

Eurasian Studies in Business and Economics 7
Series Editors: Mehmet Huseyin Bilgin · Hakan Danis

Mehmet Huseyin Bilgin
Hakan Danis
Ender Demir
Ugur Can *Editors*

Regional Studies on Economic Growth, Financial Economics and Management

Proceedings of the 19th Eurasia Business
and Economics Society Conference



 Springer

Eurasian Studies in Business and Economics 7

Series editors

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Preface

This is the seventh issue of the Springer's series *Eurasian Studies in Business and Economics*, which is the official book series of the Eurasia Business and Economics Society (EBES, www.ebesweb.org). This issue includes selected papers presented at the 19th EBES Conference that was held on May, 2016, at Istanbul Technical University—Faculty of Management, Department of Economics in Istanbul, Turkey, with the support of the Central Bank of the Republic of Turkey and Istanbul Economic Research Association. Distinguished colleague *M. Hashem Pesaran* joined the conference as a keynote speaker. Moreover, EBES Executive Board selected *M. Hashem Pesaran* as the EBES Fellow Award 2016 recipient for his outstanding academic achievements and invaluable contributions to time-series econometrics, including modeling, testing, and forecasting. All accepted papers for the issue went through peer-review process and benefited from the comments made during the conference as well.

During the conference, participants had many productive discussions and exchanges that contributed to the success of the conference where 184 papers by 320 colleagues from 42 countries were presented. In addition to publication opportunities in EBES journals (*Eurasian Business Review* and *Eurasian Economic Review*, which are also published by Springer), conference participants were given opportunity to submit their full papers for this Issue.

Theoretical and empirical papers in the series cover diverse areas of business, economics, and finance from many different countries, providing a valuable opportunity to researchers, professionals, and students to catch up with the most recent studies in a diverse set of fields across many countries and regions.

The aim of the EBES conferences is to bring together scientists from business, finance, and economics fields, attract original research papers, and provide them publication opportunities. Each issue of the *Eurasian Studies in Business and Economics* covers a wide variety of topics from business and economics and provides empirical results from many different countries and regions that are less investigated in the existing literature. The current issue covers fields such as:

- (i) ACCOUNTING & FINANCE
- (ii) EMPIRICAL STUDIES ON EMERGING ECONOMIES
- (iii) GROWTH & DEVELOPMENT
- (iv) INTERNATIONAL TRADE & REGIONAL STUDIES
- (v) MANAGEMENT & MARKETING

Although the papers in this issue may provide empirical results for a specific county or regions, we believe that the readers would have an opportunity to catch up with the most recent studies in a diverse set of fields across many countries and regions and empirical support for the existing literature. In addition, the findings from these papers could be valid for similar economies or regions.

On behalf of the Series Editors, Volume Editors, and EBES officers, I would like to thank all presenters, participants, board members, and the keynote speaker, and we are looking forward to seeing you at the upcoming EBES conferences.

Istanbul, Turkey

Ender Demir

Eurasia Business and Economics Society

Eurasia Business and Economics Society (EBES) is a scholarly association for scholars involved in the practice and study of economics, finance, and business worldwide. EBES was founded in 2008 with the purpose of not only promoting academic research in the field of business and economics but also encouraging the intellectual development of scholars. In spite of the term “Eurasia,” the scope should be understood in its broadest term as having a global emphasis.

EBES aims to bring worldwide researchers and professionals together through organizing conferences and publishing academic journals and increase economics, finance, and business knowledge through academic discussions. To reach its goal, EBES benefits from its executive and advisory boards which consist of well-known academicians from all around the world. Every year, with the inclusion of new members, our executive and advisory boards became more diverse and influential. I would like to thank them for their support.

EBES conferences and journals are open to all economics, finance, and business scholars and professionals around the world. Any scholar or professional interested in economics, finance, and business is welcome to attend EBES conferences. Since 2012, EBES has been organizing three conferences every year: one in Istanbul (usually in late May or early June) and two in Europe or Asia (usually in January and October). Since our first conference, around 7045 colleagues from 91 different countries have joined our conferences and 4022 academic papers have been presented. Also, in a very short period of time, *EBES has reached 1533 members from 82 countries.*

Since 2011, EBES has been publishing two academic journals. One of those journals, *Eurasian Business Review—EABR*, is in the fields of industry and business, and the other one, *Eurasian Economic Review—EAER*, is in the fields of economics and finance. Both journals are published thrice a year, and we are committed to having both journals included in SSCI as soon as possible. Both journals have been published by *Springer* since 2014 and are currently indexed in the *Emerging Sources Citation Index* (Thomson Reuters), *EconLit*, *Google Scholar*, *EBSCO*, *ProQuest*, *ABI/INFORM*, *Business Source*, *International Bibliography of*

the Social Sciences (IBSS), OCLC, Research Papers in Economics (RePEc), Summon by ProQuest, and TOC Premier.

Furthermore, since 2014 Springer has started to publish a new conference proceedings series (Eurasian Studies in Business and Economics) which includes selected papers from the EBES conferences. The 10th, 11th, 12th, and 13th EBES Conference Proceedings have already been accepted for inclusion in the Thomson Reuters' *Conference Proceedings Citation Index*, and subsequent conference proceedings are in progress.

On behalf of the EBES officers, I sincerely thank you for your participation and look forward to seeing you at our future conferences.

With my very best wishes,

Jonathan Batten, PhD
President

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Part I
Accounting and Finance

The Effects of Operating Leases Capitalization on Financial Statements and Accounting Ratios: A Literature Survey

Destan Halit Akbulut

Abstract The purpose of this paper is to survey empirical papers about the effects of operating leases capitalization on accounting ratios and financial statements. In this paper, we focus on the new requirements and changes related to financial statements and we try to discover particularly the lessee accounting requirements. The paper analyses published research papers for the period between 2000 and 2015 which demonstrate the impact of the lease capitalization on accounting ratios and financial statements and these papers are mainly empirical studies. We extract the sample, ratios examined, findings and conclusions of these empirical studies. The results of these academic researches show that there is no common agreement. However the changes of lease accounting and the constructive capitalization of operating leases will mostly influence the financial statements and the key accounting ratios. In this paper, we focus deliberately the papers that assess the changes to lessee accounting because the new lease standard IFRS 16 Leases, which was published in 13 January 2016, substantially changed the lessees' requirements. The paper lays out a current situation survey and gives brief information about the new lessee accounting and their impacts which are prospective to be worthwhile for users and preparers of financial reports, academics and researchers.

Keywords Lease accounting • Operating leases • Off-balance sheet finance

1 Introduction

The purpose of this paper is firstly to introduce the International Accounting Standards Board's (IASB) new accounting standard, called IFRS 16 Leases. There are several changes and new accounting requirements in this standard. We have two objectives, firstly we focus on the changes related to financial statements and we try to put light on the lessee's accounting requirements. Secondly, we realize a literature review to highlight the essence of the empirical studies.

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We analyze the published research papers about the impact of the lease capitalization on accounting ratios and financial statements. There are mostly empirical studies. We mainly extract the sample, the ratios examined, the findings and conclusions of these empirical studies.

Lloyd (2016) indicates that for many years lease accounting doesn't meet investors' needs. The current accounting model (IAS 17) depended on whether the lease qualified as an operating lease or a finance lease in terms of the financial statements of lessees. Thus, more than 85% of all leases don't appear on the balance sheet today (IASB 2016). The new accounting model (IFRS 16) excludes the classification of leases as either operating or finance for lessees. This new approach develops a single lessee accounting model. It requires leases result in company obtaining the right to use an asset. So the companies have to account for all of their leases in a manner similar to finance leases applying IAS 17. According to IFRS 16, a lessee will recognize lease assets and lease liabilities in the balance sheet and recognize depreciation of lease assets and interest on lease liabilities in the income statement.

2 Research Methodology

We perform a literature review to survey empirical researches about the effects of operating leases capitalization on accounting ratios and financial statements. We examine published empirical studies which demonstrate the impact of the lease capitalization on accounting ratios and financial statements. In the analysis part, we extract the sample, ratios examined, findings of selected empirical studies. Finally, we give the results of this literature review.

2.1 Sample and Data

We select 12 studies as sample of the literature review. First five studies are principal empirical studies which are published in accounting journals including the following: *Journal of Accountancy*, *Accounting and Business Research*, *Accounting Horizons*, and *Journal of Accounting Research* and the other seven studies are the published research papers for the period between 2000 and 2015 which can be seen Tables 1 and 2 respectively.

Table 1 shows the author, year and journal names of the main empirical studies of the impact of lease capitalization on financial statements and accounting ratios.

Table 2 shows author, year and journal names of the current empirical studies published for the period between 2000 and 2015.

Table 1 Main empirical studies of the impact of lease capitalization

Author	Year	Journal
Nelson (1963)	1963	Journal of Accountancy
Ashton (1985)	1985	Accounting and Business Research
Imhoff et al. (1991)	1991	Accounting Horizons
Ely (1995)	1995	Journal of Accounting Research
Imhoff et al. (1997)	1997	Accounting Horizons

Table 2 Current empirical studies of the impact of lease capitalization between 2000 and 2015

Author	Journal
Bennett and Bradbury (2003)	Journal of International Financial Management and Accounting
Durocher (2008)	Accounting Perspectives
Fülbier et al. (2008)	Schmalenbach Business Review: ZFBF
Duke et al. (2009)	Advances in Accounting, incorporating Advances in International Accounting
Singh (2011)	International Journal of Contemporary Hospitality Management
Kostolansky and Stanko (2011)	Journal of Business and Economics Research
Wong and Joshi (2015)	Australasian Accounting Business and Finance Journal

2.2 Analysis

In this part, we analyze sample, ratios examined and findings of main and current empirical studies of the impact of lease capitalization on financial statements and accounting ratios.

Table 3 shows the samples of empirical studies. The samples change between one to 366 companies.

Table 4 demonstrates the ratios examined of empirical studies. Each study analyses different kind of ratios which are mainly about companies' financial strength, management performance and investment return ratios. For example Durocher (2008) selects debt to assets ratio and current ratio for financial strength ratios, return on equity and return on assets ratios for management performance ratios and earnings per share for investment return ratios. Singh (2011) chooses EBIT and EBITDA for interest coverage ratios, debt to equity for leverage ratio and return on assets, return on invested capital, EBITDA margin and EBIT margin for profitability ratios.

Table 5 demonstrates the findings of empirical studies. Each of these empirical studies has different samples and assumptions, so the findings of these academic papers show that there is no common agreement. Some of them found significantly affected results about the effects of operating leases capitalization on financial statements and accounting ratios but the others didn't find such results.

Table 3 Sample of empirical studies

Author	Sample
Nelson (1963)	11 companies
Ashton (1985)	23 companies
Imhoff et al. (1991)	14 companies
Ely (1995)	212 companies
Imhoff et al. (1997)	2 companies
Bennett and Bradbury (2003)	38 companies
Durocher (2008)	68 companies
Fülbier et al. (2008)	90 companies
Duke et al. (2009)	366 companies
Singh (2011)	1 company
Kostolansky and Stanko (2011)	100 companies
Wong and Joshi (2015)	170 companies

Table 4 Ratios examined of empirical studies

Author	Ratios examined
Nelson (1963)	Current ratio, debt to equity, debt to total capital, return on total capital, times interest charges earned, net profits on net working capital, net sales to net working capital, fixed assets to tangible net worth, current debt to tangible net worth, inventory to net working capital, current debt to inventory, funded debt to net working capital, funded debt to net plant, net working capital to net plant, net plant to sales
Ashton (1985)	Return on shareholders' funds, return on capital employed, profit margin, asset turnover, interest cover, gearing
Imhoff et al. (1991)	Return on assets, debt to equity
Ely (1995)	Debt to equity, return on assets
Imhoff et al. (1997)	Return on equity, return on assets, operating income to revenue
Bennett and Bradbury (2003)	Total debt to total assets, current ratio, return on assets
Durocher (2008)	Debt to assets ratio, current ratio, return on equity, return on assets, earnings per share
Fülbier et al. (2008)	Book/Market ratio, capital employed ratio, debt to equity, earnings per share, equity to assets, intensity of investment, price to earnings, profit margin, return on assets, return on capital employed, return on equity, times interest earned, turnover capital employed
Duke et al. (2009)	Debt to equity ratio, debt to total asset, return on assets ratio, interest and rent expense coverage ratio, current ratio
Singh (2011)	EBIT, EBITDA, debt to equity, return on assets, return on invested capital, EBITDA margin, EBIT margin
Kostolansky and Stanko (2011)	Total debt to total assets, return on total assets
Wong and Joshi (2015)	Debt to asset, debt to equity, return on equity, return on assets

Table 5 Findings of empirical studies

Author	Findings
Nelson (1963)	The study finds that some ratios are affected by lease capitalization
Ashton (1985)	The paper detects a difference before and after capitalization ratios which are significantly different for only gearing ratios. And it also finds inter firm comparisons of performance are not significantly affected by lease capitalization
Imhoff et al. (1991)	The paper discovers a decrease in return on assets ratio and an increase in debt to equity ratio. The implementation of constructive capitalization of operating leases significantly affects inter-firm comparisons of accounting ratios
Ely (1995)	The study finds a significant relation between equity risk and the effects of operating lease and obligations. It detects significant relation between equity risk and the adjustment to the debt to equity ratio for operating leases and also it finds a significant increase in explanatory power in terms of the operating lease adjustment to the return on assets
Imhoff et al. (1997)	The results of this study indicate that the effects of off-balance sheet operating leases on return on equity and return on assets are really important. And they demonstrate that ignoring of the existence of operating leases or only partially adjusting financial statements can cause substantially misleading results
Bennett and Bradbury (2003)	The results suggest that operating lease capitalization has a material impact on reported liabilities. And it decreases liquidity and profitability ratios
Durocher (2008)	This study indicates that capitalizing off-balance sheet leased assets and liabilities significantly affect debt to assets ratio and current ratio. Lease capitalization has less effect on their income statements. It also finds a significant impact on return on equity and return on assets and earnings per share
Fülbier et al. (2008)	The results show that a material capitalization impact for a considerable number of companies. Changes in financial ratios appear primarily in assets and liability relations, and have minor effects for the profitability ratios
Duke et al. (2009)	The results indicate that the debt to equity and debt to total assets are significantly improved by capitalization of operating leases. Return on assets and interest and rent expense coverage ratios have been significantly decreasing for the negative income subgroups. And this situation has negatively affected by the performance rating of these companies
Singh (2011)	The results show that a material increase EBITDA and EBIT ratios, and a decrease in pre-tax income because of higher lease expense, an increase in leverage debt to equity ratio, and a decrease in return on assets and return on invested capital ratios
Kostolansky and Stanko (2011)	The study finds an essential impact on specific companies and on specific industries. The findings of this study support the IASB's new lease standard and the capitalization of operating leases
Wong and Joshi (2015)	The results show a significant effect of lease capitalization on financial statements. The ratios such as debt to assets, debt to equity and return on assets will change significantly. And this study finds the change in return on equity is insignificant

2.3 Results

In this paper, we focus on deliberately the studies that assess the changes to lessee accounting due to the new lease standard IFRS 16 Leases, substantially changed the lessees' requirements. This paper lays out a current situation survey about sample, ratios and findings of some empirical studies and it gives brief information about the new lessee accounting.

By reason of each of these academic studies have different samples, assumptions about interest rate, remaining lease life, total lease life, variability of leased assets, lease term; the results of these academic researches show that there is no common agreement. Some of them found significantly affected results and the others didn't find such results. However the changes of lease accounting and the requirement of the constructive capitalization of operating leases will mostly influence the financial statements and the key accounting ratios.

Figure 1 demonstrates the most substantial financial statements (total assets, total liabilities and total equity) and accounting ratios (return on assets, return on

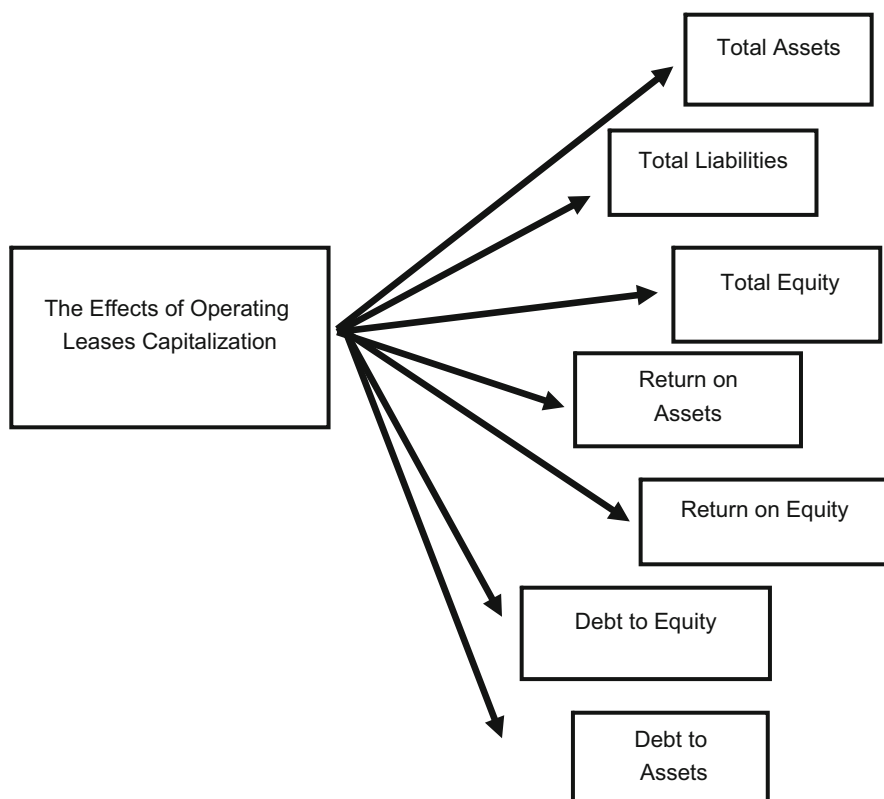


Fig. 1 The effects of operating leases capitalization on financial statements and accounting ratios

equity, debt to equity and debt to assets) which are examined by these empirical studies. Imhoff et al. (1991, 1997), Bennett and Bradbury (2003), Duke et al. (2009) and Singh (2011) examine the effects of operating leases capitalization on financial statements which include total assets, total liabilities and total equity. Imhoff et al. (1991, 1997), Ely (1995), Durocher (2008), Duke et al. (2009), Kostolansky and Stanko (2011), and Wong and Joshi (2015) analyze the effects of operating leases capitalization on return on assets. Nelson (1963), Ashton (1985), Imhoff et al. (1997), Durocher (2008), Fülbier et al. (2008), and Wong and Joshi (2015) identify the effects of operating leases capitalization on return on equity. Nelson (1963), Ashton (1985), Imhoff et al. (1991), Ely (1995), Fülbier et al. (2008), Duke et al. (2009), and Wong and Joshi (2015) analyze the effects of operating leases capitalization on debt to equity ratio. And Nelson (1963), Durocher (2008), Duke et al. (2009), Kostolansky and Stanko (2011), and Wong and Joshi (2015) examine the effects of operating leases capitalization on debt to assets ratio.

3 Conclusion

IASB and Financial Accounting Standards Board issued a convergence project on accounting for leases for approximately 10 years and they published Exposure Draft ED/2010/9 Leases and Exposure Draft ED/2013/6 Leases in 2010 and 2013 respectively. In 13 January 2016, the new Standard IFRS 16 Leases was finally published and companies will require implementing the new requirements from 1 January 2019. This new standard, IFRS 16, replace the requirements in IAS 17.

In this paper, we discussed the new requirements and changes to financial statements and we tried to determine particularly the lessee accounting requirements in IFRS 16. The new lease standard, IFRS 16, terminates the classification of leases such as operating or finance lease for lessees and it evolves from an ownership model to the right of use an asset model. To demonstrate the impact of the new lease standard on financial statements and accounting ratios, we summed up the papers which examine and improve methods for the constructive capitalization of operating leases.

The principal method of constructive capitalization is developed by Imhoff et al. (1991, 1997) which is mostly followed by academic researches. We analyzed the relevant literature about the impact of constructive operating lease capitalization and their effects on financial statements and key financial ratios.

Overall, the academic papers show that the changes of lease accounting and the constructive capitalization of operating leases will mostly influence the financial statements and the key accounting ratios. Thanks to this new lease standard, upon IFRS' documents, users of accounting reports have a more information about leases in terms of amount, timing and uncertainty and they can make more accurate reflection about leases.

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Social Change and Business Development Through Transnational Companies in Turkey

Ludger Pries and Serife Erol

Abstract Turkey is an exciting hub between Europe and Asia. How do transnational companies influence social change in Turkey, and how does social change in Turkey affect business organizations? After some general considerations about theories of social change, the shifting weight and role of transnational business in Turkey is sketched out. Based on this, the example of Corporate Social Responsibility is taken in order to analyze the strategies and structure of its diffusion in transnational companies in Turkey. Based on secondary analysis of existing studies, it is shown that general CRS recipes are adapted to and mixed with native culture and traditions in a way that there is an impact of CSR on social change in Turkey and, at the same time, CSR concepts and practices change while being introduced into the Turkish context.

Keywords Transnational corporations • Social responsibility • Corporate governance

1 Introduction

In the twenty-first century, social change may not be understood or explained neither as a merely endogenous change of national society (methodological nationalism) nor as a simple diffusion of modern values and life styles (simple modernization theory). Local, regional, national and transnational social spaces are intertwined in many different ways. Generally speaking, ways and dynamics of social change are not only influenced by material flows of commodities (investment goods, consumables, credit transfers etc.) and personal migration but also by organizations, particularly companies, operating across borders. With regard to Turkey as a hub between Europe and Asia, there are several important questions to be asked concerning this issue: Could the transnational companies in this country be described as motors of a catch-up modernization in the sense of Western

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industrial capitalism? Or are they rather precursors of a hybrid or rather alternative model of social change, a third way, as it were, between the traditional Islamic countries in the South and East and the modernistic industrial states of the West and North? In which way do transnational companies in Turkey themselves become subject to change as a result of their activities in diverse social and cultural contexts?

This article discusses these questions based on changes in corporate culture and Corporate Social Responsibility (CSR) in transnational business organizations, which are doing business in Turkey (and are historically based in or have their headquarters in Turkey or other countries). It is based on a secondary analysis of existing studies and new research about the significance of transnational staff mobility in business organizations working across borders. Firstly, we will present a series of fundamental observations on theories of social change (Sect. 1). Afterwards, the relationship between transnational business organizations and social change in Turkey will be discussed in a more general way (Sect. 2). Subsequently, studies concerning the relationship between national and transnational corporate culture, CSR concepts and labor relations in Turkey will be presented (Sect. 3), which leads to the discussion of several conclusions with regard to the significance of transnational organizations for national social change (Sect. 4).

2 Multiple Modernizations and Their Diffusion

For a long time, and frequently still today, social change has been considered a clearly focused process of modernization, which takes place all over the world and in a more or less similar manner. Following this theory, everyday life worlds, the patterns of life courses, values and norms, socially relevant technology and the relevant social institutions experience a gradual development progress and are changing over many generations. Key words that describe this process of modernization are rationalization of life-style and the way we explain the world, differentiation of social spheres of function and roles, individualization of life planning and preferences, urbanization of life in community, dominance of meritocratic principles for the distribution of opportunities and resources as well as a parliamentary democracy constituting a decision-making method and legally legitimate ruling mechanism.

As early as in the first half of the nineteenth century, Comte (1830–1842) explained the transition from a theological and fictitious stage of the world explanation process, passing through a metaphysical and abstract one and finally arriving at a scientific and positive approach, to be a similar universal evolutionary scheme. The historically unequalled crimes of Nazi Germany form the ultimate turning point for the naïve believe in a simple universal modernization process to give way to an insight into the ambivalence of the modern age, or into the Dialectic of Enlightenment as it was called by Horkheimer and Adorno (1947). The atomic bombs of Hiroshima and Nagasaki, the subsequent nuclear reactor disasters of

Chernobyl and Fukushima as well as the realization that global warming was influenced by mankind helped to strip the so-called technical progress, essential part of the modernization process of all its innocence. After all, the benefits of the promised catch-up modernization did not show on the expected scale in the so-called developing countries of the South—we rather find ultra-modern enclaves and gated communities for a small percentage of the population coexisting with poor districts and slums, mostly excluded from public provisions and welfare, home to a considerable amount of people. This concept of a focused modernization was related to the idea that this linear transition process was transmitted through simple learning and imitation, usually from the advanced and progressive national societies to the more backward and traditional ones. Societies organized as nation-states were therefore perceived as units for analysis, in which social development and modernization would take place mostly through taking up social institutions.

Due to the non-appearance of simple modernization in the Southern countries, more complex theories were developed, such as the hypothesis of the Development of Underdevelopment (Frank 1969) or the mutual dependency of diverse parts of the world within a globally thought world-system (Braudel 1993; Wallerstein 1974).

Compared to the simple, linear modernization theory, merely outlined in the present article, the current state of knowledge has been expanded and differentiated considerably. Nowadays, social change is generally understood as a contradictory and complex, at times even opposing process of structural change of social institutions, cultural patterns and conducts of societies or other massive interconnections (Pries 2014). According to Shamael Eisenstadt, we should not talk about just one modernity but a multiple modernity (Eisenstadt 2000a), or rather multiple modernities (Eisenstadt 2003), each combining cultural, structural and institutional patterns. According to Eisenstadt (2000b, pp. 2) “the idea of multiple modernities presumes that the best way to understand the contemporary world—indeed to explain the history of modernity—is to see it as a story of continual constitution and reconstitution of a multiplicity of cultural programs (...) Western patterns of modernity are not the only “authentic” modernities, though they enjoy historical precedence and continue to be the basic reference point for others”. Hence, historically speaking, modernity first developed in Europe, its cultural worldview being influenced by the existence of shifting (political and cultural) centers, balances of authority and equality as well as utopian visions of the future.

With regard to the diversity of institutional and structural combinations in the modern age, the internationally widespread theoretic model of the Varieties of Capitalism (Hall and Soskice 2001) will be relevant for the context in question. In accordance with the specific institutional facilities of capitalistic (national) societies, the first general differentiation made is the distinction between the idealized forms of liberal and coordinated market economies, all of which show specific configurations regarding economic constitutions, the educational system, labor regulation and the role of markets and networks as coordination mechanisms. These variants of capitalism, in spite of mutual observation and institutional learning, are therefore known for their historically evolved and path-depending

institutional characteristics (Schreyögg et al. 2003), making utterly unlikely not only a general homogenization and convergence but also a simple transferability of management and production concepts from one country to another. Several related studies show the limits of the complete transfer (application) of, for instance, the Japanese or rather Toyota production system to the United States or Europe—the actual process is more likely to be a complex mechanism of adapted and selective transfer or translation (adaption) of certain elements (Abo 1994, 1998).

With regard to the different forms of labor organization (as a specific form of distribution and coordination of tasks and resources in order to produce goods and services), scientific studies demonstrate time and time again that in spite of many global management concepts and the application of standardizing best-practice-rules, there is still a considerable variance in concrete evolvement of labor organization. Neither Taylorism nor Toyotism/lean production, neither partly autonomous self-regulation nor new production concepts, neither the extended mechanization and computerization nor the politics of subcontracting of tasks (temporary employment and contracts for services) have led to a homogenization of labor organization. Technical and sector-specific factors as well as organization-related or socioinstitutional factors lead to a lasting differentiation according to countries, industries and companies (Pries 2013).

There is no general answer to the question if variances within national societies, within lines of business or within cross-border organizations are greater or smaller than those between different fields and between companies—it always depends on the specific aspects of labor organization considered.

The problems mentioned herein have been of special interest in the field of organizational analysis. With regard to globalization tendencies, several authors (Meyer 1987; Perrow 2002) generally attribute an important role in processes of social change to the organizations themselves. Cross-border organizations may be considered motors for globalization processes (Rehbein and Schwengel 2008; Meyer 2005). They especially induce and intensify cross-border mobility of employees and migrant workers (House et al. 2004; Adick et al. 2014). Mobile actors transport ideas and concepts that influence the respective locations. Taking expatriates in transnational companies as an example, Beaverstock (2002) has demonstrated that organizations are by no means exclusively self-referential operating units which act isolated from the respective local context, but are embedded in local structures of values and references. In his World Polity Theory, Meyer (1987) assumes that organizations globally disseminate mainly Western values and principles of rationality which creates a Western-oriented “world culture”. Many globalization theorists, however, are questioning such a Westernization of the world in the sense of the classic modernization theory. Instead, they find both tendencies for a progressing localization of cultures or moral concepts and hybridization or glocalization tendencies (Robertson 1998; Nederveen Pieterse 2003; Pries 2013). Even if we do not follow the World Polity Theory as much as to speak of a homogenized dissemination of a modern Western-oriented “world culture”, its firmly established link to the neo-institutionalism of organizational

sociology is still apt to examine the relationship between transnational companies and social change in a country such as Turkey.

The term neo-institutionalism concentrates research and theories that systematically relate the conduct and actions of organizations as collective actors to social institutions. By these means, it is aimed for a conceptional connection of general Social theory and sociological Organizational theory—a connection basically essential to the problem herein exposed of determining the relationship between transnational companies and social change. For this matter, a social institution may be understood as a program of social norms and practice, (1) a “socially inherited” ensemble of routines, rules, cognitive frames and mutual expectations of conduct which came socially into being and has been stabilized over generations by (2) processes of habituation, definition, typification as well as symbolic formulizing and which (3) structures certain areas of life of massive social interconnections (such as “societies” or “ethnic groups”) and creates social identity, solidarity, predictability and stability. Examples for social institutions are (on a micro level) salutations or greeting ceremonies and the exchange of gifts, (on a meso level) marriage or baptism and (on a macro level) the family, market, organization, the job and the state. Compared to that, organizations are (just) a certain kind of institution which has gained importance throughout the history of capitalist civil society. Organizations are relatively constant, job-sharing cooperation structures with (1) shapable goals and objectives, with (2) alterable structures and processes (of horizontal and vertical distribution of tasks, of rules and power) and with (3) more or less explicit rules for entrance, exit and membership. Organizations enable the association of many people under a specific purpose, beyond the relations established by family bonds or social classes. The neo-institutionalism of organizational sociology parts from the concept, and further shows empirically, that organizations don’t exclusively orientate their structures and processes—such as the organization of labor and labor relations that are of interest for the present article—to the explicit objectives of an organization by means of rational efficiency or effectiveness calculations. They also take into consideration the perceived or assumed expectations for legitimacy of the organizational environment, marked and structured by social institutions (Meyer and Rowan 1977; Scott 2001; Walgenbach and Meyer 2008). The supposed rationality of organizations is therefore really just a myth. Organizations draw these myths of rationality from their organizational environment in order to reduce the complexity of internal and external reality and create sense and legitimation.

The term organizational field firstly describes “a collection of interdependent organizations operating within common rules, norms and meaning systems” (Scott 2003, p. 130). An organizational field therefore consists of collective and corporate organizations that perceive themselves as mutually interactive and connected by an intensified level of communication. A central assumption of neo-institutional research is that institutional influences within the organizational field determine the structures and practices of the participating organizations. “Wider societal forces operate to structure organizational fields, which develop their own distinctive institutional logics and governance systems, and these systems, in turn,

influence the structure and activities of individual organizations” (Scott 2001, p. 148). The institutional influences operate by means of constraints (regulative orders or government instructions), of norms (internalized shared role models and ideas) and cultural-cognitive frames (expectation and attitudes of other field actors are anticipated and imitated).¹

Parting from the idea that the rationally established organizational objectives and the corresponding, declared universally valid, efficiency and effectiveness calculations of organizations are, in the end, rationality myths which are being influenced institutionally by the legitimacy expectations of the other collective and corporate actors, we are able to analyze the forms of mutual influence of organizations and their environment—in this case, transnational companies operating in Turkey—in a more discriminate manner. Scott (2001, 2003) identifies four mechanisms of organizational learning: symbolic systems (such as laws, values, standards, categories), relational systems (such as power relations, authoritarian regimes, identities), routines (as procedures, conduct standards, job and profession roles, conduct guidelines), and artifacts (such as system designs, software programs or manuals). An example for learning through symbolic systems is management concepts (such as the Toyota management system), which are already abstractions or rather theorizations of social practices and therefore the result of a double “translation” process: they are formulated within a specific context of social practice and then adapted to another context. According to Scott (2003), the communities of practice on the interface of different cooperating organizations may serve as an example for a relational system. Sales representatives of an organization work so closely with their clients that “communities of shared social practice” are created, which in turn have an impact on the participating organizations. Frenkel (2005, p. 295), referring to the reception and acceptance of management concepts of Scientific Management and Human Relations in Israel, demonstrates that national institutions and regional power constellations strongly influence the (re-)translation of such symbolic systems: “[. . .] despite the scientific legitimacy awarded to professional models of management and despite international experts spreading them around the world, specific institutional arrangements at the level of the nation state influence the adoption or rejection of those models in specific historical and social contexts.”

In conclusion, it shows that a model of simple mechanical transfer of modern forms of doing business from one country (e.g. Germany) to another (e.g. Turkey) does hardly do justice to the complexity of the interrelations between technical-functional, organizational and institutional factors. Companies operating

¹For a good introductory overview of neo-institutionalism cf. Walgenbach and Meyer (2008) and Brinton and Nee (2001); for neo-institutionally inspired articles which (also) discuss migrant organizations cf. Boswell (2007), Hollifield (2004) and Joppke (1998).

transnationally² are being influenced in their production systems, labor organization and labor relations by technical-functional organization configurations, background-related social institutions, learning curves and trajectories concerning development as well as charismatic individual and collective actors. Organizational learning takes place as a selective transmission and a necessarily adaptive and creative translation.

3 Transnational Organizations and Social Change in Turkey

Flows of commodities and migration within Europe and those between Europe and other continents have created cross-border economical interrelations that result in processes of social change in both countries of origin and destination and may even foster the creation of social correlation patterns beyond national states as transnational social spaces (Mayer-Ahuja 2011; Escobar et al. 2006). In order to adequately understand and explain the dynamics of social change in Turkey, we have to take into consideration the country's cross-border exchange relations with other states. For this reason, a "methodological nationalism", analyzing processes of change in Turkey on a merely national level and with concepts such as "industrial-capitalist catch-up modernization", does not go far enough and seems inadequate (Pries 2005; Halm and Thränhardt 2009). In the case of Turkey, transnational interrelations with Germany are of special importance, above all the migration progress that has been taking place since the 1960s. Social development in Turkey is strongly influenced by repercussions from migration and organizations operating transnationally (Avci and Kirisci 2008).

The direct investment law of 2003 has turned Turkey into an even more attractive destination for foreign companies, Germany taking third place in this ranking, meanwhile also being Turkey's most important business partner. Summing up the years 1980–2014, Germany has been the biggest investor in Turkey. The bilateral trade volume amounted to almost 33 billion euros in 2014. At the end of February 2015, the number of German companies and Turkish companies with German equity ownership was 6076 (Auswärtiges Amt 2015; Alman-Türk Ticaret ve Sanayi Odası 2015). The increasing economical transnationalization may, in turn, lead to an intensification of existing transnational interrelations in other areas

²"Transnational" is herein defined as generally referring to all relations that cross the borders of national states. In the stricter definition of organizational sociology, transnational companies are defined as enterprises which—contrary to focal or global organizations—do not have a clearly defined centre of power or resource centre and whose single units are—contrary to multinational organizations—strongly connected (Bartlett and Ghoshal 1989). The present article—if not noted otherwise—defines transnational companies in a very broad sense as those profit-oriented organizations which, on a relatively permanent basis, run separate units of their organization in several countries and coordinate the resources distributed across borders.

of life and may consequently contribute to social change in Turkey. Recent studies point out the transnationalization of social relationships between Turkey and other countries as well as the correlation of social and economic transnationalization.

Little research has been done to determine the significance of transnational organizations in general and, more specifically, companies operating between Germany and Turkey for social processes of modernization and innovation in Turkey. Examining transnational migrant organizations operating between countries of origin and destination, it could be demonstrated that, with respect to the relationship between Germany and Turkey, such organizations stimulate change in the country of destination as well as in the migrant's country of origin (Pries and Sezgin 2012). Not least of all, the legalization of the foundation of Alevi organizations in Turkey (e.g. ABF) could be achieved through the actions taken by the Germany-based transnational Alevi migrant organization AABF and their corresponding umbrella organization AABK, active on a European level (Pries and Tuncer-Zengingül 2013). The Turkish-Islamic Union for Religious Affairs (DITIB), however, concentrates on the representation of Turkish interests in Germany (Rosenow-Williams 2012).

With respect to transnational organizations with headquarters in Turkey or other countries and cross-border activities in Turkey, we have to ask ourselves if they work as motors of a "catch-up modernization" in the sense of Western industrial capitalism or if they rather represent a hybrid form of business and labor organization between Turkey and Germany. How strongly do these companies experience change themselves as a result of affiliation to diverse sociocultural contexts? Within the context of these problems of greater dimensions, it is of more concrete interest to define the role of transnational intra-organizational mobility of concepts and ideas in the area of labor organization and relations, in the sense of transmission or absorption effects of symbolic systems within the respective local contexts of the organizations.

It is assumed that organizations operating across borders transport ideas and concepts, whereas members of the organizations who move between worlds play an important role in this process. This, for instance, affects Germans who are sent to Turkish sites as expatriates and simultaneously Turks, sent as inpatriates to Germany by sites of German companies. Organizations operating transnationally, however, also induce cross-border mobility outside of the limits of their own organization, an example for Turkey being the return migration of people with Turkish origin. Studies which prove a connection between return migration and a higher density of transnational companies in some of the European countries (Jones 2003; Jain 2011) give rise to the supposition that return migration might also lead to an intensification of transnational interrelations in Turkey (Baraulinal and Kreienbrink 2013; Hür 2010). Splitt (2012) shows, referring to offshoring activities of call centers in Istanbul, how return migrants with good knowledge of German are recruited and later influence the local working conditions as part of a transnational labor market. The International Placement Services of the German Federal Employment Agency help people living in Germany but originating from Turkey to find a job in Turkey. By means of return programs, they advertise excellent chances on the

job market at companies originating from Germany that are operating in Turkey (Bundesagentur für Arbeit 2011). Apart from companies in Turkey originating from Germany, other companies in Turkey, operated by German or transnational ethnic entrepreneurs, such as Öger Tours are also of great importance. The latter exploits its double affiliation as an advantage in the market, recruits certain actors such as Germans with Turkish origins as its employees and at times specifically looks for personnel who possess a transnational cultural capital.

The problems touched here may be examined by means of labor organization and relations and, more specifically, by reviewing the question of diversity management and labor-related strategies of Corporate Social Responsibility (CSR). The topic of CSR is especially interesting for the problem in question because, as a globally noticed management concept, it represents a symbolic system according to Scott. CSR concepts and practices directly relate companies and society. They are explicitly bound by institutional expectations from their organizational environment, such as expectations of shareholders or stakeholders and—especially in Corporate Citizenship—those pronounced by the local society. According to Ararat (2005), within the emerging markets such as Turkey, CSR is impelled by mostly exogenous factors. Turkey, however, has had a history of a strong tradition of entrepreneurial philanthropy since the Ottoman Empire (Turker 2009). Primarily, it was family-owned enterprises that found “*waqf*” (charitable foundations). Altintas et al. (2007) note a continuous increase of CSR within the top 30 of companies listed on the stock exchange of Istanbul. There is little research, however, on the role of companies with German origin in the diffusion and absorption of CSR activities.

There is empirical evidence for the fact that regional change impulses result from CSR initiatives by cross-border organizational networks as, for instance, the launch of campaigns for improvement of labor standards and working conditions in the Turkish textile industry. As an initiative of the Foreign Trade Association of German Retail Trade (AVE) and the former German Corporation for Technical Cooperation (GTZ, now: German Corporation for International Cooperation, GIZ) the Business Social Compliance Initiative was put into practice, whose objective was the implementation on a voluntary basis of the BSCI Code of Conduct (of the Business Social Compliance Initiative BSCI) in Turkish supply companies in order to improve the on-site working conditions. Over 200 companies participated in this initiative (Utz and Hibbeler 2010). Another measure is the Joint Initiative for Corporate Accountability and Workers’ Rights (JO-IN). Until now, there has been little research examining the question if such transnationally induced activities in Turkey actually result in social change beyond organizational borders and façades of legitimacy.

In the following, several recent studies on transnational corporate culture and CSR concepts in Turkey shall be presented and discussed.

4 Corporate Culture, CSR Concepts, and Labor Relations in Turkey

Cakmakci's study (2009) centers upon universal and particular cultural patterns in the development process of Turkish society. The author scrutinizes social change and industrialization in Turkey during the twentieth century. He examines the correlation between culture and innovation processes in business, viewing culture as both a legitimation frame for business conduct and an influencing characteristic of business conduct. Basing his assumptions on Schumpeter's thoughts on social innovation through business conduct, he differentiates between an industrial-capitalistic modernization including the respective regional cultures and a universally planned industrial-capitalistic modernization through Westernization. Japan, for instance, started out on its industrialization belatedly by imitating Western development, but later on used its own culture for its industrial-capitalistic development process, actually creating the globally successful management concept of lean production. The organization-related Japanese culture helped to create another form of capitalism than the individualistic American culture.

According to Cakmakci, the development of industrial-capitalistic economy in Turkey was closely connected to sociocultural change, even though the direction of this influencing process could not be clearly defined. The economic system did not merely adjust to the existing culture, but selectively modified and implemented several social institutions—such as extended family and community structures—and simultaneously decided not to take up certain elements of Western industrial-capitalistic development (e.g. a professionally organized and unionized work force). Contrary to the Western liberal scheme of modernization, social change in Turkey had been impelled “from above” by an authoritarian government.

With respect to the change in cultural value orientations, Cakmakci cites the results of the internationally comparative studies by Hofstede (1984), Schwartz (2004), the GLOBE study (House et al. 2004), as well as the study on value change by Inglehart and Baker (2000) and notes the peculiarity of Turkish business culture and labor relations. Instead of carrying out a strict cost-benefit analysis during the decision-making process, it is more common to refer to emotions; community and group structures are important for labor relations; superiors demand respect not only for their organizational position but also for them as a person; the role allocation within organizations is strongly oriented towards family structures (the manager being the good father who sees himself affected by all dismissals, even those of less productive employees); the individualization process and independence of individuals is almost as limited within the organizations as it is in Turkish families; status preservation being of vital importance, innovation is often seen as a threat by the companies.

The specific influence of transnational companies on (local) Turkish companies is the focus of a MÜSIAD (Independent Industrialists and Businessmen Association) study (Gür 2014). In a pilot study, 101 member companies of MÜSIAD were consulted, being active in nine different areas (technology, energy, food and

Table 1 Areas influenced positively by transnational companies

Area	Yes	No
Know-how and expertise	86	14
Technology	83	17
Flow of capital from MNC to national companies	73	27
Creation of jobs	93	7
Positive influence on human capital through further education	89	11
Increase of export volume	82	18
Increase of tax revenue	83	17

Source: Gür (2014)

agriculture, services, construction, chemistry, car industry, health and textiles). On average, the companies had been in business for 19 years and employed 153 people. When it comes to export business, half of the companies compete against multinational enterprises and have multinational enterprises as clients. Almost half of the consulted companies purchase intermediates from multinational enterprises. It may consequently be assumed that they have a good knowledge of similarities and differences in business practice and strategy. Three quarters of the companies believe that transnational companies effect Turkey positively, both by spreading technological progress and contributing economically. Table 1 demonstrates the individual aspects of perceived positive effects of transnational enterprises in Turkey.

The consulted companies stated that globalization increased the pressure of competition on national companies, forcing them to look for better further education measures for their employees. Learning processes in transnational companies happened through direct cooperation as well as through the recruitment of qualified workers with work experience in a transnational enterprise. Apart from these more general questions, some studies furthermore specifically discuss the significance of CSR strategies and labor relations taking into special consideration the functions of transnational companies.

In an extensive study, Öztürk and Ayman (2008) examine the different CSR measures taken by companies with and without Turkish origins, selecting the 23 companies listed on the “Most Admired Companies in Turkey” survey conducted by the Capital Turkey (2007) (3 places are occupied by 2 companies each, resulting in a total number of 23). On the basis of the respective web sites of the companies, just fewer than 300 documented CSR activities could be identified until mid-2008. Nine of 23 companies (Coca Cola, P&G, Unilever, Microsoft, Toyota, Bosch, Pfizer, Siemens and Vodafone) had their headquarters in countries other than Turkey. The authors assume that an increasing number of CSR activities may be observed since the year 2000.³ According to their opinion, CSR measures

³Methodological problems and limits of this study cannot be further discussed; it is very possible, for instance, that some companies keep more detailed records of their activities on their websites than others and that some measures taken have not been documented at all or, vice versa,

are especially helpful to emerging nations such as Turkey in provoking social change in the society outside company limits. If you divide the organizations into those of Turkish and non-Turkish origin, it shows that, (1) with regard to the temporal development of CSR measures, Turkish companies started the implementation earlier, (2) there are no significant differences between the companies with Turkish origins and the enterprises operating transnationally concerning the distribution of CSR measures according to their type or area⁴ and (3) the companies' CSR projects have been implemented in cooperation with 7 universities, 11 governmental institutions and authorities as well as 29 NGOs. By increasing the conscience of regional actors and helping to actively shape the Turkish transition process, these cooperations serve as multipliers.

In conclusion, the study about CSR measure clearly demonstrates that we cannot speak of a simple diffusion of management concepts of previously industrialized countries into Turkey. According to the study, since the beginning of 2000, CSR activities of both transnational and Turkish companies have increased simultaneously. Before 2000, one third of the CSR activities with known beginning date had been initiated by transnational companies.⁵ As it is common in Turkey, the biggest part, totaling 80% of the projects, consists in sponsoring initiatives and philanthropic activities in the areas of education and culture.⁶ Fifty-seven percent of the strategic philanthropy-initiatives were initiated by companies originating in Turkey, the contribution of non-Turkish companies being of similar dimensions with the resting 43%.⁷ In this case, the influence of regional culture on activities of transnational companies may be observed since, as noted by Bikmen (2003), Turkish culture itself has been strongly influenced by philanthropic thinking ever since the Ottoman Empire.

A study conducted by Hostut (2016) depicts cultural influences of the organizational environment on transnational companies, precisely comprising CSR strategies and activities in Turkey.⁸ The study's objective is to discover the global and

documented measures have not been applied. Therefore, these results have to be taken with great caution and may only be understood as a first approach.

⁴Only six companies (Garanti Bank, Eczacibasi, Koc Holding, Coca-Cola, P&G, Siemens) engage in activities concerning 4–5 different CSR types. Remarkably, half of these companies are transnational enterprises and the other half shows a high level of international cooperation (which is, many international partners). Generally speaking, companies with less international activity also register a lower number of CSR activities.

⁵The initial date of the initiatives was known in the case of 177 of 272 companies.

⁶In Turkey, CSR projects mostly follow the concept of "strategic philanthropy" and are being established in the educational sector. Issues such as labor rights, job satisfaction and cultivation of the employee's commitment usually do not form part of the CSR activities in Turkey (Yamanoglu 2010; Hostut and Hof 2014; Ararat 2005; Ararat and Göcenoglu 2006).

⁷With a total of 67 philanthropic initiatives, 38 were reported by Turkish companies and 29 by companies originating in countries other than Turkey.

⁸The PR concepts of 9 of 17 transnational companies in the automotive industry listed on the Fortune Global 500 of 2012 were examined by means of interviews with experts, since the majority (13%) of the 100 biggest transnational companies engage in activities in this industry

local characteristics of PR activities of transnational companies in Turkey. Since CSR strategies and activities are generally organized as PR concepts, the study may also be examined from a CSR point of view (Yilmaz 2008). It is investigated if a globally unified PR concept is being implemented in Turkey by transnational companies or if so-called international components may be identified, which promote individual PR concepts for different cultures. Enterprises have the freedom to implement, besides the strategies of their headquarters, a range of local practices and to adapt, for example, CSR strategies to regional peculiarities. In this way, global and regional strategies and local practices are being harmonized by building a metaphorical bridge between global practices and local demands. Studies involving several countries lead to the result that CSR results vary according to the country and its characteristics (culture, institutions, level of development etc.) (Küskü and Zarkada-Fraser 2004; Hostut and Hof 2014; Habisch et al. 2005; Öztürk and Ayman 2013). Koparan's study (2014) on CSR concepts in 30 different industrialized and emerging countries further identifies a significant influence of national culture on CSR activities. Hence, the activities and understanding of CSR by both Turkish and transnational companies is influenced by the traditional philanthropic culture of Turkey.

As mentioned beforehand, CSR concepts and practices directly relate companies and society. They are explicitly bound by institutional expectations originating from their organizational environment, such as demands of shareholders or stakeholders and—especially in Corporate Citizenship—those pronounced by the local society. Corporate Citizenship is a “multidimensional construct” (Hutton et al. 1998, p. 282). Carroll (1991) proposes four dimensions: economic, legal, ethical dimensions and a philanthropic one which comprises the social responsibility of a company as forming part of society. “Corporate Citizenship is all about serving stakeholders well by being an integral part of their lives” (Carroll 2015, p. 83). While economic and legal demands of a company are required by society, the assumption of responsibility is being expected and philanthropic responsibility is a desired conduct (Carroll 1991, 2015). According to Carol, the concept of CSR goes far beyond the extreme of altruistic intentions when following contemporary standards and is starting to turn into the other extreme, namely a concept that has been fully arranged, exploited and strategically rationalized (Carroll 2015). This tendency can also be found in Turkey. On the basis of the philanthropic culture, well-established in Turkey since the time of the Ottoman Empire, strategic, social and financial benefits were derived over time from philanthropic activity and exploited by companies in order to constitute their “Corporate Reputation” (Alakavuklar et al. 2009; Bikmen 2003). These developments may be attributed to exogenous influences. While a growing number of transnational companies in Turkey push on with the Turkish CSR concept by institutional progress and a closer

(UNCTAD 2009) and all brands of this sector can be found in Turkey. Four of seventeen refused to participate in this study, in the case of four other companies, an interview could not be arranged (Hostut 2016).

international cooperation with NGOs, pursuing the objective of Turkey's accession to the European Union,⁹ the studies come to the conclusion that non-Turkish companies adapt to Turkish philanthropic culture when it comes to CSR activities. Instead of creating a diffusion of modern management concepts through transnational companies in Turkey, this correlation based on mutual learning processes could establish a hybrid approach to the assumption of social responsibility, which harmonizes philanthropic responsibility, a desired feature for companies as respectable Corporate Citizens, and strategic CSR of organizations.

With respect to the diffusion of such management concepts and practices, it is often said that the MNC play a pioneering role in the emerging countries. According to Ararat, in emerging countries such as Turkey and other countries with similar cultural clusters—being a combination of short-term culture for alignment, little social collectivism, authoritarian structures and little humane orientation of the managers—a CSR concept may not be developed primarily within the domestic companies (Ararat 2005; Ararat and Göcenoglu 2006).¹⁰ In those countries, CSR can only arise through exogenous influences and institutions. Ararat states that if the philanthropic activities were not being considered, CSR initiatives in Turkey would be implemented by MNC (Ararat 2005; Ararat and Göcenoglu 2006). For some authors, an adoption of such concepts and institutions by pioneering emerging countries such as Turkey is the only solution to achieve integration into the global market economy. Turkey has been strongly advised to adapt to Western or European CSR concepts in order to be able to integrate into the European market since, in Turkey, non-profit activities of companies are not perceived as CSR (Michael and Ohlund 2005; Michael et al. 2005).

It has to be considered, though, that the origin of CSR in Turkey should be defined as the traditional philanthropic culture which, on its part, is subject to religious influences. According to a study conducted by United Nations Development Programme (Göcenoglu and Onan 2008), CSR in Turkey was, at the beginning of the process, subject to completely voluntary measures taken by the companies: “The experience of the philanthropic stage of CSR in Turkey goes back to the Ottoman times. In the Ottoman era, the “*waqf*” (foundation) was the premier institutional mechanism for philanthropic provision of public services such as education, health and social security. Today, most family owned conglomerates in Turkey have an associated *waqf*. In this sense, the public demand from the

⁹The Corporate Social Responsibility Association of Turkey was founded in 2005 in order to turn the already existing social culture of responsibility into an international standard. United Nations (UN) Global Compact played an important role for the institutionalization of the CSR concept. In 2002, a corresponding initiative was signed by two Turkish companies. Nowadays, Turkey is Europe's sixth largest national network with 505 participating companies (UN Global Compact 2014).

¹⁰According to Ararat (2005, p. 252), Turkey shows more of an “in-group collectivism”: “the most dominant characteristic of Turkish societal culture is an in-group collectivism”—even though Hofstede's study mentions “strong collectivism” as a characteristic of Turkish culture (Hofstede 1984).

companies is shaped within the historical “waqf” philosophy and social responsibility identical to donations and philanthropic actions of the companies.” (Göcenoglu and Onan 2008, p. 43). In Turkey, these waqf have been in existence since 1969 (Vehbi Koc Vakfi 1969, Hacı Ömer Sabancı Vakfi 1974 and Dr. Nejat F. Eczacıbasi Vakfi 1978) and, still today, are of great importance for this sector (Torlak 2013).

Two additional studies finally examine the influence of transnational companies on the development of labor relations in Turkey. Seymen and Ceken (2004) screened the transformation processes of labor relations for mutually dependent changes on a macro and micro level. According to Seymen and Ceken (2004), transnational companies influence national labor relations on a macro level. The organization of labor relations is being influenced more and more by cross-border companies, mainly due to their own strong HRM systems. The author declares that the unions lose their capacity to impose measures because of rising unemployment rates in both Turkey and all over the world. Whereas the local union agreement, as an institutional relation between employer and employee, becomes less important due to the decreasing level of organization by the unions, bigger companies have long since established their own regulatory systems for labor relations. The organization of labor relations has therefore become more favorable for the employer’s side. Even though transnational companies are active in different countries and under diverse legal, political and social conditions, they usually manage to implement their own HRM systems, apart from adapting to the organizational environment. Especially in those countries that cannot look back on a long history of their trade unions (Seymen and Ceken 2004), transnational companies strongly influence the core areas of labor relations.

Transnational companies, by means of their cross-border activities, form national labor relations and two different systems are brought closer to each other, basically creating hybrid forms. This may lead to the erosion of the national character by labor relations. On a micro level, Seymen and Ceken examine the role of personnel management and the influence of HRM on transformation processes of labor relations. When it comes to HRM, transnational companies are far ahead of national companies.

Sari-Gersil (2004) describes the influences of cross-border companies on labor relations in Turkey in a very similar manner, but includes Push and Pull factors of cross-border activities. While cheap labor and production in emerging and developing countries are described as pull factors for foreign investment, the corresponding push factors are increasing competition and a tendency for saturation on the local markets as well as stricter regulations for the tax and legal systems (Tokol 2001, p. 2). The author concludes that, apart from the social classes of “Blue Collar” and “White Collar”, a new class emerges, namely “Gold Collar”.¹¹ As it

¹¹The term Gold-Collar Worker was coined by Kelley (1985). It describes persons with a high transnational cultural capital. Gold-Collar workers are actually qualified White-Collar workers and

were, the presence of transnational companies thus results in new dynamics in Turkish social life.

5 Transnational Organizations and Social Change

In conclusion, it shows that relations between social change and transnational organizations are fairly complex. Transnational for-profit and non-profit organizations may serve as an important catalyst or even initiator for certain areas of social change. However, they do experience change themselves, since cultural, technical and social impulses contribute to the constitution of the original organizations as soon as they expand their activities to other countries. According to quantitative weight and qualitative significance of new activities abroad, the prevailing social conditions of that country can have considerable impact on the structure and working methods of transnational companies. While BMW, Volkswagen or Mercedes-Benz are still mostly perceived as German or German-based companies—in spite of the expansion of their transnational activities—Shell is usually not being identified as a Dutch enterprise (Bartlett and Ghoshal 1989).

This can also be applied to the area of non-profit organizations: Greenpeace is hardly perceived as a Canadian and Doctors without Borders hardly as a French organization. The Rockefeller Foundation, however, is clearly identified as an US-American foundation. Cross-border organizations may therefore influence social change in certain countries or regions, while simultaneously being influenced themselves by their expanded activities and the new environments. At the same time, social change is ever more strongly becoming a cross-border process of change and is no longer enclosed in national society. This becomes obvious when looking at general technological developments such as internet-based means of communication which have spread all over the world in no time. However, following the example of Corporate Social Responsibility, it also applies to management concepts and personnel policies.

The example of transnational companies in Turkey clearly demonstrated that CSR politics and structures consist in a complex mixture of traditions based on the country of origin's culture and cross-border or rather universal development strategies. The real transformation process does lead neither to a general convergence of procedures and structures nor to stronger divergence of the same. The relationship between social change and transnational companies in the area of CSR may be adequately described as convergent divergence and divergent convergence. On the one hand, the CSR structures and strategies practiced by organizations—based on very divergent social traditions—have the tendency to move closer to one another (divergent convergence). This, however, does not result in homogenization but in a,

are defined as independent, innovative and incredibly valuable because they possess the means, knowledge and imagination which are absolutely necessary for today's information society.

always very specific and divergent, processing and integration of general convergent formulas (convergent divergence). Hence, companies and other organizations are able to take up the same terms and concepts, taken from globally distributed manuals and best-practice catalogues, and still fill them in with a different type of content or socially contextualize them in a different manner. For this reason, the empirical analysis of the relationship between social change and transnational companies or organizations will remain an important task for scientific research.

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Sustainability Reporting Assurance: A Literature Survey

Idil Kaya

Abstract Recent years have witnessed a growing demand for corporate sustainability disclosures as a result of an increase in accountability pressures on businesses. According to professional literature, obtaining assurance is a costly decision, but at the same time, it is a valuable tool for companies and leads to increased stakeholder confidence. The growing market for assurance provision has been divided between certification bodies, specialist consultancies and accounting firms. Additionally, there is an increasing prominence within the capital markets of indices such as the Dow Jones Sustainability Index. The existence of the different standards providing guidance for Sustainability Reporting Assurance is another characteristic that deserves attention. In parallel with these developments, the assurance of sustainability reports is a fast growing area of interest in the academic research. Studies on this area provide evidence on a number of factors that may affect the general development of the profession in terms of the services it attempts to offer and the methodologies used to provide these services. The purpose of the present paper is to highlight the focus of the empirical studies and identify the broad problem areas on sustainability assurance practice. It critically assess how researchers study sustainability reporting assurance in fact, considering both experimental and archival methods and it provides a survey of the recent progress in the literature. This survey consists of a high-level review academic journal articles published in the years between 2005 and 2015.

Keywords Assurance • Sustainability reporting • Sustainability reporting assurance

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1 Introduction

Sustainability Reporting (SR) is a communication tool to enable the stakeholders to assess how sustainable an organization's operations are. It consists of the non-financial disclosures of a company's impacts on the sustainability issues and it encompasses social, environmental, governance and societal information. Therefore sustainability reports may be divided into three main categories. Firstly, social disclosures are used to communicate information spanning employment, labor relations, health and safety, and other social information. Secondly, environmental disclosures incorporate the information on environmental issues of the company e.g. pollution, waste management, and energy consumption). Finally, governance and societal information is composed of the disclosures on community involvement and societal categories such as social impacts, relations with stakeholders, human rights, and actions undertaken to prevent corruption. Global Reporting Initiative GRI (2011) defines SR as the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development.

The development of SR has given rise to the auditing of public disclosures on sustainability performance. It is believed that companies hire an external auditor to examine its social, environmental and societal practices because of stakeholders' demand of accurate, transparent and trustworthy information. In other words, the corporate responsibility to enhance the robustness, accuracy and credibility of disclosed information may have an important influence on the use of external independent reviews. The terms used to describe this process vary and include assurance, external assurance, verification and certification. The term assurance usually describes the methods and processes employed by an assurance provider to evaluate an organization's public disclosures about its performance as well as underlying systems, data and processes against suitable criteria and standards in order to increase the credibility of public disclosure. Assurance includes the communication of the results of the assurance process in an assurance statement.

According to KPMG (2015) survey, SR assurance is now recognized as standard practice among the world's 250 largest companies by revenue. Almost two thirds of these companies now have their SR independently assured. Assurance is also growing among the top 100 companies in each of the 45 countries. KPMG (2015) remarks also that the enlarging market is divided between different assurance bodies, including Big4 accounting firms, certification bodies and specialist consultancy. Additionally, there is an increasing prominence within the capital markets of indices such as the Dow Jones Sustainability Index.

Another characteristic that deserves attention is the existence of the different standards providing guidance for SR Assurance. The two major standard setters (International Auditing and Assurance Standards Board—IAASB and the UK-based Institute of Social and Ethical Accountability—AccountAbility) have standards to guide the assurance engagements on sustainability reports. IAASB developed International Standard on Assurance Engagements (ISAE) 3000 (IAASB 2013).

AccountAbility, a global organization setting standards for corporate responsibility and sustainable development, issued AA1000 Assurance Standard which is compatible with the methodology of ISAE 3000 (AccountAbility 2008). In general terms, this means that while accounting firms use typically ISAE 3000 to guide their assurance engagements on sustainability reports, consultancy firms prefer AA1000. Finally there is ISO 14064-3 Specification with guidance for the validation and verification of greenhouse.

According to the professional literature, obtaining assurance is a costly decision but a valuable tool for companies and leads to increased stakeholder confidence. GRI (2013) lists the benefits of external assurance as follows: It increases recognition, trust and credibility, reduces risk and increases value, improves Board and CEO level engagement, strengthens internal reporting and management systems, improves stakeholder communication. But academic literature provides mixed findings. Studies on this fast growing area of interest provide evidence on a number of factors that may affect the transparency and the credibility of sustainability reports.

The purpose of the present paper is to highlight the focus of the empirical studies and identify the broad problem areas on this issue. Our objective is to provide a review of extant literature in order to synthesize findings, identify areas of controversy in the literature and formulate questions that need further research.

More specifically, our review of academic research on SR assurance is structured to address the following questions:

- How are structured the assurance statements?
- Does assurance increase quality and credibility of SR?
- What are the determinants for external assurance?
- What are the assurance bodies? Are there differences between their scopes, methodologies and statements?
- What are the stakeholders' preferences and demand drivers of SR assurance?
- Which countries and industries are more likely to have an assurance statement?

Several studies address more than one question, thus we review in each section only those parts of a given study that pertain to the question being addressed in that section. The remainder of the paper is organized as follows. The next chapter describes the research methodology. Subsequently, we critically assess how researchers study assurance of sustainability reporting and we describe the synthesis and evaluation of the main findings of our literature survey. Finally, we present the main conclusions.

2 Research Method

We used qualitative and descriptive research approach in this literature review paper. We aimed to reveal trends, relations, inconsistencies, and gaps in the literature in order to organize and evaluate existing work in sustainability

Table 1 Journals

Journal	Number of article
Accounting and Finance	1
Accounting Review	1
Accounting, Auditing and Accountability Journal	1
Accounting, Organizations and Society	2
Auditing: A Journal of Practice and Theory	2
Australian Accounting Review	4
Business Strategy and the Environment	3
Comptabilité, Contrôle, Audit	1
Corporate Social Responsibility and Environmental Management	2
Critical Perspectives on Accounting	1
International Journal of Management	1
Journal of Business Ethics	5
Journal of International Financial Management and Accounting	1
Managerial Auditing Journal	1
The British Accounting Review	1
The Journal of Corporate Citizenship	1
Total	28

assurance. We surveyed, studied, analyzed and summarized the findings and limitations of 28 journal articles related to business, management, and accounting dating from 2005 to 2015. Table 1 presents the journals surveyed by this literature review.

3 Findings

The literature is fairly extensive in its investigation on different aspects of sustainability assurance provision. Our literature review indicates that the role of the assurance on sustainability reports has grown significantly over the years and given the significant demand of social and environmental disclosures companies are facing, it is likely to be subjected to more increasing relevance of the sustainability concept in a globalized scenario in the future. The questions of our literature review are addressing the content of assurance statements, quality and credibility of reports, determinants for SRA, assurance bodies, stakeholder perspective, and international comparisons. Major finding include the following.

3.1 How Are Structured the Assurance Statements?

In order to illuminate broad characteristics of assurance practice, the content of assurance statements is analyzed widely by academic literature (Darnall et al. 2009; O'Dwyer and Owen 2005, 2007; O'Dwyer et al. 2011; Simnett et al. 2009; Manetti and Becatti 2009). Such analyses enable researchers to make broad inferences about aspects of the nature of assurance provided on the content of the reports. Data source, sample description and results of the research on the content of assurance statements are presented in Table 2. The findings offered by these studies are as follows.

- There is great variability and ambiguity in the assurance statements across countries concerning definitions, methodology and content of assurance engagements (Deegan et al. 2006).
- The most used instruments in assurance provisions are interviews, analytical procedures, inspection, observation and verification (Manetti and Becatti 2009).
- Companies with a great need to reinforce credibility and build corporate reputation have higher incidence of assured reports (Simnett et al. 2009).
- The absence of stakeholder involvement and a tendency to attach little importance to their expectations are observed as the main weaknesses of the greater part of assurance reports. Besides, there are a reluctance to specify addressees in assurance statements, and a tendency to downplay expectations through the use of extensive scope limitations providing low assurance levels (O'Dwyer and Owen 2007).
- The process to secure pragmatic, moral and cognitive legitimacy between the constituencies of assurance service is very complex (O'Dwyer et al. 2011).

To conclude this section, the literature identifies interviews, especially with managers and members of staff; analytical procedures; inspection, observation and verification on a sample basis as the most used instruments. It is highlighted that the plurality of assurance providers causes great variability and ambiguity in the assurance statements.

3.2 Does Assurance Increase Quality and Credibility of SR?

Companies resort to the provision of assurance for a variety of reasons and motivations. By way of illustration, Kolk (2008) identified these motivations such as the continuous improvement, assessing quality and responsibility, to hear opinions, enhancing credibility of reported disclosures and protecting standards of quality. Whether and how the assurance enhances the quality and credibility of sustainability reporting is investigated widely in the academic literature (Cheng et al. 2015; Hodge et al. 2009; O'Dwyer et al. 2011; Pflugrath et al. 2011; Simnett et al. 2009). Table 3 presents the findings of academic research on the quality and

Table 2 Research on the content of assurance statements

Article	Data source, and sample description	Results
Darnall et al. (2009)	Data are collected from an international survey developed and administered by the OECD Environment Directorate and academic researchers from Canada, France, Germany, Hungary, Japan, Norway and the US in 2003. The sample consists of individuals who worked in 2249 manufacturing facilities having at least 50 employees	Internal, regulatory, and supply chain stakeholders are positively influencing the use of environmental audits; whereas societal stakeholders have no influence on the organization's use of environmental audits
Deegan et al. (2006)	European and UK triple bottom line report assurance statements	The contents of the third-party statements exhibit variability and ambiguity
O'Dwyer and Owen (2005)	The sample consists of 81 reports short-listed for the 2002 ACCA UK and European Sustainability Reporting Awards	Improvement in the extent of work undertaken and independence of the exercise are indicated. The performance dimension is likely to be more important, particularly in the case of assurance exercises which use AA1000 methodology
O'Dwyer and Owen (2007)	The sample consists of 51 sustainability reports shortlisted for the 2003 ACCA UK and European Sustainability Reporting Awards scheme	The main weaknesses observed in the majority of reports are as follows: a continuing absence of stakeholder involvement in assurance practice, a reluctance to specify addressees in assurance statements, and a tendency to downplay expectations through the use of extensive scope limitations providing low assurance levels
O'Dwyer et al. (2011)	Data are collected in a case study. A qualitative research is realized in an assurance body and individual interviews took place in the period from December 2005 to June 2006	The three key constituencies of the assurance provision are (1) clients who commission the sustainability assurance services; (2) non-client users of the assurance statements; and (3) the firm's internal Risk Department that approves the wording of assurance statements. Securing pragmatic, moral and cognitive legitimacy with these interdependent constituencies is complex
Simnett et al. (2009)	2113 companies from 31 countries between 2002 and 2004	The incidence of assurance of sustainability reports is associated with the need to enhance credibility
Manetti and Becatti (2009)	34 selected assurance statements included in the GRI database at the date of December 31 2007	In assurance provisions, the most used instruments are as follows: interviews, especially with managers and members of staff; analytical procedures; inspection, observation and verification on a sample basis

Table 3 Research on the quality and credibility of SR assurance

Article	Data source, period and sample description	Results
Cheng et al. (2015)	Two 2 × 2 between-subjects experiments	Assurance increases investors' willingness to invest to a greater extent when sustainability indicators are relevant to the company strategy
Hodge et al. (2009)	145 MBA students—a questionnaire survey involving a between-subjects experimental case design at two levels	Assurance provision augments perceived reliability of sustainability information. On the other hand, no significant main effects for both the level of assurance and type of assurance practitioner are indicated. The level of assurance provided and the assurance bodies are seen as factors strongly related to the users confidence on assurance reports (Assurance provided by big accounting firms are likely to be perceived more confident)
O'Dwyer et al. (2011)	This is a discussion paper	The author discussed the legitimacy of managers and auditors in SR assurance. He suggests that the progress of 'true accountability' and transparency is based on the conflict between external social auditors and company management
Pflugrath et al. (2011)	This is a behavioral experiment with 106 participants from Australia, the United States, and the United Kingdom	Credibility of sustainability reports is likely to be higher when they assured and when the assurer is a professional accountant
Moroney et al. (2012)	74 observations of companies in the top 500 public companies listed on the Australian Securities Exchange (ASX), between 2003 and 2007	It is perceived that environmental assurance is likely to be result of the quality of disclosures. Additionally, the scores of companies with assured information are to be higher than companies with unassured disclosures on the environmental index
Simnett et al. (2009)	See Table 1	The probability of assurance of sustainability reports is to be higher for companies with a greater need to enhance credibility
Smith et al. (2011)	This is a discussion article	The authors propose a research method with an objective to explore and explain the process of managerial and professional capture in SR assurance. They also propose to collect data via a qualitative interviews format

credibility of SR assurance. While several studies indicate that assurance increases quality and credibility of sustainability disclosures, there are also controversial findings. Major positive findings offered by the articles surveyed are as follows.

- SRA enhances investors' willingness to invest in an organization particularly when sustainability indicators inform on corporate strategy (Cheng et al. 2015).
- Assurance provision is associated with reliability of sustainability reports. Furthermore, assurance provided by big accounting firms are likely to be perceived more confident (Hodge et al. 2009; O'Dwyer et al. 2011; Pflugrath et al. 2011).
- Sustainability reports are perceived more confident when the level of assurance provided is reasonable (Hodge et al. 2009).
- The probability of assurance of sustainability reports is higher for companies with a greater need to enhance credibility (Simnett et al. 2009).
- The progress of 'true accountability' and transparency is relying on the conflict between external social auditors and company management (O'Dwyer et al. 2011).

Overall, the findings of these researches support the view that the provision of assurance improves quality and credibility of reported information. Nevertheless, there are also different perspectives and critical views to this external verification. An example of this is the article written by Smith et al. (2011) in which they argue that there is frequently a tendency of taking control or capture over the assurance process by corporate management and assurance providers. The authors propose a conceptual framework to analyze the dynamics of the capture process by using institutional theory and arena concept.

3.3 What Are the Determinants of the Adoption of External Assurance?

A significant number of academic researches investigate the determinants of the adoption of external assurance (Gillet-Monjarret and Martinez 2012; Kolk and Perego 2010; Sierra et al. 2013; Perego 2009; Smith et al. 2011). These investigations comprise the impact of different variables including size, leverage, ownership structure, and composition of the Board of Directors and media visibility as well as the country and industry level factors on this non-financial auditing practice. Table 4 summarizes academic research findings on the determinants of external assurance practice. Major findings offered by these researches are as follows.

- Beside the size of the company, media visibility may influence the adoption of assurance (De Beelde and Tuybens 2015).
- Internal governance factors such as capital dilution, employee shareholders, size and independence of the Board and presence of a corporate social responsibility (CSR) committee play a significant role on the decision of assurance provision (Gillet-Monjarret and Martinez 2012).

Table 4 Research on the determinants of the adoption of external assurance

Article	Data source, period and sample description	Results
De Beelde and Tuybens (2015)	227 European companies from the Euro STOXX Sustainability Index, the Dow Jones Sustainability Eurozone Index and the FTSE4GOOD Europe index	Company's size and media visibility appear to be the main determinants
Gillet-Monjarret and Martinez (2012)	The sample consists of France SBF 120 companies and over the period 2007–2008	The internal governance factors, including capital dilution, employee shareholders, size and independence of the Board, presence of a CSR committee, exert powerful effects upon SR assurance
Junior et al. (2014)	Data are collected from the G500 organizations' official websites between 15/09/2011 and 12/10/2011	Being accountable to internal and external stakeholders has profound consequences for assuring the sustainability reports
Kolk and Perego (2010)	Assurance statements of 212 Fortune Global 250 companies for the years 1999, 2002 and 2005	Country level factors are seen to play a vital role as the determinants of the level of SR assurance (See Table 7)
Sierra et al. (2013)	The sample consists of 133 reports of IBEX-35 companies in the period of 2005–2010	Determinants of assurance are size and leverage. The SR assurance is positively associated with ROE and negatively associated with ROA

- There is some evidence that country-level factors are important driving force on SR assurance (Kolk and Perego 2010).
- Size, leverage and profitability appear to be the important factors in SR assurance (Sierra et al. 2013).

To conclude this section, the literature provides information on the main driving factors relative to assurance provision. The key determinants can be listed as follows: being accountable to internal and external stakeholders, internal governance factors, size, media visibility, leverage, profitability and country-level factors.

3.4 Who Are the Assurance Bodies? Are There Differences Between Their Scopes, Methodologies and Statements?

According to existing research, the plurality of assurance bodies stems for the variability of assurances statements and complex and heterogeneous nature of the expertise and methodologies. Different types of assurers, including accounting firms, certification bodies and specialist consultancies are providing assurance

services. By way of illustration, Manetti and Toccafondi (2012) distinguish two categories of assurance bodies; first category comprises professional accountants and non-profit organizations; the second includes certification bodies, NGOs, professional individuals or opinion leaders, trade associations and even academic institutions. An important number of academic research addresses different methodologies, scopes and assurance statements of the different assurance bodies (Junior et al. 2014; O'Dwyer and Owen 2005, 2007; Pflugrath et al. 2011). Table 5 presents researches that compare different assurers. Major findings offered by these studies are as follows.

- Different scopes, methodologies and assurance statements exist across different types of assurance bodies. Additionally, two new observable types of assurance practice are indicated. These are stakeholder or specialist reviews, and mixed approach in which accounting firms work with a specialist (Junior et al. 2014).
- Having experts from various disciplines and in consulting, in interviews and on-site visits, a wide public of stakeholders give the auditors their relative power. Nevertheless the culture and tradition of the profession render them attentive toward formal aspects of the auditing process. Consequently, it is commonly assumed that using 'data accuracy approach' is their particularity (Manetti and Toccafondi 2012).
- Big 4 auditing firms follow to a greater extent AA1000 and ISAE3000 whereas other assurers utilize the AA1000 assurance standard. As far as the type of assurance report is concerned, Big 4 are less likely to give positive assurance (Mock et al. 2013).
- The dissimilarities between professional accountants' and consultants approaches are considerable (O'Dwyer and Owen 2005).
- Assurance providers from accounting profession are likely to concentrate on data accuracy rather than performance issues (O'Dwyer and Owen 2007).
- Big 4 accounting firms are likely to have a positive effect on the quality of reporting format and assurance procedures while other assurance providers are likely to have a positive impact on the quality of the recommendations and opinions (Perego 2009).
- The perceived credibility of an assurance report is likely to be higher when the assurers are from accountancy firms (Pflugrath et al. 2011).
- Stakeholders are seen apparently to opt for specialist assurers rather than professional accountants since the perception of independence and subject expertise are considered key factors in the credibility of assurance body rather than competence in auditing procedures (O'Dwyer and Owen 2007; Wong and Millington 2014).

Table 5 Research on the differences between assurance bodies

Article	Data source, period and sample description	Results
Junior et al. (2014)	See Table 4	There is much variability inherent in the scopes, methodologies and assurance statements across different assurance providers
Manetti and Toccafondi (2012)	160 sustainability reports in English, Spanish or German with A+ GRI in the GRI database as of 31st December 2010 and relating to the financial year 2009	Power of audit firms can result from having experts from various disciplines and in consulting, in interviews and on-site visits, a wide public of stakeholders whereas the cultural and professional background tied to the auditing tradition influence the auditors to direct their attention to formal aspects of the assurance process and to adopt a 'data accuracy approach'
Mock et al. (2013)	The sample consists of 450 assurance reports during 2006 or 2007 from Corporate register database	Big 4 accounting firms utilize to a greater extent AA1000 and ISAE3000 while other assurers use the AA1000 assurance standard. Additionally, Big 4 firms are less seen to provide positive assurance
O'Dwyer and Owen (2005)	See Table 2	The evidence of a distinction can be clearly seen in the approaches of accountant and consultant assurance providers.
O'Dwyer and Owen (2007)	See Table 2	Auditors are generally seen to concentrate on data accuracy rather than performance issues
Perego (2009)	The sample consists of 136 companies from different countries shortlisted in 2005 ACCA Sustainability Reporting Award	The accounting firms positively affect the quality of reporting format and assurance procedures whereas non-accounting assurance providers have a positive impact on the quality of the recommendations and opinions
Pflugrath et al. (2011)	See Table 3	The credibility of an assured sustainability report can be positively associated with the assurers from professional accountancy firms
Wong and Millington (2014)	494 entities from UK Social Investment Forum (UKSIF) as at December 2007 and the 2008 Yearbook of the Society of Procurement Officers (SOPO) in Local Government	Stakeholders distinctly choose specialist assurers rather than professional accountants; a perception of independence and subject expertise, rather than competence in auditing procedures, is playing an important role on the perception of the credibility of assurers

Table 6 Research on the stakeholders' preferences and demand drivers of SR assurance

Article	Data source, period and sample description	Results
Darnall et al. (2009)	See Table 2	Internal and external stakeholders have an impact on the use of environmental audits; and the relationship between the stakeholders' influence and the environmental auditing practices is very complex
Manetti (2011)	174 sustainability reports of English, Spanish or Portuguese companies from the GRI online database with "A+ GRI", in 2008	Stakeholder management approach is applied in a wide majority of the cases rather than a stakeholder engagement approach
Manetti and Toccafondi (2012)	See Table 5	Stakeholder engagement is a key factor in assurance services. The effectiveness and the intensity of the stakeholder engagement may determine the fairness and quality of the process
Wong and Millington (2014)	See Table 5	The importance of specialist environment assurers and the role of trust have clear emphasis on the stakeholders' preferences. The significance and the value of corporate social disclosures or the stakeholders may positively affect the demand for assurance

3.5 *What Are the Stakeholders' Preferences and Demand Drivers of SR Assurance?*

Given the complex nature of sustainability reporting and its assurance, stakeholders' preferences and demand drivers of this audit service are one of the controversial area the researchers investigate (Darnall et al. 2009; Manetti 2011; Manetti and Toccafondi 2012; Wong and Millington 2014). Table 6 presents mixed findings of these research on the stakeholders' preferences and demand drivers of SR assurance. Major findings can be listed as follows.

- Internal and external stakeholders are likely to have important influences on the use of different environmental auditing practices. Furthermore, the relationship between the stakeholders' influence and the environmental auditing practices is very complex (Darnall et al. 2009).
- Stakeholder management approach is applied in a wide majority of the cases rather than a stakeholder engagement approach (Manetti 2011).

- Fairness and quality in the assurance process is likely to be related to the effectiveness and the intensity of stakeholder engagement (Manetti and Toccafondi 2012).
- The demand for assurance may be related to the stakeholder' assessment of the value of corporate social disclosures (Wong and Millington 2014).

3.6 Which Countries and Industries Are More Likely to Have an Assurance Statement?

Many recent studies have investigated which countries and industries are more likely to have an assurance statement. These large cross-sectional studies (e.g. Green and Zhou 2013; Herda et al. 2014; Kolk 2010; Kolk and Perego 2010; Mock et al. 2007, 2013; Perego 2009; Simnett et al. 2009; Sierra et al. 2013) suggests that there are country and industry patterns on the assurance demand and practices. Table 7 presents findings of cross-country and cross-industrial comparative researches.

The key of findings of the researches looking at the effects of country and industries can be listed as follows.

- There is heterogeneity on assurance practices of carbon emissions disclosures, that is strong country and industry patterns indicate the demand for the assurance. Companies from Europe and from carbon-intensive industries are likely to be most active in resorting to assurance of these disclosures (Green and Zhou 2013).
- Country-level investor protection is generally assumed to play a role in the decision to obtain assurance. It is observed that managers in low investor protection countries tend to be more concerned with obtaining higher quality of assurance. Additionally, the cross-country variation in the decision to assure and to seek higher quality assurance may be explained by the discrepancy of investors' demand for credible sustainability information (Herda et al. 2014).
- Companies from Europe are more likely to publish assured reports compared to their Japanese counterparts. Furthermore, assurance is not widespread in US companies (Kolk 2008).
- Country level institutional factors such as legal environment, enforcement mechanisms and public policies and institutional pressures are likely to be significant determinants of the assurance's adoption (Kolk and Perego 2010).
- Obtaining assurance services is generally seen as a factor strongly related to operating in environmental and economically sensitive industries such as utilities, mining and oil sectors (Mock et al. 2007).
- A positive relationship is indicated between the companies domiciled in countries with a weaker governance system and the choice of Big 4 accounting firms.

Table 7 Research on the comparisons of countries and industries

Article	Data source, period and sample description	Results
Green and Zhou (2013)	The research has an international sample of 3008 companies across 43 countries between 2006 and 2008	There has been a growing trend for assurance of carbon emissions disclosures. There are also strong country and industry patterns on the demand for the assurance services. Companies that are most actively engaged in this market are from Europe and from carbon-intensive industries
Herda et al. (2014)	The sample consists of 1482 observations for 618 companies in 2005–2009	Country-level investor protection has an effect on the decision to obtain voluntary sustainability report assurance and the decision to obtain higher quality assurance. Managers in low investor protection countries are likely to use voluntary sustainability assurance The investors' demand for credible sustainability information determines the cross-country variation in the decision to assure and to seek higher quality assurance
Kolk (2008)	161 companies' reports in the Fortune Global 250 in 2004	There are cross-country differences in dealing with various aspects of sustainability reporting and assurance. Board Supervision and structuring of sustainability responsibilities, compliance, ethics and assurance become new topics on which some multinationals, particularly in Europe and Japan, have started to pay attention
Kolk and Perego (2010)	See Table 4	A set of factors at country-level is likely to predict a firm's choice of assurance service. Thus, companies from stakeholder-oriented countries with a weaker governance enforcement regime and a lower level of litigation are more likely to adopt a sustainability assurance and to choice Big 4 firms. Furthermore, the level of demand for assurance may be linked to the suitability of market conditions and institutional mechanisms of a country. Consequently, companies from Europe and Japan exhibit high level of reporting and assurance in manufacturing, banking and insurance sectors

(continued)

Table 7 (continued)

Article	Data source, period and sample description	Results
Mock et al. (2007)	The sample consists of 130 assured sustainability reports in 2002–2004 from Corporate register database	Operating in environmental and economically sensitive sectors such as utilities, mining and oil can give rise to assurance of information disclosures
Perego (2009)	See Table 5	A positive relationship is indicated between the companies domiciled in countries with a weaker governance system and the choice of Big 4 accounting firms. Thus sustainability assurance services may serve as a good corporate governance substitute role
Perego and Kolk (2012)	The sample consists of 488 sustainability reports of 212 MNCs in 1999, 2002, 2005, from the Fortune Global 250 firms	Companies from Food and Beverages industry and the ones from traditionally more polluting sectors, like Mining and Oil and Gas and produce the highest number of assured sustainability reports Companies domiciled in the United Kingdom, Germany and The Netherlands show higher scores of assurance
Simnett et al. (2009)	See Table 1	The demand for assurance is higher among companies in mining, utilities, and finance sector. Furthermore, companies from stakeholder-oriented countries are more likely to obtain assurance and more likely to engage an accounting firm.
Sierra et al. (2013)	See Table 4	Sometimes the type of industry has an influence on the decision to hire an accounting firm as an assurance provider. Certain industries, such as oil and energy, basic materials and financial services, significantly tend to rely more heavily on auditors to perform this service

In these cases, sustainability assurance services may substitute a good corporate governance system (Perego 2009).

- Companies from Food and Beverages sector and the ones from traditionally more polluting sectors, like mining and oil and gas are likely to produce higher number of assured sustainability reports. Regarding cross-country comparisons, firms domiciled in the United Kingdom, Germany and The Netherlands show higher scores of assurance (Perego and Kolk 2012).
- The demand for assurance service is higher among companies in mining, utilities, and finance sector. Regarding country differences, the decision to

obtain assurance and to engage an accounting firm is more likely to be higher in companies domiciled in stakeholder-oriented countries (Simnett et al. 2009).

- There is some evidence that the types of industry affect the decision to hire an audit firm for assurance service. The well-known examples of these industries are oil and energy, basic materials and financial services (Sierra et al. 2013).

4 Conclusion

The main message of this literature review is that SR assurance is of critical importance given the increasing relevance of sustainability concept in a globalized scenario. Over the past years, a substantial body of academic research on SR assurance has developed. These studies have generated a number of findings that should be of interest to SR Assurance development. Understanding how academic literature assesses SR Assurance is of significant value. Also important is the recognition that the role of assurers is crucial for companies that are positioned to strategically align their goals of main stakeholders.

Empirical research support the significance and importance of the companies' impacts on environmental, social and governance issues and multiple stakeholder groups, including investors, financial analysts are increasingly demanding companies to disclose assured sustainability information. Additionally academic studies indicate that the quality of reports is reinforced when they are assured. There are still some questions to be posed and answered by researchers on the efficacy of assurance practice and on the transparency and accountability towards stakeholders.

In conclusion, beside the different aspects of assurance practice indicated by the academic literature; the multidimensional character of business sustainability, significant demand of assured disclosures and a more dynamic regulatory environment may be considered major developments that resulted in opportunities and challenges for managers and assurers.

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Gamma-Hedging of Warrants: Evidence from Frankfurt Stock Exchange

Hana Florianova

Abstract Gamma-hedging is a useful strategy to reduce risk of a portfolio consisting of financial derivatives and shares. This paper investigates portfolios consisting of European type warrants and shares of world-known companies. Currently traded assets on the Frankfurt Stock Exchange are used to compose portfolios. In theory, gamma-neutral portfolios should be immune even to significant changes of underlying assets' price but real markets may not support this fact. We find trading strategy similar to protective collar. Since our strategy is intended for decreasing price of an underlying asset, we test the hypothesis that alternative collar strategy is profitable for decreasing shares and losing for increasing shares. We test it on three kinds of shares—decreasing BMW, increasing Adidas and stagnating Telekom. Our results are that gamma-hedging in our scenario has positive impact on decreasing portfolio's risk, our trading strategy brings profit and it is verified on real financial markets.

Keywords Gamma-hedging • Warrants • Portfolio • Trading • Risk

1 Introduction

Investing in financial derivatives is popular these days and trading in warrants is not any exception. It can be documented by volumes of warrants traded daily on the Frankfurt Stock Exchange which is construed in this paper. Warrants are agreements, where one side has a right (not an obligation) to sell or buy an underlying asset for a predefined price at a predefined time or a period of time. The other side has an obligation to settle the agreement if the first side chooses to use the warrant (Hull 2012).

Warrants have been popular all over the world in recent years but theoretical information, which investor can find in literature or on the internet, are not as precise as we would expect. Therefore, for small, non-experienced investors,

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trading in warrants might be tricky and often it is almost impossible to sort out the right warrant according to basic knowledge of their pricing. Warrants are suitable for trading in short period and long period of time as well. Generally speaking, they are not designed for conservative investors because of riskiness resulting from using leverage. On the other hand, it means they are approachable for small investors who can reach high profits with only small amount of money.

Warrants are usable for both speculation and hedging although Chinese research (Li and Zhang 2011) shows that in reality warrants are not really options alike, they are constantly overpriced in comparison to the Black-Scholes model results and, therefore, they cannot be used for hedging effectively (Fan and Yuan 2011). In this paper, we investigate how true this statement is on European markets.

Although some investors use warrants as a speculation tool, they are more likely to be used for hedging. There are several ways to hedge a portfolio. We are focusing on two of them—delta and gamma hedging. Both of them are derived from Black-Scholes option pricing model (Black and Scholes 1973), which may be used for warrants pricing as well. Delta-hedging is a possibility how to protect a portfolio from unnecessary risk. This method's basic idea is that investors try to stay in delta-neutral position with their portfolio as it is resistant to the small changes in underlying asset's price of the derivative they hedge. Gamma-hedging is stronger method as the gamma-neutral portfolio is resistant even to great changes in underlying asset's price.

Theory of hedging brings many presumptions which are not fulfilled by real financial markets and improper hedging may bring unexpected future losses. Therefore, forming a hedged portfolio and consequent rebalancing is always problematic. One assumption says that investor can trade continuously in time, which is not possible on the floor but nowadays we are meeting this assumption by creating online trading environment, for example, Xetra, where we can make operations without time restrictions. Another assumption says that we can buy any fraction of a share which is in fact not possible; we cannot buy one half of a share in real world. Nevertheless, Black-Scholes model and delta-gamma hedging are steadily used by financial market's subjects nowadays; therefore, this topic is highly relevant.

According to Nandi and Waggoner (2000), it is important to find a correct approach to hedging. We must distinguish between frequent rebalancing, costing us a lot of money, and rare rebalancing, costing us less money, but taking us far from the optimal portfolio where hedging is not effective. We have chosen the Black-Scholes model approach although some authors apply different approaches—e.g. binomial trees (Boyle and Vorst 1992). The framework for delta-gamma-hedging has been introduced by Raju (2012).

Gobet and Makhlof (2012) analyzed the convergence rate of the quadratic tracking error, when a delta-gamma hedging strategy is used at N discrete times. They explained that the fractional regularity of the payoff function plays a crucial role in the choice of trading dates, in order to achieve optimal rates of convergence. Mina and Ulmer (1999) described four methods to approximate the delta-gamma distribution, commonly used in Value-at-Risk calculations, and evaluate the methods for accuracy and speed. All aforesaid authors were always concerned

with options. The aim of this paper is not to do research on options but on warrants. It is important to investigate consequences of gamma-hedging on real markets because this method is often used by its participants. The paper follows earlier works and extends the theory to warrants.

2 Methodology and Data

Our portfolios consist of long position in call warrants, long shares and short put warrants. Having combined these assets, we get a trading strategy similar to protective collar but with swapped strikes of call and put warrants, see Fig. 1. As the protective collar strategy is intended for future increasing value of shares, this alternative collar strategy is intended for decreasing shares. We state the hypothesis that alternative collar strategy is usable for decreasing shares and we test it on three different shares—one increasing, one decreasing and one steady to see if there is any difference.

We compose five test portfolios for every type of share. It gives us 15 portfolios in total. We keep as many features of warrants the same as possible—type: plain vanilla European, maturity: 12/16/2016, denomination in Euros. In Tables 1, 2 and 3 we can see information about the chosen warrants.

In Table 4, we see information about underlying assets.

We use Black-Scholes model for European call options in the following form:

$$W = S_0N(d_1) - Ke^{-rT}N(d_2) \quad (1)$$

where

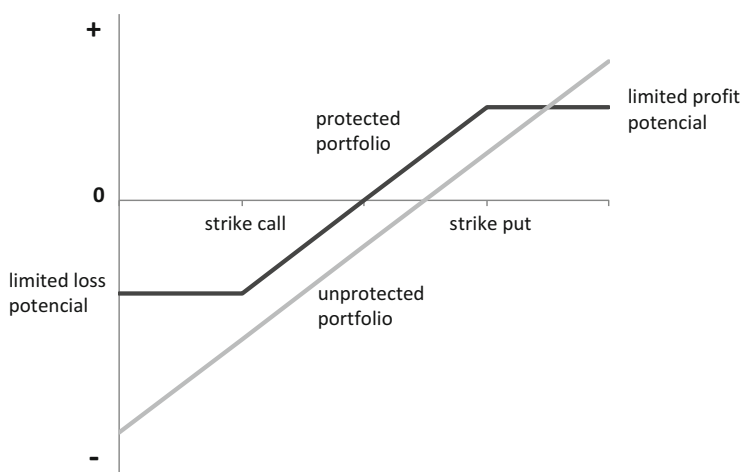


Fig. 1 “Alternative collar” strategy. Source: Own construction

Table 1 Basic information about warrants on BMW shares

Warrant type	WKN	ISIN	Strike	σ_0	σ_t	W_0	W_t	Δ_0	Δ_t	Γ_0	Γ_t
Call	SG2LU9	DE000SG2LU94	80	0.263	0.307	0.89	0.36	0.636	0.374	0.025	0.026
Call	US328C	CH0236968753	115	0.222	0.2924	0.025	0.01	0.045	0.021	0.115	0.001
Call	PA86EW	DE000PA86EW8	85	0.214	0.2838	0.52	0.2	0.51	0.256	0.033	0.029
Call	DG3QNV	DE000DG3QNV7	75	0.218	0.3215	1.1	0.55	0.775	0.491	0.037	0.024
Call	RC0ASE	AT0000A1B305	100	0.257	0.2984	0.2	0.057	0.228	0.088	0.031	0.064
Put	US24QK	CH0236965478	100	0.381	0.32	2.03	2.9	-0.66	-0.89	0.052	0.017

Source: Author's own construction based on data collected from Frankfurt Stock Exchange: <http://en.boerse-frankfurt.de/certificates/new-search>

Table 2 Basic information about warrants on Adidas shares

Warrant type	WKN	ISIN	Strike	σ_0	σ_t	W_0	W_t	Δ_0	Δ_t	Γ_0	Γ_t
Call	SG2LTY	DE000SG2LTY4	80	0.214	0.303	2.69	3.385	0.97	0.947	0.129	0.06
Call	PA86CC	DE000PA86CC4	60	0.355	0.318	4.645	5.305	0.988	0.997	0.166	0.738
Call	VZ9HHQ	DE000VZ9HHQ0	84	0.264	0.315	2.49	3.04	0.907	0.912	0.043	0.039
Call	VSSZGY	DE000VSSZGY5	96	0.258	0.3	1.555	1.78	0.756	0.79	0.023	0.023
Call	VS7F4H	DE000VS7F4H7	115	0.244	0.263	0.795	0.555	0.415	0.483	0.02	0.019
Put	PA88S6	DE000PA88S63	55	0.405	0.451	0.015	0.013	-0.01	-0.01	0.156	0.157

Source: Author's own construction based on data collected from Frankfurt Stock Exchange: <http://en.boerse-frankfurt.de/certificates/new-search>

Table 3 Basic information about warrants on Telekom shares

Warrant type	WKN	ISIN	Strike	σ_0	σ_t	W_0	W_t	Δ_0	Δ_t	Γ_0	Γ_t
Call	SG2LV8	DE000SG2LV85	15	0.14	0.167	0.145	0.135	0.758	0.751	0.291	0.257
Call	VZ13KJ	DE000VZ13KJ1	13	0.2	0.128	2.97	2.96	0.924	0.991	0.447	0.03
Call	US2V60	CH0237083404	18.5	0.187	0.187	0.235	0.195	0.194	0.183	0.248	0.274
Call	DG3QRB	DE000DG3QRB0	12	0.21	0.195	3.87	3.935	0.968	0.985	0.852	0.03
Call	PB0UYC	DE000PB0UYC3	19.5	0.19	0.188	0.13	0.1	0.116	0.1	0.344	0.409
Put	VZ13KE	DE000VZ13KE2	11	0.392	0.384	0.215	0.175	-0.08	-0.07	0.213	0.276

Source: Author's own construction based on data collected from Frankfurt Stock Exchange: <http://en.boerse-frankfurt.de/certificates/new-search>

Table 4 Basic information about underlying assets

Share	S_0	S_t
BMW	82.6	71.36
Adidas	106.29	110.12
Telekom	15.81	15.92

Source: Author's own construction based on data collected from Frankfurt Stock Exchange: <http://en.boerse-frankfurt.de/certificates/new-search>

$$d_1 = \frac{\ln \frac{S_0}{K} + \left(r + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}} \quad (2)$$

and

$$d_2 = d_1 - \sigma\sqrt{T} \quad (3)$$

and S_0 stands for a price of a share, K is strike price, r is risk-free rate, σ is volatility, T is time to maturity, $N(\cdot)$ is normal distribution function.

Delta is a characteristic of a warrant which shows us how the change in price of a warrant depends on changes in the price of an underlying asset. We can calculate delta as a partial derivation from Black-Scholes model:

$$\Delta_W = \frac{\Delta W}{\Delta S_0} \approx \frac{\partial W}{\partial S_0} = \frac{\partial S_0 N(d_1) - Ke^{-rT} N(d_2)}{\partial S_0} \quad (4)$$

After solving Eq. (4) we get following result for call warrants:

$$\Delta_W = N(d_1) = \int_{-\infty}^{d_1} \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx \quad (5)$$

As for put warrants

$$\Delta_W = N(d_1) - 1 \quad (6)$$

Similarly we have to calculate delta of a share:

$$\Delta_{S_0} = \frac{\Delta S_0}{\Delta S_0} = 1 \quad (7)$$

Gamma is a characteristic of a warrant which shows how the change in delta of a warrant depends on changes in the price of an underlying asset. We can derive gamma from Black-Scholes model:

$$\Gamma_W = \frac{\partial \Delta_W}{\partial S_0} = \frac{\partial N(d_1)}{\partial S_0} \quad (8)$$

After solving Eq. (8) we get following result for both call and put warrants:

$$\Gamma_W = \frac{1}{S_0 \sigma \sqrt{2\pi T}} e^{-\frac{d_1^2}{2}} \quad (9)$$

Similarly we have to calculate gamma of a share:

$$\Gamma_{S_0} = \frac{\partial 1}{\partial S_0} = 0 \quad (10)$$

The values of gamma-neutral portfolio at time $T = 0$ and $T = t$ are equal to

$$P_0 = n_{w1,0} \cdot W_{1,0} + n_{w2,0} \cdot W_{2,0} + n_{S,0} \cdot S_0 \quad (11)$$

$$P_t = n_{w1,t} \cdot W_{1,t} + n_{w2,t} \cdot W_{2,t} + n_{S,t} \cdot S_t \quad (12)$$

where $n_{i,T}$ stands for amount of i th asset at time T , $W_{i,T}$ stands for price of i th warrant at time T and S_T stands for price of a share at time T . Profit from each portfolio is

$$\pi = P_t - P_0 \quad (13)$$

Presumptions of our approach are no transaction costs, no bid-ask spread and no portfolio rebalancing; we use daily opening prices.

Initial conditions of portfolio selection—assume we currently hold 1000 shares and 1000 American call warrants, then certainly $\Delta > 0$ and $\Gamma > 0$. First we have to make portfolios gamma-neutral; we short given amount of put warrants with the corresponding underlying share. Afterwards, to make portfolio delta-neutral, we sell or short certain amount of shares. We compose portfolios of shares of one particular company, call warrants and put warrants, both having those shares as an underlying asset.

3 Results

In Table 5, we present sample of calculation for BMW share.

We made calculations for all 15 portfolios and results are in Tables 6, 7 and 8.

Table 5 Sample of results for BMW share based portfolio

Asset	Initial		Gamma-neutral		Delta-neutral		Current	
	Amount	Value	Amount	Value	Amount	Value	Value	Profit
Call warrant	1000	890	1000	890	1000	890	360	-530
Put warrant	0	0	-481	-976	-481	-976	-1395	-418.9
Share	1000	82,600	1000	82,600	-955	-78,875	-68,412	10,733

Source: Author's own calculations

Table 6 Portfolios' profit (BMW)

BMW	
WKN	Profit in % p.a.
SG2LU9	+140
US328C	+219
PA86EW	+138
DG3QNV	+184
RC0ASE	+91

Source: Author's own calculations

Table 7 Portfolios' profit (Adidas)

Adidas	
WKN	Profit in % p.a.
SG2LTY	-34
PA86CC	-34
VZ9HHQ	-34
VS5ZGY	-30
VS7F4H	-21

Source: Author's own calculations

Table 8 Portfolios' profit (Telekom)

Telekom	
WKN	Profit in % p.a.
SG2LV8	-4
VZ13KJ	-3
US2V60	-2
DG3QRB	+5
PB0UYC	+1

Source: Author's own calculations

BMW share had decreasing price in the examined period (value decreased from 82.6 to 71.36). Portfolios based on this type of share were all profitable. Returns were in interval from 91 to 219% p.a. with a simple average of 155% p.a. This result supports our hypothesis about alternative collar strategy.

Adidas share had increasing price in the examined period (value increased from 106.29 to 110.12). All portfolios ended in loss. Returns were in interval from -34 to -21% p.a. with an average equal to -30% p.a. This result also supports our hypothesis—if we use strategy intended to decreasing shares on increasing shares, we get negative results and our portfolios are in loss.

Telekom share stagnated in the given period (value went from 15.82 to 15.91). Portfolios were both profitable and losing. Returns are from interval -4 to $+5\%$ p.a. with an average of -0.6% p.a. This result supports our hypothesis as well.

In future research, we recommend adding transaction costs into the model—taxes, trading fees, etc. Also, the dataset should be broadened, many of warrants could be compared, for example, index warrants, commodity warrants or other share warrants.

4 Conclusions

On the set of 30 delta-gamma-hedged portfolios consisting of plain vanilla European call warrants, put warrants and shares, we tested the hypothesis that alternative collar strategy is usable for decreasing shares and we test it on three different shares—increasing BMW, decreasing Adidas and stagnating Telekom. It was shown that our empirical research supports theory facts in terms of gamma-hedging. For strategy expecting decreasing in price, we gained profit, for increasing price portfolio was in loss, for stagnating we ended with nearly zero. All these findings are in accordance with our expectations. We presented strategy for shares losing their value which may be used on real markets when trading in warrants and composing hedged portfolios.

Moreover, delta-gamma-hedging makes derivatives more feasible even for risk-averse investors, who can profit from them. The average profit for share with decreasing price is 155% p.a., for share with increasing price -30% p.a. and for share with stagnating price -0.6% p.a. If we invested in all portfolios, our total profit would be approximately 49% p.a. That shows us that even if an investor is not experienced and does not have advanced knowledge about technical analysis of shares, he or she may profit from the diversification.

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Financial Risk Tolerance as a Predictor for Malaysian Employees' Gold Investment Behavior

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and O. Mohamad Amim

Abstract Economic uncertainty has led to the decision of investing in a much safer investment such as gold investment. Gold in the investment portfolio is perceived to safeguard individual investors against market risk. The Malaysian government has launched unit trust schemes under the Amanah Saham group which is a government-backed fail-safe investment. Gold investment, however, is a new phenomenon with very little promotion. The central bank has introduced the gold coin series while the private banking sector released few gold-related products. This study is performed to identify the purpose of investing, barriers to invest in gold and to ascertain financial risk tolerance as one of the predictor affecting gold investment behavior among Malaysian employees. Respondents in Peninsular Malaysia were sampled via a multistage random among urban public sector employees. Data from self-administered questionnaires revealed the main purpose to invest on gold was to have savings in the form of physical product. More than one-third of the 403 respondents reasoned out inavailability of funds for gold investment followed by the complication of gold investment procedures which they are not very familiar as the main barriers to gold investing. The significant predictors for gold investment behavior revealed were financial risk tolerance, gold investment attitude, subjective norms and perceived behavioral control with an explained variance of 30.4%. As gold investment is perceived as a safe investment, the result of financial risk tolerance as a positive significant predictor is not as expected. In addition, gold investment subjective norms surpassed the others in predicting gold investment behavior however gold investment knowledge is not significant in predicting investment on gold. It can be concluded that peer group is very important in determining a person's intention to invest in gold. The results from this study may be utilised in marketing practices and business decisions.

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Keywords Financial risk tolerance • Gold investment knowledge • Attitude • Subjective norms • Perceived behavioral control • Gold investment behavior

1 Introduction

The global economic and political instability has affected much of the investment scenario across countries especially those holding risky investments. Investors with limited resources and funds may find these adverse market and economic situations very harrowing. They turn to safer investment albeit a lower return. Capital loss could be minimised with this conservative strategy. These periods of uncertainties have led many to review their portfolios and move towards much safer and less risky investment such as bonds or precious metals. Among the precious metals, gold has been known to rise during economic crisis and market downturn. It can also maintained its value over the long-term, unlike paper currency, coins or other assets (Hundal et al. 2013). Gold is capable of enduring the test of time and its contribution in rough economic conditions is very reassuring.

Countries also hold gold as financial assets for the same reason. During the recent economic situation, many countries including China and India have bought tons of gold to hedge against dollar risk (Agarwal et al. 2014). In line with that, Pati and Shome (2011) stated that households prefer the safer channels of investments rather than placing their investments in risky channels of savings. A conservative portfolio is where expected risks are low due to risk diversification among different class of investments, having different levels of expected return in the portfolio. Hence, as a safe investment, the investment-mix may include gold in several different forms. The World Gold Council (2007) reported that currently, gold investment (excluding jewellery) contributes only less than 1% of the investor's asset allocation. There is opportunity in gold and the numbers may rise.

In Malaysia, the government has launched several unit trust schemes, attracting people from all walks of life to participate in this form of investment. This is a government-backed fail-safe investment. Gold investment, however, is a new phenomenon. Most individual investors in Malaysia hold under diversified portfolios. Tun Dr. Mahathir, the then Prime Minister of Malaysia, is a strong advocate for gold as a form of currency, in particular the dinar. There have been several promotions to create awareness in gold investment from both public and private institution.

However, there have also been reported cases of gold investment fraud in the country. Bank Negara Malaysia (BNM) does not regulate gold investment neither do any body of authorities. BNM only acted when institutions take illegal deposits from individuals in the gold investment schemes (Bank Negara Malaysia 2012). There have been cases where gold investment institution fail to provide physical evidence of their gold-asset when demanded by customers as well as fulfil their promise to buy back these golds. There were also reportedly fake gold certificates and even fake gold being issued to 'investors'. Virtual E-gold, which resembles a

money laundering scheme has also been reported. This negative news about gold investment may hinder the intention of individuals to invest in gold.

Investing in gold consists of investing in the form of gold dinar, gold bar, gold jewellery or opening gold account (Sukami 2011). Specific gold investment products in Malaysia include Public Dinar Gold coin and Gold Account. The government through the Royal Mint introduced *Kijang Emas* gold coin in 2001. Malaysia became the 12th country in the world to issue its own gold bullion coin. The series of related products in Malaysia continues with the introduction of gold dinar in 2003 by the Royal Mint of Malaysia, the Kelantan state government in 2006 and the Perak state government in 2011 (Ghazali et al. 2015). A more advanced product offered is the Gold Futures Contract. The i-ETF by the Securities Commission (SC) of Malaysia, which was introduced beginning 7th October 2014, is the first Sharia Parameters on Islamic Exchange-Traded Fund (i-ETF) based on gold and silver. This acts as a guidance and reference from Sharia perspective to facilitate product development by industry participants.

This study is conducted to identify the purpose of investing on gold, barriers to investing in gold and to assess financial risk tolerance as one of the predictors affecting gold investment behaviour among public sector employees. Potential predictors for gold investment behaviour according to the Theory of Planned Behaviour are knowledge, attitude, subjective norms and perceived behavioural control. In this case, it will be studied in the context of gold investment.

2 Literature Review

The extent and reasons for individuals' involvement in gold investment varied across stages of life-cycle and nations. Individuals possessing tertiary education in Thailand purchased gold on a regular basis with most of the time during their birthday anniversary. Majority of the young and highly educated females who earned about Baht 10,000 in monthly salaries stated gold as attractive. In addition, the availability of buyback option strongly influenced their purchase (Panyapikrau 2005). In another study on gold purchasing behavior among Thailand residents, Napompech et al. (2010) who did a study on a sample with most of the sample were private company employees or officers revealed many reasons on gold purchasing. Among the main reasons were that gold yields higher return rates than savings and investments in other types of assets and that gold had its own value regardless of any changes in the world situation. Most of other studies have consistently supported the fact that gold is a better alternative to fixed deposits especially for those seeking safety of their capital investment (Ghosh et al. 2004; Singh and Nadda 2013).

Past studies revealed gold characteristics that make gold investment attractive with hedging capability across countries. Aggarwal and Lucey (2007) stated that gold holds its value for a long duration of time, is portable and a useful hedge against adversity as well as easily cashable. In India that stocks and equity has not

given the returns as expected. Hence, gold remains a good option for investment. Gold also contended as a safe haven as it was able to maintain its value in times of crisis (Baur and Lucey 2010; Mulyadi and Anwar 2012). The studies in the US, UK and Germany provided evidence suggesting gold is a good hedge against financial and market risk. Baur and McDermott (2010) further analyzed major developed and emerging markets against gold returns and concluded that gold can provide a hedge and safe haven for these markets.

Similarly, it is evidenced from Malaysian stock market that gold price will rise with a series of market declines. Hence, concluding that it would be beneficial for people to invest in gold during market slump (Ibrahim 2012). Hedging against market risk by gold investment is further proved empirically by Baral (2012). The study on gold investment as an option in derivatives market noted that gold remains the safest form of investment and is a hedge during difficult times. It is preferred over stocks, debts or real estate investments. Gold also exhibit a hedging property against interest rate. Researchers studied the relationships between the British pound, US dollar and Japanese yen against gold price from 1971 to 2004 and found evidence to support the hedging property of gold against these currencies, though the hedging properties do vary at times (Baur and Lucey 2010; Baur and McDermott 2010; Capie et al. 2005).

Lutter (2008) and Ibrahim (2012) proved diversification characteristic by gold in an investment portfolio through their studies where they agreed that gold assists to stabilize any investment portfolio. This was later supported by a study conducted by Singh and Nadda (2013) when they collected data from the Stock and Commodity exchange during the period of 2005–2006 and 2012–2013. They concurred that gold held less than one-third the risk of stocks and equity. Due to low correlations with the stock market, gold together with other precious metals such as platinum and silver act as a diversifier of investment risk in a portfolio of investment consisting of stocks (Hillier et al. 2006). Gold reacts positively to adverse market conditions. During the world economic turmoil due to oil crisis in the 1970s, gold was at all time high (Baur and McDermott 2010). Then again in 2008, gold price surges in respond to the US subprime crisis. Holding gold in the investment portfolio mix would provide good hedging against the volatile stock market situation. Previous similar studies (Chua et al. 1990; Conover et al. 2009; Michaud et al. 2011; Ratner and Klein 2008) also agree that gold is good for portfolio diversification because it reduces risk and increases returns.

Related financial knowledge or understanding is supposed to be a criterion for investment. A study on investment knowledge found that individuals having high financial knowledge tend to involve more in investment suggested by investment experts (Hilgert et al. 2003). Individuals knowledgeable in investment were those that obtained high marks for the index of investment management. Thus, they concluded that investment knowledge had a significant impact on the quality of investment decision.

With regards to the level of investment knowledge, Wong and Lai (2009) in a study on the local stock market investors suggested that the investment knowledge and skills of Malaysian investors are generally low. Their decisions generally were

influenced by behaviours such as overconfidence, loss aversion, representative heuristic and price anchoring. For these Malaysian investors, it is sufficient to say that it would be safe to invest even with lack of investment knowledge or skill. On the other hand, those with good understanding of financial knowledge, tend to be more involved with investment experts, resulting in better success rate in their investment (Hilgert et al. 2003).

In other financial situation studies (Chudry et al. 2011; Grable et al. 2009; Hayes 2012; Jorgensen and Savla 2010), the lack of financial knowledge did have a negative effect on credit card user and they end-up incurring big credit card debts and left in a poorer financial standing. However, Mandell (2012) found no significant relationship between knowledge and credit card debts.

Financial risk tolerance defined as the maximum amount of uncertainty an individual is willing to accept when making a financial decision affect us in almost all aspect of our life (Grable 2000). It was found that risk tolerance is not so prominent in Gen-X (Schooley and Worden 2003), older people (Hira et al. 2007) and lower income group (Grable and Joo 2004) as well as single individuals (Hartog et al. 2002). Gender-wise male singles are more risk tolerance than female singles (Yao and Hanna 2005) including those nearing retirement age (Hariharan et al. 2000). In general, men are found to be more risk tolerance than women (Grable and Joo 2004; Weber et al. 2002). The higher the education level of the investors, the higher is their risk tolerance (Grable and Lytton 1999).

The extent of risk tolerance among individuals affected much of their investment behaviour. Low risk tolerance investors have a tendency to take up investment product without first understanding the financial risk involved (Atkinson et al. 2006). Higher risk tolerance investors are also found to trade in higher value stocks (Clark-Murphy and Soutar 2004; Durand et al. 2008; Keller and Siergist 2006; Wood and Zaichkowsky 2004). These past studies reflected the positive association between risk tolerance and risky investment. Evidence from past research supported the safe haven characteristic of gold investment hence it is expected that risk tolerance will be negatively influencing gold investment participation.

The Theory of Reasoned Action as earlier proposed by Ajzen and Fishbein (1969, 1980) provided a way for predicting the intention to perform based on an individual's attitude and norms. Ajzen (1991) later extended this to add new elements and called it the Theory of Planned Behaviour. Both models have been widely used to evaluate a range of consumer behaviours (see Lautenschlager and Smith 2007). Behavioural decisions are the results of a reasoned process where the behaviour is influenced by attitude, subjective norms and perceived behavioral control. The influences from these three variables on behaviour are primarily through the impact on behavioural intention that in turn affects behaviour.

Attitude defined as the extent to which someone has a favourable or unfavourable assessment of the specific behaviour (Ajzen 1991). Attitude towards gold investment behaviour include an overall positive or negative evaluation of the individual towards investing in gold. Studies have shown that many factors influence attitude. An individual attitude towards credit card debt includes his debt tolerance (Hancock et al. 2012). A person's attitude found to have a positive effect

on his intention to borrow. Individual's intention to borrow is expected to relate with the actual behaviour of borrowing. Attitude towards specific behaviour such as towards gold investment is proposed to affect gold investment behaviour through intention.

Subjective norms are the social and peer pressure exerted on the individual that leads an individual to conform to the norms of the group (Ajzen 1991). In a study on credit card debt behaviour, subjective norms found to be a significant contribution as to whether a person will incur credit card debts (Kennedy and Wated 2011). Another study by Chudry et al. (2011) found that subjective norms had a great impact on borrowing intention. In the gold investment context, subjective norms are the influence of others or peer referent group approve or disapprove of the gold investment behaviour. An individual's intention to invest in gold may be largely due to these people behaviour regarding gold investing. In relation to the role of subjective norms in gold investment intention, social context included parental, family and peer provided a better assessment of the construct.

Perceived behavioural control as additional construct in the Theory of Planned Behaviour could explain behaviours in which the actor does not have full volitional control (Fen and Sabaruddin 2008). The construct looks at how much control a person has over the activity that the individual intends to perform. It is the individual's perception as to whether he or she has the skills and ability necessary to perform a behavior, while still maintaining control over that decision (Shively 2001). It also refers to the perceived ease or difficulty of performing specific behaviour (Ajzen 1991). The focus may be on a specific situation that a person is trying to control. Past study on college student loan behaviour revealed that perceived behavioural control found to be a successful predictor of their intention to borrow money (Chudry et al. 2011). In another financial situation, Kennedy and Wated (2011) found it also to be a significant predictor for credit card debts.

Past studies found that the more favourable the attitude, the subjective norms and the perceived behavioural control are towards the behaviour, the stronger is the behavioural intention (Hrubes et al. 2001) which supported the Theory of Planned Action. In financial decision making such as in the application of share in the stock exchange, it was found that the behaviour to purchase these shares were closely tied to their intention. Their intention was the result of a positive attitude, subjective norms and perceived behavioural control and past behaviour. There were strong influence of friends and relatives and the ease of obtaining funds as well as the financial criteria such as profit and investment securities that drove them to make the purchases (East 1993).

In the context of this study, the more favourable the attitude, subjective norms and perceived behavioural control an individual has regarding gold investment, the stronger will be his intention to invest on gold. Intention to invest on gold in turn will influence the gold investment behaviour. Investment intention acts as a mediator in the influence of attitude, subjective norms and perceived behavioural control and these three predictors also are directly influencing behaviour. In view of this, the Theory of Planned Behaviour is able to explain the potential predictors and the control variables in the gold investment behaviour framework.

3 Methodology

Information on gold investment behaviour and other information were obtained from the respondents via a cross-sectional design using survey method. Multi-stage random sampling was used to sample respondents among urban public sector employees in Peninsular Malaysia. Four states were randomly selected in the initial stage and in the second stage, public sector departments located in the urban areas were selected from a list of departments in the public sector websites. Liaison officers at each location assist in distributing self-administered questionnaires to the employees based on list of names that resulted in a total of 403 respondents.

List of statements for investing on gold and barrier to invest on gold were given in the questionnaire with a “yes” and “no” responses. Financial risk tolerance was measured using adapted measurement by Jacobs-Lawson (2003). It is the attitude towards risk-taking in the respondent’s life. All statements were reverse-coded to obtain higher scores reflecting higher financial risk tolerance or more risk-taking. Likert scales were mainly used for the variables with responses from strongly disagree (1) to strongly agree (5). Gold investment knowledge items were obtained from past research and financial institutions websites. Gold investment attitude, subjective norms, perceived behavioural control and behaviour were measured using adapted measurement from Kennedy and Wated (2011).

Sample items for gold investment attitude are “Investing in gold makes me feel happy” and “I like investing in gold”. For subjective norms, some examples are “Most people who are important to me invest in gold.”, “The people in my life whose opinions I value invest in gold.” and “My friends invest in gold.” For perceived behavioural control, some items are “It is possible for me to invest in gold.”, “If I wanted to, I could invest in gold.” and “I have control over investing in gold.” As for gold investment behaviour, statements are “I invest on gold.” and “I invest on gold regularly.” The influential predictors on gold investment behaviour were ascertained using multiple regression. The normality of the distributions of the data was assessed prior to the regression analysis.

4 Empirical Results

The respondents’ background displayed in Table 1 shows two-third of the respondents were female employees with slightly less than half of the respondents had been working for more than 10 years and were non-graduates. As the samples were public sector employees, most of the respondents were Malay and two-third of them was married with a small family size.

Referring to Table 2, one third of the respondents (36.5%) revealed the main purpose to invest on gold was to have savings in the form of physical product followed by avoiding risk from cash savings. High responses for these purposes indicated that the respondents realized the risk in having cash savings as compared

Table 1 Background of respondent (N = 403)

Background of respondent		n (%)
Gender	Male	142 (35.2)
	Female	261 (64.8)
Work experience	≤10 years	225 (56.9)
	>10 years	178 (43.1)
Race	Malay	367 (91.1)
	Chinese	7 (1.7)
	Indian	11 (2.7)
	Bumiputra Sabah/Sarawak	18 (4.4)
Education	Non-graduate	177 (43.9)
	Graduate	226 (56.1)
Marital status	Unmarried	94 (23.3)
	Married	309 (76.7)
Family size	≤5 persons	280 (67.8)
	>5 persons	123 (32.2)

Table 2 Purpose of investing on gold

	Statement	Yes n (%)
1.	Invest as a symbol status	13 (3.2)
2.	Invest as savings in the form of physical product	147 (36.5)
3.	Invest to avoid risk from cash savings	126 (31.3)
4.	Invest to maintain value or return above inflation rate	56 (13.9)
5.	Invest in the expectation of up to 20% annual return	32 (7.9)
6.	Invest in the expectation of between 20 and 50% annual return	65 (16.1)
7.	Invest in the expectation of more than 50% annual return	66 (16.4)

to possessing gold. It also reflected their preference in having gold investment in the form of physical product such as jewelry, coin or nugget as compared to gold account or ETF.

Quite a significant number of the respondents (13.9%) understood the ability of gold investment to hedge against inflation. However, about one-sixth of the respondents admitted that they were expecting a high annual return of more than 20% from the gold investment. Gold investments yielded a rate of return of 5.41% in the year 2008 and up to 30.94% in 2007 that are relatively high as compared to other kinds of asset investments. The rate of return for 2009 was 10.65% (Jeffreys 2009).

While for barriers to invest on gold as shown in Table 3, the main barrier as responded was on the zero allocation for gold investment followed by the complexity of the process of gold investment that were not well understood by them. Almost one-third of them responded that they did not know how to invest on gold and quite a number did not know the benefit of investing on gold.

Possible reason for not having any money allocated for gold investment may be due to inadequacy of income. This is based on the level of their financial problem where 39.4% was at the moderate level and 8.2% was at the high level. This gives a

Table 3 Barriers to invest on gold

	Statement	Yes n (%)
1.	Does not know how to invest on gold	132 (32.8)
2.	Does not understand the gold investment process	160 (39.7)
3.	Does not know the benefit of investing on gold	56 (13.9)
4.	Does not have allocation for gold investment	190 (47.1)
5.	There is a cost to keep physical gold	23 (5.7)
6.	Perceive that gold investment is not profitable	21 (5.2)
7.	Never thought of investing on gold	71 (17.6)

Table 4 Financial risk tolerance

	Statement	Mean (1–5)
1.	I always think investment is a loss ^a	2.75
2.	I am worried if I invest in stocks ^a	3.17
3.	I lack the knowledge to be a successful investor ^a	3.36
4.	Investing is too difficult to understand ^a	3.21

^aNegative statements

total of 47.2% which is half of them experiencing quite a high financial problem. The financial problems items are on whether they were able to pay for some purchases such as clothing and insurance, or make payment for bills or loans.

The descriptive analysis for financial risk tolerance statements in Table 4 shows the highest score is in terms of the level of their knowledge on investing which was perceived to be low by the respondents. This reflects a low financial risk tolerance where the respondents tend not to make investment due to lack of investment knowledge and skill. The second highest respond is “Investing is too difficult to understand” followed by “I am worried if I invest in stocks” which are considered as a moderate level of financial risk tolerance based on the mean scores that are near to the middle score of three for each statement.

The overall level of financial risk tolerance is determined after recoding each result with the opposite scores and a total score is computed and averaged. The overall mean score for financial risk tolerance was computed as 2.88, which is below the middle score. This indicated that in general, the respondents were having quite a low financial risk tolerance where they are considered as not a risk-taker. In conclusion, the Malaysian respondents were more risk-averse and this is similar to the US survey by Atkinson et al. (2006) and Hall et al. (2006).

In terms of gold investment knowledge, Table 5 revealed the correct responses by the respondents. Majority (two-third) of the respondents' responded correctly to the statement on the ability of gold investment in hedging against inflation. They responded almost similarly regarding gold nugget as the best form of gold

Table 5 Gold investment knowledge

	Statement	Correct answer n (%)
1.	Gold investment is able to protect from the inflation effect on <i>ringgit</i> currency	263 (65.3)
2.	Gold maintain its value from time to time	234 (58.1)
3.	Compared to land, gold purchasing is not taxable	220 (54.6)
4. ^a	Gold price always increase	210 (52.1)
5. ^a	Purchasing gold in the form of jewellery is the best choice of gold investment	149 (37.0)
6.	Investing on gold nugget is the best form of gold investment	256 (63.5)
7.	Gold jewelleries have lower resold price than gold dinar	214 (53.1)
8.	Gold jewelleries have lower resold price than gold nugget	226 (56.1)

^aWrong statements

investment. These results indicated their understanding on hedging ability of gold investment and knowing the best form of gold investment.

Only one-third of the respondents could answer correctly for knowledge item number 5 that is “Purchasing gold in the form of jewelry is the best choice of gold investment”. This showed that majority of the respondents still thought that possessing jewelry is the best form of gold investment as compared to other forms of gold investment. Statistical analysis demonstrated a moderate level (mean = 4.48; range 1–8) for gold investment knowledge where respondents answered correctly four to five questions from eight questions.

The respondents’ attitude towards gold investment had a mean score of 3.31 and the mean score for gold investment perceived behavioral control of 3.33 was above the average score. While for gold investment subjective norms, the mean score was 2.58 and gold investment behavior had a mean score of 2.17. Hence, the subjective norms and behavior regarding gold investment among the respondents were at low levels. Reliabilities for the variables were high ranging from 0.727 to 0.965 of alpha values portraying that the items in the variables can measure the intended concept.

Results for the gold investment behavior multiple regression are displayed in Table 6. The multiple regression model was found to be a valid model ($F = 34.440$; $p = 0.000$). The R square value of 0.304 for the model suggested that the model can explain 30.4% of the variance in gold investment behavior.

Knowledge on gold investment variable found to be insignificant in the gold investment behavior model controlled by other predictors. Gold investment knowledge found to be not an important factor in influencing gold investment behavior. Thus, individuals that are knowledgeable in gold investment will not necessarily decide to invest on gold. Influential predictors were financial risk tolerance, gold investment attitude, subjective norms and perceived behavioral control. Gold investment subjective norms variable found to be the most influential predictor as compared to attitude towards gold investment and gold investment perceived

Table 6 Multiple regression for gold investment behavior

Variables	B
Constant	-3.476** (-3.592)
Gold investment knowledge	0.121 (1.872)
Financial risk tolerance	0.096* (2.041)
Gold investment attitude	0.120* (2.385)
Gold investment subjective norms	0.298** (9.732)
Gold investment perceived behavioral control	0.174* (2.333)
N	403
R ²	0.304

* and ** represent significance levels at 5% and 1%, respectively t-values are given in the parenthesis

behavioral control. Financial risk tolerance revealed as the least influential predictor compared to other significant gold investment behavior predictors.

Subjective norms reflecting the perception of whether others approved of the behavior was determined as important in predicting gold investment behavior. Gold investment behavior was much influenced by gold investment activities done by others close to the respondents or norms. For gold investment, parents, friends and those who are known to the respondents were important in their decision to invest on gold. On the other hand, the perception of the respondents being in control of their investment behavior found to be not much influencing their gold investment behavior. Though they perceived themselves as being able to control their investment behavior, this does not translate into their actual gold investment behavior.

Attitude towards gold investment also found as an important predictor for gold investment behavior. Positive attitude towards gold investment that has developed over years required matching environment of gold investment. In this study, the significant result of the influence by financial risk tolerance on gold investment behavior, even though was the least influential, was not as expected. The result come to a conclusion that risk-taker individuals tend to invest on gold and vice-versa, risk-averse individuals tend not to invest on gold. As gold investment is globally perceived as a safe investment as compared to stock prices, the result is not as expected. However, it reflected the risk perceived by the respondents for gold investment. Referring to the earlier result where Malaysian respondents concluded to be more risk-averse, this justifies the low level of participation in gold investment among the respondents.

5 Conclusion and Implication

This study examined the effect of financial risk tolerance as one of the predictors on behavior of individual investors regarding gold investment among public sector employees in Peninsular Malaysia urban areas. Risk takers tend to be involved in gold investment apart from individuals with high gold investment subjective norms, perceived behavioral control and attitude. However, knowledgeable individuals in gold investment may not be investing on gold. The findings suggested that individual has a perception that gold investment is risky though globally it is considered as a safe investment. In addition, gold investment subjective norms surpassed the others in predicting gold investment behavior. It can be concluded that other people are important in their behavior as far as gold investment is concerned. Hence, individuals tend to invest on gold despite the extent of gold investment knowledge but more to referring to others that are important to them.

As attitude is develop in a long duration of time, the environment surrounding the individual should be supportive of the intended attitude development. The perception on their ability to control their gold investment decision is also important which may be due to their confidence in the gold investment market. These results are useful information that may be incorporate into program development aimed to improve personal financial behavior of employees. The results may also be emphasized in marketing practices and business decisions in the gold investment industry.

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Part II
Empirical Studies on Emerging Economies

Policy of Inflation Targeting in the Presence of Budget Deficits and Hyperinflation: Difference-in-Differences Estimation

Olfa Manai Daboussi and Amel Hedhli

Abstract The majority of macroeconomic theories assume that budget deficits are the causes of macroeconomic instability and inflation. With the implementation of the inflation targeting strategy, this relationship was limited and sometimes it has not been empirically justified in emerging countries. In this paper, our aim is to show the effect of the inflation targeting policy on inflation or hyperinflation, economic growth and budget deficits. In empirical work, we use a sample of 50 emerging economies, which 30 countries are not yet adopted inflation targeting and 20 countries that adopt this strategy for the period 1980–2014. The findings show that inflation targeting contributes to the reduction of hyperinflation and budget deficits in emerging countries.

Keywords Budget deficits • Hyperinflation • Difference-in-differences estimation • Inflation target • Emerging economies

1 Introduction

Inflation targeting provides a simple and predictable framework for the conduct of monetary policy. This strategy allows formulating inflation expectations and targeting them at a low level in the context of the independence of the central bank, the credibility and the reputation in front of the public. Inflation targeting has been used by economists as a substitute for monetary targeting. This new strategy is essentially based on the construction of the inflation forecasts that occupied economists in the formulation of economic theory.

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In practice, the reformulations of inflation expectations are based on available information (Leiderman and Svensson 1995; Bernanke and Mishkin 1997; Svensson 1997, 1999; Bernanke et al. 1999). In this respect, the conduct of monetary policy strategy has become increasingly useful for independent central banks. It has made a significant improvement in inflation performance and was soon chosen by some emerging countries (New Zealand, Chile, Israel, Peru, Mexico, Brazil. . .).

Indeed, the IMF no longer hesitates to encourage emerging economies to adopt this strategy. The literature on inflation targeting is diverse in most focuses on emerging economies. Bernanke et al. (1999), Neumann and Von Hagen (2002) and Truman (2003) concluded that IT improves economic performance. Inflation targeting has advantages over other monetary strategies, characterized mainly by the credibility, transparency and good communication. The central bank is committed to achieving an inflation target for the creation of a more stable macroeconomic environment, able to improve the effectiveness of monetary policy and stimulate investment in the economy (Batini and Laxton 2006; Gonçalves and Salles 2008; Lin and Ye 2009, 2012; De Mendonça and de Guimarães e Souza 2012; Ffitti and Essadi 2013).

Dueker et al. (1996) find that perfect stability of inflation in the industrialized and emerging countries is caused by other factors such as a good investment incentive, the recovery of economic activity in handling of another monetary regime. Cecchetti and Krause (2002), Mishkin and Schmidt-Hebbel (2007) and Cecchetti et al. (2006) estimate the efficiency frontier between the variability of inflation and output, allowing us to deduce measures of economic performance and efficiency monetary policy of inflation targeting. Indeed, the adoption of inflation targeting has a particular interest to the central bank in achieving their goal of price stability.

Bernanke et al. (1999), Corbo et al. (2002), Ball and Sheridan (2003, 2005) and Mishkin and Schmidt-Hebbel (2007) essentially differ from the choice of non-inflation targeting (named control group) and the techniques of estimations. Their results are considerably different. Using panel data regressions, Mishkin and Schmidt-Hebbel (2007) also conclude that inflation targeting has enabled industrialized countries to meet a lower level of inflation in the long term and a lower impact of terms of trade. However, the results for the inflation targeting in the advanced countries are very similar especially with a control group countries.

Indeed, the majority of the works argue that inflation targeting is a more sustainable and efficient system compared to other monetary regimes. In this respect, emerging market economy has a long growth crisis during the 1980s. In particular, it was reflected by a deep budget deficit, increasing debt and a pronounced deterioration in the balance of payments.

Budget deficits have increased in many developed countries. Macroeconomic instability and rising inflation have been linked in many cases in the inability of the Government to make real progress in economic reforms. Governments are trying to achieve fiscal discipline to stimulate macroeconomic performance (Fatás and Mihov 2007).

Most work in macroeconomic theory confirms the existence of a causal relationship between the fiscal deficit and inflation. Yet empirical research has had limited success in uncovering this relationship with the implementation of inflation targeting by the central banks of emerging countries.

The relationship between seigniorage and inflation is analyzed by Dornbusch and Fischer (1993). In countries where inflation is below 10%, seigniorage generally represents less than 1% of GDP. Conversely, where inflation is high, seigniorage is high. Amato and Gerlach (2002), Fischer et al. (2002), Vu (2004), and Catao and Terrones (2005) demonstrate that when seigniorage needs become excessive, there will be a hyperinflation. Indeed, the conventional deficit is financed by the increase in debt held by the private sector and the increase in money supply (seigniorage).

Empirical work of Lucotte (2012) note that the adoption of inflation targeting in emerging countries can be considered as a solution to facilitate the collection of tax revenues and balance the budget. Recently, Kadria and Ben Aissa (2016) evaluate the effect of this monetary policy in emerging countries on budgetary discipline in terms of reduction or control the public deficit. If the objective of monetary targeting policy is to target both price stability and the lowest possible inflation and stimulate economic activity and growth, what is the relationship between this policy and the budget deficit? Our work will be organized as follows: Section 2 describes methodology and data. Section 3 present results and interpretations. Finally we conclude.

2 Methodology and Data

The aim of this study is to investigate empirically how the adoption of inflation targeting, in emerging countries, can actually affect the variability of some macroeconomic variables such as inflation, economic growth and the budget deficit.

To address this problem, we adopt the theoretical model of Ball and Sheridan (2003). This model named was thus developed in 2005 by the same economists. It uses the difference-in-differences method. It's advantage of use allows researchers to break down the sample into two periods: the period before the adoption of inflation targeting and after the period adoption targeting.

The sample used is divided into two groups of countries: the first consists of emerging countries adopting inflation targeting. This group is called "treatment group". The second group consists of emerging countries not adopted inflation targeting (IT). This group is called "control group".

Equation takes this form:

$$X_{it} = \gamma\alpha^N + \gamma(\alpha^T - \alpha^N)d_{i,t} + (1 - \gamma)X_{i,t-1} \quad (1)$$

- X_{it} Macroeconomic variable value of the X indicator of country i in time t.
 α^T Average to which X converges for countries with (IT).
 α^N Average to which X converges for countries without (IT).
 $d_{i,t}$ Dummy variable (d = 1 if country i target inflation in time t or d = 0 if country i not target inflation).

According to this equation, measuring the convergence of the variable X to the α value by the speed of parameter λ .

There are two periods in the model: pre-period of IT and post-period of IT.

$$X_{it} = C + a_1 D_{i,t} + \delta_t + \gamma_t + \varepsilon_{it} \quad (2)$$

According to Eq. (2), C is a constant, $D_{i,t}$ is a dummy variable γ_t and δ_t are respectively the effects and ε_{it} is the error term.

Equation (2) with difference:

$$X_{i,\text{post}} - X_{i,\text{pre}} = \gamma_{\text{post}} + a_1 D_{i,\text{post}} + \delta_t + \varepsilon_{i,\text{post}} - (\gamma_{\text{pre}} + a_1 D_{i,\text{pre}} + \delta_t + \varepsilon_{i,\text{pre}}) \quad (3)$$

$$X_{i,\text{post}} - X_{i,\text{pre}} = (\gamma_{\text{post}} - \gamma_{\text{pre}}) + a_1 (D_{i,\text{post}} - D_{i,\text{pre}}) + (\varepsilon_{i,\text{post}} - \varepsilon_{i,\text{pre}}) \quad (4)$$

OLS estimator can be written:

$$X_{i,\text{post}} - X_{i,\text{pre}} = a_0 + a_1 D_i + e \quad (5)$$

Then, Eq. (5) can be written:

$$X_{i,\text{post}} - X_{i,\text{pre}} = (\gamma_{\text{post}} - \gamma_{\text{pre}}) + a_1 D_i + a_2 X_{i,\text{pre}} + (\varepsilon_{i,\text{post}} - \varepsilon_{i,\text{pre}}) \quad (6)$$

Where:

$$X_{i,\text{post}} - X_{i,\text{pre}} = a_0 + a_1 D_i + a_2 X_{i,\text{pre}} + e \quad (7)$$

Equation (7) can be estimate through the OLS method.

In this model, the dependent variable $X_{i,\text{pre}}$ contained in Eq. (7) can justify the effect of the inflation targeting policy on other variables.

The choice of the sample differs from other works by the number of emerging countries (Manai 2016). Fifty emerging countries were selected including 30 countries. These countries do not target inflation and the adoption attempts were encouraged by the IMF. Then, the group of 20 countries adopts inflation targeting in the 1990s and 2000 (see Table 6 in Appendix).

We use quarterly data during the period 1980–2014. The variables used are GDP growth, inflation rate in percent and budget deficit (% of GDP). The data are from IMF statistics. For the average volatility of inflation, output growth and budget deficits, we use the standard deviation from the average. The estimates will be based on two periods: the period before the adoption of inflation targeting and a period after the adoption of inflation targeting (see Table 7 in Appendix).

3 Results and Interpretations

3.1 Estimation of Effect on Budget Deficits

Studies on emerging economies show that with the new monetary policy of inflation targeting, the budgets (% GDP) fell after the period of adoption of inflation targeting. The empirical results are expected relative to precedents work. Dummy variable in this estimation of the budget deficits regressions has of negative sign (see Table 1).

We compare the two coefficients of budget deficits between the two periods of the test. The results show that this ratio decreased from 3.03 to 2.21%. Furthermore, Samaryna and De Haan (2011) show that there is a negative correlation between public debt and inflation targeting, an unsustainable budget policy that could ultimately undermine the credibility and viability of the targeting policy inflation.

For Gonçalves and Carvalho (2008), this inverse relationship may also reflect a deliberate choice of the governments of highly indebted economies not adopt inflation targeting in order not to compromise the lever of monetary financing of public deficits. Indeed, developed countries continue to strengthen economic growth and encourage investment to minimize budget deficit and reduce public debt.

According the same order of ideas, Abbas et al. (2010) show the importance of the role of public finances on the effectiveness of inflation targeting. The high public debt weaken the capacity of the central bank to conduct a policy of targeting inflation effectively, given the potential pressure from the government to finance the deficit with the monetary leverage. This result therefore strengthens the argument that a fiscal policy healthy and responsible is an essential condition to the effectiveness of this monetary strategy.

Table 1 Estimation of average budget deficits (% GDP)

Dependent variable ($X_{i,post} - X_{i,pre}$): budget deficits		
	Period 1	Period 2
D_i	-3.03*** (1.5)	-2.21*** (1.1)
X_i	-1.14* (1.12)	-0.81* (1.4)
C	10.02* (0.51)	6.42* (0.87)
R^2	0.58	0.49
N	50	50

Note: C is a coefficient

Robust standard errors are in parentheses

***, **, and * represent significance level at 1%, 5% and 10%

Period 1 and 2 design respectively, before and after adoption of IT

Table 2 Estimation of average inflation

Dependent variable ($X_{i,post} - X_{i,pre}$): average inflation		
	Period 1	Period 2
D_i	-3.2*** (1.9)	-1.48*** (1.92)
X_i	-2.36* (1.47)	-1.77* (1.9)
C	4.44* (1.89)	1.05* (0.07)
R^2	0.78	0.62
N	50	50

Note: C is a coefficient

Robust standard errors are in parentheses

***, **, and * represent significance level at 1%, 5% and 10%

Period 1 and 2 design respectively, before and after adoption of IT

Table 3 Estimation of inflation volatility

Dependent variable ($X_{i,post} - X_{i,pre}$): inflation volatility		
	Period 1	Period 2
D_i	-2.5* (1.6)	-3.62** (1.91)
X_i	-0.22** (1.82)	-0.11** (1.7)
C	2.41* (0.01)	2.5* (1.62)
R^2	0.84	0.71
N	50	50

Note: C is a coefficient

Robust standard errors are in parentheses

***, **, and * represent significance level at 1%, 5% and 10%

Period 1 and 2 design respectively, before and after adoption of IT

3.2 Estimation of Effect on Inflation Variability

The estimation of the relationship between the rate of growth and the impact of inflation targeting leads to these results. The coefficient on the dummy variable and the average variable inflation regressed between periods of the estimate (Table 2). These results show that in practice the adoption of inflation targeting is a purely effective strategy in emerging economies.

Then, we substitute inflation volatility with average of inflation. The results of the estimates in Table 3 show a decline in inflation volatility in only countries adopting inflation targeting. These results are consistent with Manai (2016) and Lucotte (2012). They find that the impact of IT on the average of inflation is more important.

3.3 Estimation of Effect on GDP Growth

In the latter estimate treating the targeting effect on economic growth, we show that the signs of the coefficients are negative and both insignificant. The results remain

Table 4 Estimation of average output growth

Dependent variable ($X_{i,post} - X_{i,pre}$): average output growth		
	Period 1	Period 2
D_i	-2.021*** (1.5)	-2.89*** (1.21)
X_i	-1.87* (0.85)	-0.55* (1.23)
C	2.3* (2.62)	1.5* (0.17)
R^2	0.55	0.39
N	50	50

Note: C is a coefficient
 Robust standard errors are in parentheses
 ***, **, and * represent significance level at 1%, 5% and 10%
 Period 1 and 2 design respectively, before and after adoption of IT

Table 5 Estimation of output growth volatility

Dependent variable ($X_{i,post} - X_{i,pre}$): output growth volatility		
	Period 1	Period 2
D_i	-1.69 (1.3)	2.41*** (1.95)
X_i	-2.12*** (1.5)	1.3** (1.22)
C	2.05** (0.7)	2.7* (1.3)
R^2	0.42	0.34
N	50	50

Note: C is a coefficient
 Robust standard errors are in parentheses
 ***, **, and * represent significance level at 1%, 5% and 10%
 Period 1 and 2 design respectively, before and after adoption of IT

ambiguous at this stage (Table 4); they pushed us to postulate that the goal of inflation targeting is not always dependent on the stability of economic activity in emerging countries.

By estimating the volatility of GDP, we note that the coefficients change sign and become significant (Table 5). This confirms that these countries have experienced an increase in economic growth after the adoption of this strategy. This leaves us to believe that inflation targeting is the origin of this economic performance.

4 Conclusion

In this paper, we show that the adoption and pursuit of the inflation targeting strategy has reduced the level and volatility of inflation in emerging economies. The adoption of inflation targeting by emerging economies has evolved on two perspectives. Transparency and communication have become the criteria underlying the operational independence of central banks and anchor inflation expectations.

For the stability of the growth rate, our results are similar to those normally encountered in the literature, and show a significant impact of inflation targeting on the GDP growth rate. In fact, the emerging countries (IT or not IT) have experienced sharp declines in inflation and a marked improvement average growth rate. The development of financial markets provides access to other funding sources by limiting funding through money creation to cover budget deficits. The reduction of fiscal deficits may be due to good control of fiscal policy in the collection of the State resources when economic growth is increasing.

This relation is non-significant effect on budget deficits during the period before the implementation of this regime. Despite the promising results of inflation targeting in emerging economies, the adoption of this strategy by the countries still raises many questions in the economic literature. The policy implications can manifest at this point. In this regards the condition of independence of the central bank at the forefront of institutional prerequisites that must be met to ensure the proper functioning of any monetary policy strategy, and in particular the inflation targeting (Blinder 2000).

In reality, to consolidate the macroeconomic framework in particular in the context of implementing an inflation targeting strategy in emerging countries, the authorities should give priority to the following:

- Preserve the sustainability of the budget deficits by pursuing efforts to consolidate public finances, including through the rationalization of operating expenses and subsidies and strengthening revenue collection through actions to broaden the tax base.
- Ensuring good management of the public debt in order to preserve its viability.

Finally, the harmony between monetary policy and fiscal policy is essential to achieve price stability (Blanchard et al. 2010). Thus, strong fiscal policies are key elements in achieving macroeconomic stability (Sims 2009).

Appendix

Table 6 20 Inflation targeting countries and 30 non inflation targeting countries

<i>20 Inflation targeting countries</i>
Turkey, Thailand, South Korea, South Africa, Slovakia, Serbia, Romania, Poland, Philippines, Peru, Mexico, Israel, Indonesia, Hungary, Guatemala, Ghana, Republic Czech, Colombia, Chile and Brazil
<i>30 non inflation targeting countries</i>
Venezuela, Uruguay, Ukraine, Tunisia, Syria, Slovenia, Singapore, Russia, Paraguay, Morocco, Mauritius, Macedonia, Lithuania, Lebanon, Kazakhstan, Jordan, Jamaica, Iran, Hong Kong, Georgia, Estonia, Egypt, Dominican Republic, Croatia, Costa Rica, China, Bulgaria, Belarus, Argentina and Algeria

Source: Lin and Ye (2012)

Table 7 Adoption of inflation targeting

Countries	Pre-period	Beginning of post-period	Start of framework ^a
Brazil	1980:1–1999:1	1999:2	1999M6
Chile	1980:1–1990:2	1990:3	1990M9
Columbia	1980:1–1999:2	1999:1	1999M9
Czech Republic	1980:1–1997:3	1997:4	1998M1
Hungary	1980:1–2000:3	2000:1	2001M1
Indonesia	1980:1–2005:2	2005:3	2005M7
Israel	1980:1–1991:3	1991:4	1992M1
Mexico	1980:1–1990:3	1990:4	1999M1
Peru	1980:1–2001:3	2001:4	2002M1
Philippines	1980:1–2001:3	2001:4	2002M1
Poland	1980:1–1998:2	1998:3	1998M10
South Africa	1980:1–1999:3	1999:4	2000M2
South Korea	1980:1–1998:1	1998:2	1998M4
Thailand	1980:1–2000:1	2000:2	2000M5
Turkey	1980:1–2005:1	2005:2	2006M1
Guatemala	1980:1–2004:3	2004:2	2005M1
Romania	1980:1–2005:2	2005:3	2005M8
Serbia	1980:1–2006:2	2006:3	2006M9
Ghana	1980:1–2007:1	2007:2	2007M5
Slovakia	1980:1–2004:4	2005:1	2005M1
<i>Non-inflation targeting</i>			
Average date ^b	1980:1–1999:2	1999:3	

Source: ^aRoger (2009), IMF. WP/09/236. ^bAuthor's calculation

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Assessing Predictors for Health Insurance Purchase Among Malaysian Public Sector Employees

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Abstract Challenges are faced by individuals in making financial decisions throughout their life to be financially well. Managing risk such as health risks may incur high cost to remain healthy. Individuals make decisions on having protection against health risks in the long run which depends on several factors. This study focused on the behavioral aspects of finance which attempts to assess factors predicting health insurance purchase among Malaysian public sector employees. The likelihood of personality and health risks factors in predicting health insurance purchase were determined. Multistage random sampling based on four zones in Peninsular Malaysia was utilized to sample 500 respondents from four states. Selected departments in the states were contacted prior to the data collection for their consent. Respondents identified by liaison officers in each department were given self-administered questionnaires resulting in 356 usable questionnaires. Apart from socioeconomic characteristics and health insurance purchase, data on investment, personality and health status were collected. Personalities measured were self-esteem, risk-averse and future-orientation, while health risks were measured through health status using SF-36. The primary measures and the aggregate measures of health were analyzed in two separate binomial logistic regressions where both analyses revealed that income was the strongest predictor as compared to investment activity or self-esteem. None of the indicators for health risks was found to be significant in predicting health insurance purchase. Both models were justified as fit by being moderately correctly classified and were more than 25% improvement over the chance accuracy rate. It is concluded that the decision on protection against health risks using health insurance is not based on their health risks instead the decision depends more on their income. As these are

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employees in the public sector, it may reflect high reliance on the government health service. Nevertheless, the public sector is considered as a potential market for health insurance industry.

Keywords Income • Investment • Health risks • Personality • Health insurance

1 Introduction

Challenges are faced by individuals in making financial decisions throughout their life to be financially well. As contended by Altfest (2004), financial planning for individual which originates from both economic and finance fields considered the contributions of Becker (1965), and Modigliani and Brumberg (1954). Financial planning functions to plan for household's financial future needs in an efficient manner. Thus, personal financial planning enabled the household to be financially prepared for their future leading to financial stability. Managing risk as one of the components in financial planning such as managing health risks for financial loss protection may at the same time incur high cost to remain healthy. With constraint monetary resources, decisions on the type of risk management methods are critical. Individuals may decide on having protection against health risks in the long run which depends on several factors.

Private health insurance including takaful policies have various choices of premiums charged based on the individual's health status, the type of health insurance and the level of coverage. Annual reports by the central bank of Malaysia from year 2005 to 2010 stated significant growth of the private health insurance and takaful business (Bank Negara Malaysia 2005a, b, 2010a, b). In conjunction to this, the National Health and Morbidity Survey III, which is a cross-sectional survey undertaken in year 2006, indicated that about 18.8% of the Malaysian population owned private health insurances including takaful (Institute for Public Health 2008).

As an employee in the Malaysian public sector, the employees including their family members have free access to medical services provided by the public sector. Even for private sector employees or individuals, minimal fee health care is highly accessible at the public health institutions. Nevertheless, some may choose suitable private health insurance or private medical care benefits to protect against health risks. Even with a good public health system in Malaysia, there is always a gap in the market to fill.

Placing high importance for timely treatment especially for critical illnesses create the need for contingency protection. The demand for private health insurance may arise from the inner-self of the individual or their perceived health risks. Family history and life experiences regarding critical illnesses triggers fear to face health risks. As such, health risks would have an impact on work productivity which in turn affected job security. Overall, the effects of health risks are not only on the expenses due to sickness but also on the monetary resources.

This study focused on the behavioral aspects of finance which attempts to assess factors predicting health insurance including takaful purchase among Malaysian public sector employees. The likelihood of investment involvement, personality and health risks factors in predicting health insurance purchase were determined. Self-esteem, risk-averse and future-orientation is the employees' personality studied and health status reflects health risk among the employees.

2 Literature Review

Monetary resources affect decision making of individuals and this is crucial in most situations including decision on insurance protection. In the insurance market, advantageous selection was driven by the effect of income which was positively correlated with insurance coverage (Fang et al. 2008). Kunreuther and Pauly (2005) stated that one reason individuals may not purchase insurance is they felt that they are constrained by their current income flow furthermore they do not have easily available funds for investment in protection against low probability events. Lazim and Mohd. Nordin (2012) contended that purchasing power was among influential factors affecting increase of demand on health insurance. Purchasing power may be reflected by income that is available for spending. Part of the income generated constitutes of mandatory deductions which cannot be considered for expenses.

Risk preferences have been studied much with investment activities. Jacobs-Lawson and Hershey (2005) mentioned that risk-tolerant individuals preferred to invest in risky investments such as equities whereas those who were risk-averse preferred investing in low risk options such as bonds and certificates of deposit. Consistently, Cardak and Wilkins (2009) also found that the risky asset ratio decreased accordingly to the degree of risk aversion. Hence, it is proven in past research that financially risk tolerant individuals tend to invest in risky asset where they are willing to take risk. Thus, in the case of insurance purchasing, risk-averse individuals who are unwilling to assume risk would most likely prefer to purchase any insurance.

Researchers proposed that a market equilibrium with adverse selection are characterized by a positive correlation between risk and the level of insurance coverage (Chiappori et al. 2006; Einav et al. 2010). Adverse selection in the context of insurance is the individual demand for insurance which is positively related with individual's risk of loss. The higher the expected loss is perceived by the individuals, the larger would the insurance coverage where individuals prefer to be highly protected against risk rather than facing the risk. Thus, the expectation of risk by a person is likely to affect the extent of insurance coverage. The proposed positive correlation was found for annuities (Finkelstein and Poterba 2002) but not for other types of insurance (Fang et al. 2008).

Risk selection was studied in the context of employer-sponsored health benefits programs in which employees were given choices of insurance options. Higher risk individuals tend to choose insurance plans that allow more flexibility including

greater choice of providers (Strombom et al. 2002). The tendency of selection among higher risk individuals was towards optimum benefit achieved from the insurance plan.

Time orientation suggests that individual uses information about the time-frame in which an event occurs for them to evaluate and respond accordingly to the event. The extent of motivation in making decisions either for the future or for the present goals reflected greater future or present time orientation (Simons et al. 2004). Seginer (2003) explained future orientation as the image individuals have regarding their future. As such, future orientation provides the grounds for goals setting, planning, exploring options and making commitments, and further guides the persons' developmental course.

Psychological literature showed that adolescent future orientation is often used to predict behavior and planning (Beal and Crockett 2010). Non-planners were those who had been planning generally in the form of responses to events rather than of pro-active responses to predictions about the future (Denton et al. 2004). This reflected a present-time perspective and was less concerned for their future. Planners oppositely had evidence of planning which was found in self-insurance preparation such as long-term investments, savings, pensions and having no debt (Denton et al. 2004). Planning for later life was most dominant among those who portrayed a future-time perspective. In self-insurance preparation, risk management methods used are other than risk transfer hence they do not choose to purchase insurance. In a way, future-oriented individuals may have sufficient funds to finance expected risks. Nonetheless, planners may also be able to foresee any huge potential risks which may not be able to be covered by individual fund. With this regards, transferring expected risks may be the optimum option.

Self-esteem or self-worth is a personality that displays confidence in individual ability and perceived as able to do things as good as others (Hira and Mugenda 1999). In the context of financial behavior, Grable and Joo (2001) examined the results from Hira and Mugenda's study (1999) on the relationship between self-esteem and financial beliefs, financial behaviors and financial satisfaction. The study used faculty and staff from two Midwestern universities as samples and found that those exhibiting better financial behaviors tended to have higher self-esteem. Thus a positive relationship existed between self-esteem and financial behaviors. Similar trend was observed in psychological studies with a positive relationship displayed between self-esteem and behavior. High self-esteem adolescents were found to be associated with good behavior and vice-versa. Low self-esteem adolescents were more likely to experience bad behavior such as psychological distress or delinquent activity or aggressiveness (Baumeister et al. 2000). However, a local study on 347 Malaysian credit card holders revealed that the subjects possessed high self-esteem personality however insignificant difference for self-esteem was found between those who pay-off their credit card bills in full or otherwise (Husniyah et al. 2005).

Significant demand for health insurance is related to factors that influence individual in purchasing health insurance. Risk factors of age, lifestyle and health conditions are among those influential factors including purchasing power. With

regards to health conditions, risk of illness and the attendant cost of care contribute to the demand for health insurance. Nonetheless, the factors identified that would increase the likelihoods of purchasing insurance are still not exhaustive (Abdullah and Abdul Rahman 2012). This view is agreed by McLaughlin et al. (2004) who stated that not much is known about the factors determining individuals to purchase health insurance although obtaining health insurance is voluntary in the United States.

Chronic illness of the employee was found to have no effect on choice of the CDHP (Consumer-Driven Health Plan), but such employees tended to choose the preferred provider organization (Parente et al. 2004). However, Parente et al. (2004) also found that in general, employees tended to choose plans with lower premiums while employees with a chronic health condition themselves or in their family were more price-sensitive. The result gave support for the effect of health risks on purchasing health insurance though they were concerned with the price. Even so, healthier employees or low health risk employees were found to purchase health insurance nevertheless they were more likely to choose less costly policy, but with more restrictive managed care plans (Strombom et al. 2002). As opposed to the results, considerable empirical evidence suggests that many individuals who are in need of insurance do not have insurance coverage (Kunreuther and Pauly 2005).

With regards to the extent of insurance coverage, Buchmueller et al. (2013) stated that consumers who have private information about their risk of suffering a loss is predicted to have a positive correlation between risk and the level of insurance coverage. The prediction which was tested in the context of the market for private health insurance in Australia revealed that about half of the adult population also bought private health insurance despite a universal public system with comprehensive coverage. The policy holders understood the main benefit of private health insurance which is more timely access to elective hospital treatment. No support for the positive correlation hypothesis was found which is consistent with several studies on different types of insurance in other countries.

3 Research Methodology

The cross-sectional design study was focused on Malaysian public sector employees specifically in Peninsular Malaysia. Questionnaire as the instrument of this study was developed by the researchers to gather information on the behavioral aspects of finance among the employees. Apart from socioeconomic characteristics and health insurance purchase, data on investment involvement, personality and health status were collected.

Personalities determined were self-esteem (Hira and Mugenda 1999), risk-averse as measured by financial risk tolerance (Jacobs-Lawson 2003) and future-orientation as measured by future time orientation (Hershey and Mowen 2000) which used five scales with extreme responses of strongly disagree and strongly agree. The self-esteem scale looked into the perception of the respondents on

themselves in general. Financial risk tolerance measured the attitude towards risk-taking in the respondent's life. Risk-averse is the opposite direction of financial risk tolerance. The items measured in future time orientation scale determined the extent of individuals enjoyed thinking about and planning for the future. The measurements of the constructs used in this study were adapted from previous studies. Negative statements were recoded and higher scores indicated higher self-esteem and more future-oriented. The financial risk tolerance scale was recoded so that higher score represented more risk-averse.

Health risks were measured through health status using SF-36 (Stewart et al. 1988). The SF-36 measures eight concepts that were physical functioning (PF), role limitations due to physical health (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE) and general mental health (MH). Physical functioning, role physical and bodily pain were the primarily measures of physical health, while the other three scales were the primarily measures of mental health. Aggregate measures of health which are two summary measures of physical (PCS) and mental (MCS) health's were constructed from the eight scales. High scores for any of the scales can be interpreted as having a better health in the specific aspect. An individual scoring low of the physical functioning (PF) scale is very limited in all activities, including bathing and dressing.

The SF-36 scales and summary measures were scored according to specific formulas so that they are on the same metric, where 50 is the mean for the US general population and 10 is the standard deviation. The SF-36 has demonstrated a capacity to effectively discriminate between subjects with different chronic conditions and between subjects with different severity levels of the same disease.

Factor analyses for the measurements are presented in Table 1 showing high factor loadings for the remaining items. Reliability tests on the measurements displayed in Table 2 gave high Cronbach alphas which indicated high reliabilities of the measurements used in this study. The items in each of the measurement were able to measure the intended concept for each construct. As cautioned by Stewart et al. (1988), the PCS and MCS are not simple linear composite scales but rather are factor scales derived from a Principal Components analysis. Hence, a straightforward application of Cronbach's alpha to such scales is not appropriate.

Upon completion of the questionnaire developed, approval for data collection involving human beings was sought from the university's ethic committee. Multi-stage random sampling based on four zones in Peninsular Malaysia was utilized to sample 500 respondents from four states. Selected departments in the states were contacted prior to the data collection for their agreement to involve in this study. Respondents identified by liaison officers in each department were gathered for the data collection. Self-administered questionnaires were distributed at their workplace resulting in 356 usable questionnaires.

Descriptive analyses presenting mean and standard deviations were used to describe the data and binomial logistic regressions were conducted to obtain predictors for health insurance purchase. Health status as measured by the eight scales of primarily measures and aggregate measures in SF-36 which is considered as a

Table 1 Factor analysis for investment and personality constructs

	Factor loading	Eigen values	% of Variances
<i>Investment</i>			
Invest in various types of investment	0.873	2.003	66.778
Invest in unit trust	0.781		
Invest in equity	0.794		
<i>Self-esteem</i>			
I take a positive attitude toward myself	0.821	2.492	62.294
I am respected by others	0.746		
I am able to do things as well as other people	0.807		
I am satisfied with myself	0.782		
<i>Financial risk tolerance</i>			
I am worried if I invest in the stock market	0.793	2.210	73.682
I feel that I lack knowledge to be successful in investment	0.905		
I hardly understand the investment process	0.873		
<i>Future time orientation</i>			
The distant future is too uncertain to plan for	0.785	2.774	69.351
The future seems very vague and uncertain to me	0.794		
I pretty much live on a day-to-day basis	0.888		
I enjoy thinking about how I will live years from now in the future	0.860		

Table 2 Reliability test

Construct	Alpha	Number of items
Investment	0.745	3
Self-esteem	0.797	4
Financial risk tolerance	0.818	3
Future time orientation	0.849	4

global approach to quality of life, were calculated as explained in the manual (Ware et al. 1993). The eight primary measures and the two aggregate measures of health were analyzed with other potential predictors in two separate binomial logistic regressions.

4 Results and Discussion

4.1 Background of Respondents

As shown in Table 3, male comprised of one-third of the respondents as compared to female respondents and there were equal numbers of less experienced and experienced workers. Majority of the respondents were married (85.7%) with

Table 3 Back-ground of the respondents

Socioeconomic characteristics		Frequency (N = 356)	Percentage (%)
Gender	Male	123	34.7
	Female	231	65.3
Marital Status	Unmarried	51	14.3
	Married	305	85.7
Age	20–29 years	63	17.8
	30–39 years	144	40.8
	40–49 years	62	17.6
	50–59 years	84	23.8
Work experience	0–10 years	178	50.0
	More than 10 years	178	50.0
Education	Non-graduate	225	63.2
	Graduate	131	36.8
Household income	<RM750	7	2.0
	RM750–<RM1,500	45	12.9
	RM1,500–<RM2,500	79	22.6
	RM2,500–<RM3,500	79	22.6
	RM3,500–<RM5,000	78	22.3
	RM5,000–<RM7,500	39	11.2
	RM7,500–<RM10,000	13	3.7
>RM10,000	9	2.6	
Insurance purchased	Health insurance	154	43.3
	Life insurance	90	25.3
	Automobile/fire insurance	300	85.0
	Credit insurance	234	66.3

slightly more than half were young workers that is below 40 years old (58.6%). Almost two-third of the respondents were non-graduates (63.2%) and also almost two-third earned monthly household income of less than RM3,500 (60.1%).

Referring to the mean monthly household consumption expenditure of RM3,578 in the Household Expenditure Survey 2014 (Malaysian Department of Statistics 2014a), this amount of income would most probably sufficient to fulfill basic needs for the family especially those living in urban areas. In this study, the workplace is in the urban areas; however, a small number of them may reside in the rural areas.

A small percentage of the respondents had monthly household income of more than RM5,000 (17.5%). This shows that less than 17.5% of the respondents earned more than the Malaysian mean household income of RM6,141 based on the Report of Household Income and Basic Amenities Survey 2014 (Malaysian Department of Statistics 2014b). Only 2% of the respondents earned monthly household income of less than RM750 which is under the ‘poor’ category. Households with average monthly incomes of less than RM760 in Peninsular Malaysia is categorized as poor as the consumption of these people are below certain standards of consumption which are deemed necessary to maintain ‘decency’ in society.

General insurance specifically automobile and fire insurance (85.0%) were found to be the highest purchased among the respondents. This is followed by credit insurance as the second highest (66.3%) type of insurance purchased. Credit insurance is a type of insurance policy taken for the purpose to protect against risk of repayment disability due to death. It can be purchased for loans obtained by individuals such as housing loan, personal loan, hire purchase or credit card. In the event of death, the insurance company will make full settlement of the loan balance to the loan provider. Health insurance purchase found as the third highest (43.3%) purchased was almost double the number of life insurance purchased (25.3%) among the respondents. Hence, those without any insurance protection against health risks (56.7%) were prone to financial risk.

4.2 Investment and Personality Constructs

The mean scores of investment and personality constructs are displayed in Table 4. Overall, investment construct (mean = 2.30) and future time orientation construct (mean = 2.07) gave lower than average mean scores as compared to self-esteem (mean = 3.86) and financial risk tolerance (mean = 3.39) constructs. The low mean scores for investment showed a low involvement in investment among the

Table 4 Mean score for investment and personality constructs

Constructs	Mean	Standard deviation
<i>Investment (mean = 2.30)</i>	(Scale: 1–5)	
Invest in various types of investment	2.35	1.139
Invest in unit trust	2.81	1.285
Invest in equity	1.75	1.060
<i>Self-esteem (mean = 3.86)</i>		
I take a positive attitude towards myself	4.06	.778
I am respected by others	3.62	.752
I am able to do things as well as other people	3.90	.718
I am satisfied with myself	3.85	.809
<i>Financial Risk Tolerance (mean = 3.39)</i>		
I am worried if I invest in the stock market	3.35	1.065
I feel that I lack knowledge to be successful in investment	3.45	1.022
I hardly understand the investment process	3.36	1.007
<i>Future Time Orientation (mean = 2.07)</i>		
The distant future is too uncertain to plan for ^a	2.28	1.115
The future seems very vague and uncertain to me ^a	2.24	1.052
I pretty much live on a day-to-day basis ^a	1.86	.974
I enjoy living in the present without thinking about the future ^a	1.91	1.011

^aNegative statements however original data are used in the above; financial risk tolerance was used to measure the opposite personality which is risk-averse

respondents. However, they preferred unit trusts as contrast to equity shares and most of them do not hold portfolios of investment. Equity shares are classified as risky investments as opposed to unit trusts which are more conservative investments. Looking at these, they were believed to be less risk-taker or more risk-averse. Examining the mean scores for financial risk tolerance items, the high mean scores which reflected tendency of risk-averse (as explained in the methodology) supported the results for investment involvement.

High mean scores for self-esteem were revealed among the respondents where they have high perception on their capability of doing things. Most of them were confident that they can do things as well as others. For the future time orientation original items, high mean scores for each item means that they were not much concerned of their future. However, the results showed low mean scores reflecting a more future-oriented among the respondents. Hence, most of the respondents were thinking much about their future. Since more than half were young workers, it can be assumed that even the young workers were planning for the distant future.

4.3 Health Risks

The SF-36 health measurements for the primarily measures and aggregate measures are displayed in Table 5. The primarily measures are physical functioning (PF), role physical (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE) and general mental health (MH). Physical functioning, role physical and bodily pain are the primarily measures of physical health, while the other three scales (social functioning (SF), role limitations due to emotional problems (RE) and general mental health (MH)) are the primarily measures of mental health. Aggregate measures of health are the two summary measures of physical (PCS) and mental (MCS) health. Lower scores of health measures reflect the health risks among the

Table 5 Mean score for health measures

Health measures	Mean	Standard deviation
<i>Primarily measures</i>		
PF	75.5746	21.41816
RP	67.9906	35.66817
BP	66.8906	19.59210
GH	61.9690	16.42187
VT	47.2912	6.44630
SF	76.5708	21.37669
RE	70.6386	34.86698
MH	51.2980	10.10701
<i>Aggregate measures</i>		
PCS	49.8983	9.63580
MCS	42.7017	8.16499

employees. Higher scores of health measures portray better health status in the specific aspect with a cut-off point at 50.

In general, the primarily health measure scales gave quite high scores which are expected as the respondents were at their work-place during the data collection. However, the respondent scored lowest for the two primarily measures of health which are vitality (VT = 47.2912) and general mental health (MH = 51.2980). Most of the respondents expressed low vitality which means that they felt they had less energy, tired or worn-out. In terms of general mental health, the low scores portrayed that they were too worried or too sad. Among other primarily measures, physical functioning (PF = 75.5746) and social functioning (SF = 76.5708) scored the two highest. These measures confirmed on their high ability to carry heavy things, climbing the stairs, bathing or dressing and that their social activities were not much limited by their physical or emotional health respectively.

The application of specific formulas to calculate the PCS and MCS measures resulted in a moderate level of health status in terms of the physical and mental healths. The moderate physical health (PCS) gave the overall level for aggregates of three primarily measures of physical health consisting of physical functioning (PF), role physical (RP) and bodily pain (BP). In addition, the moderate mental health (MCS) gave the overall level for aggregates of the other three primarily measures of mental health scales (SF, RE and MH). Both aggregate measures were slightly below norm values of 50 suggesting that even though the public sector employees studied were present at their work-place, their health status were not at their utmost fit.

4.4 Predictors for Health Insurance Purchase

The primarily measures and the aggregate measures of health as potential predictors for health insurance purchase were analyzed in two separate binomial logistic regressions. Significant Omnibus tests and non-significant Hosmer and Lemeshow (2013) tests justified the fitness of the models as presented in Table 6. Furthermore, each model was fit by being moderately correctly classified and was more than 25% improvement over the chance accuracy rate.

The proportional by chance accuracy rate was computed by calculating the proportion of cases for each group based on the number of cases in each group in the classification table at Step 0 (Model 1 = 55.6%; Model 2 = 55.8%) in each model and then squaring and summing the proportion of cases in each group. The proportional by chance accuracy rate for the first model is $0.506 (0.556^2 + 0.444^2 = 0.506)$. For the second model, it is $0.507 (0.558^2 + 0.442^2 = 0.507)$. The proportional by chance accuracy criteria for the first model is 63.3% ($1.25 \times 50.6\% = 63.3\%$) and for the second model is also 63.3% ($1.25 \times 50.7\%$). Both models with classifications of 63.7 and 65.5% exceeded the proportional by chance accuracy criteria of 63.3%.

Table 6 Fitness of the health insurance purchase model

	Model 1 Using primarily measures	Model 2 Using aggregate measures
<i>Omnibus tests of model coefficients</i>		
Chi-square	40.278	37.135
df	13	7
Sig.	0.000	0.000
<i>Model summary</i>		
-2 Log likelihood	414.441	415.957
Cox and Snell R Square	0.115	0.106
Nagelkerke R Square	0.153	0.143
<i>Hosmer and Lemeshow test</i>		
Chi-square	8.633	8.226
df	8	8
Sig.	0.374	0.412
Proportional by chance accuracy criteria	63.3	63.3
Classification (%)	63.7	65.5

Table 7 Binomial logistic regression for health insurance using primarily measures

Constructs	B	S. E.	Wald	Sig.	Exp(B)
Household income more than RM3,500(1)	0.911	0.245	13.809	0.000	2.487**
Investment	0.155	0.045	11.821	0.001	1.168**
Self-esteem	0.093	0.053	3.012	0.083	1.097†
Risk-averse	-0.030	0.045	0.438	0.508	0.970
Future-orientation	0.041	0.036	1.263	0.261	1.042
PF	-0.001	0.008	0.015	0.902	0.999
RP	0.003	0.004	0.647	0.421	1.003
BP	0.006	0.008	0.440	0.507	1.006
GH	0.007	0.009	0.511	0.475	1.007
VT	-0.019	0.018	1.024	0.312	0.981
SF	-0.011	0.010	1.164	0.281	0.989
RE	-0.002	0.004	0.232	0.630	1.002
MH	-0.007	0.016	0.178	0.673	0.993
Constant	-2.474	1.469	2.835	0.092	0.084

Note: Reference group is household income less than RM3,500; $p \leq 0.001^{**}$; $p \leq 0.1^{\dagger}$

Results from both binomial logistic regressions as displayed in Tables 7 and 8 revealed that income was the strongest predictor as compared to investment activity or self-esteem. None of the indicators for health risks was found to be significant in predicting health insurance purchase. It is concluded that the decision on protection against health risks using health insurance is not based on their health risks instead the decision depends more on their income.

Table 8 Binomial logistic regression for health insurance using aggregate measures

Constructs	B	S. E.	Wald	Sig.	Exp(B)
Household income more than RM3,500(1)	0.890	0.241	13.615	0.000	2.435**
Investment	0.151	0.044	11.678	0.001	1.163**
Self-esteem	0.091	0.051	3.159	0.076	1.095†
Risk-averse	-0.032	0.045	0.506	0.477	0.969
Future orientation	0.047	0.035	1.795	0.180	1.049
PCS	0.013	0.013	0.979	0.323	1.013
MCS	0.005	0.016	0.094	0.760	1.005
Constant	-4.378	1.348	10.549	0.001	0.013

Note: Reference group is household income less than RM3,500; $p \leq 0.001^{**}$; $p \leq 0.1^{\dagger}$

Those earning higher monthly household income above RM3,500 was significantly predicted to have purchased health insurance 2.5 times more likely ($\exp(B) = 2.487$; $p = 0.000$ and $\exp(B) = 2.435$; $p = 0.000$) than those earning monthly household income less than RM3,500. With constraint resources, individuals would less prefer to purchase health insurance. As purchasing health insurance is a protection against financial loss due to expected risk somewhere in the future, there is no instant gratification in purchasing health insurance.

Active investors were significantly found to have purchased health insurance policies 1.2 times (or 20%) more likely ($\exp(B) = 1.168$; $p = 0.001$ and $\exp(B) = 1.168$; $p = 0.001$) than not purchasing health insurance. This result showed that most of those who purchased health insurance also involved highly in investments. In a way, it reflected that those with surplus of income after considering the basic expenses may purchase health insurance.

Among the personality constructs, none of them were revealed as significant predictors for health insurance purchase however self-esteem was found to be marginally significant ($\exp(B) = 1.097$; $p = 0.083$; $\exp(B) = 1.095$; $p = 0.076$). As high self-esteem individuals are those that perceived themselves to be as good as others, it is presumed that they will more likely make good decisions. The logistic regression analyses marginally significantly predicted the likelihood of high self-esteem individual to purchase health insurance. These results if significant, may lead to a statement that purchasing health insurance is perceived as a good decision but this is not the case. The insignificant results suggested that the respondents may decide on other risk management methods such as risk avoidance, risk reduction or risk assumption rather than risk transfer.

The risk-averse personality resulted in insignificant negative influences on health insurance purchase for both models. High risk-averse or unwilling to bear much risk individuals seem not likely to purchase health insurance. They may have perceived that purchasing health insurance will incur financial risk to them. Nonetheless, as the negative influences were found to be insignificant, it is uncertain whether risk-averse individuals tend not to purchase health insurance.

In contrast, based on the results, it is also uncertain for risk tolerant individuals to purchase health insurance. It is believed that risk tolerant individuals who are willing to face high risks tend not to transfer risk to other party by purchasing insurance but instead are self-insured. Self-insurance as mentioned by Denton et al. (2004) among all are having long-term investments, savings, pension and incurring no debt. This can be justified with a study by Jacobs-Lawson and Hershey (2005) where financial risk tolerance of young working adults had a positive association with savings profiles. To conclude, the results of logistic regression models did not support nor deny the indirect proposition of the positive risk-averse effect on health insurance purchase from past studies.

Future orientation construct was another personality that was found to be positively predicting health insurance purchase however it is insignificant. Nevertheless, the explanation on the direction of prediction can assist in understanding its effect. Future-oriented individuals put an effort to imagine their life in the distant future thus they plan ahead to control their future life. As stated by Denton et al. (2004), planning for later life was most prevalent among those who took a future-time perspective. Thinking of the future requires individuals to gather necessary information to identify risks and the extent of specific risk. Health risks may be among the risks identified and in spite of the uncertainty, future-oriented individuals may be able to minimize the risks through various risk management methods. Even so, as what were found from this study, the logistic regression models controlled with income revealed non-significant influences of future-oriented individuals on their decision to purchase health insurance. Hence, the positive effect of future orientation on specific risk management method namely transferring risk through health insurance purchasing was not justified.

In terms of the predicting effect of health status on purchasing health insurance, none of the primarily health measures or aggregate health measures were found to be significant predictors for health insurance purchase. Nevertheless, the observed effects of health status are discussed. Two measures (role physical, RP and bodily pain, BP) from the three primarily measures for physical health showed slightly positive influences on health insurance purchase which would suggest higher physical health risks were more likely to predict non-purchase of health insurance. On the other hand, better physical health condition or lower physical health risks would more probably predict an individual to purchase health insurance however these are undetermined in this study. Physical functioning (PF) in contrast, gave slightly a negative insignificant influence on health insurance purchase. This may not be able to support health risk as a positive predictor for insurance purchasing. As stated by Chiappori et al. (2006) and Einav et al. (2010), a positive correlation exists between risk and the level of insurance coverage that characterized a market equilibrium with adverse selection. The aggregate measure of physical health (PCS) was positively however insignificant in predicting health insurance purchase. Hence, it's undecided on whether physical health risks would predict the purchase.

Two from three mental healths primarily measures that are social functioning (SF) and general mental health (MH) were found to be negatively and insignificantly predicting health insurance purchase. As for role limitations due to

emotional problems (RE), it was revealed as a positive predictor for the purchase and also not a significant predictor. The aggregate measure of mental health (MCS) was slightly positive in predicting purchasing of health insurance however was insignificant. These results make it unclear to decide on the possible direction of influence by mental health on the purchase.

Hence, deciding on the purchase of health insurance is not necessarily based on personality or health risks. Individuals may simply purchase health insurance as they have available resources despite facing with potentially low health risks. In contradict to that, individuals facing with potentially high health risks may ignore the need to purchase health insurance. As for the respondents who were employees in the public sector, free health care available to them was seen as a protection against financial risk. Purchasing health insurance for the lower income may be perceived as incurring financial risk.

5 Conclusion and Implication

Binomial logistic regressions revealed that income was the strongest predictor as compared to investment activity or self-esteem. Personality constructs and health risks were found to be not predicting health insurance purchase. Thus, it is concluded that the decision on protection against health risks by purchasing health insurance was not based on their health risks instead the decision depends more on the availability of monetary resources. Being active investors also reflected the surplus of income experienced in their life hence, surplus of income plays the main role in their decision to transfer risks to another party.

In view of this, employees faced with high health risks may end-up uninsured as opposed to their counter-part with low health risks. Uninsured individuals would have to bear the health cost using other risk management methods that are less costly. Bundorf and Pauly (2006) showed that those uninsured by health insurance appeared to have sufficient income and assets that they could buy coverage and still have adequate surplus to pay other expenses. Using the budgeting decision process enables them to avoid buying a health care policy.

As respondents are employees in the public sector, it also reflects high reliance on the government health service. Kunreuther and Pauly (2005) did mentioned that the choice of incomplete insurance coverage in private markets requires governmental intervention. Nonetheless, the insurance industry can tap on the needs of suitable insurance products focusing on the lower income with high health risks. Even with good public health services, the Malaysian public sector is still considered as a potential market for private health insurance industry.

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Aeronautical Excellence Through European Strategic Partnerships

Claudia Dobre

Abstract Research, Innovation and Technological Development (RI&TD) are essential elements in functioning and developing of industrialized countries, such as the EU Member States and the New Member States, paving the way for companies and their employment potential to push competitiveness to new levels. The Treaty of Lisbon serves as a guideline for implementing European policies and programs in all research fields, involving all member states. Aeronautical research in Romania started as part of the Applied Mechanics Institute of the Romanian Academy, founded in 1950 as the country's first research institution, having a department of aeronautical research. Since then, Romanian aeronautical research and industry grew constantly becoming one of Europe's most prestigious and cutting-edge provider of aeronautical services and products. In the recent years, ever since Romania was allowed to participate in the European research programs, Romanian aeronautical research and industry was always present having important contributions to European policies, strategies and visions. This paper follows the Romanian aeronautical research since its beginnings, making a parallel between Romanian and European research strategies and programs in the field of aeronautics. It describes the evolution of Romanian aeronautical companies in the European context and the participation in the development of major programmatic documents.

Keywords Romanian aeronautical research • Aeronautical programs • Aeronautical policies • Research and innovation • Flightpath 2015 • SRIA

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1 Introduction

Research, innovation and technological development contribute directly to the level of prosperity and well-being of individuals and society in general all over the world. The Treaty of Lisbon strengthens European Union (EU) action in the field of research with the aim of creating a European Research Area: “The Union shall have the objective of strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely, and encouraging it to become more competitive, including in its industry, while promoting all the research activities deemed necessary by virtue of other Chapters of the Treaties” (European Union 2012, pp. 38–39).

Why joint European Research? Why do not each country in Europe do its individual research? Research, Innovation and Technological Development are essential elements in functioning and developing of industrialized countries, such as the EU Member States and New Member States countries, paving the way for companies and their employment potential to push competitiveness to new levels. Research and development leading to great discoveries are offering support not only for competitiveness of industries, but also for the policies involving customer protection or environment protection.

The individual and collective well-being of citizens depend on the quality and relevance of research, innovation and development in various fields of science, such as medicine or telecommunication and IT, or ground, naval or in flight transportation systems. The discoveries in any of these fields have a great impact on the quality of day-to-day life of European citizens. To achieve the goal of meeting and exceeding the consumer satisfaction and protection, European industries must work together. The challenges of modern life are so complex and they require huge amount of human, financial and also time resources that almost no individual research team, laboratory or company is able to face on its own. Countries are facing difficulties in playing a leading role in many important areas of scientific and technological progress.

Innovation and development of breakthrough technologies in global environment can be achieved only by European and international cooperation, by aligning national and European policies and long term strategies, by networking and by increasing the mobility and exchanges of researchers and scientists and by sharing ideas. The main objectives of European programs on research, innovation and technological development are to strengthen the competitiveness of European economy, to strengthen the scientific and technological base of European industry, to encourage international cooperation, to solve major societal challenges and to sustain the development and implementation of EU policies.

Over several decades, starting in 1984 with the first Framework Program ever launched in Europe, either focused on technological research (FP6 and FP7) or focused on innovation and economic growth (H2020), EU programs have funded Europe’s best researchers and institutes, and produced large-scale structuring effects, scientific, technological and innovative impacts, micro-economic benefits,

and downstream macro-economic, social and environmental impacts for all EU Member States.

2 Aeronautical Research in Romania

The history of Romanian aviation starts with Traian Vuia demonstrating in 1906 that his flying machine “Vuia I” could take off from a flat surface, after accelerating for 50 m, then travel through the air for about 12 m, continues with the first flight of Aurel Vlaicu in June 1910 with his “Vlaicu I” plane, which rose from the ground to a height of 3–4 m, and after floating in the air for approximately 50 m, landed smoothly and safely, and then continues also in 1910, with Henri Coanda observing for the first time the phenomena that will bear his name “Coanda Effect”, taking us closely to the present with Elie Carafoli, one of the most prestigious Romanian engineer and aircraft designer, pioneering contributor in the field of aerodynamics and the founder of Bucharest Faculty of Aerospace Engineering. The birth of Romanian aviation started with them.

Aeronautical research in Romania started as part of the Applied Mechanics Institute of the Romanian Academy, founded in 1950 as the country’s first research institution, having a department of aeronautical research. Between 1950 and 1990, the department of Aeronautical Research has gone through many changes having different names and different forms of organization, from Institute of Fluid Mechanics in 1965 to The National Institute for Technological and Scientific Creation in 1978 and then in 1985 changing again its name to The Institute for Aerospace Scientific Research and Technological Engineering—ICSITAV, but always keeping its specialization in aeronautics and space fields. In 1990, a new reorganization in the aviation field took place and ICSITAV became the Aviation Institute, as the unique company for research and design in the field of aeronautics in Romania.

In 1991, the Aviation Institute was reorganized along with the whole aeronautical industry, resulting in the establishment of several research companies in the field of aeronautics and space. All the new created companies born from the old Aviation Institute: IMFDZ, STRAERO, INAV, ELAROM, SIMULTEC, CPCA, kept research and development activity in the field of Aeronautical Sciences, but with limited competences. Among these, only two -IMFDZ and ORCAS- have as object the complex research in the aeronautical and space field, which resulted in their merging in 1991. The new created company received the name of The National Institute for Aerospace Research “ELIE CARAFOLI”—INCAS which grew to be the leading research establishment in aerospace sciences in Romania (INCAS 2016).

3 Aeronautical Programs and Policies

Romania seeks to harmonize with the European Research, Innovation and Technological Development policies; aims to ensure connection of technical and scientific community objectives and the business environment in Romania with the specific science and technology priorities in the European Union and the dynamics of their evolution. At European level, the priorities of the Framework Programs are reflecting the major concerns of increasing industrial and economic competitiveness and the quality of life for European citizens.

The first research program in Romania addressing the aeronautic field was included in the National Program for Scientific Research and Technological Development 1996–2000 (called ORIZONT 2000). The research direction was Aeronautics and Space with a sub-direction for Aeronautics, Technologies for Space Exploration and Aerospace Medicine and Biology (Ministry of Research and Technology 1995). The budget for Aeronautics and Space direction was very low, 2% of the total ORIZONT 2000 program budget (National Authority for Scientific Research 2006).

Almost during the same period of time in Europe was in place the fifth Framework Program for Research, Technological development and Demonstration activities (1998–2002) with a total budget of 14,960 million euros. The topic “New perspectives for Aeronautics” was included under Key action “Competitive and sustainable growth” with a limited budget of 700 million euros (European Commission 2009).

Romanian participation in this FP5 was limited to eight projects with consortium partners coming from four different aeronautic organizations in Romania (European Commission 2016). This framework program was the first one Romania was allowed to participate. At that time Romania was candidate for the EU membership, and researchers and organizations from Romania were permitted participation in specific programs of FP5 under essentially the same conditions as those from EU Member States. Referring to Hungary, Romania and Slovakia the European Commission states “The three countries are all candidates for EU membership, and their participation in a wide range of EU programs is aimed at helping them to familiarize themselves with the workings of the Union” (European Commission 1999, p. 1).

Starting 2000 until 2006, PNCDI I—National Plan for Research, Development and Innovation, included the program called AEROSPATIAL, a program that will focus on space and aeronautics related research, and coordinated by ROSA—Romanian Space Agency. The total budget for PNCDI I was 1,242,287,878 lei (approx. 622,700,690 euros, calculated for an average annual exchange rate in 2000 of 1 euro = 1.995 lei), 75% from the state budget and the remaining 25% representing co-financing of participants in the research projects. Out of this total budget, AEROSPATIAL program had a budget of 53,034,008 lei (26,583,463 euros) representing 4.27% of total PNCDI I budget (National Authority for Scientific Research 2007a).

During 2002–2006, in Europe was functioning the Framework Program 6 (FP6), the European Community Framework Program for Research, Technological Development and Demonstration, with the objective of funding and promoting research. The main objectives of Framework Program 6 are of strategic importance: strengthen the scientific and technological bases of industry; encourage its international competitiveness and cooperation and promote research activities in support of European policies.

FP6 was made up of three main blocks of activities, the first one being Focusing and Integrating European Research, with seven priority thematic areas, the fourth one being Aeronautics and Space with a budget of over 1000 million euros (almost 6% of total FP6 budget) out of over 17,500 million euros the total budget of FP6 (European Commission 2002).

Compared to FP5, Romanian participation increased to 20 projects including 11 different organizations in the field of aeronautics in Romania (European Commission 2016). Back then, Romania was allowed to participate in FP6 as Associated Candidate Country along with Estonia, Hungary, Latvia, Lithuania, Poland and Slovenia.

Between 2007 and 2013, in Romania was in place PNCDI II—National Plan for Research, Development and Innovation II, whilst in Europe the main tool for supporting research was the seventh Framework Program for EU Research—FP7.

PNCDI II had a total budget of 15,000 million lei (approx. 4500 million euros, calculated for the average annual exchange rate for 2007, 1 euro = 3.3373 lei) and a budget for Space and Security (including aeronautics) of 432 million lei (approx. 130 million euros) (National Authority for Scientific Research 2007b).

FP7 had a total budget of over 50,000 million euros (European Commission 2007), representing a substantial increase compared with FP6, being a reflection of the high priority of research and innovation at European level. FP7 is a key tool for Europe in order to maintain its leadership in the global knowledge economy and also to respond to Europe's needs in terms of competitiveness and job markets.

FP7 was structured in five major Specific Programs: Cooperation, Ideas, People, Capacities and Nuclear Research. The Cooperation Program was the core of FP7 representing two thirds of the total budget. It enables collaborative research across Europe and other partner countries, through research projects by transnational consortia of industry, research institutions and academia. Research was carried out in ten key thematic areas, the seventh being transport (including aeronautics) with a budget of 4160 million euros (European Commission 2007).

Under FP7 AAT (Aeronautics and Air Transport) calls, 13 aeronautical organizations from Romania participated in 39 projects over the full 7 years of the program (European Commission 2016). Taking a look back at Romanian participation in previous framework programs, this is a considerable increase being a reflection of not only the importance and priorities set by research institutes in Romania in participating in European programs, strategies and visions, but this is also a result of many EU projects supporting the integration and participation of Eastern European countries in aeronautical research programs. Romania was involved in this kind of coordination and support actions aiming at supporting

aeronautical SMEs in advancing their technology base and their competitiveness through participation in European RTD projects (Support for European Aeronautical SMEs—AeroPortal project in 2007), at establishing a well-coordinated network among the research organizations of the Central—European states for sharing the know-how, the latest research results and to be able to find the contact more easily with the European aeronautical industry (Central European Aeronautical Research Network—CEARES project, 2008); at increasing the participation of Eastern European regions in pan-European research activities through Horizon 2020 in the field of Aeronautics and Air Transport (Bridging East West for Aerospace Research—BEAWARE project in 2013).

“Clean Sky” Joint Technology Initiative, launched under FP7 program (2008) involves 12 founding partners and has a budget over 7 years of 1.6 billion euros, involving 86 organizations from 16 countries. Also this time Romania is involved as associate member, the only one in the Eastern Europe, contributing to the most ambitious aeronautical research program ever launched in Europe. The main objectives of Clean Sky program are to develop innovative technologies, to increase the environmental performances of airplanes and air transport, to reduce external noise and CO₂ emissions by 50% through drastic reduction of fuel consumption, to reduce the NO_x emissions by 80%, to develop and implement green product life cycle: design, production, maintenance and disposal/recycling (CleanSky 2016).

At the beginning of 2014, the European Commission launched the eighth Framework Program called Horizon 2020, spanning over 7 years, with a budget of nearly 80 billion euros. It aims to propel the European Union as a leading economy, producing world-class science and innovation to ensure Europe’s global competitiveness (European Commission 2014). An overview of all the total research budgets and aeronautical budgets in Europe and in Romania for the last 20 years, starting with FP5 and ORIZONT 2000 are presented in the Table 1.

A comparison between the Romanian participation in the three European Framework Programs is shown in the Fig. 1, where the increasing trend can be very well observed.

Also, the total budgets for Romanian research programs and European research programs, Romanian aeronautical programs and European aeronautical programs are compared in Fig. 2.

Table 1 Budgets for European/Romanian research programs and for the aeronautical programs

Budget (in million euros)	Program		
	FP5/ORIZONT 2000	FP6/PNC DI I	FP7/PNC DI II
Total budget for EU programs	14,960	17,500	50,000
Budget for EU programs on aeronautics	700	1000	4160
Total budget for Romanian programs	No information	623	4500
Budget for Romanian programs on aeronautics	No information	27	130

Source: Projects and Results Service, http://cordis.europa.eu/projects/home_en.html

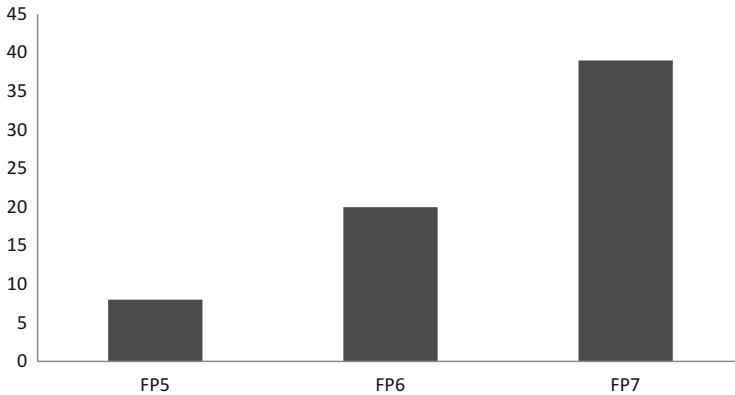


Fig. 1 Romanian participation in FP5, FP6, FP7 (including Clean Sky). Source: Projects and results service, http://cordis.europa.eu/projects/home_en.html

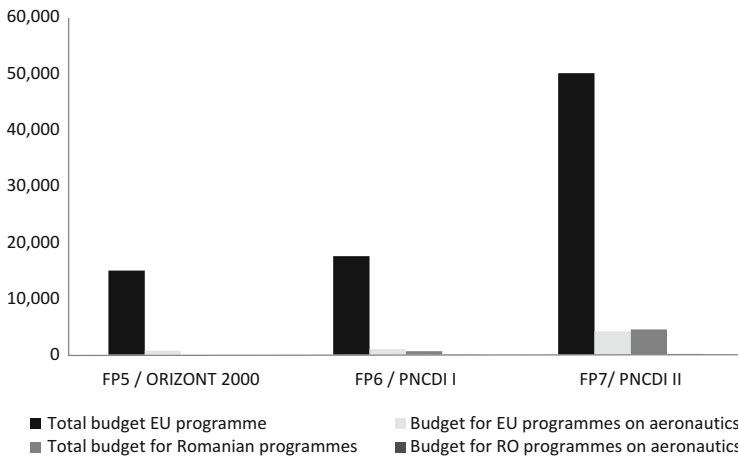


Fig. 2 Total budgets for European/Romanian research programs and for aeronautical programs. Source: Projects and results service, http://cordis.europa.eu/projects/home_en.html

4 Romania in European and International Groups

In parallel with the participation in all these programs, Romania is trying to find its way through the influential aeronautical groups and associations at European level, groups that have a strong voice and that are designing all programmatic documents, visions and strategies in the European field of aeronautics.

The increase of air traffic, conducting to more noise and more fuel consumption, pollution, delays, unreliable schedules, crowded facilities, congestion has brought the aviation community realizing that the forecasts for the future indicate

fundamental problems, if these issues will not be properly addressed. In 2000, Commissioner Philippe Busquin created a Group of Personalities that had the mission to design a vision for the future of aeronautics over the medium to long term. Their report was called “European Aeronautics—a Vision for 2020” and it was published at the beginning of 2001.

The report recommended the creation of an Advisory Council that will develop a Strategic Research Agenda. This council will bring together all the stakeholders (industry, research establishments, academia, airlines, airports, regulators, IATA, EUROCONTROL, and European Commission) in order to collaborate and explore the technologies that will lead to the realization of the goals of the Vision 2020. The Advisory Council for Aeronautics Research in Europe (ACARE) was founded in June 2001 bringing together representatives of Member States, European Commission and various stakeholders (ACARE 2004).

Since 2010, Romania is represented in ACARE Member States Group, having contribution to the next Strategic Research and Innovation Agenda launched in 2012. Romania, through the National Institute for Aerospace Research “Elie Carafoli”—INCAS, is also full member in the only Association of European Research Establishments in Aeronautics (EREA), association representing the “voice of research” in the field of aviation in Europe.

EREA was created in 1994 having as main objectives to promote and represent the joint interests of its members; to intensify the cooperation between its members, aimed at further integration of their activities in the field of civil, military and space-related aeronautics; to improve and intensify the cooperation of EREA and its members with third parties in the field of aeronautics; to facilitate the ultimate goal of the Members of an integrated management of joint activities, thereby contributing to Europe’s role as a global player in aeronautics; to promote research in aviation to the various European stakeholders, to bridge fundamental research to industrial application in order to ensure future growth in Europe, to be proactive through joint initiatives and joining capabilities and resources, to position EREA as the best offer for innovative research to industry, governments and European institutions in the field of aviation, to expand activities in the field of safety and security with the emphasis on all aviation related aspects (EREA 2015).

Since its beginnings in EREA, Romania has been involved in all activities, being contributor to all major programmatic documents and programs, like EREA vision for the future—Towards the future generation of Air Transport System, EREA ATS Study Phase 2: Towards ATS 2050, Future Sky—a joint research initiative in which development and integration of aviation technologies is taken to the European level, program included in Horizon 2020 and with a total contribution from European Commission of about 100 million euros.

International Forum for Aviation Research (IFAR) is the world’s only aviation research establishment network, and Romania is among the founding members. IFAR brings at the same table 26 nation members represented by national research organizations in the field of aviation and universities active in aviation research, all over the world, from NASA in USA to INCAS in Romania, from research institutes in Russia, Brazil, Portugal, China, Czech Republic, South Korea, Germany, Japan,

Italy, France, Netherlands, Australia, South Africa, Canada, India, Sweden, Spain, Belgium, Finland, Poland to universities in Turkey, Austria, Hungary. IFAR was created in 2010 and its primary objectives are to connect the global aviation research community worldwide, to serve as a single point of information exchange and communication, to develop among its members a common understanding of current challenges faced by the global aviation research community; to develop views and recommendations, to develop common research strategies for the future of aviation and to facilitate opportunities for networking, collaborations and partnership. IFAR focus is on creating a non-competitive aviation research and development environment, related to common technical challenges and interests. IFAR members are also concerned about the young generation and they are implementing activities related to the exchange on education and promotion of young scientists and researchers by organizing videoconferences, forums for the young researchers and once per year IFAR Young Researchers Conference, in parallel with the IFAR Summit, annual summit reuniting all nation members (IFAR 2015).

5 Conclusions

Flying was always mankind's most desired dream. Nowadays aeronautics and air transport is an essential sector for the European Union and its Member States, offering jobs for millions of Europeans, connecting people all over the world, delivering goods for our daily life. Public and private stakeholders provide world leadership by ensuring suitable and sustainable mobility of passengers and freight; generating wealth and economic growth; significantly contributing to the balance of trade and European competitiveness; providing highly skilled jobs and innovation; fostering Europe's knowledge economy through substantial R&D investment; contributing in many ways to global safety, security and self-reliance (European Union 2011).

Aeronautical sector is requiring huge amount of economic, financing and human resources (Clean Sky—1.6 billion euros for 7 years) to develop major projects, dealing with breakthrough technologies, novel architectures and configurations enabling changes in environmental and economic performances. The huge involvement of human and financing resources could not be undertaken by countries on their own, thus the future of aeronautics is depending on a great extent to the European cooperation.

If before 2007, when Romania was accepted as member of the European Union, the participation of Romanian organizations in the European projects was very limited, after 2007, taking advantages of massive experience gained especially in FP6 and beginning of FP7, and through the participation in coordination and supporting actions aiming at increasing participation of Eastern European Countries in European research programs, Romania was on an ascending trend in relation with the aeronautical European research, participating in more and more research

projects, and being member in important associations and groups, making its opinion count in the field of European aeronautics and air transport.

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Why Can't We Make It? The Cardinal Business Sins of Domestic Companies in a Transitional Economy

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Abstract This analysis is focused on the business practices of companies in a transitional economy (Republic of Macedonia) including different ways of financing in early stage of development, alternative ways of financing, start-up investments, working capital financing, market research; market orientation; implementation of elements of marketing strategy. The paper is developed on two general hypotheses: a proactive market approach is significantly beneficial for the financial performance of the companies and, appropriate ways of financing are crucial for survival and growth. The analysis was performed with IBM SPSS19. The results show that these companies have many limitations in the analyzed activities: lack of usage of different ways of financing; inappropriate use of working capital financing; illiteracy concerning financial and investment management; occasional implementation of market research; medium level of market orientation; flaws in several elements of the marketing strategy. The analysis reveals a connection of consumer research, higher level of market orientation and implementation of certain elements of marketing strategy with profitability. This paper offers functional and social implications: elimination of the perceived weaknesses, thus creating the possibility for further growth and development. The results can also provide base and support for research in other transitional economies.

Keywords Domestic companies • Transitional economy • Market research • Market orientation • Marketing strategy elements • Sources of finance • Financial performance

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1 Introduction

Development of domestic companies in Macedonia, as a transitional economy, should be one of the key priorities at national, regional and local level, because they are one of the key factors for successful completion of the transition process. Creation of a wide network of successful domestic companies and their economic integration with major business systems is a necessity for development of the industry and economy as a whole.

In companies in transition economies, we can generally observe changes that occur under the influence of the change of the economic system and business environment in which they work, regardless of their size (Kotler 1999). However, there are some important factors that influence the development of all companies, which can be of internal and external nature. One of the most important business activities that contribute to companies' growth and development, besides innovation, is marketing.

The structure of the business sector in Macedonia is predominantly comprised of domestic enterprises in the category of small and medium enterprises, and the proportion of SMEs in the total number of enterprises is about 99.8%, with a predominance of micro and small enterprises (European Commission 2011). This means that the implementation of marketing activities is hugely influenced by the views about marketing of the central executive manager or owner. This poses a certain risk of underestimating the importance of marketing activities.

Financial management, and usage of bank products and other ways of financing are also some of the deficiencies that are present during the everyday working, but also during decision making processes in the domestic companies in Macedonia. McMahon et al. (1993) defines financial management established on activating and using sources of funds. Financial management is concerned with raising the funds needed to finance the company's assets and activities, and with ensuring that the funds are used effectively and efficiently in achieving the company's goal.

Modern financial management that is missing in the companies in transition economies includes planning, controlling and decision making tasks implementation. Some of them are various types of financing and how to decide which one is more appropriate for the company. Also, there are alternative ways in which finance raised may be used in a company and how to select those that are likely to prove most profitable (Meredith 1986). Maybe one of the most important things is ensuring that finance entrusted to specific activities realizes the returns that were anticipated on its allocation to them.

When top managers are surveyed, they often list their business priorities as: finance, sales, production, management, legal and people. It can be noted that marketing is missing from the list. Regardless of the indications and evidence that marketing is a key element for success in operations, the domestic companies in Macedonia have shown a negative tendency regarding the application of marketing and embracing a culture of marketing concept of operations. Many of the managers or owners of the companies are so-called IP managers, that don't like

marketing, but think that it is important to promote their products and services, and see marketing mainly as promotion or sales (Jovanov Marjanova 2009).

Financial management in a company operating in transition economy must be concerned with what is going to happen in the future. Its purpose is to look for ways to maximize the effectiveness of financial resources (English 1990). Financial management in a company in transition economies can be viewed in terms of three specific objectives: profitability, liquidity and growth (Ross et al. 1999). Profitability management is concerned with preserving or growing a business's income through consideration to cost control, pricing policy, sales volume and capital expenditures. This objective is also consistent with the goal of most businesses. Liquidity management, on the other hand, guarantees that the business's responsibilities (wages, bills, loan repayments, tax payments, etc.) are paid. The owner wants to avoid any loss to a business's credit rating, due to a momentary incapability to meet obligation by: anticipating cash shortages, maintaining the confidence of creditors, bank managers, pre-arranging finance to cover cash shortages. Concerning growth, the manager or the owner of the company should be concerned with current and long-term growth objectives. In making decisions related to financial management, the owner-manager or the financial manager should remember objectives of financial management and balance between liquidity, profitability and growth, a process that very small number of owners or financial managers in transitional economies are taking into consideration. Furthermore, many marketing activities have shown positive effects on business profitability and growth not only in developed, but in transitional economies as well, such as: market orientation, market research, branding, price and distribution strategies, product innovation, marketing planning, etc. (Kotler and Keller 2009).

Market research can have many positive outcomes for the company, seen through increase in market share, modification in the methods of sale, distribution or promotion, keeping track of customer satisfaction and retention, innovation in the production process or in the product portfolio, etc. The number of domestic enterprises in Macedonia who invest in research and development (R&D) as well as the amount of funds invested are very small. In general, Macedonia belongs to the group of modest innovators with a performance well below the EU27 average, and the following is observed: there is weak export of service based on knowledge, low profits from patents and licenses from abroad, large decline in applications for registration of patents and trademarks/brands in the country, weak financial support, little protection of intellectual rights, etc. (European Commission 2011).

In Republic of Macedonia, some of the main reasons for undertaking innovative activities by domestic companies include: improvement of quality of existing products (16%); new production lines (13%), access to new markets and dealing with the existing (13%); decrease in production cost (11%); an improved way of operation (10%); diversification (8%) (European Agency for Reconstruction 2004).

In regard to marketing activities, domestic companies show several weaknesses (Jovanov Marjanova and Stojanovski 2012): there is a tendency to perform most of the business activities internally; only direct competitors are perceived as competition; business clusters are inoperative; the focus is primarily on the domestic or

regional markets; the most used elements for development of competitive advantage are the price and the product; there is dominant use of traditional mass marketing; preferred structure of organization is the hierarchy top to bottom mode. This situation of opposite realities emphasizes the fact that companies should implement the marketing concept as a business philosophy and not only as a function, even in transitional economies.

Financial markets in transition are often very limited and underdeveloped and the market structure is highly concentrated with banks often achieving only low levels of efficiency. The banking sector is also relatively inexperienced in private sector lending, and project finance in particular, and thus lacks organizational capabilities to finance relatively new companies (Hourvouliades and Davcev 2014). That is why owners and managers, predominantly in small and medium enterprises must be well acquainted with all the capabilities for external financing, and know how to manage the company from financial perspective.

2 Literature Review

Many studies prove the connection of certain marketing activities like market research, level of market orientation and formal (written) creation of marketing strategy with better business performance, i.e. increased profitability and market share growth. Research studies provide evidence of not only short-term benefits, but long-term positive effects as well.

Market research includes and analyses several different areas of interest to the company, and provides answers about the market (size, growth potential, needed market activities, law regulations, technological and socio-economic trends); the competitors (direct and indirect competition, their size and number, their strategies, quantities of sales, distribution channels); the customers (demographics, geographic area, psychographics, size of the target group, profile of the competitors customers); the trends (changes in population, changes in preferences, changes in law regulations, changes in political or economic situation) (Hague 2006). Market research enables the companies to gather and transform data into useful information, which further explain the complexity of the target market and consumer preferences. Market research is proven to create loyal customers, which are the key to business success, and the companies that have the information about these customers, are the ones that dominate the market (Kelly 2002).

Moreover, the level of market orientation of a company has been found to impact business activities in different areas. Research suggests that higher level of market orientation has direct and positive correlation and impact on profitability, increased customer satisfaction and retention (Krepapa et al. 2003). Also, studies have shown direct connection of high level of market orientation with improved and closer relations with distributors (Day 1994). Market orientation, as research suggests, is important for increase in activities of social responsibility that are one of the key

elements of modern marketing concept as business philosophy (Narver and Slater 1990).

In today's turbulent business environments, the companies should implement the marketing concept and strategy not merely at the level of a function, but as a guiding business philosophy, through changes in their activities, such as organization of the company according to market segments instead of products; transformation of the strategy from mass marketing to micro marketing; changes in the way of thinking about customers in every employee, not only in the marketing sector; shift in focus from profit from sales to long term relationship with customers; changes in promotion from traditional to integrated marketing communication; shift in focus from financial results to marketing results as well (Jovanov Marjanova et al. 2016). The strategy of the company is an obligation of the management to look in the future of the markets; to decide which products or services are worthy of investment and which should be excluded from the portfolio; when and where to use aggressive promotion; to give priority to certain activities from the business portfolio; to decide about innovation. The marketing strategy includes several different elements and it starts with the vision, mission and the goals which are the base for incorporation of other elements of the marketing strategy, such as segmentation, targeting, positioning and development of the marketing mix (Kotler and Armstrong 2007). Planned inclusion of these elements in the marketing strategy can give a clear picture of the future business steps and help in organizing the activities in coordination with the wants and needs of the target market.

Every business can be defined in accordance with three dimensions: technology (the product/service); customer groups and customer needs (Kotler and Keller 2009). Changes in one or all of these dimensions can foster company's further development and growth. According to Porter (2008), the differences in profitability between companies usually increase due to different strategic positions of the companies on the market or because of the effects of the level of uniqueness on a given market. This means that companies should have a proactive market approach and continuously evaluate the market in search for changes and new opportunities. One way of creating competitive advantage is to use some of the well known marketing strategy elements such as (Porter 2008; Kotler and Keller 2009): development of business philosophy, vision and mission, SMART (specific, measurable, achievable, realistic and time-defined) goal setting, situational analysis, market segmentation, etc. When using these elements, the company can more easily evaluate the market, the competitors, its own strategy, its market position and future possibilities, which will enable it to complete the process of strategic and tactical planning.

The financial capability of a company, different ways of financing available for companies in early stage of development, possibilities for alternative ways of financing, start-up investments, cash flow projections, working capital financing are some of the problems that are facing small and medium companies in their ability to secure sufficient cash flow and working capital to remain profitable. This has been a recurring theme in the small business literature since 1970s (Carrington and Aurelio 1976; Carland and White 1980; Ross et al. 1999; Kennedy et al. 2006).

Financial theory and practice are occupied issues such as: preserving capital, maintaining liquidity, bankruptcy, and so on. The 1950s were marked by paying attention to the analytical approach to the process of financial decision making. Today, the emphasis on financial management is facing toward company where the manager brings difficult financial decisions under the influence of external and internal factors by using the strategic planning (Kennedy et al. 2006).

Generally speaking, there are three categories of choices the financial manager of a company must make, regardless of a size and a market where it is operating: the budgeting decision, the bankrolling decision, and decisions involving short-term finance and concerned with the net working capital (Ross et al. 1999). Similarly, Walker (1988) also indicated three main financial decisions including the investment decisions, financing decisions and dividend decisions. Another way of identifying the major choices of financial management is to look at the balance sheet of a company. There are many decisions concerning bits and pieces on the balance sheet.

A manager in a company can define the main zones of financial management including planning (cash planning and control, asset-required forecasting, profit planning), investment decision-making, working capital management (cash, receivable and inventory management) and sources of financing (short-term and long-term financing, intermediate financing and going public) (Walker and Petty 1978). Barrow (1988) listed the tools of financial analysis, including business controls; measure of profitability; control of working capital (or liquidity); control of fixed assets, cost; volume; pricing and profit decisions, and business plans and budgets.

Financial management focuses on working capital management and tools of financial management such as ratio analysis, profitability measures and bread-even analysis. Moreover, financial manager or the owner of a small and medium company should emphasize the objectives of financial management including liquidity, profitability and growth (English 1990). Therefore, the specific areas that financial management should be focused on are liquidity management (cash flow budgeting, working capital management), profitability management (profit analysis, profit planning), and growth management (capital resource planning and decisions).

3 Methodology and Hypotheses

This research is a part of an ongoing project, entitled “Strengthening the business capacity of women entrepreneurs in Republic of Macedonia, as a developing country”. This paper presents information about some of the ongoing marketing and finance practices by domestic companies in Republic of Macedonia, as a transitional economy. The research focuses on verifying the importance of the implementation of certain marketing activities (market research, market orientation and formal, i.e. written marketing strategy) in the strategic planning process, and their positive impact on business performance, i.e. profitability, as well as the

current practice of certain ways of financing and financial analysis and the effects of this activities.

The methodology used in this study includes quantitative and qualitative research methods and data was gathered from secondary (academic and science research papers, academic books, official web pages of national institutions and organizations) and primary sources (structured questionnaires about attitudes measured on a 5-point Likert scale, and a follow-up interview with the managers/owners).

The research was performed in 25 domestic companies from the production sector, and the analysis—with IBM SPSS19 on the basis of descriptive and deductive statistics. Business profitability was measured on a subjective scale, which has high level of convergence with objective scales for measuring business performance (Dawes 1999).

In regard to the aforementioned literature review, and the intent to offer adequate information about present marketing practices in domestic companies in a transitional economy, this study examines the processes of implementation of market research, market orientation and marketing strategy in domestic entrepreneurial companies in Republic of Macedonia. The aim is to help the managers and owners of the companies to understand the benefits of these activities and to move forward to more proactive market approach, which could lead to further development and growth of the companies.

Based on the literature review and the aim of the paper, we test two main hypothesis:

1. A proactive market approach is beneficial for the business, i.e. financial performance of the companies (by rejecting the opposite H_0 hypothesis):
 - (a) Implementation of detailed market research before the start of the business has a direct positive effect on profitability.
 - (b) Continuous implementation of market research while operating the business has a direct positive effect on profitability.
 - (c) Higher level of market orientation has a direct positive effect on profitability.
 - (d) Usage of marketing strategy elements is positively correlated with profitability.
2. Appropriate ways of financing are crucial for survival and growth.

4 Findings and Discussion

The research was done in 25 domestic companies from the food production sector, and because the proactive market approach is not limited to large companies, the sample included micro, small, medium-sized and large companies (Table 1), where size is determined primarily by number of employees.

Table 1 Size of the domestic companies included in the research

Size of companies		Frequency	Percent
Valid	Micro	3	12.0
	Small	7	28.0
	Medium	8	32.0
	Large	7	28.0
	Total	25	100.0

Source: Authors research

Table 2 Descriptive statistics of companies profitability

Descriptive statistics		Companies' profitability mean	
N	Valid	25	
	Missing	0	
Mean		5.28	
Minimum		3	
Maximum		9	
Companies profitability current state		Frequency	Percent
Valid	Bad	6	24.0
	Moderately bad	6	24.0
	Moderately good	8	32.0
	Very good	3	12.0
	Extremely good	2	8.0
	Total	25	100.0

The descriptive statistics in Table 2 show the mean and state of companies' profitability measured on a 11-point subjective scale, and it can be noted that the mean of the reported profitability is 5.28 (good), where 32% of the companies report moderately good profitability, by 24% report bad and moderately bad profitability, and only 12%—very good and 8%—extremely good profitability.

The primary research analyzed the practice of implementation of market research as a part of the strategic process in these companies. Therefore, the analysis measured the attitudes of the managers/owners about implementation of detailed market research before the start of the business and continuous implementation of market research while operating the business, on a 5-point Likert scale (1—I totally disagree and 5—I totally agree). The descriptive statistics (Table 3) show that 40% (cumulative percent) of the managers disagree that they implement detailed market research before the start of the business, while other 40% (cumulative percent) agree that they implement detailed market research before the start of the business. With regards to the continuous implementation of market research 44% (cumulative percent) disagree, while 36% (cumulative percent) agree that these activities are included in the strategic process (Table 3).

When we analyze these responses by companies' size, we can see that there is a huge difference in the answers given by micro and small companies versus medium and large companies. For example, from Table 4 we can see that most of the micro and small companies totally disagree that they implement market research activities

Table 3 Descriptive statistics of implementation of market research

		Frequency	Percent	Cumulative percent
Implementation of detailed market research before the start of the business				
Valid	I totally disagree	7	28.0	28.0
	I disagree	3	12.0	40.0
	I nor agree nor disagree	5	20.0	60.0
	I agree	6	24.0	84.0
	I totally agree	4	16.0	100.0
	Total	25	100.0	
Continuous implementation of market research while operating the business				
Valid	I totally disagree	6	24.0	24.0
	I disagree	5	20.0	44.0
	I nor agree nor disagree	5	20.0	64.0
	I agree	5	20.0	84.0
	I totally agree	4	16.0	100.0
	Total	25	100.0	

before or during business operations, while both medium-sized and large companies in large part agree and totally agree that they implement detailed market research before the start of the business, but they differ in the continuous implementation during business operations, where half of the medium-sized companies nor agree nor disagree, but large companies agree and totally agree by 42.9%.

This means that implementation of market research activities by domestic companies could be dependent of the size of the company and further research is needed to analyze the factors of influence that have led to this situation. In addition, the deductive statistics examines the relationship between implementation of market research before and during business operations on one, and profitability on the other side, as well as, the direct impact on profitability. Pearson correlation (Table 5) shows strong relation between both of the activities (implementation of detailed market research before the start of the business and continuous implementation of market research during business operations) with profitability, and a strong correlation between the two activities, which could mean that the companies that implement market research before the start of the business are more likely to continuously implement market research after the business has started working.

In order to see if these activities have a direct impact on profitability, testing on the basis of simple and multiple linear regression was conducted. The results in Table 6 (according to the rule of decision-making: $t > t_{df;\alpha}$) reveal that in the case of implementation of detailed market research before the start of the business, there is a direct positive effect on profitability.

Likewise, from Table 7 we can notice that continuous implementation of market research while operating the business shows a direct positive impact on profitability.

On the base of the strong impact of market research activities before and during business operations on profitability, we can state that medium-sized and large

Table 4 Descriptive statistics of implementation of market research by companies' size

		Implementation of detailed market research before the start of the business							Total
		I totally disagree	I disagree	I nor agree nor disagree	I agree	I totally agree	Total		
Size of companies	Micro	Count	2	0	1	0	0	3	
		% within companies' size	66.7	0.0	33.3	0.0	0.0	100.0	
	Small	Count	5	2	0	0	0	7	
		% within companies' size	71.4	28.6	0.0	0.0	0.0	100.0	
	Medium	Count	0	1	3	4	0	8	
	% within companies' size	0.0	12.5	37.5	50.0	0.0	100.0		
Large	Count	0	0	1	2	4	7		
	% within companies' size	0.0	0.0	14.3	28.6	57.1	100.0		
Total	Count	7	3	5	6	4	25		
	% within companies' size	28.0	12.0	20.0	24.0	16.0	100.0		
		Continuous implementation of market research while operating the business							Total
		I totally disagree	I disagree	I nor agree nor disagree	I agree	I totally agree	Total		
Size of companies	Micro	Count	3	0	0	0	0	3	
		% within companies' size	100.0	0.0	0.0	0.0	0.0	100.0	
	Small	Count	3	4	0	0	0	7	
		% within companies' size	42.9	57.1	0.0	0.0	0.0	100.0	
	Medium	Count	0	1	4	2	1	8	
	% within companies' size	0.0	12.5	50.0	25.0	12.5	100.0		
Large	Count	0	0	1	3	3	7		
	% within companies' size	0.0	0.0	14.3	42.9	42.9	100.0		
Total	Count	6	5	5	5	4	25		
	% within companies' size	24.0	20.0	20.0	20.0	16.0	100.0		

Table 5 Correlations between implementation of market research and profitability

Correlations		Profitability	Implementation of detailed market research before the start of the business	Continuous implementation of market research while operating the business
Profitability	Pearson correlation	1	0.917**	0.849**
	Sig. (2-tailed)		0.000	0.000
	N	25	25	25
Implementation of detailed market research before the start of the business	Pearson correlation	0.917**	1	0.873**
	Sig. (2-tailed)	0.000		0.000
	N	25	25	25

**Correlation is significant at the 0.01 level (2-tailed)

Table 6 Regression estimates (model 1)

	Dependent variable: profitability
Constant	1.733*** (0.361)
Implementation of detailed market research before the start of the business	1.232*** (0.112)
N	25
R square	0.840

***, **, * represent significance level at 1%, 5%, 10%

Table 7 Regression estimates (model 2)

	Dependent variable: profitability
Constant	1.936*** (0.485)
Implementation of detailed market research before the start of the business	1.177*** (0.153)
N	25
R square	0.720

***, **, * represent significance level at 1%, 5%, 10%

companies are in a better position in regard to these activities, than small and micro companies. Having in mind the significant effects on profitability, the owners of the micro and small companies should seriously consider to put more focus on

Table 8 Mean value of market orientation

Statistics		CA	RCD	OC	IFC	MO
N	Valid	25	25	25	25	25
	Missing	0	0	0	0	0
Mean		3.31	3.62	3.68	3.63	3.56

implementation of market research activities before the start of the business, and continuous implementation of market research during business operations.

Beside the analysis of market research implementation, the study also included analysis of the level of market orientation (MO) in the companies, measured on a 5-point Likert scale (1—never/I totally disagree and 5—always/I totally agree) about the attitudes of the managers/owners of the companies concerning several activities, i.e. components that define market orientation, such as consumer analysis (CA), reaction to consumer demands (RCD), orientation towards competitors (OC) and inter-functional coordination (IFC) (Narver and Slater 1990). The results show that market orientation of the companies is on a medium level, with mean values of 3.31–3.68 (Table 8), which means that they implement these activities only occasionally.

Additionally, the analysis of each of the components of MO—CA, RCD, CO and IFC (Table 9), shows that micro and small companies implement them on a lower level than medium-sized and large companies, answering mostly with rarely or sometimes when questioned about these activities. In the contrary, medium-sized and large companies have answered with often or always for all of the determinants. This is the situation for all of the components of MO, but is especially expressed in the process of consumer analysis (CA).

When testing the relation of profitability with the four components CA, RCD, CO, IFC, and of MO, the results have shown that each of the components and MO have a direct positive correlation with profitability (Table 10).

In addition, the linear regression analysis (Table 11) demonstrated a significant impact of market orientation on profitability, which means that with higher level of implementation the companies should expect higher profits.

The paper also includes the analysis of development of certain elements of marketing strategy, such as how often do these companies develop business philosophy, values and vision and mission, as well as, the practice of situational analysis, SMART goal setting and market segmentation (Table 12). The descriptive statistics have shown that most practiced element of marketing strategy is development of SMART goals, with mean value of 3.44, which means that this element is practiced only occasionally. The rest of the elements are rarely, or never developed by these companies.

The analysis shows flaws in the practice of different elements of marketing strategy. For example, from Table 13 it can be seen that 72% of the companies do not develop corporate philosophy; 68% of them never develop corporate values; corporate vision and mission are defined only by 4% always, while 32% never define these statements; the practice of situational analysis and SMART goal setting is somewhat better with 36% answering that they often implement these elements;

Table 9 Implementation of the determinants of MO by companies' size

Crosstabulation			Rarely	Sometimes	Often	Always	Total	
CA								
Size of the company	Micro	Count	1	1	1	0	3	
		% within companies' size	33.3	33.3	33.3	0.0	100.0	
	Small	Count	3	1	0	0	7	
		% within companies' size	85.7	14.3	0.0	0.0	100.0	
	Medium	Count	0	2	4	2	8	
		% within companies' size	0.0	25.0	50	25.0	100.0	
	Large	Count	0	1	3	2	7	
		% within companies' size	14.3	14.3	42.9	28.6	100.0	
Total		Count	4	5	8	4	25	
		% within companies' size	32.0	20.0	32.0	16.0	100.0	
RCD								
Size of the company	Micro	Count	1	1	1	0	3	
		% within companies' size	33.3	33.3	33.3	0.0	100.0	
	Small	Count	3	3	1	0	7	
		% within companies' size	42.9	42.9	14.3	0.0	100.0	
	Medium	Count	0	1	5	2	8	
		% within companies' size	0.0	12.5	62.5	25.0	100.0	
	Large	Count	0	1	3	3	7	
		% within companies' size	0.0	14.3	42.9	42.9	100.0	
	Total		Count	4	6	10	5	25
			% within companies' size	16.0	24.0	40.0	20.0	100.0
OC								
Size of the company	Micro	Count	1	1	1	0	3	
		% within companies' size	33.3	33.3	33.3	0.0	100.0	
	Small	Count	2	4	1	0	7	
		% within companies' size	28.6	57.2	14.3	0.0	100.0	
	Medium	Count	0	2	2	4	8	
		% within companies' size	0.0	25.5	25.0	50.0	100.0	
	Large	Count	1	0	1	5	7	
		% within companies' size	14.3	0.0	14.3	71.5	100.0	

(continued)

Table 9 (continued)

Crosstabulation		Rarely	Sometimes	Often	Always	Total	
Total	Count	4	7	5	9	25	
	% within companies' size	16.0	28.0	20.0	36.0	100.0	
IFC							
Size of the company	Micro	Count	1	1	1	0	3
		% within companies' size	33.3	33.3	33.3	0.0	100.0
	Small	Count	2	4	0	1	7
		% within companies' size	28.6	57.1	0.0	14.3	100.0
	Medium	Count	1	2	0	4	8
		% within companies' size	12.5	25.0	0.0	50.0	100.0
	Large	Count	1	2	0	4	7
		% within companies' size	14.3	28.6	0.0	57.1	100.0
Total	Count	5	9	2	9	25	
	% within companies' size	20.0	36.0	8.0	36.0	100.0	

Table 10 Correlations between implementation of CA, RCD, OC, IFC and MO and profitability

Correlations		Profitability	CA	RCD	OC	IFC	MO (mean value)
Profitability	Pearson Correlation	1	0.672**	0.687**	0.677**	0.519**	0.677**
	Sig. (2-tailed)		0.000	0.000	0.000	0.008	0.000
	N	25	25	25	25	25	25

**Correlation is significant at the 0.01 level (2-tailed)

Table 11 Regression estimates

	Dependent variable: profitability
Constant	0.507*** (1.123)
Implementation of detailed market research before the start of the business	1.343*** (0.304)
N	25
R Square	0.458

***, **, * represent significance level at 1%, 5%, 10%

Table 12 Mean values of different marketing strategy elements

Statistics	Development of corporate philosophy	Development of corporate values	Development of corporate vision and mission	Implementation of situational analysis	Development of SMART goals	Market segmentation
N	25	25	25	25	25	25
Missing	0	0	0	0	0	0
Mean	1.04	1.16	2.12	2.64	3.44	2.56
Minimum	0	0	0	0	0	0
Maximum	2	3	5	5	5	5

Note: 1—never; 2—rarely; 3—sometimes; 4—often; 5—always

Table 13 Practice of different elements of marketing strategy

		Frequency	Percent	Cumulative percent
Development of corporate philosophy				
Valid	NA (No answer)	3	12.0	12.0
	Never	18	72.0	84.0
	Rarely	4	16.0	100.0
	Total	25	100.0	
Development of corporate values				
Valid	NA	3	12.0	12.0
	Never	17	68.0	80.0
	Rarely	3	12.0	92.0
	Sometimes	2	8.0	100.0
	Total	25	100.0	
Development of corporate vision and mission				
Valid	NA	3	12.0	12.0
	Never	8	32.0	44.0
	Rarely	4	16.0	60.0
	Sometimes	4	16.0	76.0
	Often	5	20.0	96.0
	Always	1	4.0	100.0
	Total	25	100.0	
Implementation of situational analysis				
Valid	NA	3	12.0	12.0
	Never	5	20.0	32.0
	Rarely	1	4.0	36.0
	Sometimes	6	24.0	60.0
	Often	9	36.0	96.0
	Always	1	4.0	100.0
	Total	25	100.0	
Development of SMART goals				
Valid	NA	3	12.0	12.0
	Never	1	4.0	16.0
	Rarely	3	12.0	28.0
	Sometimes	1	4.0	32.0
	Often	9	36.0	68.0
	Always	8	32.0	100.0
Total	25	100.0		
Market segmentation				
Valid	NA	3	12.0	12.0
	Never	5	20.0	32.0
	Rarely	2	8.0	40.0
	Sometimes	6	24.0	64.0
	Often	8	32.0	96.0
	Always	1	4.0	100.0
	Total	25	100.0	

Table 14 Correlations between implementation of elements of marketing strategy and profitability

Correlations		Profitability
Profitability	Pearson correlation	1
	Sig. (2-tailed)	
	N	25
Development of corporate philosophy	Pearson correlation	0.495*
	Sig. (2-tailed)	0.012
	N	25
Development of corporate values	Pearson correlation	0.361
	Sig. (2-tailed)	0.076
	N	25
Development of corporate vision and mission	Pearson correlation	0.483*
	Sig. (2-tailed)	0.014
	N	25
Implementation of situational analysis	Pearson correlation	0.466*
	Sig. (2-tailed)	0.019
	N	25
Development of SMART goals	Pearson correlation	0.330
	Sig. (2-tailed)	0.108
	N	25
Market segmentation	Pearson correlation	0.425*
	Sig. (2-tailed)	0.034
	N	25

*Correlation is significant at the 0.05 level (2-tailed)

market segmentation is never implemented by 20%, sometimes by 24% and often by 32% of the companies.

The testing of the relation between the abovementioned elements of marketing strategy and profitability shows positive correlation when companies practice development of corporate philosophy, development of corporate vision and mission, implementation of situational analysis and market segmentation (Table 14).

Macedonian companies are in similar position with companies from other emerging market countries concerning the financing, especially different ways of financing available for companies in early stage of development, possibilities for alternative ways of financing, start-up investments, cash flow projections, working capital financing. There are financial sources that a small and medium company needs in order to found the basic business functions and successfully function during the stages of development. There are different sources of financing such as loans, leasing arrangements, securitization, risky capital etc., but this problem is still present among SMEs. And the reasons are multilateral. Some of them are unsatisfactory development of the financial system from the one hand, and the scarce information on the available financing sources, on the other hand.

One of the main sources of financing is external crediting from commercial banks. This in the same time is the most expensive way of external financing. The banks frequently avoid micro and small companies, especially newly-established ones, due to many different reasons. Some of them are inadequate assets; poor technical, managerial and marketing skills of the small businesses owners; small percentage of returned credits by SMEs, due to high operational expenses; poor and non-appropriate financial statements, which do not show the key indicators for financial valuation of working etc.

Comparing the ways of financing that developed countries like USA, Australia, but also some Balkan countries like Slovenia have, Macedonian companies are missing the business angels financing, and initial developing phase by risky capital, or maybe the implementation of securitization process in the mature phases of the company development. Some of them, like the first network of business angels in Macedonia was established in May, 2011 in the Center for Innovations as USAID project, and has only ten members, so from that time it is still in the initial stage.

One of the main determinants of the survival of the companies in the initial stages is the access to the capital. Concerning Macedonian companies, this access is influenced mainly by the industry, number of employees, year of establishment, capital structure, institutional support, information on the available credit lines etc. Thus, the enterprise financial state is defined by its ability to provide permanent matching of monetary flows, i.e. as a sum of the assets positions at a given moment, classified according to the degree of their maturity (Rankovic 1997).

5 Conclusions

The necessity of the proactive market approach is a widely accepted business concept that has showed significant benefits for the companies in economies of different level of development. The marketing philosophy starts with the needs and wants of the consumers and incorporates many different activities in order to create the end offer to the consumer in a profitable way. Some of these activities that directly contribute to the success of the corporate strategy are of the area of marketing, while others are directly connected with the area of finance. The literature suggests that certain marketing activities should be always included in the strategic processes of the companies, because they develop and maintain strong and close relationship with the consumers and other stakeholders.

This study demonstrates that some marketing activities are of importance for the business development also in a developing economy, such as Republic of Macedonia. For instance, the research has shown a significant correlation and impact of market research activities before the start of the business, as well as during the operation of the business on profitability. Also, the level of market orientation is shown to have a direct positive impact on profitability. Even though the analysis confirms these connections, the level of their implementation in the companies practices is rare to occasional, especially in micro and small companies.

Additionally, the companies have shown weaknesses in the process of development of marketing strategy, particularly in the implementation of some of the elements of marketing strategy. These elements are known to add to the efficiency and effectiveness of the marketing strategy, and are of significant importance for the market position and competitiveness of the companies. The results presented a direct connection between several of these elements with profitability, such as: development of business philosophy, values, vision and mission, and implementation of situational analysis, SMART goal development and market segmentation. The research has found that most of the domestic companies in Macedonia never or rarely include these elements in the marketing strategy, while some of them occasionally or often use them as a way of improving business performances.

These inconsistencies in the strategy of the companies can be a problem for future growth and development, because even in developing economies, the markets are highly fragmented, saturated, with high rivalry among competitors and slow growth. In this kind of business environment, the companies have to develop strong competitive advantage that will endure the attack of the competitors, which is only possible if they develop and implement higher level of market orientation, detailed marketing strategies and continuously perform market research.

The practice of managing the SMEs shows that despite the identified need for the application of the strategic planning process in business management, managers/owners of these enterprises lack the "know-how" of key elements and methods of strategic management, especially for planning financial operations with a strategic approach. Macedonian companies, meaning mainly SMEs, regularly acquire finances from their own sources, and also the banks' products. There is an imminent necessity of creating alternative sources such as equity funds, credit funds and private credit bureaus which will provide loans under favorable terms and will decrease interest rates, construction of credit guarantee funds, shortening of financial transactions for creating financial support, etc.

The results have confirmed the hypotheses, and on that basis the paper offers some practical and social implications: possibility to notice the present weaknesses in the business practices, and their elimination of future activities. Also, the study can be consulted by other researchers that analyze business practices in transitional economies.

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Analysis of Female Labor Force Participation: Evidence from Turkey

Omer Limanli

Abstract In this study, we have estimated the determinants of female labor force participation in Turkey. For this purpose, we have used Household Labor Force Survey for 2000–2014. The determinants of female labor force participation have been studied extensively by previous studies but this paper differs in some ways. First and foremost, previous studies have used traditional estimation techniques such as simple logit or probit estimators. Here, we have used a newly developed estimator called special regression, and we have included the random individual effect in the model by using recursive mixed-process estimator. Second, we have taken into account endogeneity problem of education which is mostly ignored by researchers. Finally, previous studies, generally, have used 1 year data. This paper has used 14 years data so we might see whether there is a change in the effect of explanatory variable. Generally speaking, estimation results have demonstrated that education, not surprisingly, has positive and significant effect. Marital status, having children and region are other important variables. Estimation results support previous studies.

Keywords Female • Labor force • Turkey

1 Introduction

Among the OECD countries, Turkey has the lowest female labor force participation rate (FLFP). According to the OECD (2016), FLFP rate was only 33.5% in 2014. In South Africa and Costa Rica, FLFP rates are higher nearly 15 and 20 percentage point then in Turkey, respectively. Despite the increasing schooling, infrastructure development and legislative regulations, FLFP rate grows slowly in Turkey. For example, when we compare FLFP rates in 2000 and 2014, there is nearly 5 percentage point increment for Turkey. It is 16.9 for Spain, 9 for Latvia and 8 for Hungary.

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These figures mean that Turkey cannot benefit enough from its human capital¹. Beside the human capital perspective, FLFP in turn affects distribution of resources intra-household and attitudes toward the children. Berik and Bilginsoy (2000) have demonstrated that FLFP affects the child sex ratio in Turkey. This ratio in turn might affect the welfare of girls. All these viewpoints indicate that FLFP is very important for all countries.

In order to understand the behind the scenes, scholars have studied extensively to uncover the determinants of FLFP in Turkey (World Bank 2009; Uraz et al. 2010; Biçerli and Gündoğan 2009; Dayıoğlu and Kırdar 2010; Toksöz 2014). Tansel (2001) has investigated the determinants of FLFP by using census data for 1980, 1985 and 1990 at the province level. She has used times series data and ordinary least squares methodology. Her estimation results have showed that logarithm of per capita, urbanization growth rate, number of women graduated from university and number of women enrolled in university have positive impact on FLFP in Turkey. Results are very similar for models in which with and without unpaid family workers. Gündüz-Hoşgör and Smits (2008) have investigated married women by using Demographic and Health Survey for 1998. They have separated their sample in different sub-samples such as housewives, farming, formal and upper non-manual and they have used logistic regression. Their estimation results indicate that education affects negatively being housewife while affects positively being formal or upper non-manual worker. Having child, as expected, has negative effect on the FLFP. These studies, among others, only have factored in individual characteristics such as age, sex, marital status and education or household characteristics like region where household is in, total household wealth and household composition. However, we know that cultural and social factors are very important in developing countries such as Turkey.²

Göksel (2013) has analyzed the determinants of FLFP from a different viewpoint. She has investigated the effects of conservatism and social norms on FLFP by using Household Structure Survey for 2006. Her findings indicate that conservatism has a negative effect on FLFP in Turkey. Moreover, Gedikli (2014) also has analyzed the role of traditional or conservative social norms and culture on FLFP. She has worked on Demographic and Health Survey for 1998 and 2008. Gedikli (2014) has estimated the probability of moving from one employment type to another by using multinomial logit regression. Her estimation results showed that traditional values influence working status of females regardless of education, region (urban/rural) and development level of where they live in. Like previous studies, Dildar (2015) has estimated the effect of patriarchal norms and religiosity on FLFP by using Demographic and Health Surveys for 2005. She has used probit and, differently from previous studies, instrumental variable probit regression. As far as we know, this study is the only one which takes into account endogeneity. She

¹For theoretical literature on FLFP, see Killingsworth and Heckman (1986).

²Karaca and Kocabaş (2011) give detailed discussion about the position of women in economic life with a comparison between European Union countries and Turkey.

conducts the study by taking family conservatism into account as an instrument for patriarchal norms. Estimation results, once again, indicate that patriarchy and religiosity influence FLFP negatively. These are very conspicuous findings. As we have mentioned before, despite some developments, FLFP rate grows slowly. It means that only economic and judicial improvements are not enough to solve the puzzle by themselves; thus we also need lots of changes in the cultural and social norms and understanding.

The aim of this paper is to estimate the determinants of FLFP in Turkey. Our analysis differs from previous studies in some ways. Firstly, previous studies do not take into account endogeneity of education. We have estimated our models with two different methods; recursive mixed-process and special regression. These methods have some advantages over traditional instrumental variables methods for discrete choice models. Secondly, we have used data for 14 years 2000–2014, so we can see the changes in coefficients over time. This paper is organized as follows: In Sect. 2, we present methods which we have used in the paper. Detailed information about data could be found in Sect. 3. Estimation results are given in Sect. 4. Finally, conclusions are given in Sect. 5.

2 Methodology

As we have stated earlier, we have used two different methods in this paper. So, we will first present recursive mixed-process which is formulated by Roodman (2011). We also have used Roodman (2011)'s formulation for consistency.

Roodman (2011) have derived well known estimation models such as classical linear, tobit, probit, censored, etc. from seemingly unrelated regression (SUR). Hence, we start with the SUR model. The SUR model can be written as:

$$\mathbf{y}^{*'} = \boldsymbol{\theta}' + \boldsymbol{\epsilon}' \quad (1)$$

$$\boldsymbol{\theta}' = \mathbf{y}'\boldsymbol{\Delta} + \mathbf{x}'\mathbf{B} \quad (2)$$

$$\mathbf{y} = \mathbf{g}(\mathbf{y}^*) = \{g_1(\mathbf{y}^*) \dots g_J(\mathbf{y}^*)\}' \quad (3)$$

$$\boldsymbol{\epsilon}|\mathbf{x} \sim i.i.d.\mathcal{N}(0, \boldsymbol{\Sigma}) \quad (4)$$

where \mathbf{B} is matrix of coefficients whose dimension $\mathbf{K} \times \mathbf{J}$, \mathbf{y} and $\boldsymbol{\epsilon}$ random vectors whose dimension $1 \times \mathbf{J}$, $\mathbf{x} = (x_1, \dots, x_k)'$ is a vector of predetermined variables whose dimension $1 \times \mathbf{J}$, $\boldsymbol{\Delta}$ is the strictly upper triangular, $\boldsymbol{\Sigma}$ is the variance-covariance matrix and $\mathbf{g}(\cdot)$ is the link function. We can write recursive equations as follows:

$$y_1^* = \theta_1 + \epsilon_1 \quad (5)$$

$$y_2^* = \theta_2 + \epsilon_2 \quad (6)$$

$$\theta_1 = \beta_1 x \quad (7)$$

$$\theta_2 = \gamma y_1 + \beta_2 x \quad (8)$$

$$\mathbf{y} = \mathbf{g}(\mathbf{y}^*) = (y_1^*, 1\{y_2^* > 0\})' \quad (9)$$

$$\epsilon = (\epsilon_1, \epsilon_2)' \sim \mathcal{N}(0, \Sigma) \quad (10)$$

where the first equation is classical linear and second equation is probit. These variables correspond to years of education and dummy variable which indicates whether person is in labor force (1) or not (0), respectively. That is, we have estimated first education equation with cohort indicator and urban/rural dummy or regional dummy. After the first stage, probit regression has been estimated with usual independent variables. This method is very similar with two stage least squares but more efficient than it. Roodman (2011) writes general fully observed recursive model as follows:

$$L_i(\mathbf{B}, \Sigma, \Delta, \mathbf{c}; \mathbf{y}_i | \mathbf{x}_i) = \frac{\int_{\mathbf{h}_i^{-1}}(\mathbf{y}_i) f_{\epsilon_i}(\tilde{\epsilon}) d\tilde{\epsilon}}{\int_{\mathbf{T}_i} f_{\epsilon_i}(\tilde{\epsilon}) d\tilde{\epsilon}} \quad (11)$$

where \mathbf{c} is the vector of unknown censoring points for ordered probits, $\tilde{\mathbf{h}}_i^{-1} = [\underline{c}_{i1} - \tilde{\theta}_{i1}, \bar{c}_{i1} - \tilde{\theta}_{i1} \times \dots \times \underline{c}_{ij} - \tilde{\theta}_{ij}, \bar{c}_{ij} - \tilde{\theta}_{ij}]$. If y_{ij} is uncensored, then $\underline{c}_{ij} = \bar{c}_{ij}$. $\tilde{\mathbf{T}}_i$ is Cartesian product of truncation points for multinomial probits with deleted few bounded dimensions of T . We have used `cmp` command written by Roodman (2011) for the estimation of recursive mixed-process in Stata.

Now, we turn to our second method; special regression. Special regression approach is very simple but also very effective estimator for binary choice models with endogenous variable(s). There are other estimation methods for binary choice models with endogenous variable(s) such as linear probability model, maximum likelihood model and control function model. These methods have some drawbacks which are not seen in special regression method. Kang and Lee (2014) and Lewbel et al. (2012) give excellent review on binary choice models with endogenous variables. Special regression has been first proposed by Lewbel (2000) and improved by Dong and Lewbel (2015). Following Dong and Lewbel (2015), we can explain the special regression method as follows.

Let $D = I(X'\beta + V + \epsilon \geq 0)$ be binary choice model. D is dummy variable that equals zero or one, X is a vector of observed regressors, β is vector of coefficient to be estimated, ϵ is unobserved error term, $I(\cdot)$ is indicator function that equals one if it is true and zero otherwise and V is special regressor. We need three assumptions in special regression method. First, V and ϵ must be additive. Second, V should be conditionally independent of the ϵ , conditioning on other covariates. Third, V needs to be continuously distributed with large support. Last assumption can sometimes be relaxed. Let Z be vector of instruments. It has standard properties as in liner

models, rank of $E(ZX')$ equals to number of elements of X and $E(Z\epsilon) = 0$. Z might include all exogenous variables in X and a constant. Z does not contain V . There are no restrictions on distribution of, i.e. it might be unknown and heteroskedastic which depends on X and Z . Let S be the union of the elements of X and Z , so S is the vector of all instruments and all regressors except V . We need one more information that will be required in the estimation process. V is the function of U and S , $V = g(U, S)$ where U is the error term. Dong and Lewbel (2015) have proposed four steps for estimation of special regression;

Step 1. Assume that V has mean zero. If it is not, demean it first. Let \hat{b} ordinary least squares estimation of linear regression of V on S . Construct the residual terms for each observations from this regression, $\hat{U}_i = V_i - S_i'\hat{b}$.

Step 2. For each i , let \hat{f}_i non-parametric or alternatively normal density function for \hat{U}_i . We have used non-parametric kernel density.

Step 3. Define \hat{T}_i as, $\hat{T}_i = [D_i - I(V_i \geq 0)]/\hat{f}_i$.

Step 4. Estimate $\hat{\beta}$ from $T = X'\beta + \tilde{\epsilon}$ with instruments Z using generalized method of moment or two stage least squares. Outliers have been discarded in this step.

Age has been chosen as special regressor in our estimations, because age is exogenous so it is conditionally independent from ϵ . The sign of V should be positive. If it is not, it should be multiplied by negative one. We know that the relationship between age and the probability of labor force participation is non-linear. That is, there is inverted U shaped relationship. We estimated Kernel-weighted local polynomial smoothing with 1,000 evaluation points. Estimation result has indicated that females who are 25 years and over are appropriate sample for special regression. Therefore, we have used the sub-sample who is over the age of 25. We have not used data sets from 2000 to 2003 because age variable is categorical in those years. After the decision about special regressor, second important point in the estimation is finding appropriate instruments for education. Here, we have used parents' education statuses as instruments for children's education. We naturally expect that more educated parents' children probably will be more educated compared with less educated parents' children. We have used `sspecialreg` command that is written by Baum (2012) in Stata.

3 Data

In this study, Household Labor Force Survey (HLFS) is used for 2000–2014 which was conducted by Turkish Statistical Institute (TSI). This survey has detailed information about individual and labor force characteristics of household members such as sex, marital status, schooling, labor market status, employment type and statuses, wage and region information. The data from 2000 to 2003 is not used by

the reason of methodological requirement in special regression. We have paid attention to variable selection process in order to avoid endogeneity issue.

The dependent variable is the dummy variable that indicates whether a person is in labor force (1) or not (0). Here, it is important to determine who is in labor force and who is not. According to the TSI (2015), labor force comprises all employed persons and all unemployed. Unpaid family workers are included in this definition. Unpaid family workers can be taken as unemployed because they could have been in this work type as a result of low education or lack of job opportunity. The models are estimated with and without unpaid family workers in order to see definitional differences. Data sets contain labor market information of all household members who are 15 years old and over. Except 2014, individual characteristics of household members who are under the 15 years old are also collected. So, the persons who are between 15 and 65 years old constitute our main sample. People might be out of the labor market for the reason that they are student in the survey year. To take into account this possibility, persons who are under the 25 years old are excluded as alternative specifications.

Seven independent variables are used in the study. Our first independent variable is years of education. Actually, education is coded as categorical variables in the data sets. We have derived this variable by using education categories. For persons who are illiterate and literate but not completed any educational institution, the years of education calculated zero. Similarly, education years are calculated for primarily (5 years), secondary school, vocational school at secondary school level or primary education (8 years), high school and vocational or technical high school (11 years) and university, faculty or upper (15 years). Cohort and urban/rural/region dummies are used as independent variables in the education equation in the recursive mixed-process. Parent education categories are used as instruments for education in the special regression. It is expected that education should affect positively the probability of being in the labor force like in the previous studies. Second independent variable is the marital status of person. This is the binary variable that indicate whether a person is married (1) or not. We expect that marriage affects negatively FLFP because married women are seen as housekeeper and responsible for child bearing and rearing. Two independent variables are added in order to support this argument: number of children under 4 years old and the interaction variable that is multiplication of marital status and the number of children who are under 4 years old. It is also expected that number of children under 4 years old affect negatively FLFP. Other independent variable is the age of female. Labor economics literature have taught us that labor force participation first increases with age at some point and falls after that. Age is given only as ordered categorical variable until the 2004. After that time, it is given also as continuous in addition to ordered categorical scale. The last age category, 61-65, is our base category in all estimations. Lastly, there are two other important independent variables: urban/rural and region indicator for 12 regions (Nomenclature of Territorial Units for Statistics–NUTS 1). Urban/rural cannot be found in data sets after 2004. That is why we have added this variable for 2000–2003. Region indicators have been added after 2004. Region variable might give some information

Table 1 Variable definitions

Variable	Definition
Education	Years of education that individuals have completed
Marital status	1 if individual is married, 0 otherwise
Age	Indicates age category
<4 years old child.	Number of children under 4 years old
<4 years old child. × married	Interaction variable that created with number of children under 4 years old and marital status (married)
Rural	Indicates where individuals live. It equals 1 if individuals live in rural area, 0 otherwise
Region	Indicates regions where individuals live

regarding how women are seen in the different regions in Turkey. We think this is because there are remarkable development differences between regions. East of Turkey is “more conservative” than west, south and north. Regions have also different job opportunities. Women who live in less developed regions (especially east and north-east of Turkey) have less job opportunity compared with other regions. Urban and İstanbul are base categories. The definitions of these variables are given in Table 1. Descriptive statistics of all these variables could be found in appendix.

4 Results

Generally speaking, all estimation results are in line with our expectations. We will first consider estimation results from recursive mixed-process. Later, we will discuss findings from special regression. The numbers in these tables are average marginal effects. All estimation results are given as follows.

Four different model have been run using different samples in recursive mixed-process estimator: (i) all sample, (ii) excluding females who are under 25 years old, (iii) excluding casual and unpaid family workers, and (iv) excluding females who are under 25 years old and casual and unpaid family workers.³ In the first specification, as can be seen in Table 2, education has positive effect on the probability of labor force participation of women for all years. Being married, as we expected, reduce the probability of labor force participation of women again for all years. The probability of labor force participation of women increases proportionally with age until 35–39 age category and falls after that point. Having children under 4 years old reduce the probability of labor force participation of women as expected. These

³Casual and unpaid family workers are excluded for 2000, 2001, 2002, and 2003. Only unpaid family workers excluded after 2004. After 2008, there is no way to exclude causal workers. Special regression estimation starts from 2004. So this is done because we want to compare recursive mixed-process and special regression.

Table 2 Estimation with recursive mixed-process, whole sample

	2000	2001	2002	2003	2004	2005	2006	2007
Education	0.022*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.020*** (0.002)	0.012*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.014*** (0.001)
Married	-0.120*** (0.004)	-0.116*** (0.004)	-0.116*** (0.004)	-0.118*** (0.004)	-0.120*** (0.003)	-0.125*** (0.003)	-0.124*** (0.003)	-0.119*** (0.003)
Age categories								
15-19	-0.055*** (0.000)	-0.074*** (0.000)	-0.095*** (0.000)	-0.086*** (0.000)	-0.089*** (0.000)	-0.087*** (0.000)	-0.084*** (0.000)	-0.099*** (0.000)
20-24	0.066*** (0.005)	0.067*** (0.005)	0.062*** (0.005)	0.076*** (0.005)	0.079*** (0.004)	0.089*** (0.004)	0.087*** (0.004)	0.086*** (0.004)
25-29	0.120*** (0.005)	0.104*** (0.005)	0.107*** (0.005)	0.130*** (0.005)	0.117*** (0.004)	0.132*** (0.004)	0.133*** (0.004)	0.128*** (0.004)
30-34	0.125*** (0.005)	0.121*** (0.005)	0.121*** (0.005)	0.137*** (0.006)	0.121*** (0.005)	0.131*** (0.004)	0.139*** (0.004)	0.139*** (0.005)
35-39	0.137*** (0.005)	0.126*** (0.005)	0.118*** (0.005)	0.144*** (0.005)	0.130*** (0.004)	0.148*** (0.004)	0.157*** (0.004)	0.149*** (0.004)
40-44	0.123*** (0.005)	0.111*** (0.005)	0.103*** (0.005)	0.127*** (0.005)	0.111*** (0.004)	0.133*** (0.004)	0.141*** (0.004)	0.128*** (0.004)
45-49	0.086*** (0.006)	0.079*** (0.006)	0.081*** (0.006)	0.093*** (0.006)	0.082*** (0.005)	0.106*** (0.005)	0.097*** (0.005)	0.087*** (0.005)
50-54	0.067*** (0.007)	0.054*** (0.007)	0.040*** (0.007)	0.057*** (0.007)	0.059*** (0.006)	0.074*** (0.005)	0.080*** (0.005)	0.062*** (0.005)
55-59	0.050*** (0.009)	0.026*** (0.009)	0.022* (0.009)	0.031*** (0.009)	0.044*** (0.007)	0.040*** (0.007)	0.047*** (0.007)	0.034*** (0.007)
<4 years old child.	-0.002 (0.005)	-0.010 (0.005)	-0.009 (0.006)	-0.014* (0.006)	0.000 (0.004)	-0.006 (0.004)	-0.015*** (0.004)	-0.018*** (0.005)

<4 years old child. × married	-0.013 *	-0.011 *	-0.016 **	-0.010	-0.009 *	-0.007	0.002	-0.009
	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)
Rural	0.252 ***	0.268 ***	0.287 ***	0.268 ***				
	(0.004)	(0.004)	(0.004)	(0.004)				
Regions								
West Marmara					0.123 ***	0.141 ***	0.127 ***	0.127 ***
					(0.006)	(0.005)	(0.005)	(0.005)
Aegean					0.116 ***	0.075 ***	0.065 ***	0.063 ***
					(0.004)	(0.004)	(0.004)	(0.004)
East Marmara					0.042 ***	0.068 ***	0.067 ***	0.060 ***
					(0.005)	(0.004)	(0.004)	(0.004)
West Anatolia					0.009	-0.004	-0.002	0.008
					(0.005)	(0.005)	(0.005)	(0.005)
Mediterranean					0.041 ***	0.070 ***	0.082 ***	0.092 ***
					(0.005)	(0.005)	(0.004)	(0.004)
Central Anatolia					-0.001	0.036 ***	0.015 *	-0.011
					(0.007)	(0.006)	(0.006)	(0.006)
West Black Sea					0.125 ***	0.131 ***	0.145 ***	0.149 ***
					(0.005)	(0.005)	(0.005)	(0.005)
East Black Sea					0.334 ***	0.292 ***	0.264 ***	0.265 ***
					(0.006)	(0.006)	(0.006)	(0.006)
Northeast Anatolia					0.139 ***	0.121 ***	0.096 ***	0.098 ***
					(0.007)	(0.007)	(0.007)	(0.007)
Central East Anatolia					0.004	0.040 ***	0.060 ***	0.051 ***
					(0.008)	(0.008)	(0.008)	(0.007)
Southeast Anatolia					-0.025 **	-0.096 ***	-0.154 ***	-0.127 ***
					(0.008)	(0.008)	(0.009)	(0.009)
N	97,625	101,364	101,957	100,014	157,485	163,942	167,033	162,075

(continued)

Table 2 (continued)

	2008	2009	2010	2011	2012	2013	2014
Education	0.016*** (0.001)	0.016*** (0.001)	0.015*** (0.001)	0.014*** (0.001)	0.016*** (0.001)	0.017*** (0.001)	0.015*** (0.001)
Married	-0.112*** (0.003)	-0.111*** (0.003)	-0.106*** (0.003)	-0.105*** (0.003)	-0.085*** (0.003)	-0.087*** (0.003)	-0.088*** (0.003)
Age categories							
15-19	-0.091*** (0.000)	-0.110*** (0.000)	-0.118*** (0.000)	-0.107*** (0.000)	-0.118*** (0.000)	-0.123*** (0.000)	-0.163*** (0.000)
20-24	0.104*** (0.005)	0.103*** (0.005)	0.116*** (0.005)	0.129*** (0.005)	0.118*** (0.005)	0.124*** (0.005)	0.069*** (0.005)
25-29	0.149*** (0.004)	0.159*** (0.005)	0.187*** (0.005)	0.199*** (0.005)	0.206*** (0.005)	0.209*** (0.005)	
30-34	0.158*** (0.005)	0.171*** (0.005)	0.187*** (0.005)	0.209*** (0.005)	0.215*** (0.005)	0.225*** (0.005)	0.138*** (0.004)
35-39	0.170*** (0.004)	0.174*** (0.004)	0.207*** (0.004)	0.225*** (0.004)	0.224*** (0.004)	0.239*** (0.004)	0.159*** (0.004)
40-44	0.142*** (0.004)	0.156*** (0.004)	0.190*** (0.004)	0.212*** (0.005)	0.217*** (0.004)	0.236*** (0.004)	0.182*** (0.004)
45-49	0.108*** (0.005)	0.102*** (0.005)	0.132*** (0.005)	0.169*** (0.005)	0.169*** (0.005)	0.183*** (0.005)	193*** (0.004)
50-54	0.072*** (0.005)	0.066*** (0.005)	0.082*** (0.005)	0.095*** (0.005)	0.099*** (0.005)	0.103*** (0.005)	0.150*** (0.004)
55-59	0.048*** (0.007)	0.040*** (0.007)	0.051*** (0.006)	0.055*** (0.006)	0.042*** (0.006)	0.046*** (0.006)	0.085*** (0.004)

<4 years old child.	-0.001	-0.006	-0.008	-0.007	-0.001	-0.002
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
<4 years old child. × married	-0.035***	-0.034***	-0.032***	-0.028***	-0.045***	-0.052***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Rural						
Regions						
West Marmara	0.115***	0.134***	0.119***	0.097***	0.074***	0.065***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Aegean	0.049***	0.079***	0.096***	0.118***	0.108***	0.113***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
East Marmara	0.058***	0.066***	0.050***	0.071***	0.037***	0.044***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
West Anatolia	0.029***	0.051***	0.053***	0.027***	0.001	-0.002
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Mediterranean	0.093***	0.107***	0.118***	0.100***	0.053***	0.039***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)
Central Anatolia	-0.060***	-0.013*	0.036***	0.044***	0.027***	0.022***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
West Black Sea	0.183***	0.203***	0.162***	0.160***	0.104***	0.088***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
East Black Sea	0.272***	0.253***	0.204***	0.177***	0.145***	0.092***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Northeast Anatolia	0.148***	0.148***	0.132***	0.106***	0.065***	0.097***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

(continued)

Table 2 (continued)

	2008	2009	2010	2011	2012	2013	2014
Central East Anatolia	0.002 (0.008)	0.022** (0.008)	0.037*** (0.008)	0.040*** (0.008)	0.043*** (0.008)	0.045*** (0.008)	0.037*** (0.007)
Southeast Anatolia	-0.061*** (0.009)	-0.088*** (0.009)	-0.081*** (0.008)	-0.134*** (0.008)	-0.160*** (0.008)	-0.103*** (0.008)	-0.100*** (0.007)
N	162,326	168,751	175,671	174,900	173,711	170,972	174,553

Clustered-Robust standard errors in parentheses

*p < 0.05, **p < 0.01, ***p < 0.001

variables generally preserve their sign in all other specifications. But when we look at the rural and region variables, their signs and magnitudes differs substantially between specification. Except Southern Anatolia, all regional indicators have positive impact on the probability of labor force participation of women. This is surprising. It was being expected negative sign at least for North-east and Central East Anatolia. The reason behind of this situation might be the dominant role of agriculture in these regions. Because we know that unpaid family workers are not considered unemployed. So, women who work in garden/field of her family is considered as employed person. Another interesting finding is that East Black Sea has biggest average marginal effects; it is 0.334 in 2004 and 0.123 in 2014 (with North-east Anatolia). That is, on average, being in East Black Sea compared with being in İstanbul increases the probability of labor force participation by 0.334 in 2000 and 0.123 in 2014. Similar results have been found when we have excluded females who are under 25 years old, given in the Table 3. Excluding people who under the 25 years old is useful for avoiding school-aged children bias. Females maybe cannot participate labor market because of the compulsory education. After the exclusion, marginal effects has increased in for all regions.

Other two estimations have changed the entire picture. In the first step, casual and unpaid family workers have been excluded from sample. Estimation results are given in Table 4. Now, half of total number of region has negative marginal effects. This confirms us regarding the doubt about labor market status of unpaid family workers. So many women have been working as unpaid family worker in Anatolia. Marginal effect of South-east Anatolia is still quite high. Being in the west of Turkey, compared with İstanbul, is still a chance for a woman. Black Sea also has positive effects on the probability of the participation in the labor force of women, compared with İstanbul. We know that labor force participation also has been influenced from job opportunities in corresponding region. We also know that Black Sea, especially east of it, does not have so much job opportunities as Aegean or Mediterranean has. Therefore, the negative signs of east of Turkey might be associated with other determinants, such as status of women in society and conservatism. In addition to the exclusion of casual and unpaid family workers, females who are under 25 years old are also excluded in the last mixed-process estimation which is given in Table 5. Region variables preserve their signs. Marginal effects have increased (as absolute value) almost in all regions and all years. Comparing two estimations with respect to number of children under 4 in household and being married at the same time (interaction variable), we see that, on average, holding other variable at their observed values, increasing the number of children under 4 years old and being married at the same time by one decreases the probability of labor force participation by 0.010 in Table 4 and 0.016 in Table 5 in 2000. The figures are 0.074 and 0.056, respectively, in 2013.

After the recursive mixed-process estimation, special regression has been run. Two separate equations have been estimated as in the previous methodology. In the first specification, which is given in Table 6, whole sample has been used. Note that only females who are 25 years old and over have been included in the sample on special regression. In the second specification, given in Table 7, unpaid family

Table 3 Estimation with recursive mixed-process, age > 25

	2000	2001	2002	2003	2004	2005	2006	2007
Education	0.023*** (0.002)	0.023*** (0.002)	0.023*** (0.002)	0.023*** (0.002)	0.015*** (0.002)	0.015*** (0.002)	0.016*** (0.001)	0.016*** (0.001)
Married	-0.115*** (0.004)	-0.107*** (0.004)	-0.111*** (0.004)	-0.118*** (0.004)	-0.111*** (0.004)	-0.119*** (0.003)	-0.115*** (0.003)	-0.114*** (0.003)
Age categories								
25-29	0.110*** (0.001)	0.091*** (0.001)	0.098*** (0.001)	0.121*** (0.014)	0.104*** (0.000)	0.120*** (0.001)	0.124*** (0.001)	0.121*** (0.001)
30-34	0.116*** (0.005)	0.109*** (0.005)	0.113*** (0.005)	0.130*** (0.014)	0.109*** (0.004)	0.119*** (0.004)	0.131*** (0.004)	0.133*** (0.004)
35-39	0.129*** (0.005)	0.116*** (0.005)	0.111*** (0.005)	0.139*** (0.012)	0.119*** (0.004)	0.138*** (0.004)	0.150*** (0.004)	0.143*** (0.004)
40-44	0.117*** (0.005)	0.102*** (0.005)	0.098*** (0.005)	0.124*** (0.012)	0.102*** (0.004)	0.125*** (0.004)	0.135*** (0.004)	0.123*** (0.004)
45-49	0.081*** (0.006)	0.071*** (0.006)	0.076*** (0.006)	0.090*** (0.010)	0.074*** (0.005)	0.099*** (0.005)	0.092*** (0.005)	0.082*** (0.005)
50-54	0.063*** (0.006)	0.049*** (0.006)	0.036*** (0.006)	0.056*** (0.010)	0.054*** (0.005)	0.070*** (0.005)	0.077*** (0.005)	0.058*** (0.005)
55-59	0.048*** (0.009)	0.023** (0.009)	0.020* (0.009)	0.030*** (0.009)	0.041*** (0.007)	0.038*** (0.007)	0.046*** (0.007)	0.033*** (0.007)
<4 years old child.	-0.018* (0.008)	-0.035*** (0.008)	-0.045*** (0.009)	-0.048*** (0.009)	-0.032*** (0.007)	-0.042*** (0.007)	-0.036*** (0.006)	-0.053*** (0.007)
<4 years old child. × married	0.005 (0.009)	0.020* (0.009)	0.024* (0.009)	0.029** (0.009)	0.028*** (0.007)	0.032*** (0.007)	0.023*** (0.007)	0.025*** (0.007)
Rural	0.276*** (0.008)	0.291*** (0.008)	0.312*** (0.009)	0.298*** (0.008)				

Regions														
West Marmara			0.157*** (0.006)	0.176*** (0.006)	0.158*** (0.006)	0.155*** (0.006)								
Aegean			0.146*** (0.005)	0.100*** (0.005)	0.094*** (0.004)	0.091*** (0.004)								
East Marmara			0.063*** (0.005)	0.094*** (0.005)	0.094*** (0.005)	0.082*** (0.005)								
West Anatolia			0.043*** (0.005)	0.031*** (0.005)	0.035*** (0.005)	0.039*** (0.005)								
Mediterranean			0.079*** (0.005)	0.108*** (0.005)	0.121*** (0.005)	0.126*** (0.005)								
Central Anatolia			0.039*** (0.007)	0.084*** (0.007)	0.052*** (0.007)	0.016** (0.007)								
West Black Sea			0.154*** (0.006)	0.170*** (0.005)	0.189*** (0.005)	0.188*** (0.005)								
East Black Sea			0.397*** (0.007)	0.357*** (0.007)	0.333*** (0.007)	0.334*** (0.007)								
Northeast Anatolia			0.211*** (0.008)	0.185*** (0.008)	0.171*** (0.008)	0.172*** (0.008)								
Central East Anatolia			0.077*** (0.009)	0.108*** (0.008)	0.130*** (0.008)	0.121*** (0.008)								
Southeast Anatolia			0.006 (0.009)	-0.071*** (0.009)	-0.126*** (0.009)	-0.106*** (0.010)								
N	68,027	70,991	71,905	71,165	122,459	120,830								

(continued)

Table 3 (continued)

	2008	2009	2010	2011	2012	2013	2014
Education	0.018*** (0.002)	0.018*** (0.001)	0.017*** (0.001)	0.016*** (0.001)	0.018*** (0.001)	0.019*** (0.001)	0.017*** (0.001)
Married	-0.111*** (0.003)	-0.109*** (0.003)	-0.107*** (0.003)	-0.105*** (0.003)	-0.090*** (0.003)	-0.090*** (0.003)	-0.081*** (0.003)
Age categories							
25-29	0.140*** (0.012)	0.155*** (0.001)	0.185*** (0.001)	0.197*** (0.001)	0.207*** (0.012)	0.212*** (0.012)	
30-34	0.151*** (0.012)	0.167*** (0.004)	0.185*** (0.004)	0.207*** (0.005)	0.217*** (0.012)	0.228*** (0.012)	0.138*** (0.008)
35-39	0.165*** (0.010)	0.171*** (0.004)	0.206*** (0.004)	0.225*** (0.004)	0.227*** (0.010)	0.243*** (0.010)	0.160*** (0.008)
40-44	0.137*** (0.010)	0.153*** (0.004)	0.190*** (0.004)	0.212*** (0.004)	0.220*** (0.010)	0.241*** (0.010)	0.185*** (0.007)
45-49	0.104*** (0.009)	0.100*** (0.005)	0.130*** (0.005)	0.168*** (0.005)	0.171*** (0.008)	0.186*** (0.008)	0.196*** (0.007)
50-54	0.068*** (0.009)	0.064*** (0.005)	0.081*** (0.005)	0.093*** (0.005)	0.099*** (0.008)	0.104*** (0.008)	0.152*** (0.006)
55-59	0.047*** (0.007)	0.040*** (0.007)	0.050*** (0.007)	0.054*** (0.007)	0.042*** (0.007)	0.046*** (0.007)	0.086*** (0.006)
<4 years old child.	-0.038*** (0.007)	-0.038*** (0.006)	-0.049*** (0.007)	-0.047*** (0.007)	-0.035*** (0.007)	-0.026*** (0.008)	
<4 years old child. × married	0.004 (0.007)	-0.002 (0.007)	0.007 (0.007)	0.008 (0.008)	-0.013 (0.008)	-0.031*** (0.008)	
Rural							

Regions	0.146*** (0.006)	0.169*** (0.006)	0.156*** (0.006)	0.129*** (0.006)	0.100*** (0.006)	0.089*** (0.006)	0.084*** (0.006)	
West Marmara	0.078*** (0.004)	0.106*** (0.004)	0.125*** (0.005)	0.146*** (0.005)	0.136*** (0.005)	0.139*** (0.005)	0.118*** (0.005)	
Aegean	0.079*** (0.005)	0.083*** (0.005)	0.071*** (0.005)	0.090*** (0.005)	0.052*** (0.005)	0.058*** (0.005)	0.038*** (0.006)	
East Marmara	0.061*** (0.005)	0.088*** (0.005)	0.091*** (0.005)	0.060*** (0.005)	0.027*** (0.005)	0.021*** (0.005)	0.021*** (0.005)	
West Anatolia	0.125*** (0.005)	0.138*** (0.005)	0.152*** (0.005)	0.128*** (0.005)	0.081*** (0.005)	0.058*** (0.005)	0.042*** (0.005)	
Mediterranean	-0.025*** (0.007)	0.024*** (0.007)	0.078*** (0.006)	0.077*** (0.006)	0.059*** (0.006)	0.051*** (0.006)	0.031*** (0.006)	
Central Anatolia	0.224*** (0.005)	0.248*** (0.005)	0.203*** (0.006)	0.194*** (0.006)	0.133*** (0.006)	0.116*** (0.006)	0.140*** (0.005)	
West Black Sea	0.341*** (0.007)	0.323*** (0.007)	0.274*** (0.006)	0.238*** (0.006)	0.209*** (0.006)	0.147*** (0.006)	0.182*** (0.007)	
East Black Sea	0.217*** (0.007)	0.213*** (0.008)	0.203*** (0.008)	0.172*** (0.008)	0.116*** (0.007)	0.152*** (0.007)	0.177*** (0.006)	
Northeast Anatolia	0.060*** (0.008)	0.082*** (0.008)	0.099*** (0.008)	0.083*** (0.009)	0.098*** (0.008)	0.098*** (0.008)	0.082*** (0.006)	
Central East Anatolia	-0.041*** (0.009)	-0.073*** (0.009)	-0.063*** (0.008)	-0.125*** (0.009)	-0.149*** (0.008)	-0.100*** (0.008)	-0.112*** (0.006)	
Southeast Anatolia	121,444	126,882	133,380	134,006	134,044	132,875	134,919	
N	Clustering-robust standard errors in parentheses							

*p < 0.05, **p < 0.01, ***p < 0.001

Table 4 Estimation with recursive mixed-process. Casual and unpaid family workers excluded

	2000	2001	2002	2003	2004	2005	2006	2007
Education	0.022*** (0.002)	0.022*** (0.002)	0.022*** (0.002)	0.021*** (0.002)	0.018*** (0.001)	0.017*** (0.001)	0.018*** (0.001)	0.019*** (0.001)
Married	-0.115*** (0.003)	-0.118*** (0.003)	-0.122*** (0.003)	-0.125*** (0.003)	-0.135*** (0.003)	-0.136*** (0.003)	-0.137*** (0.003)	-0.133*** (0.003)
Age categories								
15-19	-0.038*** (0.000)	-0.058*** (0.000)	-0.073*** (0.000)	-0.055*** (0.000)	-0.055*** (0.000)	-0.048*** (0.000)	-0.048*** (0.000)	-0.041*** (0.000)
20-24	0.065*** (0.004)	0.065*** (0.004)	0.066*** (0.004)	0.082*** (0.004)	0.092*** (0.004)	0.111*** (0.004)	0.106*** (0.004)	0.125*** (0.004)
25-29	0.126*** (0.004)	0.116*** (0.004)	0.125*** (0.005)	0.144*** (0.005)	0.147*** (0.004)	0.168*** (0.004)	0.167*** (0.004)	0.182*** (0.004)
30-34	0.134*** (0.004)	0.132*** (0.004)	0.136*** (0.005)	0.151*** (0.005)	0.159*** (0.004)	0.175*** (0.004)	0.177*** (0.004)	0.193*** (0.004)
35-39	0.137*** (0.005)	0.136*** (0.005)	0.134*** (0.005)	0.153*** (0.005)	0.159*** (0.004)	0.183*** (0.004)	0.183*** (0.004)	0.195*** (0.004)
40-44	0.120*** (0.005)	0.116*** (0.005)	0.110*** (0.005)	0.132*** (0.005)	0.135*** (0.004)	0.158*** (0.004)	0.162*** (0.004)	0.172*** (0.004)
45-49	0.075*** (0.007)	0.070*** (0.007)	0.074*** (0.007)	0.088*** (0.007)	0.094*** (0.005)	0.124*** (0.005)	0.113*** (0.005)	0.118*** (0.005)
50-54	0.046*** (0.008)	0.036*** (0.007)	0.017* (0.008)	0.035*** (0.008)	0.058*** (0.006)	0.069*** (0.006)	0.075*** (0.006)	0.074*** (0.006)
55-59	0.014 (0.011)	0.006 (0.010)	0.001 (0.011)	0.008 (0.011)	0.021* (0.008)	0.033*** (0.008)	0.027*** (0.008)	0.030*** (0.008)
<4 years old child.	-0.015** (0.005)	-0.019*** (0.005)	-0.010 (0.005)	-0.012 (0.006)	-0.009* (0.004)	-0.007 (0.004)	-0.012** (0.004)	-0.010* (0.004)
<4 years old child. × married	-0.010 (0.006)	-0.007 (0.005)	-0.026*** (0.006)	-0.020** (0.007)	-0.023*** (0.004)	-0.031*** (0.005)	-0.026*** (0.004)	-0.038*** (0.005)

Rural	0.061*** (0.005)	0.071*** (0.004)	0.077*** (0.004)	0.071*** (0.005)					
Regions									
West Marmara					0.028*** (0.005)	0.045*** (0.005)	0.028*** (0.005)	0.026*** (0.005)	
Aegean					0.029*** (0.003)	0.009*** (0.003)	0.004 (0.003)	0.006 (0.003)	
East Marmara					0.009* (0.004)	0.024*** (0.004)	0.021*** (0.004)	0.019*** (0.004)	
West Anatolia					-0.028*** (0.004)	-0.024*** (0.004)	-0.027*** (0.004)	-0.020*** (0.004)	
Mediterranean					-0.010** (0.004)	0.022*** (0.004)	0.018*** (0.004)	0.022*** (0.004)	
Central Anatolia					-0.080*** (0.005)	-0.048*** (0.005)	-0.045*** (0.005)	-0.064*** (0.005)	
West Black Sea					0.007 (0.004)	0.009* (0.004)	0.013** (0.004)	0.023*** (0.004)	
East Black Sea					0.099*** (0.005)	0.115*** (0.005)	0.110*** (0.005)	0.132*** (0.005)	
Northeast Anatolia					-0.073*** (0.007)	-0.062*** (0.007)	-0.057*** (0.006)	-0.048*** (0.007)	
Central East Anatolia					-0.078*** (0.007)	-0.064*** (0.007)	-0.073*** (0.008)	-0.067*** (0.007)	
Southeast Anatolia					-0.095*** (0.008)	-0.104*** (0.008)	-0.144*** (0.008)	-0.133*** (0.009)	
N	88,953	91,843	91,236	90,534	141,331	149,335	152,595	148,854	

(continued)

Table 4 (continued)

	2008	2009	2010	2011	2012	2013	2014
Education	0.020*** (0.001)	0.020*** (0.001)	0.020*** (0.001)	0.020*** (0.001)	0.022*** (0.001)	0.023*** (0.001)	0.023*** (0.001)
Married	-0.129*** (0.003)	-0.131*** (0.003)	-0.132*** (0.003)	-0.135*** (0.003)	-0.116*** (0.003)	-0.121*** (0.003)	-0.139*** (0.003)
Age categories							
15-19	-0.029*** (0.000)	-0.036*** (0.000)	-0.060*** (0.000)	-0.059*** (0.000)	-0.067*** (0.000)	-0.068*** (0.000)	0.191*** (0.005)
20-24	0.145*** (0.004)	0.154*** (0.004)	0.149*** (0.004)	0.157*** (0.004)	0.147*** (0.005)	0.157*** (0.005)	0.223*** (0.005)
25-29	0.208*** (0.004)	0.228*** (0.004)	0.238*** (0.004)	0.250*** (0.004)	0.252*** (0.005)	0.263*** (0.005)	0.243*** (0.004)
30-34	0.216*** (0.004)	0.235*** (0.004)	0.242*** (0.004)	0.266*** (0.004)	0.266*** (0.005)	0.284*** (0.005)	0.249*** (0.004)
35-39	0.222*** (0.004)	0.237*** (0.004)	0.254*** (0.004)	0.273*** (0.004)	0.266*** (0.004)	0.292*** (0.004)	0.194*** (0.004)
40-44	0.191*** (0.004)	0.213*** (0.004)	0.231*** (0.004)	0.254*** (0.004)	0.255*** (0.004)	0.282*** (0.004)	0.106*** (0.005)
45-49	0.144*** (0.005)	0.149*** (0.005)	0.164*** (0.005)	0.197*** (0.005)	0.192*** (0.005)	0.218*** (0.005)	
50-54	0.082*** (0.006)	0.091*** (0.006)	0.092*** (0.006)	0.103*** (0.006)	0.110*** (0.005)	0.120*** (0.005)	
55-59	0.041*** (0.008)	0.040*** (0.008)	0.035*** (0.008)	0.053*** (0.008)	0.034*** (0.007)	0.053*** (0.007)	
<4 years old child.	0.005 (0.004)	0.001 (0.004)	0.002 (0.004)	-0.002 (0.005)	-0.001 (0.005)	-0.000 (0.005)	
<4 years old child. × married	-0.059*** (0.005)	-0.061*** (0.005)	-0.062*** (0.005)	-0.061*** (0.005)	-0.072*** (0.005)	-0.074*** (0.005)	

Rural																									
Regions																									
West Marmara	0.033*** (0.004)	0.043*** (0.004)	0.030*** (0.005)	0.013** (0.005)	0.005 (0.005)	-0.001 (0.005)	-0.004 (0.005)																		
Aegean	-0.001 (0.003)	0.018*** (0.003)	0.025*** (0.004)	0.037*** (0.004)	0.029*** (0.004)	0.040*** (0.004)	0.010* (0.004)																		
East Marmara	0.021*** (0.004)	0.021*** (0.004)	0.014*** (0.004)	0.034*** (0.004)	0.001 (0.004)	0.000 (0.004)	-0.008 (0.004)																		
West Anatolia	0.003 (0.004)	0.007 (0.004)	-0.005 (0.004)	-0.027*** (0.004)	-0.044*** (0.004)	-0.048*** (0.004)	-0.040*** (0.004)																		
Mediterranean	0.028*** (0.004)	0.042*** (0.004)	0.047*** (0.004)	0.034*** (0.004)	0.002 (0.004)	-0.003 (0.004)	-0.028*** (0.004)																		
Central Anatolia	-0.097*** (0.006)	-0.059*** (0.005)	-0.041*** (0.005)	-0.051*** (0.005)	-0.069*** (0.005)	-0.074*** (0.005)	-0.094*** (0.005)																		
West Black Sea	0.042*** (0.004)	0.048*** (0.004)	0.019*** (0.004)	0.020*** (0.005)	-0.004 (0.005)	-0.012* (0.005)	-0.032*** (0.005)																		
East Black Sea	0.128*** (0.006)	0.121*** (0.006)	0.075*** (0.005)	0.074*** (0.005)	0.052*** (0.005)	0.029*** (0.005)	0.032*** (0.006)																		
Northeast Anatolia	-0.048*** (0.007)	-0.041*** (0.007)	-0.076*** (0.007)	-0.062*** (0.007)	-0.091*** (0.006)	-0.060*** (0.007)	-0.096*** (0.007)																		
Central East Anatolia	-0.098*** (0.008)	-0.092*** (0.008)	-0.083*** (0.008)	-0.085*** (0.008)	-0.076*** (0.008)	-0.070*** (0.008)	-0.111*** (0.006)																		
Southeast Anatolia	-0.109*** (0.010)	-0.090*** (0.009)	-0.094*** (0.008)	-0.121*** (0.008)	-0.145*** (0.008)	-0.108*** (0.008)	-0.118*** (0.007)																		
N	148,691	153,752	159,087	158,451	158,116	156,153	154,934																		

Clustered-Robust standard errors in parentheses

*p < 0.05, **p < 0.01, ***p < 0.001

Table 5 Estimation with recursive mixed-process, age > 25. Casual and unpaid family workers and excluded

	2000	2001	2002	2003	2004	2005	2006	2007
Education	0.023*** (0.002)	0.023*** (0.002)	0.023*** (0.002)	0.022*** (0.002)	0.019*** (0.002)	0.018*** (0.002)	0.019*** (0.002)	0.020*** (0.002)
Married	-0.115*** (0.003)	-0.117*** (0.003)	-0.125*** (0.003)	-0.131*** (0.003)	-0.137*** (0.003)	-0.139*** (0.003)	-0.137*** (0.003)	-0.135*** (0.003)
Age categories								
25–29	0.118*** (0.001)	0.106*** (0.001)	0.118*** (0.001)	0.134*** (0.016)	0.138*** (0.013)	0.158*** (0.001)	0.157*** (0.001)	0.171*** (0.001)
30–34	0.127*** (0.004)	0.124*** (0.004)	0.131*** (0.004)	0.144*** (0.016)	0.152*** (0.013)	0.167*** (0.004)	0.168*** (0.004)	0.184*** (0.004)
35–39	0.132*** (0.004)	0.129*** (0.004)	0.130*** (0.004)	0.149*** (0.013)	0.152*** (0.011)	0.176*** (0.004)	0.178*** (0.004)	0.188*** (0.003)
40–44	0.116*** (0.004)	0.111*** (0.004)	0.109*** (0.005)	0.130*** (0.013)	0.130*** (0.011)	0.154*** (0.004)	0.157*** (0.004)	0.167*** (0.004)
45–49	0.073*** (0.006)	0.067*** (0.006)	0.073*** (0.006)	0.087*** (0.012)	0.089*** (0.009)	0.120*** (0.005)	0.109*** (0.005)	0.114*** (0.005)
50–54	0.045*** (0.007)	0.034*** (0.007)	0.018*** (0.007)	0.036*** (0.012)	0.056*** (0.010)	0.067*** (0.005)	0.073*** (0.005)	0.071*** (0.005)
55–60	0.014 (0.011)	0.005 (0.010)	0.002 (0.010)	0.009 (0.011)	0.021* (0.008)	0.032*** (0.008)	0.026*** (0.008)	0.029*** (0.008)
<4 years old child.	-0.006 (0.007)	-0.019** (0.007)	-0.029*** (0.008)	-0.039*** (0.009)	-0.033*** (0.006)	-0.029*** (0.006)	-0.024*** (0.005)	-0.032*** (0.006)
<4 years old child. × married	-0.016* (0.008)	-0.003 (0.008)	-0.001 (0.009)	0.016 (0.009)	0.003 (0.007)	-0.006 (0.007)	-0.009 (0.006)	-0.012 (0.006)
Rural	0.094*** (0.005)	0.104*** (0.005)	0.114*** (0.005)	0.107*** (0.005)				

Regions									
West Marmara					0.049*** (0.005)	0.064*** (0.005)	0.043*** (0.005)	0.041*** (0.005)	
Aegean					0.047*** (0.003)	0.022*** (0.004)	0.021*** (0.004)	0.025*** (0.004)	
East Marmara					0.026*** (0.004)	0.042*** (0.004)	0.037*** (0.004)	0.032*** (0.004)	
West Anatolia					-0.000 (0.004)	0.005 (0.004)	0.001 (0.004)	0.004 (0.004)	
Mediterranean					0.014*** (0.004)	0.047*** (0.004)	0.045*** (0.004)	0.044*** (0.004)	
Central Anatolia					-0.046*** (0.006)	-0.013* (0.006)	-0.014* (0.006)	-0.047*** (0.006)	
West Black Sea					0.038*** (0.004)	0.048*** (0.005)	0.053*** (0.005)	0.054*** (0.004)	
East Black Sea					0.156*** (0.006)	0.171*** (0.006)	0.171*** (0.006)	0.191*** (0.006)	
Northeast Anatolia					-0.018* (0.007)	-0.004 (0.008)	0.000 (0.007)	0.012 (0.008)	
Central East Anatolia					-0.037*** (0.008)	-0.013 (0.008)	-0.018* (0.008)	-0.017* (0.008)	
Southeast Anatolia					-0.053*** (0.009)	-0.076*** (0.009)	-0.114*** (0.009)	-0.111*** (0.010)	
N	61,976	64,287	64,165	64,071	100,973	107,548	110,937	110,019	

(continued)

Table 5 (continued)

	2008	2009	2010	2011	2012	2013	2014
Education	0.021*** (0.002)	0.022*** (0.002)	0.022*** (0.001)	0.022*** (0.001)	0.024*** (0.001)	0.024*** (0.001)	0.024*** (0.001)
Married	-0.134*** (0.003)	-0.137*** (0.003)	-0.142*** (0.003)	-0.142*** (0.003)	-0.126*** (0.003)	-0.131*** (0.003)	-0.143*** (0.003)
Age categories							
25-29	0.198*** (0.014)	0.221*** (0.015)	0.234*** (0.002)	0.248*** (0.002)	0.252*** (0.014)	0.265*** (0.015)	
30-34	0.208*** (0.014)	0.229*** (0.015)	0.240*** (0.004)	0.265*** (0.005)	0.268*** (0.014)	0.288*** (0.015)	0.192*** (0.009)
35-39	0.216*** (0.012)	0.234*** (0.012)	0.254*** (0.004)	0.273*** (0.004)	0.270*** (0.012)	0.298*** (0.012)	0.228*** (0.009)
40-44	0.186*** (0.012)	0.211*** (0.012)	0.232*** (0.004)	0.255*** (0.004)	0.259*** (0.012)	0.288*** (0.012)	0.249*** (0.008)
45-49	0.140*** (0.010)	0.147*** (0.010)	0.164*** (0.005)	0.198*** (0.005)	0.196*** (0.010)	0.223*** (0.010)	0.255*** (0.008)
50-54	0.080*** (0.010)	0.089*** (0.010)	0.091*** (0.005)	0.103*** (0.005)	0.111*** (0.010)	0.199*** (0.010)	0.199*** (0.007)
55-60	0.040*** (0.009)	0.040*** (0.008)	0.035*** (0.008)	0.053*** (0.008)	0.035*** (0.008)	0.109*** (0.008)	0.109*** (0.007)
<4 years old child.	-0.014* (0.006)	-0.020*** (0.006)	-0.027*** (0.006)	-0.028*** (0.007)	-0.022*** (0.007)	-0.018* (0.007)	
<4 years old child. × married	-0.035*** (0.006)	-0.037*** (0.006)	-0.032*** (0.007)	-0.035*** (0.007)	-0.052*** (0.007)	-0.056*** (0.008)	
Rural							

Regions	0.054*** (0.005)	0.066*** (0.005)	0.053*** (0.005)	0.031*** (0.005)	0.021*** (0.005)	0.013* (0.005)	0.003 (0.005)
West Marmara	0.018*** (0.004)	0.031*** (0.004)	0.042*** (0.004)	0.055*** (0.004)	0.048*** (0.004)	0.057*** (0.004)	0.025*** (0.005)
Aegean	0.033*** (0.004)	0.030*** (0.004)	0.027*** (0.004)	0.047*** (0.005)	0.010* (0.004)	0.009 (0.005)	-0.004 (0.005)
East Marmara	0.028*** (0.004)	0.037*** (0.004)	0.025*** (0.004)	-0.001 (0.004)	-0.025*** (0.004)	-0.027*** (0.004)	-0.023*** (0.005)
West Anatolia	0.047*** (0.004)	0.059*** (0.004)	0.067*** (0.004)	0.053*** (0.004)	0.020*** (0.004)	0.010* (0.004)	-0.014** (0.004)
Mediterranean	-0.074*** (0.006)	-0.030*** (0.006)	-0.012* (0.006)	-0.027*** (0.006)	-0.046*** (0.006)	-0.052*** (0.006)	-0.074*** (0.006)
Central Anatolia	0.080*** (0.004)	0.087*** (0.005)	0.051*** (0.005)	0.046*** (0.005)	0.018*** (0.005)	0.009 (0.005)	-0.010 (0.005)
West Black Sea	0.184*** (0.006)	0.177*** (0.006)	0.132*** (0.006)	0.126*** (0.006)	0.104*** (0.006)	0.075*** (0.006)	0.080*** (0.006)
East Black Sea	0.010 (0.008)	0.006 (0.008)	-0.025** (0.008)	-0.003 (0.008)	-0.048*** (0.007)	-0.012 (0.008)	-0.052*** (0.007)
Northeast Anatolia	-0.062*** (0.008)	-0.053*** (0.008)	-0.047*** (0.009)	-0.053*** (0.009)	-0.039*** (0.009)	-0.030*** (0.009)	-0.084*** (0.007)
Central East Anatolia	-0.094*** (0.010)	-0.076*** (0.009)	-0.076*** (0.008)	-0.110*** (0.009)	-0.133*** (0.009)	-0.105*** (0.008)	-0.121*** (0.006)
Southeast Anatolia	110,369	114,465	119,432	120,125	120,586	120,132	118,220
N							

Clustered-Robust standard errors in parentheses
 *p < 0.05, **p < 0.01, ***p < 0.001

Table 6 Estimation with special regressor

	2004	2005	2006	2007	2008	2009
Special regressor	0.026*** (0.002)	0.024*** (0.002)	0.028*** (0.002)	0.026*** (0.002)	0.025*** (0.002)	0.025*** (0.002)
Education	0.014*** (0.003)	0.007** (0.003)	0.015*** (0.003)	0.012*** (0.003)	0.011*** (0.002)	0.014*** (0.002)
Married	0.028 (0.039)	-0.119** (0.041)	-0.006 (0.031)	-0.008 (0.026)	0.006 (0.026)	0.030 (0.026)
<4 years old child.	-0.029* (0.012)	-0.073*** (0.012)	-0.040*** (0.012)	-0.055*** (0.014)	-0.027* (0.013)	-0.051*** (0.011)
<4 years old child. × married	-0.027 (0.044)	0.118* (0.054)	-0.052 (0.048)	-0.112*** (0.030)	-0.116*** (0.034)	-0.005 (0.048)
Regions						
West Marmara	0.003 (0.036)	0.039 (0.029)	-0.042 (0.036)	-0.047 (0.031)	0.002 (0.028)	0.018 (0.026)
Aegean	0.034 (0.022)	-0.018 (0.018)	-0.033 (0.021)	-0.067*** (0.018)	-0.050** (0.018)	-0.016 (0.018)
East Marmara	-0.020 (0.022)	-0.008 (0.019)	-0.024 (0.020)	-0.018 (0.022)	0.017 (0.018)	-0.006 (0.018)
West Anatolia	0.021 (0.025)	0.015 (0.018)	0.021 (0.022)	-0.007 (0.024)	0.004 (0.021)	0.019 (0.020)
Mediterranean	-0.019 (0.025)	-0.069*** (0.020)	-0.049* (0.019)	-0.043* (0.021)	-0.044* (0.018)	-0.055** (0.019)
Central Anatolia	-0.114*** (0.033)	-0.060* (0.025)	-0.121*** (0.024)	-0.175*** (0.028)	-0.128*** (0.032)	-0.138*** (0.028)
West Black Sea	0.008 (0.024)	-0.004 (0.020)	0.002 (0.025)	-0.039 (0.024)	-0.033 (0.021)	-0.021 (0.025)
East Black Sea	0.160*** (0.033)	0.057* (0.028)	0.076** (0.029)	0.028 (0.030)	0.142*** (0.036)	0.101** (0.032)
Northeast Anatolia	-0.089* (0.039)	-0.106*** (0.028)	-0.068* (0.029)	-0.145*** (0.029)	-0.116*** (0.031)	-0.117*** (0.025)
Central East Anatolia	-0.113*** (0.031)	-0.135*** (0.023)	-0.149*** (0.027)	-0.106*** (0.025)	-0.153*** (0.023)	-0.147*** (0.024)
Southeast Anatolia	-0.203*** (0.032)	-0.220*** (0.027)	-0.262*** (0.030)	-0.237*** (0.028)	-0.218*** (0.030)	-0.229*** (0.026)
Constant	-0.059 (0.035)	0.031 (0.026)	0.009 (0.029)	0.022 (0.029)	0.005 (0.028)	-0.002 (0.025)
N	7292	8188	9073	9059	9186	10,256
		2010	2011	2012	2013	2014
Special regressor		0.023*** (0.001)	0.021*** (0.002)	0.019*** (0.002)	0.019*** (0.002)	0.018*** (0.002)
Education		0.012*** (0.002)	0.010*** (0.002)	0.009*** (0.002)	0.007*** (0.002)	0.004* (0.002)
Married		-0.027 (0.020)	-0.003 (0.021)	-0.006 (0.018)	0.034 (0.021)	-0.022 (0.017)
<4 years old child.		-0.052*** (0.013)	-0.042*** (0.012)	-0.050*** (0.012)	-0.050*** (0.013)	
<4 years old child. × married		0.023 (0.039)	0.025 (0.029)	-0.090** (0.033)	-0.083*** (0.025)	

(continued)

Table 6 (continued)

	2010	2011	2012	2013	2014
Regions					
West Marmara	-0.061** (0.023)	-0.039 (0.022)	-0.024 (0.020)	-0.057** (0.021)	-0.063*** (0.018)
Aegean	-0.014 (0.016)	-0.013 (0.015)	0.012 (0.014)	0.016 (0.017)	-0.034* (0.016)
East Marmara	-0.027 (0.017)	-0.013 (0.016)	-0.031* (0.015)	-0.021 (0.016)	-0.013 (0.016)
West Anatolia	-0.043** (0.017)	-0.048** (0.017)	-0.031* (0.014)	-0.029 (0.015)	-0.017 (0.017)
Mediterranean	-0.026 (0.017)	-0.066*** (0.017)	-0.043** (0.015)	-0.042** (0.016)	-0.071*** (0.016)
Central Anatolia	-0.134*** (0.022)	-0.128*** (0.023)	-0.122*** (0.022)	-0.111*** (0.022)	-0.100*** (0.021)
West Black Sea	-0.021 (0.023)	-0.015 (0.020)	-0.018 (0.019)	-0.056* (0.023)	-0.073*** (0.018)
East Black Sea	0.031 (0.024)	0.004 (0.021)	0.002 (0.021)	-0.050* (0.022)	-0.059* (0.023)
Northeast Anatolia	-0.130*** (0.022)	-0.154*** (0.024)	-0.134*** (0.024)	-0.090*** (0.023)	-0.153*** (0.026)
Central East Anatolia	-0.147*** (0.023)	-0.164*** (0.025)	-0.122*** (0.025)	-0.085*** (0.021)	-0.155*** (0.023)
Southeast Anatolia	-0.222*** (0.025)	-0.229*** (0.025)	-0.218*** (0.025)	-0.167*** (0.024)	-0.204*** (0.024)
Constant	0.022 (0.025)	0.018 (0.022)	0.019 (0.023)	0.036 (0.023)	0.071** (0.023)
N	10,889	11,024	11,121	11,102	10,955

Bootstrapped standard errors in parentheses (200 replications)

*p < 0.05, **p < 0.01, ***p < 0.001

workers have been excluded. Estimation results are very similar: education has positive impact on the probability of labor force participation of women as in the recursive-mixed process. In Table 6, we see that 1 year increment in education increase the probability of labor force participation of women by 0.014 and 0.004 in 2004 and 2014, respectively. After the exclusion of unpaid family workers, effect of education has risen considerably. Its effects are 0.023 and 0.013 in corresponding years. Number of children under 4 years old affects negatively the probability. But, interaction term, which represents multiplication of marital status (married) and number of children under the 4 years old, has bigger negative effect than its multipliers. Mothers have more difficult situation in terms of participating the labor force in Turkey. This interaction term decreases the probability of labor force participation of women by 0.049 and 0.069 in 2004 and 2013, respectively. There is one extra parameter that does not exist in recursive mixed-process: special regressor. The apparent sing of special regressor is positive. Its actual sing is negative because it was multiplied by minus one before estimation. Probability of labor force participation of women decreases with increasing age in special

Table 7 Estimation with special regressor. Unpaid family workers excluded

	2004	2005	2006	2007	2008	2009
Special regressor	0.027*** (0.002)	0.028*** (0.002)	0.025*** (0.002)	0.029*** (0.002)	0.026*** (0.002)	0.023*** (0.002)
Education	0.023*** (0.003)	0.016*** (0.003)	0.020*** (0.003)	0.019*** (0.003)	0.017*** (0.003)	0.018*** (0.002)
Married	0.007 (0.042)	-0.131* (0.054)	-0.032 (0.035)	-0.016 (0.023)	-0.010 (0.031)	0.011 (0.027)
<4 years old child.	-0.045*** (0.013)	-0.091*** (0.013)	-0.038** (0.013)	-0.066*** (0.013)	-0.022 (0.015)	-0.050*** (0.012)
<4 years old child. × married	-0.049 (0.062)	0.129* (0.059)	-0.025 (0.056)	-0.116*** (0.031)	-0.120** (0.038)	-0.031 (0.050)
Regions						
West Marmara	-0.013 (0.033)	-0.007 (0.036)	-0.061 (0.044)	-0.066* (0.033)	-0.017 (0.030)	0.003 (0.026)
Aegean	0.016 (0.023)	-0.029 (0.022)	-0.051* (0.021)	-0.085*** (0.020)	-0.061** (0.020)	-0.028 (0.018)
East Marmara	-0.031 (0.025)	-0.011 (0.023)	-0.038 (0.024)	-0.041 (0.023)	0.002 (0.020)	-0.024 (0.020)
West Anatolia	0.021 (0.026)	0.017 (0.022)	0.011 (0.024)	-0.021 (0.022)	-0.006 (0.023)	0.006 (0.021)
Mediterranean	-0.039 (0.023)	-0.086*** (0.022)	-0.064** (0.022)	-0.075*** (0.021)	-0.067** (0.021)	-0.083*** (0.020)
Central Anatolia	-0.122*** (0.033)	-0.084** (0.028)	-0.122*** (0.028)	-0.212*** (0.029)	-0.150*** (0.032)	-0.133*** (0.030)
West Black Sea	-0.062* (0.026)	-0.083*** (0.022)	-0.062** (0.023)	-0.095*** (0.022)	-0.089*** (0.025)	-0.076*** (0.023)
East Black Sea	0.027 (0.039)	-0.060 (0.037)	0.001 (0.037)	-0.043 (0.036)	0.062 (0.043)	0.006 (0.034)
Northeast Anatolia	-0.131*** (0.038)	-0.167*** (0.032)	-0.130*** (0.031)	-0.196*** (0.029)	-0.188*** (0.031)	-0.182*** (0.031)
Central East Anatolia	-0.142*** (0.032)	-0.200*** (0.028)	-0.178*** (0.028)	-0.179*** (0.026)	-0.190*** (0.024)	-0.154*** (0.024)
Southeast Anatolia	-0.216*** (0.036)	-0.235*** (0.028)	-0.208*** (0.029)	-0.260*** (0.029)	-0.240*** (0.028)	-0.196*** (0.026)
Constant	-0.144*** (0.034)	-0.041 (0.028)	-0.059 (0.032)	-0.029 (0.030)	-0.049 (0.030)	-0.057* (0.027)
N	6636	7600	8464	8560	8640	9615
		2010	2011	2012	2013	2014
Special regressor		0.025*** (0.001)	0.019*** (0.002)	0.021*** (0.002)	0.021*** (0.001)	0.022*** (0.002)
Education		0.020*** (0.002)	0.013*** (0.002)	0.015*** (0.002)	0.012*** (0.002)	0.013*** (0.002)
Married		-0.059* (0.023)	-0.023 (0.023)	-0.007 (0.018)	0.021 (0.024)	-0.060** (0.020)
<4 years old child.		-0.060*** (0.014)	-0.046*** (0.014)	-0.053*** (0.014)	-0.059*** (0.014)	
<4 years old child. × married		0.042 (0.049)	0.047 (0.036)	-0.099** (0.038)	-0.069* (0.028)	

(continued)

Table 7 (continued)

	2010	2011	2012	2013	2014
Regions					
West Marmara	-0.095*** (0.025)	-0.063* (0.026)	-0.047* (0.022)	-0.073** (0.022)	-0.098*** (0.021)
Aegean	-0.030 (0.017)	-0.020 (0.018)	-0.001 (0.017)	0.008 (0.016)	-0.051** (0.016)
East Marmara	-0.052* (0.022)	-0.024 (0.019)	-0.056** (0.018)	-0.036* (0.017)	-0.025 (0.017)
West Anatolia	-0.061*** (0.019)	-0.053** (0.017)	-0.044** (0.016)	-0.041** (0.016)	-0.032 (0.016)
Mediterranean	-0.045* (0.018)	-0.071*** (0.018)	-0.065*** (0.017)	-0.064*** (0.016)	-0.104*** (0.020)
Central Anatolia	-0.158*** (0.022)	-0.134*** (0.025)	-0.148*** (0.025)	-0.138*** (0.023)	-0.135*** (0.024)
West Black Sea	-0.101*** (0.026)	-0.073** (0.023)	-0.071*** (0.021)	-0.098*** (0.025)	-0.168*** (0.025)
East Black Sea	-0.036 (0.024)	-0.030 (0.023)	-0.050* (0.023)	-0.079*** (0.022)	-0.134*** (0.023)
Northeast Anatolia	-0.188*** (0.026)	-0.169*** (0.028)	-0.175*** (0.026)	-0.134*** (0.026)	-0.275*** (0.033)
Central East Anatolia	-0.179*** (0.025)	-0.155*** (0.028)	-0.148*** (0.028)	-0.116*** (0.022)	-0.231*** (0.028)
Southeast Anatolia	-0.231*** (0.027)	-0.200*** (0.026)	-0.224*** (0.027)	-0.183*** (0.021)	-0.245*** (0.026)
Constant	-0.053* (0.026)	-0.025 (0.025)	-0.037 (0.022)	-0.002 (0.024)	0.010 (0.026)
N	10,186	10,414	10,511	10,500	10,199

Bootstrapped standard errors in parentheses (200 replications)

*p < 0.05, **p < 0.01, ***p < 0.001

regression. When we look at the effects of regions in Table 6, regions have negative effects on the probability of labor force participation of women in most of years. Negative sign has been seen consistently in all years in the east part of Turkey. The highest negative effects have been found again in Southeast and Central East Anatolia. The number of regions which have negative effects across years has increased after the exclusion of unpaid family workers. This, again, confirms us in terms of doubts on employment status of unpaid family workers.

5 Conclusions

Female labor force participation is probably one of the most studied topics in labor economics literature. The importance of human capital and its scarcity lays behind this big interest. Using production factors efficiently is vital. Especially developing and less developed countries suffers from human capital scarcity in their countries.

Thus, understanding the factors that influence female labor force participation is very important. It is also important that labor force participation of males. However, female labor force participation rates always fall behind of the rates of males in all development levels. Therefore, special attention should be given to this topic. Using nontraditional econometric methodologies, this paper has tried to uncover the determinants of female labor force participation in Turkey.

Study findings have demonstrated that, like previous studies, education, being married and having children are important classic determinants of FLFP. Better education quality and child benefit support for mothers may help women. Beside these classic determinants, regional variables save their sing persistently in different specifications. Even exclusion different observations, region variables are still negative and quite high. This may be a sign of cultural and social attitudes towards women. We have seen that cultural factors are very important in the FLFP. We know that it is not easy to change cultural beliefs and social norms but policy makers should work hard on this issue. We believe in that education is the key policy device to change the attitudes toward women.

Appendix: Descriptive Statistics

Variables	2000	2001	2002	2003	2004	2005	2006	2007
LFP	0.22 (0.42)	0.23 (0.42)	0.25 (0.43)	0.24 (0.43)	0.25 (0.43)	0.25 (0.43)	0.25 (0.43)	0.25 (0.43)
Education	5.67 (4.1)	5.6 (4.1)	5.77 (4.1)	5.92 (4.1)	5.56 (4.1)	5.6 (4.2)	5.61 (4.3)	5.72 (4.3)
Married	0.68 (0.47)	0.68 (0.47)	0.68 (0.47)	0.67 (0.47)	0.68 (0.46)	0.68 (0.47)	0.68 (0.46)	0.69 (0.46)
Age								
15–19	0.16 (0.37)	0.16 (0.37)	0.15 (0.36)	0.15 (0.36)	0.15 (0.35)	0.14 (0.35)	0.14 (0.35)	0.13 (0.34)
20–24	0.14 (0.35)	0.14 (.35)	0.14 (0.35)	0.14 (0.35)	0.13 (0.34)	0.13 (0.34)	0.13 (0.33)	0.12 (0.33)
25–29	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)	0.13 (0.33)	0.13 (0.34)
30–34	0.11 (0.32)	0.12 (0.32)	0.12 (0.32)	0.11 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)
35–39	0.11 (0.32)	0.11 (0.32)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)	0.10 (0.31)	0.10 (0.30)	0.11 (0.31)
40–44	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)
45–49	0.08 (0.27)	0.08 (0.28)	0.09 (0.28)	0.09 (0.28)	0.09 (0.28)	0.09 (0.28)	0.09 (0.28)	0.09 (0.29)
50–54	0.07 (0.26)	0.07 (0.26)	0.07 (0.26)	0.07 (0.26)	0.07 (0.26)	0.08 (0.27)	0.08 (0.27)	0.08 (0.28)
55–59	0.05 (0.22)	0.05 (0.22)	0.05 (0.21)	0.05 (0.22)	0.06 (0.23)	0.06 (0.24)	0.06 (0.24)	0.06 (0.25)
60–64	0.05 (0.21)	0.05 (0.21)	0.05 (0.21)	0.05 (0.21)	0.05 (0.21)	0.05 (0.21)	0.05 (0.21)	0.05 (0.22)

(continued)

Variables	2000	2001	2002	2003	2004	2005	2006	2007
<4 years old child.	0.33 (0.65)	0.35 (0.66)	0.34 (0.65)	0.33 (0.63)	0.37 (0.68)	0.37 (0.67)	0.37 (0.68)	0.35 (0.67)
<4 years old child. × married	0.28 (0.61)	0.29 (0.62)	0.29 (0.61)	0.27 (0.59)	0.30 (0.63)	0.30 (0.62)	0.30 (0.63)	0.29 (0.62)
Rural	0.24 (0.42)	0.24 (0.43)	0.24 (0.43)	0.23 (0.42)	0.13 (0.34)	0.29 (0.62)		
Regions								
İstanbul					0.13 (0.33)	0.12 (0.33)	0.12 (0.33)	0.13 (0.33)
West Marmara					0.04 (0.20)	0.05 (0.21)	0.05 (0.21)	0.05 (0.22)
Aegean					0.15 (0.36)	0.15 (0.35)	0.15 (0.36)	0.16 (0.36)
East Marmara					0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.09 (0.29)
West Anatolia					0.09 (0.28)	0.08 (0.28)	0.08 (0.27)	0.08 (0.27)
Mediterranean					0.10 (0.30)	0.11 (0.31)	0.11 (0.31)	0.11 (0.32)
Central Anatolia					0.05 (0.22)	0.06 (0.23)	0.06 (0.23)	0.05 (0.22)
West Black Sea					0.10 (0.30)	0.10 (0.30)	0.09 (0.29)	0.09 (0.29)
East Black Sea					0.04 (0.20)	0.04 (0.19)	0.03 (0.18)	0.03 (0.18)
Northeast Anatolia					0.05 (0.21)	0.04 (0.20)	0.04 (0.21)	0.05 (0.21)
Central East Anatolia					0.06 (0.24)	0.06 (0.23)	0.05 (0.22)	0.05 (0.23)
Southeast Anatolia					0.09 (0.28)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)
N	97,625	101,364	101,957	100,014	157,485	163,942	167,033	162,075
Variables								
LFP	0.26 (0.44)	28 (0.45)	0.29 (0.46)	0.30 (0.46)	0.31 (0.46)	0.32 (0.47)	0.34 (0.47)	0.34 (0.47)
Education	5.82 (4.4)	5.92 (4.4)	6.1 (4.4)	6.24 (4.5)	6.43 (4.5)	6.6 (4.5)	6.41 (4.5)	6.41 (4.5)
Married	0.70 (0.46)	0.69 (0.46)	0.70 (0.46)	0.69 (0.46)	0.68 (0.46)	0.68 (0.47)	0.69 (0.46)	0.69 (0.46)
Age								
15–19	0.13 (0.34)	0.13 (0.34)	0.13 (0.34)	0.13 (0.33)	0.13 (0.33)	0.12 (0.33)	0.13 (0.33)	0.13 (0.33)
20–24	0.12 (0.33)	0.12 (0.32)	0.11 (0.31)	0.11 (0.31)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)
25–29	0.13 (0.33)	0.12 (0.33)	0.12 (0.32)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)	0 (0)
30–34	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.10 (0.30)
35–39	0.11 (0.31)	0.11 (0.32)	0.11 (0.32)	0.11 (0.32)	0.11 (0.32)	0.11 (0.32)	0.11 (0.32)	0.11 (0.32)
40–44	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)
45–49	0.09 (0.29)	0.10 (0.29)	0.10 (0.30)	0.10 (0.31)	0.10 (0.30)	0.10 (0.30)	0.11 (0.31)	0.11 (0.31)

(continued)

Variables	2008	2009	2010	2011	2012	2013	2014
50–54	0.08 (0.27)	0.08 (0.27)	0.10 (0.28)	0.08 (0.28)	0.09 (0.28)	0.09 (0.29)	0.10 (0.30)
55–59	0.07 (0.25)	0.07 (0.25)	0.07 (0.26)	0.08 (0.27)	0.08 (0.27)	0.08 (0.27)	0.10 (0.30)
60–64	0.05 (0.22)	0.05 (0.22)	0.06 (0.23)	0.06 (0.23)	0.06 (0.24)	0.06 (0.24)	0.08 (0.27)
<4 years old child.	0.36 (0.67)	0.35 (0.67)	0.33 (0.64)	0.32 (0.62)	0.30 (0.60)	0.29 (0.58)	
<4 years old child. × married	0.30 (0.62)	0.29 (0.62)	0.28 (0.60)	0.27 (0.58)	0.25 (0.56)	0.24 (0.54)	
Rural							
Regions							
İstanbul	0.13 (0.33)	0.12 (0.33)	0.11 (0.32)	0.11 (0.31)	0.11 (0.31)	0.11 (0.31)	0.10 (0.29)
West Marmara	0.06 (0.23)	0.06 (0.24)	0.06 (0.24)	0.07 (0.25)	0.07 (0.25)	0.06 (0.25)	0.07 (0.25)
Aegean	0.15 (0.36)	0.14 (0.35)	0.13 (0.33)	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)	0.12 (0.33)
East Marmara	0.09 (0.29)	0.09 (0.29)	0.09 (0.28)	0.09 (0.28)	0.09 (0.28)	0.09 (0.28)	
West Anatolia	0.08 (0.27)	0.10 (0.30)	0.13 (0.33)	0.14 (0.35)	0.14 (0.35)	0.14 (0.35)	0.11 (0.31)
Mediterranean	0.11 (0.31)	0.11 (0.32)	0.11 (0.31)	0.12 (0.32)	0.12 (0.32)	0.12 (0.32)	0.11 (0.31)
Central Anatolia	0.05 (0.21)	0.05 (0.21)	0.06 (0.24)	0.07 (0.25)	0.06 (0.24)	0.06 (0.24)	0.06 (0.24)
West Black Sea	0.09 (0.30)	0.09 (0.28)	0.07 (0.26)	0.07 (0.25)	0.07 (0.25)	0.06 (0.25)	0.09 (0.28)
East Black Sea	0.03 (0.17)	0.03 (0.18)	0.05 (0.21)	0.05 (0.23)	0.05 (0.22)	0.05 (0.22)	0.04 (0.20)
Northeast Anatolia	0.05 (0.21)	0.05 (0.21)	0.05 (0.22)	0.05 (0.23)	0.05 (0.22)	0.05 (0.22)	0.06 (0.24)
Central East Anatolia	0.06 (0.23)	0.06 (0.23)	0.05 (0.21)	0.04 (0.20)	0.04 (0.20)		
Southeast Anatolia	0.10 (0.30)	0.10 (0.30)	0.09 (0.28)	0.08 (0.27)	0.08 (0.27)	0.08 (0.27)	0.10 (0.30)
N	162,326	168,751	175,671	174,900	173,711	170,972	174,553

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Part III
Growth and Development

The Effect of Human Capital on Economic Growth: A Time Series Analysis for Turkey

Zeki Kartal, Aida Zhumasheva, and Hakan Acaroglu

Abstract In a globalizing world economy, human capital is the main factor of intensive development for countries which carry out anticipatory investment in human capital. This organizes its advantages for these countries, by creating the best conditions for work and life. An important advantage in creating a stable environment for growth is that the country has the accumulated high-quality human capital, such as education, health, science, management and other fields. The core of human capital, of course, is human beings, but now, the main component is an educated, creative and enterprising individual, with a high level of professionalism. The human capital in the economy determines the main share of the national wealth of country. Therefore, most of all researchers believe human capital is the most valuable resource of the post-industrial society, and it is much more important than natural or accumulated wealth. In all countries, human capital defines the rate of economic development, scientific and technological progress. Accordingly, the public interest in the education and health systems increases. This paper tries to estimate the effect of human capital through education and health on economic growth. The estimation is conducted by a Cobb-Douglas production function, in which labor, human capital, and physical capital are shown as factors of production. The Cobb-Douglas production function is preferred by time series data on education, health, physical capital, labor and economic growth for the period of 1960–2011 of Turkey. The period is divided into five sub-divisions, series 1: 1960–1980, series 2: 1981–2001, series 3: 1981–2011, series 4: 2002–2011, and series 5: 1960–2011. The findings indicate a positive impact of human capital on economic growth for both health and education. In addition, health policies were much more effective in the period of 2002–2011. The policies should be continued in the health sector for a sustainable development. But in order to attain a higher level of benefits from human capital, it is necessary to implement effective economic policies related to the education expenditures.

Keywords Economic growth • Human capital • Education • Health • Cobb-Douglas production function

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1 Introduction

Human capital is one of the most important factors of economic growth in the modern world. Representatives of the various economic theories have developed the idea of the dependence of economic well-being on the quality characteristics of the society and they have determined that economic development has been closely related to human development.

The conditions of scientific and technological revolution in the developed countries formed a deficit of highly qualified personnel. The studies shifted from the processes of use of available labor force to the process of formation of the labor force of a qualitatively new level. Structural changes in the total labor force have led to increase the interest of scientist to the factors of economic growth and have led to the development of modern human capital theory, emergence of the new institutional economic theory. The changing role of the labor force in the manufacturing process could not but cause a new trend of studies in science, in which the object of study is the processes of formation and use of human capital.

It is important to note that theory of human capital is formed and developed in the works of Mincer (1958, 1995), Schultz (1961, 1970), Becker (1962), Nelson and Phelps (1966), Ben-Porath (1967, 1970), Bowles and Gintis (1975), Heckman (1976), Lucas (1988), Griliches (1997), Katz and Goldin (1998), Gardner and Gardner (2001), Acemoglu and Autor (2012), Acemoglu et al. (2014).

This trend in economic theory is developed and used to study such spheres of social reproduction as education, health, family economics, and theory of economic growth. More recent works support the relationship between growth and human capital (Barro and Sala-i-Martin 2004). Thus, countries with higher levels of human capital have greater potential for future growth.

This situation has increased the interest in the study of the contribution of education and vocational training to the process of wealth creation. Analysis of descriptive nature very soon is complemented by new developments in the field of theory of the endogenous growth of such researchers as Nelson and Phelps (1966), Arrow et al. (1961), Arrow (1962), Uzawa (1965).

According to Aghion and Howitt (1992), economic growth depends primarily on the level of human capital development. The second approach, formulated by Lucas (1988), he both focuses on the accumulation of human capital as a factor in explaining the economic growth and the social effects of education, suggesting that the average level of human capital has a positive impact on the performance of individuals.

Benhabib and Spiegel (1994) estimate standard Cobb-Douglas production function by using physical and human capital stocks as determinants of economic growth. The labor, human and physical capital enters as factors of production. The obtained results from the regression are positive.

In the middle of the twentieth century, economists Mincer (1958), Schultz (1961) and Becker (1962) introduced the largest contribution to the modern concept development. Human capital is treated as an investment project, which is expected

to return in the form of higher incomes and economic growth. Models have been constructed, where the characteristics of the personal income distribution are explained on the basis of differences between individuals in terms of the received education. As a result, it formed “a function of income,” according to which individual income depends solely on the level of education and years of practical experience. The main components of the human capital are considered education and public health.

Becker (1962) investigates the issue of economic growth by investment in human capital. The quantitative analysis shows that investing in education, health, migration lead to large revenues in the future. In theory by Schultz (1961), the results of investment in human capital are the accumulation of abilities of people to work, their creative activity in society, the maintenance of most people’s lives and health. Thus, human capital is the quality of the economy, which varies with the skills, knowledge, and is recognized as a part of national wealth and the most important factor of economic growth.

The study of Barro (1992) evaluates human capital as a key part of economic growth and its positive effect. Also, Mankiw et al. (1992) show that physical and human capital plays an important role in development, by using Solow growth model. The endogenous side of the model contains human capital as one of the substantial factors of economic growth.

This article aims to examine the effect of human capital on economic growth for Turkey. Education and health are used as the variables of human capital. The concept of “human capital” is key to understanding the major trends in the development of society and economy of Turkey. This data enables the evaluation of the interaction between human capital and economic growth. It is obtained from Freenstra et al. (2015) which are also known as Penn World Table, version 8.1, and from the World Bank Indicators. The estimation is conducted by a Cobb-Douglas production function, in which labor, human capital, and physical capital are shown as factors of production. The Cobb-Douglas production function is implied by time series data on education, health, physical capital, labor and economic growth in Turkey for the period of 1960–2011. The period is divided into five sub-divisions, series 1: 1960–1980, series 2: 1981–2001, series 3: 1981–2011, series 4: 2002–2011, and series 5: 1960–2011. The study sums up empirical findings by using these time intervals and by considering the whole period. The study sums up the empirical findings having used the time intervals and the period as a whole. These results afford to point out the role of human capital in the growth course.

The article is organized as follows. Section 2 discusses the role of human capital in economic growth. Section 3 briefly outlines the human capital measurements. Section 4 explores the basic model and data and, Sect. 5 contains the conclusion.

2 Economic Growth and Human Capital

Human capital is a form of capital; it increases the productivity of labor. Ever since the time of such economists as Smith (1776), Mill (1909), Marx (1983), Marshall (1895), the relationship between abilities, knowledge, people and capital was known.

Human capital and investments in intangible forms of capital became the determining factor in the second half of the twentieth century. In the transition to the knowledge economy, which was preceded by globalization and post-industrial economy, human capital was a force that led to competitiveness, sustainable development, improvement of the level of financial security and living conditions, and design of a sustainable future of states.

Direct dependence of the growth rate of investment in human capital is considered, and how technological progress transforms the human capital into economic growth was shown in endogenous and exogenous growth models (Mankiw et al. 1992).

2.1 *Definition and Evolution (Development) of Human Capital*

The emergence of private capital theory in the second half of twentieth century is the yield of formation of an innovative economy of post-industrial and information societies. The concept of capital combines dissimilar interpretations given by all sorts of economic schools at different times. Analyzing capital, Smith (1776) showed that output growth—is the result of capital activity. Under the capital, he understood the material factor of production, as the supply of goods or money, which their owner expects to receive income from its usage.

Marx (1983) considered the term capital as self-expanding value and considered social relations important, which are necessary conditions for self-expansion of value. In Marxist theory, the means of labor can become the capital after its owners enter into economic relationships with the owners of the labor force.

In the neoclassical theory, capital is treated as a factor of production, created by the economic system, rather than as a specific economic relation. The main feature of capital is considered to be its ability to generate income, which is in constant circulation.

For the first time, the term “human capital” appeared in the works of Schultz (1961) in the second half of the twentieth century. In the article of Schultz (1960), being interested in the difficult position of the underdeveloped countries, he concludes that the improvement of material support of poorer segments of society depends not only on the means of production but also on the knowledge and work skills. Schultz (1960) was one of the first who introduced the concept of human capital as a productive factor and understood by this term the individual’s ability to

work—education and occupational skills. And Becker (1962)—successor of Schultz's (1961) ideas—formulated human capital not only in the form of spending on education, accumulation of professional experience, but also as on health protection, culture, migration, and information retrieval.

Kuznets (1952) identified accumulated human capital as the most important priority of all the necessary factors of development. Using the term Gross Domestic Product in economic theory for the first time, he argued the impossibility of moving to the next technological structure of the economy, not reaching a certain threshold of accumulated human capital. He believed that the high level and quality of the human capital of a country with a developing economy brings GDP to steady growth and improvement and well-being of the population (Sarigiannidou and Palivos 2012).

What Barro (1991) understands from the human capital is that, it is the capital in the form of intelligence obtained through formal training or education, or through practical experience. In modern economic literature, human capital is recognized as an independent factor in socio-economic development, and the concept of human capital is actively developed.

2.2 Investments in Human Capital

It is a well-known opinion that the more money the state invests in the social sphere, the better its economy develops. Because the private capital of a nation depends on the state's social sphere. In all countries, the private capital determines the rate of economic development as well as scientific and technological progress, which is the accumulated cost of health support, general and special education, costs associated with job search, vocational training at the place of production, searching for information on prices and wages, and labor movement (Barro and Sala-i-Martin 2004).

With the changes of the economic situation in the world, an employee comes to the fore, and the importance of human capital accumulation increases. Investments in human capital—is any measure taken to improve productivity in order to increase future revenues (Fisher 1906).

All types of expenses in the social sphere, which contribute to the growth of labor efficiency and affect the growth of income of individual owners of capital and the whole society, are regarded as an investment in human capital. Therefore, the analysis of return on investment shall compulsorily consider the socio-economic indicator of the areas. Types of investments in human capital are classified by type of expenses, divided by industry of social sphere such as health capital, education capital and capital of culture.

Education and training at the place of production increase the level of knowledge of the human, form qualified and more productive forces, thereby increasing the amount of human capital. Investments, related to health protection, prolong human

life by slowing down the physical deterioration of human capital (Gardner and Gardner 2001).

Investments in the capital of culture are essential for modern society, where the disintegration of the common social values happens. The effectiveness of human labor also depends on the overall level of its culture, which is a condition for training, confirmed by many studies. Kendrick (1976) was the first to apply a unique approach. He distinguished the method of calculating the value of the cost of human capital. He included the family expenditure on education of children, the movement of labor, obtaining a certain specialty, health care, training, professional development, and others to the investments in human capital.

According to Blaug (1992), the concept of human capital, or the idea of a hard core research program of human capital, lies in the fact that people are spending the resources in different ways—not only to meet current needs, but also for the future of monetary and non-monetary income. Thus, the role of human capital is justified as one of the key factors for socio-economic development in the modern economic literature.

2.2.1 Education Investments

We can confidently state that the modern world economy almost came to a new stage of formation in innovative society, where a central place is given to a person, as the main strategic resource. In terms of innovative production, the productive forces of the person are implemented in the form of human capital. When the limits of natural resources used are apparent, human capital becomes more important as the most valuable resource. And in order to function successfully in the new economic reality, awareness of the much higher degree of dependence of the results of economic development from a person is not enough, but also it is necessary to recognize the importance of investments in creation of totality of the conditions, ensuring the quality of human capital and efficiency of its use.

Every economic structure of the economy is linked to a corresponding stage of human capital development, and with its new high quality, especially in science and innovation. At present time, education appears as an investment in intellectual capital. The decisive factor in economic development is the human and a source of economic growth is education (Katz and Goldin 1998).

Scientific thought that the investments in human capital contribute to economic growth has been studied in since the days of Smith (1776), and Ricardo (1817). Expenses that increase the productive qualities and characteristics of the individual, “can be seen as an investment, because the operating costs are carried out with the expectation that these costs will be many times offset by the increased revenue stream in the future”, as the capital is acquired and increased by investment and provides long-lasting economic effect. For a long time, the investment in education is considered to be extravagant. And the justification of importance of investment in human as a factor of economic growth in works of Becker (1962) and Schultz (1960) and their followers made a revolution in labor economics. According to their

theory, educational investments were seen as a source of growth and education contributes to the growth of national income. And in the second half of the twentieth century, relation to education completely changed.

Denison (1962) classified the factors of economic growth in the first place considering quality of the workforce, which are the human potential of the country. In turn, the presence of the highest qualification and quality makes person inaccessible to competitors with less rich human capital, because competitors cannot use the same advanced technology with high efficiency.

The demand for education on the part of potential employees is determined by their need to receive long-term economic benefits realized as a high salary, career growth, raising the professional status and satisfaction obtained in the course of the entire life. Thus, investments in education are the most profitable of the investments, the profitability of which in the long run is higher than investments in physical capital. When making an investment decision, there is a question between the consumption immediately meeting the needs and investments creating more opportunities for production of goods and services in the future because of the dual characteristics of education, as long as the education is both a consumption and investment.

2.2.2 Health Investments

At the present stage of world development, investment in the human factor is considered to be a priority for investment. Positioning humans as the primary object of capital investment indicates a profitable investment (Grossman 1972a). Investing in human contributes to the multiplication of the human capital. Enhancing human capital in a society depends on the state. The more of investments in the health care by the state, the easier to a person to maintain their further development. Payment for medical services is made at the expense of personal funds of people due to lack of health insurance. Accordingly, there is a reduction of family income, its ability to make money and without state aid, it will be difficult for a person to increase its capacity. But we must not forget about the prevention of diseases, which will significantly reduce the funds needed for the treatment.

Functional objective of investment(s) in health contributes to the restoration and maintenance of the creative powers of man, thus retaining the number of a labor force, and increasing labor potential. Such investments have a significant impact on the formation of human capital of the next generation workforce. High rates in physical and mental health of the population are the main precondition and foundation for human capital accumulation, and the low level of health makes it ineffective in other areas of investment, i.e., prevent the accumulation of health capital.

In the seventies, the concept of health capital was developed; a significant contribution to the development was made by Grossman (1972a). He believed health and medicine are industries that produce "health capital". According to the model proposed by the demand for the health of Grossman (1972a), health has a

dual nature and is seen as a consumer good and a means for profit. In the approach to health as an economic good Grossman (1972a) sees durable goods for the production of human capital. Health, reducing the number of sick days, increases the number of days to engage in any activity. By increasing the number of “healthy days” health production has an impact on the receipt of income and leisure time. It is not only presented in the individual health demand, but he himself produces it when exposed to stock health deterioration.

Besides, there is the view from Grossman (1972b) that there is a connection between health and education. According to scientists, education is an important factor of health’s production. Only educated individuals understand the potential harm of certain actions and their advantage. People with good health, reasonably believe that they live longer, and therefore are more cautious about their savings. The state of health depends not only on income but also on their distribution—of consumption, savings, and investment.

3 Factor of Human Capital

The people are the wealth of each country. Economic growth is permissible with increasing funding for such areas of the economy as human capital, health, quality of the workforce, culture and infrastructure (Becker 1975).

The formation of human capital—is a long process of searching for and improving human performance, improving the productive qualities of the workforce and professionalism. Its formation occurs through the creation of comfortable living conditions: income growth, cultural environment, modern medical and educational services. These objectives can be achieved through the use of state policy in the field of health, culture, education and training.

Increased life expectancy, knowledge, and skills have a positive impact on human capital formation. Economic, social, demographic, industrial, institutional, integration factors directly influence the formation of human capital. One of the important tasks of the state is to develop the intellectual, physical and spiritual human capabilities and human capital accumulation. In so far as economic growth depends on the extent of human capital formation. So, if the greater potential is possessed by every individual, it will increase the intellectual resources of the whole country, and the economic growth will be more dynamic in this way.

3.1 Human Development Index

The Human Development Index (HDI) is a statistic that defines the countries’ human development in the world. The index is calculated annually by the connoisseurs of the United Nations Development Programme (UNDP) and independent international groups. Experts use measures of life expectancy, education and

per-capita income in their work (UNDP 1990). The concept of human development is one of the most prominent intellectual products developed by UNDP. The main program element of the project is the concept of human development as such. This belief system of development lies on the empowerment of human choice. The receipt of income is an important factor, but it cannot be considered as an aim in human life. The idea of development is not in receipt of income, but in expanding human choices.

In contrast to previous theories which were based on the gross national product index, the human development concept focused on the person and proclaims human welfare as the main and only purpose of development. The development is a process of expanding the capabilities of people, and not as an increase in material either economic well-being or satisfaction (Anand and Sen 1994). Human potential and efficiency of its implementation determine the level of socio-economic and cultural development of nations in the modern world. The prosperity of human life is the focus of the concept of human development. The human development process is avoiding the accumulation of physical capital in the direction of the human capital's accumulation. It allows people to lead a life that represents the value to them, and to implement their human potential.

The main strategic tool for the human development concept is the Human Development Index, which was developed in 1990 by Pakistani economist Haq (2003) whose team included known economists such as Sen (1997), Desai (1991) and Stanton (2007). The original idea of the study is that social development must be assessed not only on the national income, as it was practiced before, but also in health and education, which is measured in most countries. The Human Development Index is a cumulated measure of human development in a country. Sometimes it is used as a synonym for such economic terms as living standard or quality of life.

Human Development Index combines three equally important and quantifiable components:

- (1) Longevity, determined by life expectancy at birth. This element characterizes the ability to live a healthy and long life.
- (2) Education, defined by literacy rates and school enrollment.
- (3) Income, measured by gross national income (GNI) per capita at purchasing power parity (PPP).

Thus, the HDI divides countries into groups with different levels of human development. Regardless of the level of economic development, the groups are divided into the countries with high human development, the countries with medium human development and countries with low human development. The rankings of these countries are based on numerical values from 0 to 1 (Desai 1991).

In order to measure the human development in a more advanced fashion, the Human Development Report (UNDP 1990) has introduced the three composite indexes: HDI adjusted for inequality, the HDI takes into account the level of inequality; Gender Development Index (GDI) compares the value of the HDI for men and women which emphasize the empowerment of women; Multidimensional Poverty Index (MPI) measures the aspects of poverty, not income-related.

3.2 Technological Development

Industrial and scientific-technical revolution and technological transformation trends are considered from the standpoint of the development of human capital (HC). Analysis of these processes shows that human capital and its cycles of growth are the main factors contributing to the functioning and development of innovation activity, the development of the world economy and society (Nelson and Phelps 1966).

This is explained by the fact that changes in the economy and society, and major innovations were carried out on the basis of the increasing role of human capital and its accumulation in the process of development of the country. Along with the accumulation of knowledge by human society, science and education were developed gradually. A highly professional layer of society was formed, under whose command a jump in the development of mankind was made. In the future, the knowledge implemented in technology has an effect on technological progress, which in turn affected the economic growth (Messinis and Ahmed 2008).

The models that explain the sources of growth, reflect theoretical ideas of the influence of human capital on innovative development. The technical progress parameters began to be taken into account in them. And the aspects related to the introduction of innovations initiated and provided enhancement of the role of innovation in economic growth (Romer 1990).

The number of studies, theoretically substantiating the impact of human capital on the diffusion of technology and innovation, is negligible. Among them, there are works with a positive impact of human capital on the diffusion of technology (Kneller 2005). Few studies have calculated the minimum level of human capital necessary for catching up on the technological leader (Benhabib and Spiegel 2003). In conclusion, we can say that human capital contributes to raising the professional level of the population and greater production of investments in education. These factors, in turn, contribute to increasing the welfare of the people and innovative transformation.

4 Econometric Analysis and Results

4.1 Data, Assumptions, Model, and Methodology

The data is obtained from Freenstra et al. (2015) which is known as Penn World Table, version 8.1, and also from the World Bank Indicators. The dependent variable abbreviated as “rgdpo” in the original data sheet is taken as an output (Real GDP) for Turkey is calculated by output-side real GDP at chained PPP_s (in mil. 2005 US\$). The explanatory or independent variables are capital, labor, and human capital. Capital is abbreviated as “pl_k” in the original data sheet is taken as capital stock (Capital) for Turkey calculated by price level of capital stock, the price

level of the USA in 2005 = 1. Labor is abbreviated as “avh” in the original data sheet is taken as labor force (Labor) for Turkey is calculated by average annual hours worked by persons engaged. Human capital for education is abbreviated as “hc” in the original data sheet is taken as human capital that is calculated by education (HC) for Turkey is calculated by the index of human capital per person, based on years of schooling (Barro and Lee 2013) and returns to education (Psacharopoulos 1994). Human capital for health is taken as human capital that is calculated by health (HC) for Turkey is calculated by life expectancy at birth, total (years).

It is important to note that, even though the technology level that is indicated in production function and abbreviated as “ A_t ” corresponds to some specific value, it is assumed to “equal” a constant (intercept) value and has little effect on output. We assume like that because Turkey is not effectively producing technological products. By this assumption, we may encounter with lower R^2 values than it should be in reality.

Neoclassical models tell that the output level depends on labor, the stock of capital and the technology level. There exist arguments about the expression style of the human capital that can be both determined by education and health in endogenous growth theory. The output is not estimated adequately in the case of it is used along with the other variables that determine the production function. Griliches (1997) states that human capital should be taken as a separate variable in the estimation of a production function. This study follows this path and considers human capital as a separate variable from labor and capital. This approach is convenient with the studies Benhabib and Spiegel (1994), Gemmell (1996), Chi (2008), Zhang and Zhuang (2011), Rao and Vadlamannati (2011), and Jalil and Idrees (2013).

Our study follows Rao and Vadlamannati (2011), and Jalil and Idress (2013)’s work, and defines the Cobb-Douglas production function as;

$$Y_t = A_t K_t^\alpha (H_t L_t)^\beta \tag{1}$$

where Y is the output, A is the technology level, K is the capital stock, H is the human capital level, and L is the labor. As a methodology, Eq. (1) is linearized by taking the natural log of both sides of the equity. Therefore, both the natural logarithm of output, and capital and multiplication of human capital and labor are obtained. The linearized form of the Eq. (1) is shown in Eq. (2).

$$\ln Y_t = \ln A_t + \alpha \ln K_t + \beta \ln (H_t * L_t) \tag{2}$$

After that, we can use linear regression time series model for predictions of α , β , and their estimates. So we will have R^2 and F statistics. We will look at whether the coefficients of capital and labor are significant by checking their t values. Lastly, the economic interpretation of the α and β values will be made. Here, while α shows the elasticity of capital stock, β shows the elasticity of human capital times labor. If α plus β is equal to one than we will have a constant return to scale production

function which means it is unit elastic. If the summation is greater than one then we will have an increasing return to scale production function which means it is elastic, and if it will be less than one then we will have a decreasing return to scale production function which means inelastic.

4.2 Findings and Discussion

In this part of the study, we estimate the Cobb-Douglas production function for Turkey. The estimations are made by following a three-step process. In the first step, five different series are obtained from the data. While series 1 includes the period 1960–1980, series 2, series 3, series 4, and series 5 include the period; 1981–2001, 1981–2011, 2002–2011, and 1960–2011, respectively.

In the second step, it is concentrated on Human Capital (HC) variable. The Human Capital variable is taken as education and health separately for five different series. Therefore, a comparison between different components of human capital can be possible due to their effectiveness on output. The third step of the economic analysis includes reporting the significance of the determiners of output (Capital and $(HC * Labor)$) based on a preferred Cobb-Douglas production function and its expression type which is discussed in methods. In addition to this, the R^2 values and F statistics are reported in Table 1.

As a discussion of results, while the constant (intercept) term is found positive, highly significant and around “10” for HC that is calculated by education, it is found negative, highly significant except for the series 2 and around “–5” for HC that is calculated by health. The Capital variable is found partially significant for the only HC that is calculated by education. For series 1 it measured as “–0.21” with 5% significance level which means that in the period 1960–1980 10% increase in capital stock decreases output 2.1%. However, series 2 gives the opposite, which means that, in the period 1981–2001, 10% increases in the capital stock increases output 1.2%. The product term $(HC * Labor)$ which is a reference for human capital effect on output indicates that it is highly significant in all calculations. For the model, HC is calculated by education, in the period 1960–1980, 10% increase in $(HC * Labor)$ increases output 7.8%. This period is the most effective period among others in terms of human capital. The period 2002–2011 follows 1960–1980 as a second most effective interval. For the model HC that is calculated by health, in the period 2002–2011, 10% increase in $(HC * Labor)$ increases output 27.2%. This period is the most effective period amongst the others. The period 1981–2011 follows in effectiveness. The R^2 values are changing between 85 and 98% which means that the estimation explains the model very well. The F values also validate the existence of trustable estimations.

When we add the coefficients α and β for each series for HC that is calculated by education, we find the summation $(\alpha + \beta)$ as 0.57, 0.48, 0.44, 0.79 and 0.46 values respectively which means all the summations are less than 1 refers to inelastic values. We can conclude that the production function about education behaves in

Table 1 The estimations of Cobb-Douglas production function by linear regression method^{a, b}

Dependent variable: Output (Real GDP)	Explanatory variables: Capital and multiplication of HC and labor				
	Series 1: 1960–1980	Series 2: 1981–2001	Series 3: 1981–2011	Series 4: 2002–2011	Series 5: 1960–2011
HC is calculated by <i>education</i>					
Constant	9.67*** (18.25)	11.45*** (49.07)	10.78*** (43.31)	9.14*** (18.84)	11.41*** (40.52)
Capital (price level of the capital stock)	-0.21** (-1.77)	0.12*** (2.29)	-0.02 (-0.30)	0.05 (0.23)	0.09 (1.21)
(HC * Labor)	0.78*** (7.69)	0.36*** (9.62)	0.46*** (12.67)	0.74*** (9.48)	0.37*** (9.03)
R-squared	0.94	0.97	0.96	0.93	0.97
Adj R-squared	0.93	0.96	0.96	0.91	0.97
Root MSE	-0.09	0.04	0.07	0.06	0.11
F-statistics	131	273.41	375.72	45.02	790.32
HC is calculated by <i>health</i>					
Constant	-8.67*** (-4.99)	-5.57 (-1.44)	-17.56*** (-3.20)	-74.46*** (-5.35)	-10.07*** (-4.43)
Capital (price level of the capital stock)	0.05 (0.89)	0.07 (0.63)	-0.14 (-0.89)	-0.15 (-0.44)	0.01 (0.17)
(HC * Labor)	0.69*** (12.86)	0.59*** (4.99)	0.96*** (5.73)	2.72*** (6.33)	0.73*** (10.57)
R-squared	0.97	0.92	0.89	0.85	0.98
Adj R-squared	0.97	0.91	0.88	0.81	0.97
Root MSE	0.06	0.07	0.12	0.09	0.10
F-statistics	323.88	100.48	111.92	20.09	978.35

^aThe values in parenthesis are the t ratios. The star symbol indicates ***, ** and * respectively, 1%, 5% and 10% significance levels.

^bOutput: Real GDP that is calculated as Output-sidereal GDP at chained PPPs (in mil. 2005US\$). HC (calculated by education): Index of human capital per person, based on years of schooling. HC (calculated by health): Life expectancy at birth, total (years). Labor: Average annual hours worked by persons engaged. Capital: Price level of the capital stock, price level of USA in 2005 = 1

decreasing returns to scale. On the other hand, for HC that is calculated by health, we find $\alpha + \beta$ as 0.74, 0.66, 0.82, 2.57 and 0.74 values, respectively which mean all the summations are less than 1 except for the period 2002–2011, which refers to inelastic values. We can conclude that the production function about health indicators behaves in increasing returns to scale just for the period 2002–2011.

5 Conclusion

This study measures the effect of human capital on economic growth for Turkey. Human capital is taken as one of the determiners of the Cobb-Douglas production function. Two different variables refer to human capital. These are education and

health. The education variable is the first component of human capital and defined as; the index of human capital per person, based on years of schooling. The health variable is the second component of human capital and defined as; life expectancy at birth, total (years). These two human capital components are independently and consequently used in the production function. Besides, the capital stock, the labor and the human capital are considered as factors which determine the output level of the Turkish economy. While the labor variable is defined as; the average annual hours worked by persons engaged, the capital variable is defined as; the price level of the capital stock (price level of the USA in 2005 = 1). The data used in the study consist the period of 1961–2011, and they are obtained from both Penn World Tables and World Development Indicators.

The selected time period is divided into five different sub-periods within themselves. The effect of the capital stock and the product of the human capital with the labor are measured by time series analysis and for those time periods. The selected method for this analysis is based on the estimation of a production function after linearizing it. The linearization is processed by taking the natural logs of the output level and the natural logs of the terms that determine the output. The periods of the applied method are 1960–1980, 1981–2001, 1981–2011, 2002–2011 and 1960–2011, consequently.

In regard to the results of the linear regression which human capital is taken as education, the capital variable is found as insignificant in most of the series. The exceptions are 1960–1980 and 1981–2001. In the period 1960–1980, it is measured as -0.21 with 5% significance level. This means that the capital stock of Turkey in those years are very low, they have a negative effect on economic growth. However, the situation changes and the negative effect turns positive and is measured as 0.12 with 1% significance level in the period 1981–2001. We can say that, Turkish economy abandons the import substitution economic policies and, it becomes an open economy, thus it is counted as one of the actors of global economic system. On the other hand, the (HC * Labor) component is found as positive with 1% significance level in all the periods. It is measured as 0.78 and 0.74 for 1960–1980 and 2002–2011, consequently, which are the highest values among all the series. This can be summarized as 10% increase in (HC * Labor) variable increases the output 7.8%, for the period 1960–1980.

According to the results of the linear regression in which human capital is assumed as health, the capital variable is found as insignificant in all of the series. This means that the capital stock of Turkey at those years are very insufficient on economic growth. On the other hand, the (HC * Labor) component is found as positive with 1% significance level in all the periods. It is measured as 2.72 for 2002–2011, which is the highest value among all the series. This can be summarized as 10% increase in (HC * Labor) variable increases the output 27.2%, for the period 2002–2011.

The study also calculates the parameters by summing the α and β coefficients and predicts the behavior of the production function. Each series for HC that is calculated by education it is found that the summation ($\alpha + \beta$) values are less than 1 refers to inelastic values and behaves as decreasing returns to scale. On the other

hand, for HC that is calculated by health, it is found that the summation ($\alpha + \beta$) values are less than “one” except for the period 2002–2011, which refers to inelastic values. We can conclude that the production function about health indicators behaves as increasing returns to scale just for the period 2002–2011.

Due to these results, we understand that the economy policies about education are insufficient for Turkey. The education expenditures should be increased and it should take more amounts from the current budget. The health policies become better with the period 2002–2011 which is more satisfactory than the past periods. If these policies are sustained for health, Turkey will reach a sustainable development.

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Sustainable Development in the European Union in the Years 2004–2013

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Abstract Implementation of sustainable development strategies is a policy prerequisite for all the European Union countries, which is a result of agreement to realization of such documents as Europe 2020 plan and other more specific international obligations such as agreements on reduction of greenhouse gas emissions. As a result, the progress in creating the conditions for sustainable development achieved by all of the European Union member states should be constantly monitored. The international comparisons in the field should be made with the use of quantitative methods. Thus, the purpose of the research is to examine the progress achieved by European countries in implementing the concept of sustainable development. Special attention was given to the new member states that joined the EU after the year 2004. The research is conducted with the application of the Eurostat data at a macroeconomic level. It is assumed that sustainable development should be treated as a multivariate latent variable. Thus, it can be measured with the application of the Structural Equation Modeling (SEM) methodology that includes confirmatory factor analysis and path analysis used in econometrics. In the article, a hypothetical SEM model for the years 2004–2013 was proposed. The model was based on nine observable variables suggested by the Eurostat for measuring sustainable development phenomena at a national level. The application of the SEM model enabled us to identify the usefulness of the observable variables proposed by the Eurostat. The conducted research showed that the new European Union member states have made significant progress in the field of building conditions for sustainable development.

Keywords Structural Equation Model (SEM) • Sustainable development • European Union

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1 Introduction

Effective activities in the sphere of the creation of conditions for sustainable growth constitute the basis for the institutional policy (Balcerzak 2009; Balcerzak and Pietrzak 2015, 2016a, e), labor market policies (Müller-Frączek and Pietrzak 2011; Wilk et al. 2013; Biczkowski et al. 2014; Bieszk-Stolorz and Markowicz 2015; Zieliński 2015; Pietrzak and Balcerzak 2016a), financial policy and financial system of the country (Moździerz 2015; Mackiewicz-Łyziak 2015; Balcerzak et al. 2016; Balcerzak and Rogalska 2016; Zinecker et al. 2016; Pietrzak et al. 2016, 2017), and the broadly understood economic policy of almost all developed countries. On the one hand, it is conditioned by natural preferences of societies that have reached a certain minimum level of prosperity. On the other hand, however, it frequently results from international commitments of individual countries. In the case of the European Union, the focus on creating incentives to work towards sustainable growth is a constitutive element of the most important long-term strategies such as, for instance, Europe 2020 (Balcerzak 2015) and influences the allocation of financial resources from European funds. In a situation where individual countries have an obligation to create their own strategies for sustainable growth, and at the same time can benefit from Community funds dedicated to its support, it is reasonable to monitor continuously the performance of individual countries. This means the need for conducting empirical research in this matter and look for research tools and methods that allow making multidimensional international comparisons.

As a result, this article assumes two research objectives: the first is methodical in nature; the second is strictly empirical. From the methodological perspective, the present article proposes a method of quantitative analysis of the level of development of a sustainable economy based on the methodology of Structural Equation Modeling (SEM). This methodology is currently a tool widely applied in psychology and in the sciences of management that employ the questionnaire type of datasets. In this work, we propose applying the SEM methodology for empirical research (as a tool for multidimensional analysis) with the use of aggregate data on the countries that are derived from official sources of statistics. The strictly empirical objective of this study is to measure on an international scale the progress being made in implementing the concept of sustainable development in the European Union member states since the year of its largest extension. For this reason, the study was conducted for the time period 2004–2013, where the last year under scrutiny was conditioned by the availability of datasets for the entire panel of the countries surveyed.

The article is a continuation and development of the previous studies conducted by the authors on the problems of measuring sustainable development at regional and international levels. In the studies of Pietrzak and Balcerzak (2016b), the researchers proposed to use the SEM methodology to examine the extent of the implementation of the postulates of sustainable growth at the regional level in Poland. In turn, in the works of Balcerzak and Pietrzak (2016b) and Pietrzak and

Balcerzak (2016c), the tools of multiple criteria decision analysis (MCDA) (the TOPSIS method and Hellwig method of development pattern) for comparative analysis of the level of sustainable development at the macro-economic level for the old and new EU member states were applied.

2 Characteristics of the SEM Methodology

One of the key methodological challenges in the economic sciences focused on empirical quantitative analysis of multi-dimensional phenomena, and to a large degree on qualitative, is the issue of latent (unobservable) variables (Osińska et al. 2011a, b; Pietrzak and Żurek 2012). Recent decades can be considered as a period of intense development of methods that are to lead to a reduction in the scale of the problem. The methodology of structural equation modeling is one of the most significant proposals in this regard (Loehlin 1987; Bollen 1989; Kaplan 2000; Pearl 2000; Brown 2006).

The SEM methodology is the result of combining confirmatory factor analysis and casual-effect models normally used in econometrics. The most important advantage of the described method is its high flexibility. SEM models are more flexible than regression models, since they allow the description of dependencies between latent variables, which are the consequence of the interaction of many variables (Pietrzak et al. 2012).

A structural equation model has two components. The first component of a SEM model is an external model (the so-called ‘measurement model’), which consists of measuring endogenous and exogenous equations of latent variables. It represents the results of confirmatory factor analysis, which allows determining loadings of specific factors influencing the analyzed latent variable. The second part is created of an internal model (the so-called ‘structural model’), which is composed of equations describing relationships between latent variables. It represents path analysis, which allows determining direct and indirect causal relationships between specified factors (Osińska et al. 2011a, b; Pietrzak and Żurek 2012; Balcerzak and Pietrzak 2016c, d).

The external model is given as:

$$\mathbf{y} = \mathbf{C}_y \boldsymbol{\eta} + \boldsymbol{\varepsilon}, \quad (1)$$

$$\mathbf{x} = \mathbf{C}_x \boldsymbol{\xi} + \boldsymbol{\delta}, \quad (2)$$

where: $\mathbf{y}_{p \times 1}$ —the vector of observable endogenous variables, $\mathbf{x}_{q \times 1}$ —the vector of observable exogenous variables, $\mathbf{C}_y, \mathbf{C}_x$ —matrices of factor loadings, $\boldsymbol{\varepsilon}_{p \times 1}, \boldsymbol{\delta}_{q \times 1}$ —measurement error vectors.

The internal model can be given using Eq. (3).

$$\boldsymbol{\eta} = \mathbf{A}\boldsymbol{\eta} + \mathbf{B}\boldsymbol{\xi} + \boldsymbol{\zeta}, \quad (3)$$

where: $\boldsymbol{\eta}_{m \times 1}$ —the vector of latent endogenous variables, $\boldsymbol{\xi}_{k \times 1}$ —the vector of latent exogenous variables, $\mathbf{A}_{m \times m}$ —the matrix of regression coefficients for endogenous variables, $\mathbf{B}_{m \times k}$ —the coefficients matrix for exogenous variables, $\boldsymbol{\zeta}_{m \times 1}$ —the vector of random components.

With regard to the methods of SEM models estimation, the maximum likelihood method (MLM), generalized least squares method (GLSM) and asymptotically distribution-free (ADF) methods are used. Choosing the right method depends on the type of datasets, sample size and variables distribution. The maximum likelihood method can be used only for multivariate normal distribution. In case the distribution does not satisfy this condition, the ADF or GLSM method is used. The estimated model must be verified for the significance of parameters and the degree of fit to empirical data. The assessment criteria for the quality of models are still discussed, however, in some studies one can find a set of indicators in this respect (Bollen 1989; Kaplan 2000; Byrne 2010; Osińska et al. 2011a, b; Pietrzak and Żurek 2012).

The degree of a structural equation model fit is determined usually by comparing the resulting model with the saturated and independent model. The former assumes that all of the variables are correlated to each other, and the latter that there is no correlation between any of the pairs of variables (Loehlin 1987; Osińska et al. 2011a, b; Pietrzak and Żurek 2012).

With regard to the measures of the degree of a SEM model fit, the most significant include IFI (Incremental Fit Index) and RMSEA (Root Mean Square Error of Approximation) measures. The idea of determining the IFI index is based on comparing the estimated model with the independent model. IFI values should be contained between zero and one, and the model is considered to have good fit to empirical data when this coefficient is greater than 0.9 (see: Loehlin 1987; Bollen 1989; Osińska et al. 2011a, b; Pietrzak and Żurek 2012). IFI is given by Formula (4):

$$IFI = \frac{T_b - T_h}{T_b - df_h}, \quad (4)$$

where: T_h —the chi-square statistic of the estimated model, T_b —the chi-square statistic of the independent model, df_h —the number of degrees of freedom of the estimated model.

In contrast to the IFI measure, when calculating the RMSEA indicator the estimated model is not compared to the base model. The lower the RMSEA value calculated based on the model, the better the degree of the fit of the model. It is assumed for that for RMSEA with a value below 0.1, the model is considered to be well-fitted to empirical data (Loehlin 1987; Bollen 1989; Osińska et al. 2011a, b; Pietrzak and Żurek 2012). This indicator is calculated applying the following formula:

$$RMSEA = \sqrt{\frac{T_h - df_h}{(N - 1)df_h}}, \quad (5)$$

where: N is the number of observations and the other symbols are the same as in Formula (4).

It should be emphasized that the proposed limits of a SEM model with good fit to empirical data relate to models estimated based on data derived from surveys. In the case of aggregate data concerning regions and countries derived from sources of official statistics (e.g., Eurostat), the limit values can be determined as less restrictive (Osińska et al. 2011a, b; Pietrzak and Żurek 2012; Pietrzak et al. 2012; Balcerzak and Pietrzak 2016c, d).

3 Multivariate Analysis of the Level of Sustainable Development Using Structural Equation Modeling

The empirical objective of this article is to measure the level of sustainability for 24 EU member states covering the time period 2004–2013 with the use of potential diagnostic variables proposed by the European Commission and Eurostat (European Commission 2010; Balcerzak 2015). The study did not include Luxembourg, Malta, and Cyprus due to the lack of corresponding datasets. Croatia was also excluded due to the fact that it joined the EU only in 2013. The study assumed that sustainable development is a latent (unobservable) variable and is a multivariate phenomenon (Shrivastava 1995; Bartniczak 2014; Zielenkiewicz 2014; Turečková 2015; Baran 2015; Kopnina 2016; Szyja 2016; Reiff et al. 2016; Balcerzak 2016a, b; Pietrzak and Balcerzak 2016d). This means that the methodology of structural equation modeling (SEM) can be a useful analytical tool that can allow conducting quantitative analysis of this phenomenon at an international level. A successful application of the proposed tool will lead to the achievement of the assumed methodological objective.

In order to carry out the measurement in the implementation of the concept of sustainable development in the EU, an external model using the methodology of structural equation modeling was developed. Thus, it was assumed that in the case of the study conducted the internal model does not occur. This means that in this case only confirmatory factor analysis was made, allowing the measurement of a latent variable in the form of sustainable development. Moreover, the proposed analysis allows determining the significance of individual observable variables in the process of shaping the assumed latent variable and allows the evaluation of the usefulness of diagnostic variables proposed by Eurostat with a view to measuring the progress being made by the European Union member states while creating conditions for sustainable growth.

Therefore, for the need of empirical analysis, six of the ten indicators proposed by Eurostat were taken into account, which can be used in comparative analyses on

Table 1 A set of factors affecting the level of sustainable development

Variable	Variable description	Variable character
X ₁	Real GDP per capita (Socioeconomic development)	Stimulant
X ₂	Resource productivity (Sustainable production and consumption)	Stimulant
X ₃	People at risk of poverty or social exclusion (Social inclusion)	Dis-stimulant
X ₄	Life expectancy (Public health)	Stimulant
X ₅	Primary energy consumption per capita (Climate change and energy)	Dis-stimulant
X ₆	Energy consumption of transport relative to GDP (Sustainable transport)	Dis-stimulant

Source: Own work

sustainable growth in relation to the European Union member states.¹ The applied indicators are shown in Table 1. Unused indicators were omitted due to significant data gaps and the lack of possibilities of complementing them effectively for the test period adopted.

The values of the variables adopted for subsequent years 2004, 2008, 2013 are shown in Figs. 1, 2, 3, 4, 5 and 6. Based on the natural breaks method, the member states were assigned to five classes, where the division criterion was the value of the subsequent variables X₁, X₂, ..., X₆ (Jenks 1967). The dark color denotes the highest level of the intensity of a characteristic, and the white color the lowest level of intensity. Therefore, in the case of the variables being stimulants, the desirable values start from class 5, whereas for dis-stimulants, the situation is reverse. The analysis of groups following from the application of natural breaks method shown in Figs. 1, 2, 3, 4, 5 and 6, indicates that in the case of the European Union member states, one can talk about a permanent division into three major groups of countries: (a) the countries of northern Europe that are most advanced in terms of the studied phenomenon; (b) the countries of southern Europe; (c) the so-called new EU member states, generally exhibiting relatively low indicators.

In connection with the stated objective of the article, a hypothetical SEM model was created, which was adopted for the purpose of separating the phenomenon of sustainable development as a latent variable. The model is presented in Fig. 7 and provides a basis for empirical analysis. While developing, estimating, and verifying the model, the AMOS v. 16 package was used. In Fig. 7 the symbol Y indicates the unobservable variable, and forming it observable variables are symbolized by x_i {i = 1, 2, ..., 6}.

For the accepted six variables Cronbach's coefficient Alpha was calculated (Cronbach 1951). The designated value of 0.76 indicates that the use of the adopted observable variables should allow a correct description of the assumed latent variable. Parameters estimation of the SEM model was performed using a maximum likelihood method. The estimation results are shown in Table 2. All

¹Indicators are available in Eurostat's database: <http://ec.europa.eu/eurostat/data/database>

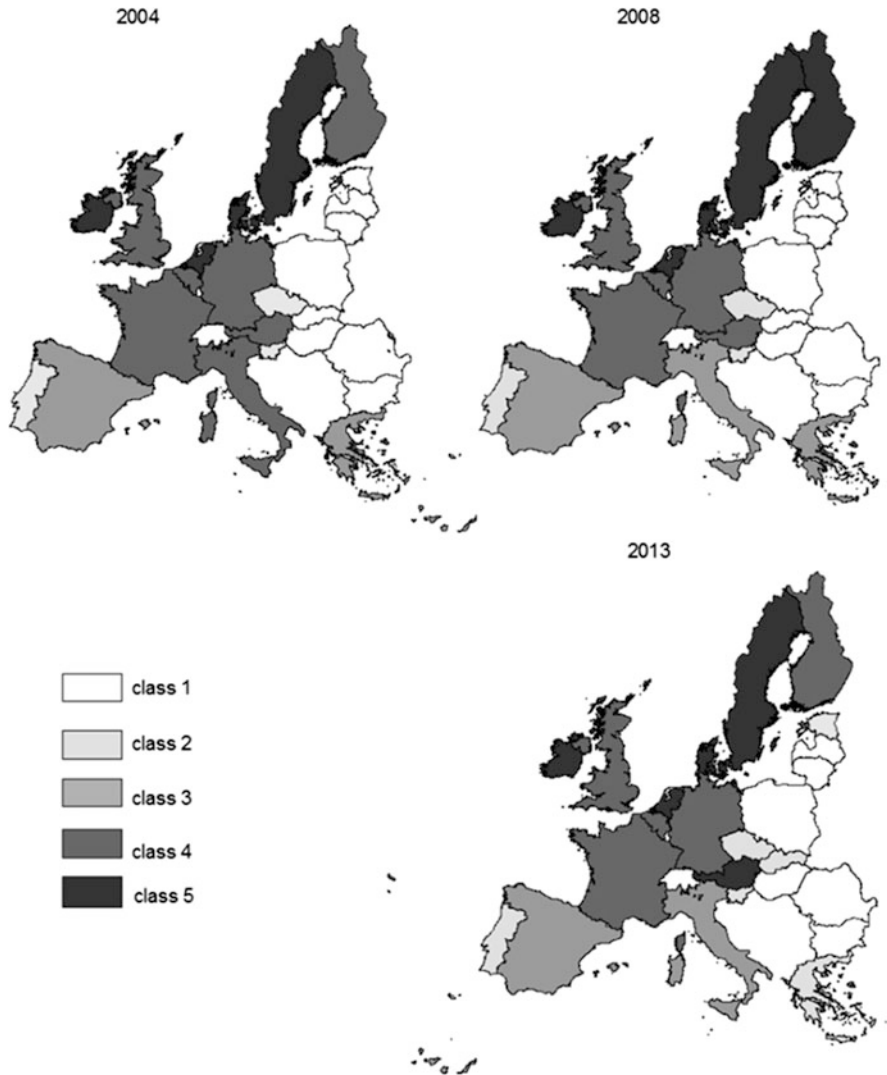


Fig. 1 Real GDP per capita in the EU member states. Source: Own estimation based on Eurostat data

parameters of the external model proved to be statistically significant, which means a correct selection of observable variables. This confirms the possibility of the use of diagnostic variables proposed by Eurostat while researching the progress being made by the EU member states in creating the conditions for sustainable growth.

The standardized assessments presented in Table 2 can be used to assess the level of importance of each variable in the context of the studied phenomenon. According to the obtained results, the following variables can be indicated

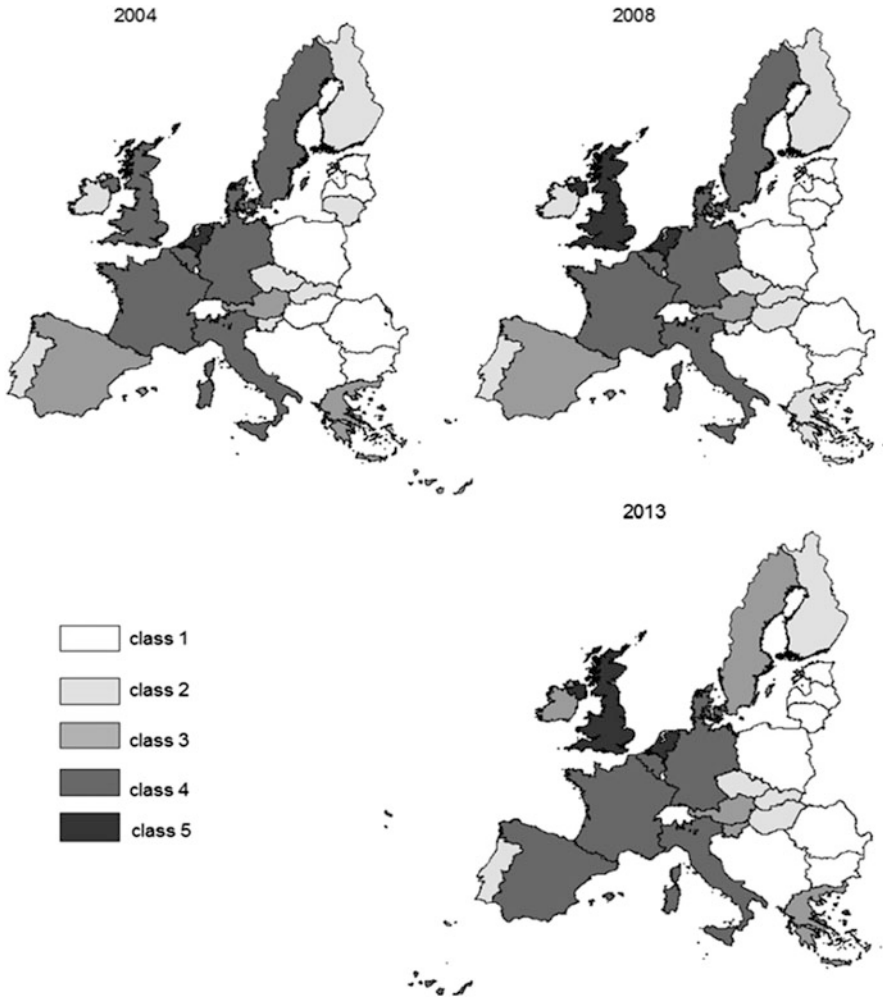


Fig. 2 Resource productivity in the EU member states. Source: Own estimation based on Eurostat data

subsequently: X_1 (Real GDP per capita), X_5 (Primary energy consumption per capita), X_4 (Life expectancy) as factors of the strongest impact, variables X_2 (Resource productivity), X_3 (People at risk of poverty or social exclusion) as factors of medium impact, and the variable X_6 (Energy consumption of transport relative to GDP) as a factor of the weakest impact on the examined unobservable phenomenon².

²The determination of the impact of variables and their distribution was made arbitrarily by the authors.

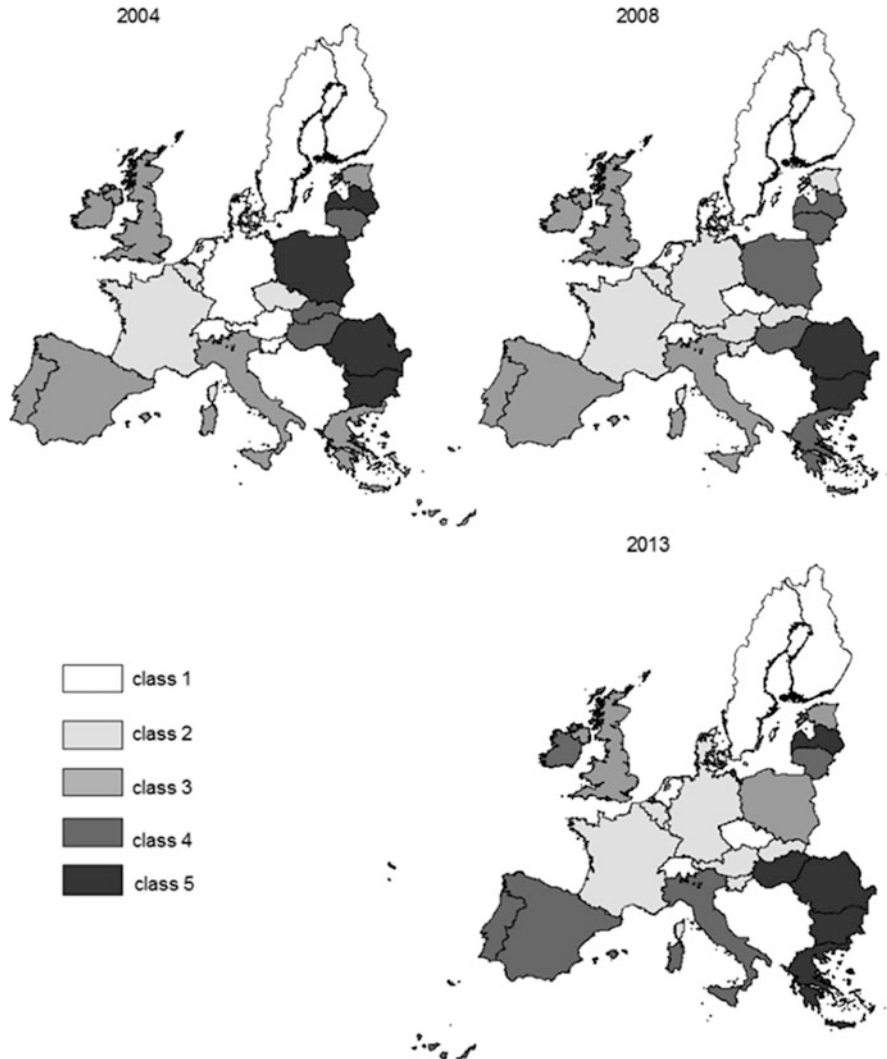


Fig. 3 People at risk of poverty or social exclusion in the EU member states. Source: Own estimation based on Eurostat data

The next stage of the study was to verify the degree of the fit of the model to the empirical data. The measures of fit allowing verification of the model in terms the degree of the model fit to the empirical data are shown in Table 3. The IFI value of the estimated SEM model is equal to 0.847, and the value of RMSEA is 0.278. The obtained measurement values deviate from the limit at the level of 0.9 for IFI and 0.1 for RMSEA. However, due to the nature of the statistical datasets used (data aggregated at the macroeconomic level, derived from sources of official statistics),

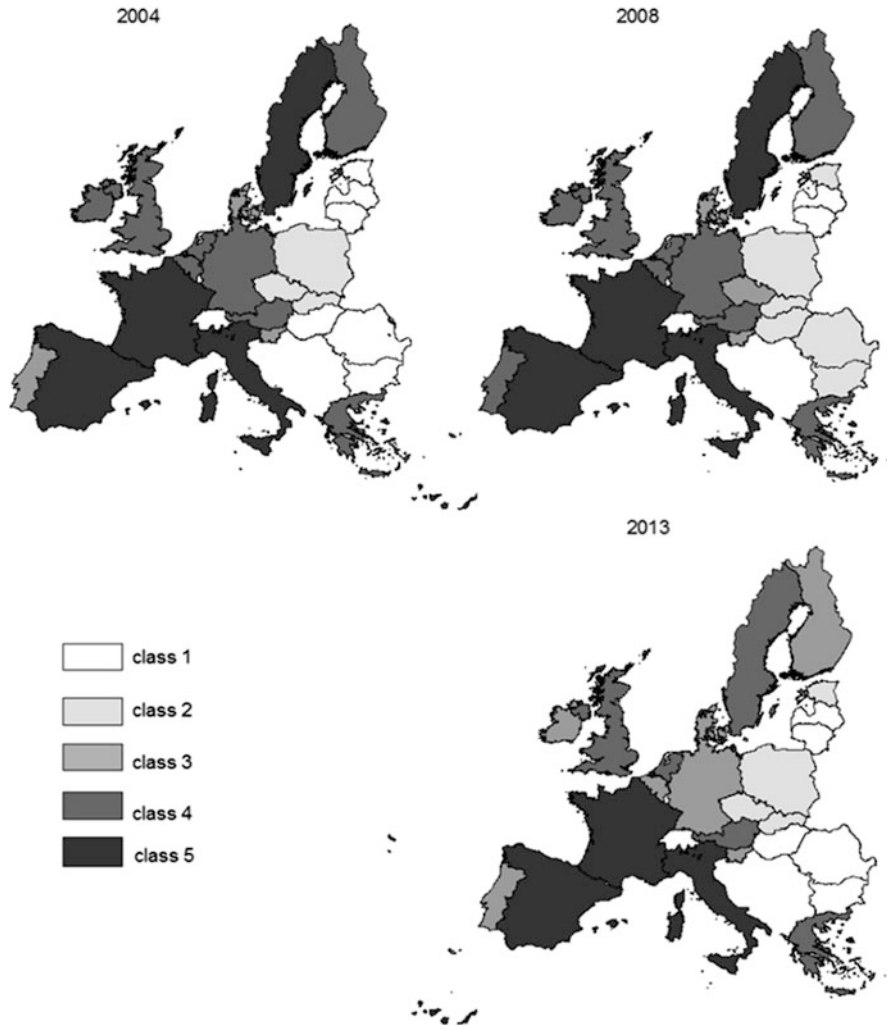


Fig. 4 Life expectancy in the EU member states. Source: Own estimation based on Eurostat data

it can be stated that the presented measures prove a correct fit of the model to the empirical data.

Using the sum of the products of Factor Score Weights contained in Table 4 and the corresponding values it was possible to estimate the value of the synthetic indicator describing the progress of individual countries in creating conditions for sustainable development. Based on the value of this indicator, the countries were ranked from the countries with the best conditions for sustainable development to countries with the poorest achievements in this regard. The survey results for the years 2004, 2008 and 2014 are shown in Table 5. Then, analogous to the presentation of observable variables from Figs. 1, 2, 3, 4, 5 and 6, the countries were

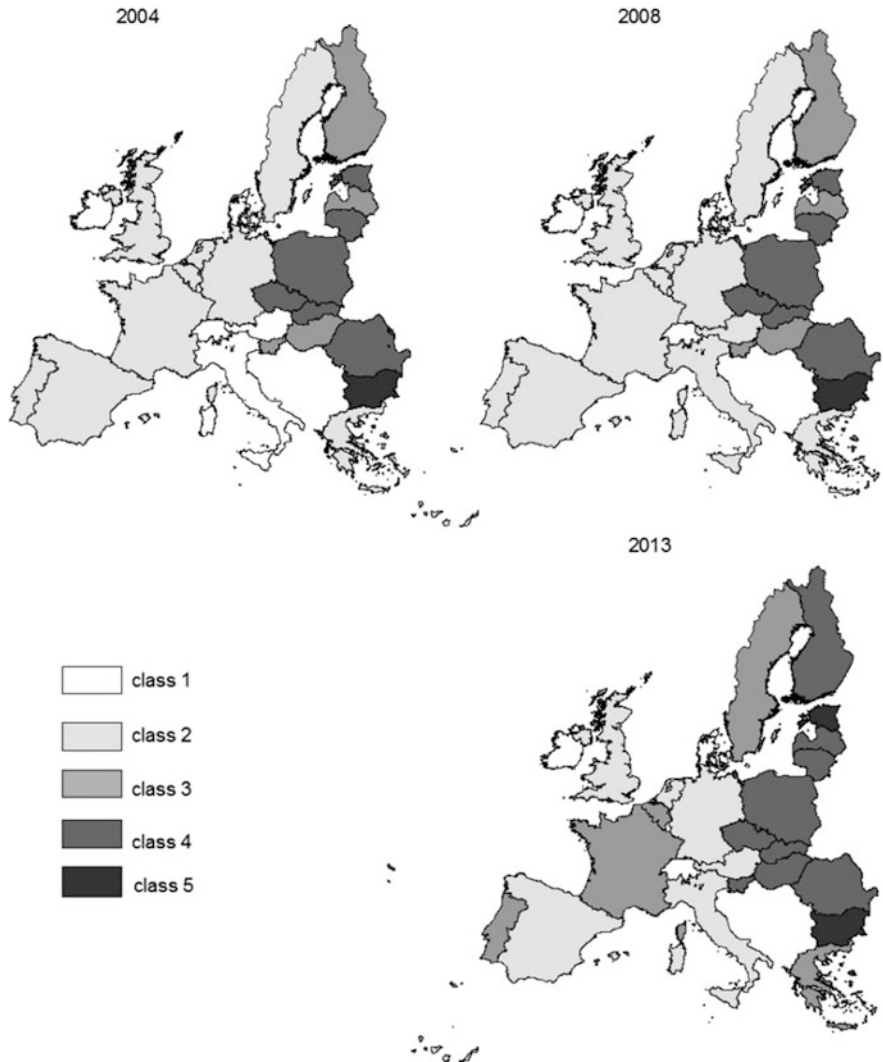


Fig. 5 Primary energy consumption per capita in the EU member states. Source: Own estimation based on Eurostat data

assigned to five classes using the natural breaks method, where the division criterion was the value of the synthetic index describing the conditions for sustainable development. The position of a country in the ranking, as well as its belonging to the selected class is also presented in Table 5.

The results presented in Table 5 and those shown in Fig. 8 are consistent with other studies in this matter. Throughout the study period, the leaders in terms of creating the conditions for sustainable growth (Class 5) are considered to be the

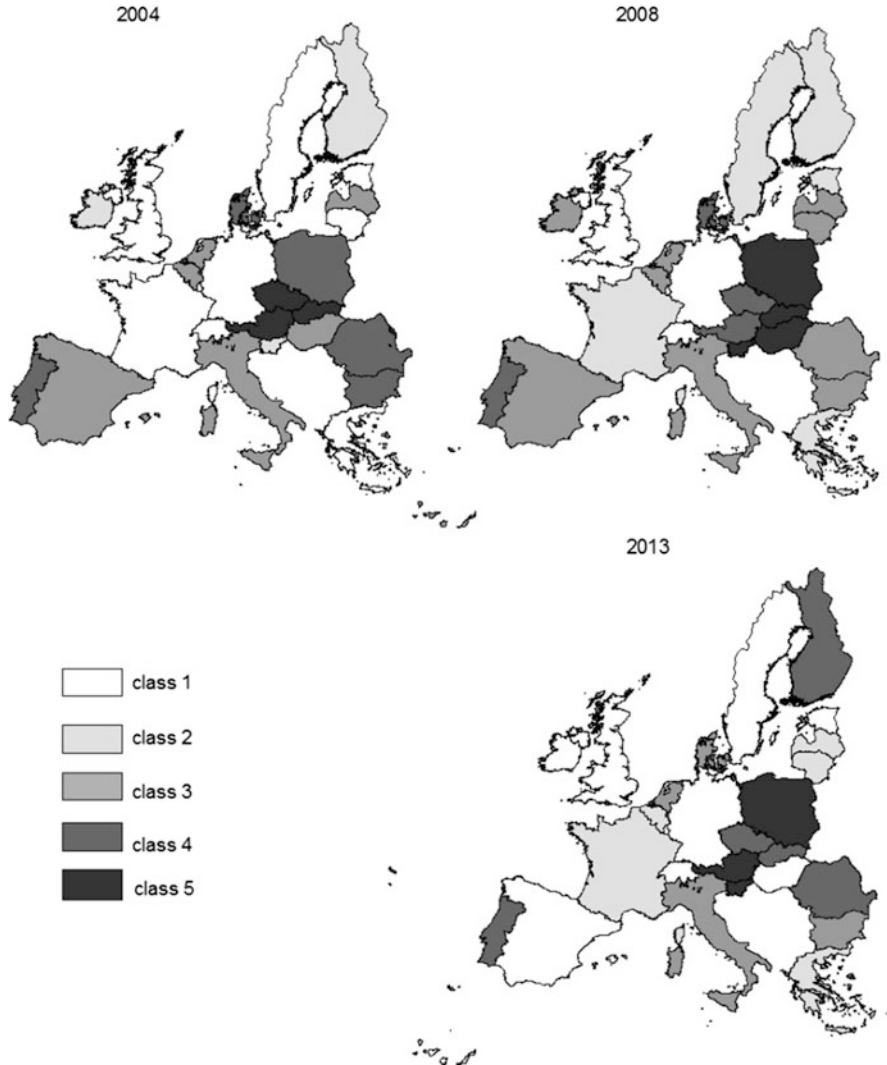


Fig. 6 Energy consumption of transport relative to GDP in the EU member states. Source: Own estimation based on Eurostat data

Scandinavian countries with Denmark as their leader. In this study, in contrast to other similar analyses, Finland was classified relatively low and throughout the period was ranked 11th and belonged to the 4th typological group (see: Mościbrodzka 2014). In particular, this resulted from the relatively weaker performance of the country in comparison with the other Scandinavian countries in two areas related to energy consumption per capita and resource efficiency. The group leaders also include the Netherlands and Ireland.

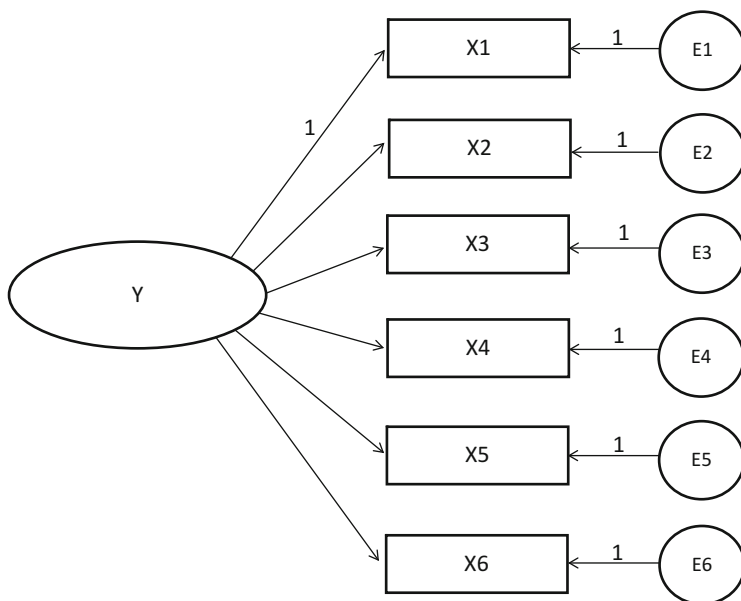


Fig. 7 A hypothetical SEM model for measuring sustainable development. Source: Own work

Table 2 Estimated parameters of the SEM model based on confirmatory factor analysis

Variable	Parameter	Estimate	Standardized estimate	p-value
X_1	α_1	1	0.952	–
X_2	α_2	0.573	0.793	~0.00
X_3	α_3	0.008	0.665	~0.00
X_4	α_4	2.301	0.847	~0.00
X_5	α_5	2.156	0.877	~0.00
X_6	α_6	0.031	0.343	~0.00

Source: Own estimation based on Eurostat data

Table 3 Model fit measures

Model	IFI	RMSEA
Default	0.847	0.278
Independence	0.000	0.549

Source: Own estimation

Table 4 Factor score weights

Latent variable	Observable variables					
	X_1	X_2	X_3	X_4	X_5	X_6
Sustainable development	0.912	0.354	3.021	0.142	0.231	0.174

Source: Own estimation

Table 5 The ranking and value of the synthetic index describing the relative level of sustainable development in the EU member states

2004				2008				2013			
Country	<i>F</i>	<i>R</i>	<i>C</i>	Country	<i>F</i>	<i>R</i>	<i>C</i>	Country	<i>F</i>	<i>R</i>	<i>C</i>
Denmark	8.38	1	5	Denmark	8.62	1	5	Denmark	8.68	1	5
Netherlands	7.98	2	5	Netherlands	8.38	2	5	Netherlands	8.47	2	5
Sweden	7.79	3	5	Sweden	8.12	3	5	Ireland	8.21	3	5
Ireland	7.70	4	4	Ireland	8.01	4	5	Sweden	8.18	4	5
Austria	7.56	5	4	Austria	7.84	5	4	Austria	7.95	5	4
France	7.49	6	4	France	7.72	6	4	France	7.87	6	4
Italy	7.43	7	4	Germany	7.70	7	4	United Kingdom	7.87	7	4
Belgium	7.41	8	4	United Kingdom	7.65	8	4	Germany	7.85	8	4
Germany	7.40	9	4	Belgium	7.61	9	4	Belgium	7.77	9	4
United Kingdom	7.36	10	4	Finland	7.56	10	4	Italy	7.64	10	4
Finland	7.22	11	4	Italy	7.55	11	4	Finland	7.50	11	4
Spain	6.92	12	3	Spain	7.18	12	4	Spain	7.42	12	4
Greece	6.76	13	3	Greece	6.93	13	3	Greece	6.70	13	3
Portugal	6.38	14	3	Portugal	6.53	14	3	Portugal	6.62	14	3
Slovenia	6.19	15	3	Slovenia	6.47	15	3	Slovenia	6.50	15	3
Czech Rep.	5.75	16	2	Czech Rep.	6.13	16	2	Czech Rep.	6.25	16	3
Hungary	5.39	17	2	Slovak Rep	5.78	17	2	Slovak Rep	6.04	17	2
Slovak Rep	5.35	18	2	Estonia	5.65	18	2	Estonia	5.80	18	2
Estonia	5.31	19	2	Hungary	5.57	19	2	Hungary	5.78	19	2
Poland	5.27	20	2	Poland	5.47	20	1	Lithuania	5.73	20	2
Lithuania	5.14	21	1	Latvia	5.43	21	1	Poland	5.72	21	2
Latvia	5.10	22	1	Lithuania	5.40	22	1	Latvia	5.56	22	2
Romania	4.93	23	1	Romania	5.20	23	1	Romania	5.38	23	1
Bulgaria	4.79	24	1	Bulgaria	4.98	24	1	Bulgaria	5.12	24	1

Note: *F* denotes the value of a latent factor determining the relative level of sustainable development, *R*—means the position in the ranking, *C*—is the class number

Source: own estimation based on Eurostat data

In 4th typological class the grouping countries reaching relatively high values of the synthetic indicator describing the conditions for sustainable development are only the old EU member states, except Greece and Portugal. Both countries were ascribed to Class 3.

The new member states belong to Classes 3–1, wherein there is a clear division into the countries that joined the European Union in 2004, belonging to Classes 3 and 2 in the last year of the study, as well as Romania and Bulgaria classified in Group 1 with the lowest values of synthetic measure.

The final stage of the study was to determine the percentage changes of the synthetic variable describing the level of sustainable development for the periods

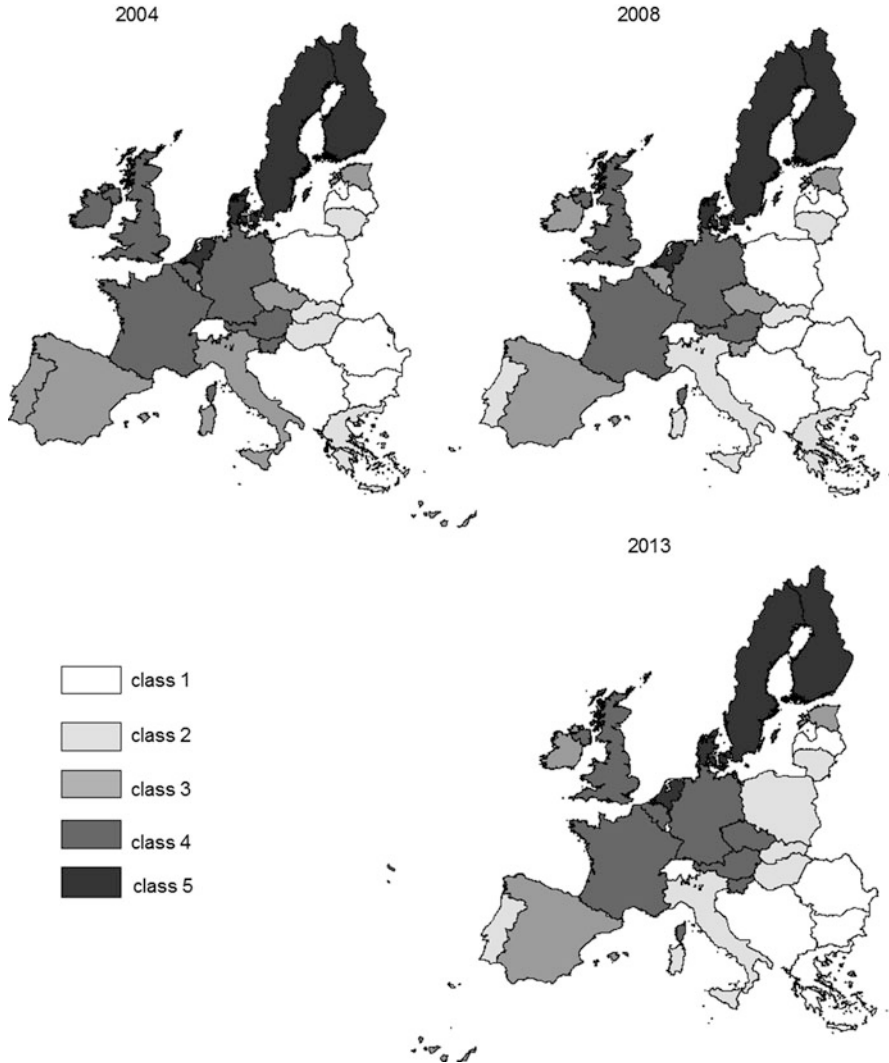


Fig. 8 The level of sustainable development in the EU member states. Source: Own estimation based on Eurostat data

2004–2008, 2008–2013 and 2004–2013. The results are presented in Table 6. Also, in this case, a ranking of countries for the periods indicated was prepared, where the countries are ordered from the economies with the highest growth of the synthetic variable describing the level of sustainable development to the countries with the lowest value. Analogously to the previous analyses, the countries were ordered by means of the method of natural distribution, as shown in Fig. 9.

Table 6 Changes in the level of sustainable development in the EU member states

2004–2008				2008–2013				2004–2013			
Country	CH (%)	R	C	Country	CH (%)	R	C	Country	CH (%)	R	C
Slovak Rep	8.01	1	5	Lithuania	6.05	1	5	Slovak Rep	13.00	1	5
Czech Rep	6.61	2	5	Slovak Rep	4.63	2	5	Lithuania	11.38	2	5
Latvia	6.44	3	5	Poland	4.55	3	5	Estonia	9.18	3	4
Estonia	6.28	4	5	Hungary	3.74	4	4	Latvia	9.10	4	4
Romania	5.38	5	4	Romania	3.45	5	4	Romania	9.02	5	4
Netherlands	5.08	6	4	Spain	3.28	6	4	Czech Rep.	8.67	6	4
Lithuania	5.02	7	4	Bulgaria	2.87	7	4	Poland	8.45	7	4
Finland	4.73	8	4	United Kingdom	2.84	8	4	Hungary	7.24	8	3
Slovenia	4.59	9	4	Estonia	2.73	9	4	Spain	7.15	9	3
Sweden	4.26	10	3	Latvia	2.50	10	3	United Kingdom	6.96	10	3
Germany	4.09	11	3	Ireland	2.43	11	3	Bulgaria	6.79	11	3
Ireland	4.08	12	3	Belgium	2.13	12	3	Ireland	6.60	12	3
United Kingdom	4.01	13	3	France	2.01	13	3	Netherlands	6.21	13	3
Bulgaria	3.81	14	3	Czech Rep.	1.93	14	3	Germany	6.09	14	3
Austria	3.77	15	3	Germany	1.92	15	3	Austria	5.11	15	2
Spain	3.74	16	3	Portugal	1.41	16	3	France	5.06	16	2
Poland	3.73	17	3	Austria	1.29	17	2	Slovenia	5.01	17	2
Hungary	3.37	18	2	Netherlands	1.08	18	2	Sweden	4.98	18	2
France	2.99	19	2	Italy	1.08	19	2	Belgium	4.96	19	2
Denmark	2.96	20	2	Denmark	0.70	20	2	Finland	3.98	20	2
Belgium	2.77	21	2	Sweden	0.69	21	2	Portugal	3.88	21	2
Greece	2.50	22	1	Slovenia	0.40	22	2	Denmark	3.67	22	2
Portugal	2.44	23	1	Finland	-0.72	23	2	Italy	2.72	23	2
Italy	1.63	24	1	Greece	-3.34	24	1	Greece	-0.93	24	1

Note: CH—percentage change of the value of the measure of sustainable development, R—means the position in the ranking, C—is the class number)

Source: Own estimation based on Eurostat data

The results presented in Table 6 and Fig. 9 confirm that the leaders in improving the conditions for sustainable growth are the new EU member states. This result to a certain extent ought to be regarded as natural, due to the necessity of making up for the years of neglect in the area of study. However, no automatic gear of a low starting position to the high dynamics of the synthetic measure of the level of sustainability, as evidenced by the results achieved by Greece, as well as by the reverse situation, where the countries with a relatively high starting position are able to achieve a relatively high dynamics of the synthetic measure—the case of Ireland, confirm that when interpreting the results obtained, one cannot rely solely on the effect of a low statistical base. This study confirms the importance of

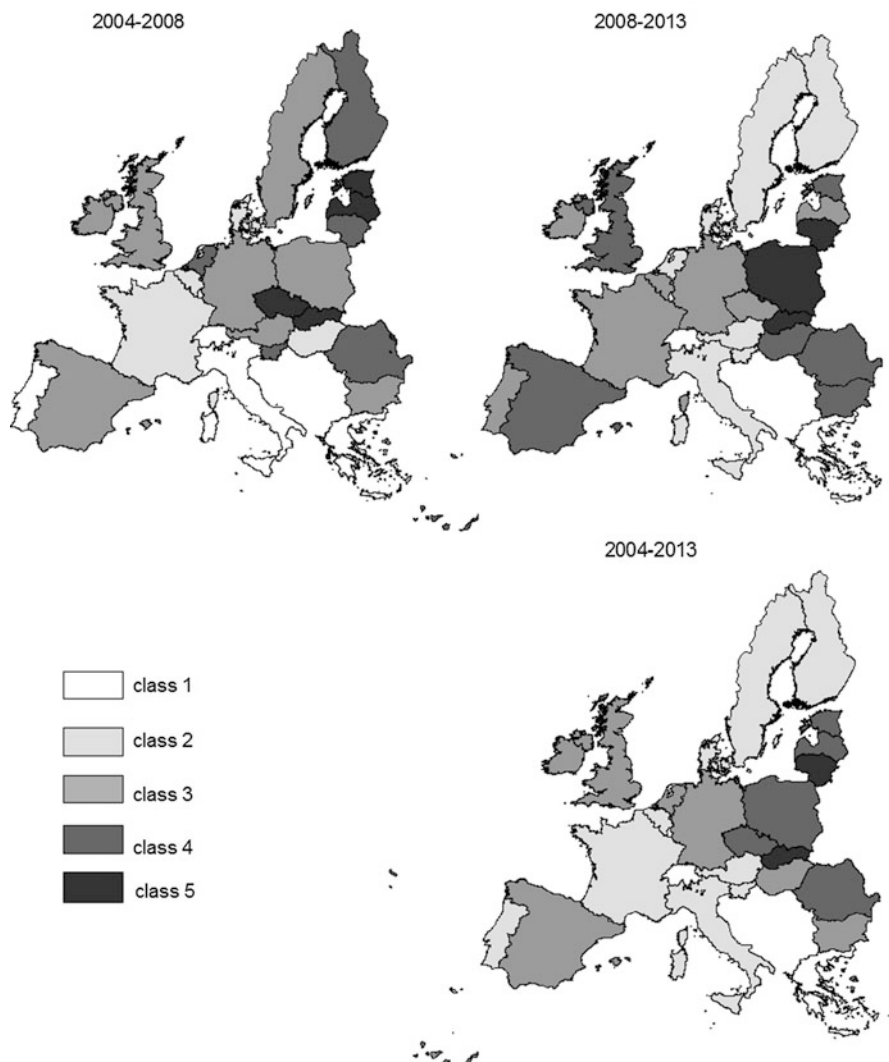


Fig. 9 Changes in the level of sustainable development in the EU member states. Source: Own estimation based on Eurostat data

economic policies and the impact of institutional factors on the studied phenomenon. These factors should be subjected to detailed empirical analysis in future studies. These results to a large extent are convergent with the results of recent studies on multidimensional analyses performed by Balcerzak and Pietrzak (2016b) and Pietrzak and Balcerzak (2016c).

4 Conclusions

In this article, we formulated two research objectives that were methodical and strictly empirical in nature. From the methodological perspective, we proposed the use of the structural equation modeling methodology for multivariate analysis applying macroeconomic data derived from official sources of statistics. The second objective, which was strictly empirical, was to verify the progress made by the European Union member states in the scope of implementing the postulates of sustainable growth.

In pursuing such defined objectives, an external SEM model was proposed, which allowed the obtainment of a synthetic measure describing the progress of the countries surveyed in the sphere of the creation of conditions for sustainable growth. The countries under examination were ranked and grouped into homogeneous classes. The adopted model confirmed the possibility of using diagnostic variables proposed by Eurostat to measure the level of sustainable development in the EU. This means that both objectives assumed in the present work were achieved.

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Long-Run Causal Effect of Greek Public Investments

Sophia Kassapi

Abstract Linear and Non-Linear Granger causality tests are used in order to examine the dynamic relationship between public investments in education and economic growth, namely Greece 1960–2015, before, during and after the financial crisis of 2008. The interest of this paper lies upon the way investments in public schooling affect the available income in terms of GDP per capita. The results indicate little or no causal effect between income and schooling for the Greek case during the whole period of study.

Keywords Government expenditures in education • Economic growth • Time-series • Nonparametric

1 Introduction

This study uses linear and non-linear Granger causality tests to investigate the dynamic relationships between schooling and income, namely, public expenditures in education, enrollments in all levels of schooling including preschool, and GDP per capita, for the time before during and after the financial crisis of 2008. Causality tests are very useful tools that can provide useful information on whether the fluctuations of one of the variables under examination improve short-run forecasts of current and future movements on another variable tested. Thus, causal evidence imply a degree of market inefficiency in a way that lagged information for student enrollments or public investments in schooling can be used to forecast changes in GDP per capita. Meanwhile, they can provide statistical evidence regarding the international contagion of the recent financial crisis of 2008, which began in the US and flew rapidly to the rest of the world.

All previous studies on causal relationship rely mostly on traditional linear Granger causality tests. However one important problem with the linear approach to causality testing is that these tests have been proven weak in detecting certain

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kinds of non-linear relationships (Baek and Brock 1992; Hiemstra and Jones 1994). At the same time, many recent studies report that financial time series exhibit non-linear dependence. For example, Alexakis and Siriopoulos (1999) in the first nonlinear Granger analysis, Chandra (2010), Diks and Panchenko (2006), Francis et al. (2010), Wolski and Diks (2013), and Hanushek (2013), document evidence of significant nonlinear dependence. While at the same time Granger (1969) stated that there is no better way than univariate and multivariate nonlinear models to represent a real world that is almost certainly non-linear.

This paper provides additional evidence regarding the nonlinear causal dependence when studying the dynamic inter-relations between financial time series. The organization of the remainder of the paper is as follows. Section 2 outlines the sample data and summary statistics. Section 3 gives a brief picture of the methodology followed. Section 4 presents the empirical results and explores the implications and Sect. 5 concludes on the major findings and the valuation of the nonlinear Granger causality testing in financial time series.

2 Data Description and Preliminary Diagnostics

The dataset consists of the annual student enrollments for all educational levels, namely, preschool, elementary, secondary and tertiary, public expenditures as derived from the government's budget for education, and annual GDP per capita. The initial observations refer to the period 09/1960–1961 to 09/2014–2015 (start of school year), the period is covered by the 55 observations that were used for all variables. In order to catch most of the variance, the data had been processed using cubic spline interpolation, and the final sample followed a quarterly frequency, a.k.a. 216 observations.

2.1 Preliminary Diagnostics

Table 1 contains the summary statistics for each variable, for the whole period under review. They include also the parameters of mean, median, standard

Table 1 Preliminary statistics 1960 Q1-2014 Q4

	GDP	EDEX	P	E	S	H
Mean	6726.597	2.29E+09	124841.1	803855.5	601127.3	110921.9
Std. Dev.	7499.131	2.83E+09	36694.62	132151.0	135145.1	40385.66
Skewness	0.722508	0.943046	-1.071234	-0.227574	-1.015759	0.079490
Kurtosis	1.952771	2.413356	2.825591	1.301999	2.676085	2.215645
Jarque-Bera	28.66284	35.11342	41.58530	27.81331	38.08791	5.764387
P-value	0.000001	0.000000	0.000000	0.000001	0.000000	0.056012

deviation, skewness, kurtosis and the Jarque-Bera test, and its P-value. None of the means is statistically different from zero, except only for higher education.

3 Methodology

This section analyses the definitions of the linear and nonlinear Granger causality. The first paragraph presents a brief overview of the traditional linear approach as it has been used to report for the presence of linear Granger causality in previous studies. The second part of this section is dedicated to the more elaborate statistical technique developed first by Baek and Brock (1992), modified later on by Hiemstra and Jones (1994), and obviously improved by Diks and Panchenko (2006) and backed up by the Wolski and Diks (2013) extension to the method of nonlinear testing.

3.1 Linear Granger Causality Test

Uni directional and bidirectional causality tests are conducted following Granger methodological patterns. This procedure is essentially a test of the predictive ability of time series models. The condition that is being satisfied is whether the lagged values of a time series X predict, or not, the future values of a time series Y, and vice versa, in the Granger sense

According to the VAR model being used, X is said to cause Y if the coefficient is not zero in the following equation:

$$Y_t = \alpha_0 + \sum_{i=1}^l \beta_i X_{t-i} + \sum_{j=1}^l \delta_j Y_{t-j} + \varepsilon_t \tag{1}$$

$$X_t = b_0 + \sum_{i=1}^l \pi_i Y_{t-i} + \sum_{j=1}^l c_0 X_{t-j} + \mu_t \tag{2}$$

3.2 Non-linear Granger Causality Test

It is well noted from Diks and Panchenko (2005) that, traditional parametric tests for Granger non causality within linear autoregressive model classes have reached a mature status, and have become part of the standard toolbox for economists. The weakness of the linear approach to causality testing is their inability to detect the existence of certain no linear relations, mainly due to its construction. The

nonlinear method was first proposed by Baek and Brock (1992). The first modification on this method was applied by Hiemstra and Jones (1994). Their model, later on, was found to be producing spurious results as it had the tendency to over reject the null hypothesis. Diks and Panchenko (2005) suggested a new nonparametric statistical software alternative to the HJ test. Namely Diks and Panchenko (2005) introduced a new nonparametric test for Granger non causality, such that avoids the over rejection rates of the frequently used test proposed by Hiemstra and Jones (1994). The real problem is that if the null hypothesis is true then the HJ test can severely over reject. This new DP test does not suffer from this serious limitation mainly due to its global nature, ignoring the possible variation in conditional distributions that maybe present under the null hypothesis. The new test statistic, letting the bandwidth ϵ tend to zero at appropriate rates, with increasing the sample size, which we will refer to again at a later stage, automatically takes into account such variation under the null hypothesis while obtaining an asymptotically correct size. It is very important to remove the source of the bias, and guarantee less size distortion as one main reason reported why HJ is inconsistent is that the assumptions made by it do not hold in general

Diks and Panchenko (2006) made available online 2 C source codes in order to conduct asymmetric and bootstrapped nonlinear Granger tests. In order to test for nonlinear Granger causality, one first has to remove the linear dependencies. One classic step one has to follow is: Applying a VAR model to all time series of the variables in order to obtain the estimated residuals to test for nonlinear causality. After estimating the VAR residuals, and according to the method that is being followed the BEKK framework provides us with another suitable model from the GARCH family that serves our forecasting interests.

So, the VAR model can be written as follows:

$$R_{i,t} = \sum_{j=1}^6 \delta_{i,j} R_{j,t-1} + \varepsilon_{i,t} \text{ for } i, j = 1, 2, 3, 4, 5, 6 \quad (3)$$

The GARCH model that is applied can be written as follows:

$$\log \sigma_t^2 = \omega + \sum_{k=1}^q \beta_k g(Z_t - k) + \sum_{k=1}^p \alpha_k \log \sigma_{t-k}^2 \quad (4)$$

By removing all linear predictive power, all remaining predictive power of any residual series on another can be regarded nonlinear predictive power.

3.2.1 Bandwidth Selection

The DP test is consistent if we let the bandwidth depend on the sample size as follows,

$$e_n = Cn^{-b}$$

For any positive constant C and $b \in (\frac{1}{4}, \frac{1}{3})$. The only value that b can take is $\frac{2}{7}$. In this case,

$$e_n = C^* n^{-\frac{2}{7}}$$

With

$$C^* = \left(\frac{18.3q_2}{4(E[s(W)])^2} \right)^{\frac{1}{7}}$$

The optimal choices for C and b rely heavily on the data generating process.

3.2.2 Data Sharpening as a Bias Reduction Method

Wolski and Diks (2013), following the modification of the HJ test by Diks and Panchenko (2005), confronted the issue of the large kernel estimator bias concerning the DP test which promotes inconsistency in the multivariate setting.

The intuition behind DS is to disturb the raw data by a sharpening function so as to obtain the desirable properties of the estimator, where ρ is the order of bias reduction. Their innovation lies within concentrating points where they are already sparse and thin them where they are already dense. The sharpening function as given above, depends on the order of bias reduction. DS allows for very high levels of bias reduction, together with the universality of the Granger causality testing method that is worldwide acknowledged for its practical purposes. DS also does not affect directly the kernel estimator function, meaning that the properties of the MSE of the test statistics remain untouched. DS is also a very straightforward and easy application, even in a multivariate setting. This method of kernel bias reduction ensures, above other methods, a clear-cut asymptotic theory for the statistics of the test.

Given the lower bias, the test does not have to include a wide range of pints in order to estimate similar properties, while at the same time it guarantees “asymptotic normality of the sharpened test statistics under smaller bandwidth values” (Wolski and Diks 2013, p. 8)

4 Empirical Results

This paper investigated the causal relationship between economic growth and public education for the Greek economy and the period 1960–2015. Employing a bivariate VAR, stationarity and cointegration were tested and indicated that economic growth, education expenditures and education enrollments are integrated of order one, and that no long run relationship exists between these time series. The negative linear results led us to investigate extensively the nonlinear properties of these time series, as the results from the linear Granger tests could not be relied upon, not solely. The main results of the linear Granger causality tests are presented in the Table 2.

According to an earlier study of Asteriou and Siriopoulos (1997) on economic growth and education for Greece, the results of the causality tests appear a lot different and have a lot to say. A very strong causal relationship that appears on the result sheet for both linear and nonlinear tests is the one between government expenditures for education and GDP growth, which has been used as a validating fact for our results. The relationship is bi-directional in the linear Granger and also running towards both directions in all the nonlinear tests on both VAR residuals and GARCH filtered data.

In comparison with Asteriou and Siriopoulos (1997) study, higher education seems to no longer affect economic growth, or vice versa. In the above mentioned study, education enrollments at least until early 1990s and economic growth had a very strong causal relationship, whereas not only education contributed to economic growth, but economic growth was also a very important driver for education enrollments expansion. Not to mention all other education levels that had a strong unidirectional relationship with economic growth as well.

Greece has been a member of the EU since early 1980s. This fact had indeed a major impact on regulatory and everyday routine issues. When entering, Greece outperformed in most, if not all macroeconomic indexes and for that it was regarded as a rapidly developing country. Since then, the country kept on evolving and transforming itself in terms of infrastructure, both human and non-human. Similar studies on education and economic growth in developing countries such as India (Chandra 2010), higher education and growth performance in Pakistan (Qazi et al. 2014), and the long run effect of education on GDP in 2 of the BCIM countries Bangladesh and China (Rahman and Peng 2012) confirm one thing right: in terms of education, Greece has probably reached a mature stage. The situation should be reevaluated and work on improving education following different paths. It might have a lot to say about the European integration of the country itself.

Secondary education appears to have a causal effect on the economic growth of the country, while preschool level, which is studied for the first time, shows a bi-directional causal relationship with economic growth. Preschool also has a causal effect on public expenditures, but this education level has multiple advantages, as it helps young mothers get back to work earlier apart from other things. Elementary education level has a much weaker effect on economic growth, while it

Table 2 Linear pairwise Granger causality tests

Null hypothesis	Prob.
Economic growth does not Granger cause education public expenditures	2.42303E-42 ^a
Education public expenditures do not Granger cause economic growth	1.77481E-15 ^a
Economic growth does not Granger cause higher education	0.8057
Higher education does not Granger cause economic growth	0.1685
Economic growth does not Granger cause Secondary sch. Enrollments	0.7279
Secondary sch. enrollments do not Granger cause economic growth	0.0262 ^a
Economic growth does not Granger cause elementary sch. enroll.	0.0366 ^a
Elementary education enroll. do not Granger cause economic growth	0.0827 ^b
Preschool enrollments do not Granger cause economic growth	0.0113 ^a
Economic growth does not Granger cause preschool enrollments	0.0224 ^a
Elementary enrollments do not Granger cause preschool enrollments	0.6878
Preschool does not Granger cause elementary school	0.8721
Secondary school does not Granger cause preschool	0.7081
Preschool does not Granger cause secondary school	0.0068 ^a
Higher education does not Granger cause preschool	0.8652
Preschool does not Granger cause higher education	0.3878
Education public expenditures do not Granger cause preschool enrollments	0.1511
Preschool does not Granger cause education public expenditures growth	0.0413 ^a
Secondary school does not Granger cause elementary school enrollments	0.5058
Elementary school enrollments does not Granger cause secondary school enrollments	0.4477
Higher education enrollments do not Granger cause elementary school enrollments	0.0059 ^a
Elementary school enrollments do not Granger cause higher education enrollments	0.0206 ^a
Education public expenditures do not Granger cause elementary school enroll.	0.8138
Elementary sch. enroll. do not Granger cause education public exp. growth	0.6961
Higher education enroll. do not Granger cause secondary school enroll.	0.0151 ^a
Secondary school enroll. do not Granger cause higher education enroll.	0.462
Education public expenditures do not Granger cause secondary school enroll.	0.2729
Secondary sch. enroll. do not Granger cause education public expenditures	0.0379 ^a
Education public expenditures do not Granger cause higher education	0.639
Higher education does not Granger cause education public expenditures	0.6165

Note: ^aDenotes significance at the 5% level

^bDenotes significance at the 10% level

is the only surviving level together with preschool (they were counted as one in the previous study, called primary level), that is promoted by the economic growth of the country, still a good sign if we think of the illiteracy levels. Of course there are other “intermediate” relationships revealed, that remain to be explored further in another study later on, possibly through artificial neuron networks.

4.1 Results of the Non-linear Granger Causality

To implement the modified DP test, we first need to select a subjective choice of values for the lead length m , the lag lengths L_x and L_y , and the scale parameter e . We will initially rely on the Monte Carlo results in Hiemstra and Jones (1994) for the choice of optimal values, which is $L_x = L_y$ and the lead length $m = 1$ and the common scale parameter $e = 1\sigma$, where σ equals the standard deviation of the standardized time series.

In the Tables 3, 4 and 5, the results of the nonlinear Granger causality tests are presented. It can be seen that the results of the nonlinear Granger causality are not as different from the ones derived by the traditional linear Granger causality tests. Higher education has lost all its causal effect, in all three tests following, as shown from the linear case. None of the remaining levels has any strong causality to exhibit. The relation between economic growth and education expenditures remain strongly causal. In this nonlinear setting, the findings reveal an absolute lack of long run relationship between economic growth and education which is in contrast with the results derived from many developing countries' studies investigating similar relations.

5 Summary and Conclusions

Linear and non-Linear Granger causality tests in this paper are used in an attempt to explore the causal relationship between government spending on education and economic growth for Greece. In order to test the relationship between those macroeconomic variables, the study followed the linear framework of Granger causality model as proposed by Granger (1969) and nonlinear models of Granger causality tests suggested by Baek and Brock (1992) and revised by Diks and Panchenko (2005) and with the additional function as proposed by Wolski and Diks (2013).

The empirical findings of this study provide with the following conclusions: Concerning the findings of the Linear Granger causality test, they seem to have many differences with other previous and present studies on the effect of education on GDP growth and vice versa. The difference in this study is that higher education seems to have no impact on the country's economic growth, while the preschool level exhibits bi-directional causal relationship between preschool enrollments and economic growth.

Also, by applying the non Linear Granger causality test, the lack of causality is confirmed. Higher education still holds a passive role. Enrolments in that level play no role in any case, lead or lag. However, the results obtained by applying the non-Linear Granger causality test seem to differ a lot from the Linear Granger causality test results in many cases. Particularly, secondary education seems to have lost all of its causal effect on economic growth. Other "intermediate" relationships

Table 3 Asymptotic nonlinear Granger causality test Valentyn Panchenko modified embed dim. = 2

VAR residuals	1.5	0.33	1.319	0.6
Null hypothesis	p-value	p-value	p-value	p-value
1. Economic growth does not cause EDEX	0.0408 ^a	0.0095	0.0420	0.040 ^a
2. Economic growth does not cause elementary	0.9833	0.298	0.891	0.596
3. Economic growth does not cause higher	0.6163	0.6284	0.5964	0.3522
4. Economic growth does not cause preschool	0.3425	0.2846	0.5783	0.7468
5. Economic growth does not cause secondary	0.4035	0.6065	0.2756	0.5584
6. EDEX does not cause economic growth	0.0053 ^a	0.0527 ^b	0.0075 ^a	0.0203 ^a
7. EDEX does not cause elementary	0.99862	0.70088	0.98762	0.87061
8. EDEX does not cause higher	0.57089	0.31110	0.33982	0.30045
9. EDEX does not cause preschool	0.02737 ^a	0.44097	0.13678	0.59941
10. EDEX does not cause secondary	0.09240 ^b	0.49917	0.12550	0.69697
11. Elementary does not cause economic growth	0.81691	0.04061	0.67919	0.37270
12. Elementary does not cause EDEX	0.98217	0.09313	0.98481	0.58047
13. Elementary does not cause higher	0.53584	0.32060	0.23870	0.60003
14. Elementary does not cause preschool	0.80417	0.21506	0.81156	0.09961 ^b
15. Elementary does not cause secondary	0.68675	0.08739 ^b	0.08671 ^b	0.05229 ^a
16. Higher does not cause economic growth	0.98283	0.28941	0.93231	0.69886
17. Higher does not cause EDEX	0.95977	0.26542	0.42315	0.27328
18. higher does not cause elementary	0.04297 ^a	0.31178	0.06695 ^b	0.02065 ^a
19. Higher does not cause preschool	0.99315	0.80480	0.96156	0.61683
20. Higher does not cause secondary	0.19334	0.22836	0.11283	0.13496
21. Preschool does not cause economic growth	0.1013	0.0998 ^b	0.1155	0.7364
22. Preschool does not cause EDEX	0.23376	0.47855	0.23495	0.77594
23. Preschool does not cause elementary	0.62563	0.36667	0.46493	0.68230
24. Preschool does not cause higher	0.69219	0.44307	0.51936	0.86707
25. Preschool does not cause secondary	0.19755	0.30675	0.04447 ^a	0.16906
26. Secondary does not cause economic growth	0.2440	0.0144 ^a	0.0933 ^b	0.0138 ^a
27. Secondary does not cause elementary	0.42186	0.43592	0.40501	0.39746
28. Secondary does not cause higher	0.12284	0.08299 ^b	0.12368	0.17573
29. Secondary does not cause preschool	0.25636	0.30653	0.28661	0.12519
30. Secondary does not cause EDEX	0.15553	0.03733 ^a	0.03994 ^a	0.03213 ^a

Note: ^aDenotes significance at the 5% level

^bDenotes significance at the 10% level

also do not make an appearance in any linear results, such as the bi-directional relationship between higher education and elementary school enrollments. Pre-school shows a bi-directional causality not as strong as in the linear results, towards economic growth.

While one dynamic relationship remains very strong, bi-directional and causal all the way, surviving all the tests, both linear and nonlinear, that of government expenditures on education and economic growth. Since this study comes with much less causal relationships than in the past, then it seems that consumer's behavior

Table 4 Asymptotic nonlinear Granger causality test Valentyn Panchenko modified embedding dimension = 2

Null Hypothesis	eGarch residuals	
	1.319	0.33
	p-value	p-value
1. Economic growth does not cause EDEX	0.01123 ^a	0.00330 ^a
2. Economic growth does not cause elementary	0.99022	0.09540 ^b
3. Economic growth does not cause higher	0.72967	0.22913
4. Economic growth does not cause preschool	0.36556	0.19293
5. Economic growth does not cause secondary	0.47487	0.93113
6. EDEX does not cause economic growth	0.01039 ^a	0.00442 ^a
7. EDEX does not cause elementary	0.80032	0.16240
8. EDEX does not cause higher	0.89929	0.21192
9. EDEX does not cause preschool	0.07858 ^b	0.32150
10. EDEX does not cause secondary	0.139	0.418
11. Elementary does not cause economic growth	0.77241	0.166
12. Elementary does not cause EDEX	0.999	0.531
13. Elementary does not cause higher	0.74556	0.308
14. Elementary does not cause preschool	0.9755	0.40495
15. Elementary does not cause secondary	0.33597	0.0657 ^b
16. Higher does not cause economic growth	0.8899	0.74410
17. Higher does not cause EDEX	0.72977	0.30055
18. Higher does not cause elementary	0.63853	0.14578
19. Higher does not cause preschool	0.99081	0.45581
20. Higher does not cause secondary	0.14289	0.11624
21. Preschool does not cause economic growth	0.24819	0.39370
22. Preschool does not cause EDEX	0.92891	0.82899
23. Preschool does not cause elementary	0.46934	0.13301
24. Preschool does not cause higher	0.86997	0.19899
25. Preschool does not cause secondary	0.37228	0.05522 ^b
26. Secondary does not cause economic growth	0.17105	0.94988
27. Secondary does not cause elementary	0.38373	0.13607
28. Secondary does not cause higher	0.271	0.09102 ^b
29. Secondary does not cause preschool	0.86735	0.667
30. secondary does not cause EDEX	0.06895	0.66982

Note: ^aDenotes significance at the 5% level

^bDenotes significance at the 10% level

must have changed a lot during the past two decades, possibly due to the ongoing changes of the globalization of knowledge and the systemic lack of a healthy labor market and other regulatory incapacities.

The results also suggest that research should always consider nonlinear mechanisms when evaluating government decisions on subsidizing public goods. What should be nevertheless noted is that, although the nonlinearities that stem out of the

Table 5 Bootstrapped nonlinear Granger Diks and Wolski modified

Egarch filtered	1000 realizations			epsilon = 0.33	
DP	1.319	0.6	1.5	10.000 real.	1000 real.
Public expenditures on education—Elementary education					
l = -2 p-value	0.857	0.86	0.64	0.857	0.83
l = -1 p-value	0.85	0.78	0.871	0.85	0.83
l = 0 p-value	0.85	0.78	0.871	0.85	0.83
l = 1 p-value	0.947	0.97	0.968	0.947	0.96
l = 2 p-value	0.826	0.82	0.838	0.826	0.9 ^b
Public expenditures on education—Economic growth					
l = -2 p-value	0.125	0.15	0.032 ^a	0.125	0.13
l = -1 p-value	0.016 ^a	0.02 ^a	0.032 ^a	0.016 ^a	0.06 ^b
l = 0 p-value	0.016 ^a	0.02 ^a	0.032 ^a	0.016 ^a	0.06 ^b
l = 1 p-value	0.029 ^a	0.02 ^a	0.032 ^a	0.029 ^a	0.02 ^a
l = 2 p-value	0.084 ^b	0.09 ^b	0.129	0.084 ^b	0.12
Public expenditures on education—Higher education					
l = -2 p-value	0.446	0.46	0.387	0.446	0.51
l = -1 p-value	0.835	0.83	0.903	0.835	0.79
l = 0 p-value	0.835	0.83	0.903	0.835	0.79
l = 1 p-value	0.704	0.71	0.774	0.704	0.68
l = 2 p-value	0.91	0.9	0.903	0.91	0.87
Public expenditures on education—Preschool					
l = -2 p-value	0.384	0.39	0.548	0.384	0.44
l = -1 p-value	0.386	0.36	0.613	0.386	0.33
l = 0 p-value	0.386	0.36	0.613	0.386	0.33
l = 1 p-value	0.897	0.88	0.871	0.897	0.91
l = 2 p-value	0.924	0.96	0.968	0.924	0.88
Public expenditures on education—Secondary enrollments					
l = -2 p-value	0.735	0.68	0.839	0.735	0.83
l = -1 p-value	0.821	0.85	0.903	0.821	0.78
l = 0 p-value	0.821	0.85	0.903	0.821	0.78
l = 1 p-value	0.507	0.54	0.581	0.507	0.57
l = 2 p-value	0.954	0.97	0.935	0.954	0.97
Elementary education—Economic growth					
l = -2 p-value	0.678	0.66	0.742	0.678	0.69
l = -1 p-value	0.983	0.99	0.935	0.983	0.97
l = 0 p-value	0.983	0.99	0.935	0.983	0.97
l = 1 p-value	0.92	0.95	0.935	0.92	0.92
l = 2 p-value	0.964	0.98	1	0.964	0.93
Elementary enrollments—Higher education enrollments					
l = -2 p-value	0.238	0.28	0.226	0.238	0.22
l = -1 p-value	0.811	0.82	0.839	0.811	0.79
l = 0 p-value	0.81	0.82	0.839	0.81	0.79
l = 1 p-value	0.668	0.71	0.839	0.668	0.62

(continued)

Table 5 (continued)

Egarch filtered	1000 realizations			epsilon = 0.33	
DP	1.319	0.6	1.5	10.000 real.	1000 real.
l = 2 p-value	0.398	0.41	0.581	0.398	0.37
Elementary enrollments—Preschool enrollments					
l = -2 p-value	0.149	0.15	0.129	0.149	0.13
l = -1 p-value	0.868	0.88	0.839	0.868	0.86
l = 0 p-value	0.868	0.88	0.839	0.868	0.86
l = 1 p-value	0.691	0.67	0.613	0.691	0.8
l = 2 p-value	0.243	0.2	0.161	0.243	0.29
Elementary enrollments—Secondary enrollments					
l = -2 p-value	0.138	0.09 ^b	0.161	0.138	0.15
l = -1 p-value	0.209	0.21	0.226	0.209	0.37
l = 0 p-value	0.208	0.21	0.226	0.208	0.37
l = 1 p-value	0.613	0.57	0.742	0.613	0.52
l = 2 p-value	0.216	0.32	0.258	0.216	0.2
Economic growth—Higher education					
l = -2 p-value	0.15	0.96	0.903	0.15	0.94
l = -1 p-value	0.458	0.87	1	0.458	0.85
l = 0 p-value	0.458	0.87	1	0.458	0.85
l = 1 p-value	0.41	0.68	0.677	0.41	0.75
l = 2 p-value	0.258	0.96	0.935	0.258	0.93
Economic growth—Preschool					
l = -2 p-value	0.842	0.88	0.806	0.842	0.84
l = -1 p-value	0.694	0.69	0.742	0.694	0.59
l = 0 p-value	0.694	0.69	0.742	0.694	0.59
l = 1 p-value	0.519	0.53	0.419	0.519	0.54
l = 2 p-value	0.912	0.91	0.903	0.912	0.91
Economic growth—Secondary enrollments					
l = -2 p-value	0.937	0.11	0.097	0.937	0.16
l = -1 p-value	0.901	0.38	0.387	0.901	0.39
l = 0 p-value	0.901	0.38	0.548	0.901	0.39
l = 1 p-value	0.679	0.42	0.548	0.679	0.42
l = 2 p-value	0.962	0.21	0.355	0.962	0.26
Higher education—Preschool					
l = -2 p-value	0.588	0.53	0.516	0.588	0.47
l = -1 p-value	0.439	0.46	0.581	0.439	0.45
l = 0 p-value	0.439	0.46	0.581	0.439	0.45
l = 1 p-value	0.16	0.12	0.129	0.16	0.17
l = 2 p-value	0.345	0.4	0.355	0.345	0.38
Higher education—Secondary enrollments					
l = -2 p-value	0.384	0.45	0.290	0.384	0.35
l = -1 p-value	0.491	0.53	0.419	0.491	0.48
l = 0 p-value	0.491	0.53	0.419	0.491	0.48

(continued)

Table 5 (continued)

Egarch filtered	1000 realizations			epsilon = 0.33	
DP	1.319	0.6	1.5	10.000 real.	1000 real.
l = 1 p-value	0.244	0.2	0.387	0.244	0.27
l = 2 p-value	0.106	0.13	0.065 ^b	0.106	0.09 ^b
Preschool enrollments—Secondary enrollments					
l = -2 p-value	0.245	0.23	0.290	0.245	0.24
l = -1 p-value	0.468	0.5	0.548	0.468	0.47
l = 0 p-value	0.468	0.5	0.548	0.468	0.47
l = 1 p-value	0.576	0.49	0.581	0.576	0.59
l = 2 p-value	0.233	0.26	0.258	0.233	0.17

Note: ^aDenotes significance at the 5% level

^bDenotes significance at the 10% level

causality testing procedure are important information, they give no further hint on what causes them.

6 Critique on GDP as a Measure for Growth: Recommendations

As many scholars have cited the issue of education having a causal effect on the economic growth of the country is mainly a problem scrutinized by emerging economies like the BCIM and such. Developed economies have never had any doubt about their leading role in convergence, instead they sustain their excellence by committing themselves to quality, thoroughly scrutinizing the history of migration, and by developing strategies on how to grow and attract people (Cetin and Sunnetci 2014).

Analyzing the results of this study, it can be concluded that the Greek Economy stands somewhere in the middle. Nor has it ever neglected the effect of education on its own economic growth responding with quantitative investments (building new schools, hiring additional personnel etc.), neither has it ever occupied itself only with qualitative issues such as time in classroom, teaching subjects, restrictions from entering (apart from HE) etc. So, the direction of the researchers, i.e. in developing countries exploring the education-growth relationship, while in developed countries they explore other relationships like education-well-being, education-self-awareness, education-philosophy, education-cohesion, education-drop-outs etc., reveals a lot about the situation at hand in their country.

No researcher has he or she ever wondered if education brings growth in the US or GB etc., because this thing is self-evident. Education is a whole business sector that brings economic growth in itself and its counterparts if done properly, but it is also the business sector that integrates progress and technological change in its textbooks and promotes individual economic growth in any functioning economy

and competition. I would only leave out one relationship between education and real wages which should be a problem investigated in developing countries also, but it is better analyzed in the organized western economies that flourish by default, as there are plenty of available data.

According to the theory developed by Turkonfed report, the levels of development of an economy are five and they are all related to technology. If a country wants to develop has to overgo all these five levels. Agriculture, Food and Textile, Motor vehicles and chemicals, computers and telecommunication technologies should all be products of one economy alone (Cetin and Sunnetci 2014). For all these products to be produced thee should be accordingly the proper human capital allocated. The assumptions made dictate us that Greece, almost like its neighboring countries, has a unique record in graduates both in the country and abroad, but the problem remains the same. All this unique wealth of knowledge has little or no relationship with the industries developed in the country, as well as the industries do not have what it takes to make use of those graduates waiting to be properly hired, what is called “the middle income trap”.

Some other scholars and international institutions have started a campaign against the credibility of GDP as a measure for growth saying that it is outdated and cannot grasp the technological effect that has been imposed onto the market and the way business is done nowadays.so, if we were to create a new index measuring the level of convergence for an emerging economy, or for any economy in doubt, should we not ignore the causal effect between education and GDP per capita. Of course, it would be a lot easier to continue the seminal work of Mincer (1974) provided that we could monitor the whole labor market day by day, and have a clear picture of who gets paid for what. But even Mincer himself couldn't open these channels of information, and that was one of the main reasons why his work in 1974 did not confirm any of his previous research findings. People integrate change in their lives and respond by changing lifestyles, tastes, choices and attitudes towards life.

So, we suggest a fictional new “Economic Convergence sub-Index” that would also take into account the adverse relationship of education and growth, whereas revenues have no significant impact on growth (if any) and expenditures have none or negative impact on growth. The less causal this relationship, the more integrated an economy, in other words comparatively closer to the developed economies. The p-value of both the linear and nonlinear Granger causality test could serve as two of the coefficients for economic growth in the equation.

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Farmer's Social Responsibility in Post-industrial Rural Development: A Challenge for the Twenty-First Century?

Rita Vilké, Lina Pareigienė, and Aldona Stalgienė

Abstract Post-industrial rural development as one of the major fields of public policy remains challenging in the twenty-first century. The bottom-up activity of society, that actively entered the process of rural policy in the past decade, accelerated several new discourses in field. By questioning the underlying support principles and justification of the public value, created by farmers that are subject to the support, the general public elucidated the existing gap between multifunctionality and sustainability in agriculture. Some insights had been proposed to close the gap with the help of corporate social responsibility (CSR). This entails to perform a study concerning farmer's social responsibility from a broader rural development perspective. The aim of this study is to explain farmer's social responsibility as a challenge for the twenty-first century, as well as possible conceptual framework for meeting transformations of post-industrial rural development. Research results show that using the systemic approach towards on-going transformations in post-industrial rural development, farmer's social responsibility originates alongside multifunctionality, endogenous development, place-based approach and network conceptions in relationships and interactions among agricultural stakeholders throughout the local and global value chains, and thus make an impact on social welfare and inclusive economic development issues next to the broadly discussed environmental concerns.

Keywords Farmer • Corporate social responsibility • Post-industrial rural development • Multifunctional agriculture • Endogenous development • Place-based approach

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1 Introduction

The global environmental challenges had never been so frequently discussed in tight interconnectivity with social and economic global concerns like recently, in the first two decades of the twenty-first century. The famous Brundtland's Report (World Commission on Environment and Development 1987) had highlighted the conflict of order promoting uncurbed economic growth and accelerating ecological degradation on a global scale. The World Summits continuously keep issuing the need for more sustainable rural development and food production since 1992. Notwithstanding, the true ideas of managing these sustainability challenges with help of corporate social responsibility (CSR) in everyday life of citizens as part of communities, corporations, institutions and many other operating units are rather late in arriving to action. Under the bottom-up pressure of civic society, business corporations start thinking about economic, social and environmental concerns and linking them to business processes in the name of CSR half of a century ago (Carroll and Shabana 2010). NGOs helped greatly in solving many different social, environmental as well as economic problems by implementing CSR activities in many forms of organized initiatives throughout several decades already (Aras and Crowther 2010). Alongside, number of top-bottom government initiatives had accelerated sustainability concerns alongside with CSR to come to national agendas throughout the Europe (Commission of the European Communities 2001; etc.).

In recent years, CSR is gaining the importance in agrarian discourse. In this study, agrarian discourse is understood and used as an umbrella concept for rural development. Both scientific (Tallontire and Greenhalgh 2005; Maloni and Brown 2006; Behling and Auer 2008; Genier et al. 2008; Heyder and Theuvsen 2008a, b, 2009, 2010; Hediger 2008, 2013a, b; Hartmann 2011; Kissinger 2012; Friedrich et al. 2012; Mueller and Theuvsen 2014; Mazur-Wierzbicka 2015, etc.) and political debates (i.e., the Common Agricultural Policy, CAP of 2014–2020) demonstrate the urgent need to get deeper into the issue. However, taking into account nearly two decades of CSR concerns in agricultural discourse, it had been rarely addressed with the “clear idea of how to proceed towards those (sustainability) goals” (Leakey 2012, p. 141). Some recent research suggest CSR to be applied as a sustainable development tool (Hediger and Knickel 2009; Mazur-Wierzbicka 2015) or, moreover, to supplement or even substitute the concept of multifunctionality and sustainability in agriculture (Hediger 2008, 2013a, b). Still, any systemic background for understanding farmer's social responsibility in post-industrial rural development as a challenge for the twenty-first century had not been proposed in any literature yet.

The main aim of this study is to explain farmer's social responsibility as a challenge for the twenty-first century, as well as a conceptual framework for meeting multiple parallel transformations of post-industrial rural development. To reach the aim, a conceptual review and systematization, induction and deduction methods were applied.

A short historical outline of shifts in rural development paradigms elucidates and gives evidence for explaining interconnectivity among the heritage from previous, i.e. industrial, stage of development and raising challenges for farmers in current, knowledge-based society, in terms of economic and social (cultural) issues next to the broadly discussed environmental concerns in agriculture. A systemic review of post-industrial rural development conceptions encompass, how on-going transformations are met with conceptual approaches, which appropriately suggest directions of future decisions for rural development, and parallel highlight the open opportunity to empower a particular paradigm of CSR. Finally a conceptual framework for understanding farmer's social responsibility in post-industrial rural development is proposed. The framework integrates featured challenges of post-industrial society as main challenges to overcome for farmers in the twenty-first century, post-industrial rural development conceptions as conceptual approaches to deal with these challenges, and three-dimensional CSR with the main areas of equally important social (cultural) and economic aspects of socially responsible farmer's activity in the twenty-first century, next to the broadly discussed environmental concerns.

2 Reasoning the Origination of the Main Challenges for Farmers in Post-industrial Rural Development

Rural development paradigm as an independent discipline originated in the sixth decade of the twentieth century, and soon rural policy became a separate part of economic policy with its specific objectives, measures and budget. The establishment of the European Economic Community and the Common Agricultural Policy (CAP) had proved the importance of institutional concerns towards agricultural sector. The Treaty of Rome in 1957 stated the concrete objectives for agricultural sector: increased productivity, guaranteed reasonable prices, equitable standard of living for farmers, market stability and guaranteed supply. As stated by Martin-Retortillo and Pinilla (2015, p. 7), "the development of this treaty, through the CAP, left its mark on the agricultural sector for decades, especially until 1992 and the MacSharry reform."

Historically, throughout the half of a last century, rural development policy had gone through many transformations in the name of industrialization, taking into account the mechanization of work process in agriculture, installation of irrigation and amelioration systems, electrification of farms and application of chemical production technologies (artificial fertilizers, herbicides, insecticides, fungicides, etc.) (Vidickiene and Melnikiene 2014). Every part of industrialization caused important changes in rural landscapes and life of rural residents. For instance, analysis of a long term historical data shows radical decrease in the number of employed in agriculture in Europe [from 67.3 thousand in 1950 to 14.2 thousand (i.e. 4% of all employed) in 2005] which comes alongside the increase of

mechanization. Decreased number of workplaces in rural areas accelerated migration of people to urban areas in search of a job. Thus depopulation of rural areas and related social problems, such as reduced accessibility of essential and vitally important public services, lack of economic activity, etc. had recently become great issues for policy makers to deal with. Installation of irrigation and amelioration systems caused huge environmental changes. In Europe, between 1961 and 2009, irrigated area grew by 0.63% annually (Martin-Retortillo and Pinilla 2015). Negative effects of irrigation systems upon the environment in the EU are much greater than positive ones, and encompass pollution of water and aquatic ecosystems from nutrients and pesticides; damage by abstraction of irrigation water; displaced formerly high natural value ecosystems; erosion of cultivated soils and slopes; salinization of water and land or contamination by minerals of groundwater. Among the positive effects of irrigation systems the gains to biodiversity and landscapes were observed, as well as the construction of large scale water infrastructure constructed as part of irrigation projects and schemes with some negatives (Dwyer et al. 2000). Indeed, the very sharp increase in the use of chemical fertilizers in European agriculture observed from 1950s till 1980s, decreased and remains almost steady, with insignificant increase in latter decades, counting up to 153 kilograms consumed per hectare in 2005 (Martin-Retortillo and Pinilla 2015).

These and many other important changes which came into action throughout the industrialization process of agriculture composed a range of challenges for farmers in the twenty-first century. The latter is often referred as a post-industrial stage of development, also knowledge, information or networked society age, etc. According to Vidickiene and Melnikiene (2014), the role of knowledge and ways of its empowerment had become fundamental for a systemic explanation of economic, social and cultural transformations and differences between industrial and post-industrial social systems, which make a crucial impact on public policy and many forthcoming decisions for rural development. In the post-industrial society, knowledge became a crucial driver for economic development, and had changed the previous focus on capital and production automation. Services became the dominant sector, and devaluated massiveness of production and consumption turned into individualization. Long-term life cycle of products and technologies is fading behind, and short life cycle become dominant. Reinvestment in intellectual capital enforces economic development in stable consumption conditions, since the role of material investment become irrelevant. Alongside, the role of savings is diminishing. The previous understanding of limited consumption of material goods turns into the recognition of the new opportunities just after the new information and knowledge product is commenced. Transformations in social system accelerated changes from hierarchical and bureaucratic intercourses to the networked ones. Excellence in own profit management diminished the importance of holding the profit rights, as final success today comes to the quick and flexible, not necessarily to the big and the dominant one. Functional distribution of tasks does not meet the new paradigm anymore and thus distribution of tasks most often becomes based on the final product. Cultural transformations are evident in aligning responsibility next to the dominance. Aspiration to originality and self-expression become of a

greater value than the ambitions to be the one among the best ones. Decreased value of material goods is replaced with ideas and services of how to apply theories in practice. Confrontation and competitiveness in most cases become organized as a team-work, cooperation, sharing and other joint forms of activity. And finally, recognition of the vitally important understanding of the subjective truth replaced the aspirations to the objectivity.

However, the limitations of a systemic methodology in reasoning shifts from one development paradigm to another accelerated the holistic approach in most popular post-industrial conceptions of rural development, i.e. multifunctional agriculture, endogenous rural development, place-based approach and networking. Dahlman (2016, p. 3) states, that “a new paradigm for rural development is needed to move forward. It needs to incorporate the lessons of past experience but also needs to meet the challenges and harness the opportunities of the 21st century—including climate change, demographic shifts, international competition and fast-moving technological change”. Recently, there are many attempts to propose particular set of components for successful rural development in the twenty-first century both in literature and policy. OECD Development Centre (OECD 2016) proposed a new rural development paradigm for developing countries in the twenty-first century, based on eight components: governance, multiple sectors, infrastructure, urban-rural linkages, inclusiveness, gender, demography and sustainability. At a first glance, the majority of components might come alongside the above discussed economic, social and cultural transformations, but further might be more systematically addressed to the post-industrial rural development conceptions, i.e. multifunctionality, endogenous development, place-based approach and networking. Moreover, the moving forward in rural development paradigm cannot be successful without a systemic view on the challenges to deal with and principles to be applied.

3 Social Responsibility of Farmers and Post-industrial Rural Development Conceptions

Since socially and environmentally friendly methods of production are currently on demand both from society and retailers, for meeting these and many other expectations, farmers in the twenty-first century start facing the challenge of CSR, next to many interconnected transformations of post-industrial rural development. In agrarian literature, seminal discussions regarding CSR are placed next to the sustainability and multifunctionality (Hediger 2008, 2010, 2013a, b; Hediger and Knickel 2009; Mazur-Wierzbicka 2015), but never to the rest of post-industrial rural development conceptions, i.e. endogenous development, place-based approach and networking.

3.1 Corporate Social Responsibility and Farmers

The concept of CSR might be defined (but not limited to) under several paradigms. In its most general sense CSR is used to be acknowledged as an activity, which goes beyond the law, beyond the primary task of providing marketable goods and services and generating income to the owners (McWilliams and Siegel 2001). Globally, CSR is related with the connections among global corporation, governments and individual citizens. Regionally, it is concerned with connections among the operating unit and the regional society in which it inhabits or functions (Crowther and Aras 2008), or relation among corporation and its stakeholders (Freeman 1984). CSR might be also viewed as a program of actions were firm's objectives to maximize its profits are aligned with contribution to improve the social welfare (Beltratti 2005), which further goes to market imperfection under the two sources, i.e., externalities and distributive fairness (Hediger 2013a) and, in a long run, leads to the threats in company's reputation and corporate values. Accordingly, economists explain the role of CSR "as a means to anticipate and minimize conflicts between corporations and society and as a means to improve corporate profits in a long-run and guard against reputational risks, while adding to social welfare" (Hediger 2013a, p. 139).

CSR may also be viewed as a way of balancing environmental, social and economic concerns in line with stakeholder expectations at the same time (Elkington 1994). It is also known as a Triple Bottom Line (TBL) approach, 3-Es (Ethics, Environment and Economy) or 3-Ps (People, Planet and Profit), further used for developing accountability and reporting guidelines (Global Reporting Initiative 2014). Hence, CSR is more locally and precisely concerned with a range of elements and tools for implementing those sustainability goals from a particular operating unit's perspective.

Different views on CSR agree on one main issue—CSR might be implemented through a particular set of elements of socially responsible activity. Altogether, from various sources of literature, these elements most often include: labor conditions, community welfare, ethics, assessed external impacts, compliance, etc. According to the particular context, CSR elements might be described more precisely. When taking into account the main vitally relevant dimension in agrarian discourse, i.e. environmental, there is sense of referring CSR after the Elkington's (1994) conception, as a three-dimensional activity, i.e. as a system of social, environmental and economic components with integrated aspects from Guidelines GRI G4 and ISO 26000:2010.

Social (or People, Ethics) dimension of CSR stresses social equity and ethics as top concerns in fair and beneficial labor practices, human rights, society in the region, in which the unit conducts its activity, and product responsibility (Elkington 1994; Global Reporting Initiative 2014). Labor practices and decent work takes into account employment issues, labor/management relations, occupational health and safety system, training and education, diversity and equal opportunity, equal remuneration for women and men, supplier assessment for labor practices and labor

practices grievance mechanisms. Human rights are taken into a special consideration when taking investment decisions, non-discrimination policy, freedom of association and collective bargaining, child labor issues, forced and compulsory labor, security practices, indigenous rights as well as human rights grievance mechanisms. Society issues are concerned with local communities in terms of engagement, impact assessment and development programs, alongside the measures of negative impacts, anti-corruption, public policy, anti-competitive behavior, compliance and supplier assessment for impacts on society, and grievance mechanisms. Product responsibility refers to the customer health and safety issues, product and service labeling, marketing communications, customer privacy and compliance.

Environmental (or Planet) dimension is focused on environment-related issues in the main fields of energy sources, carbon and water footprints, responsible exploitation of natural resources and impacts. Direct and indirect energy consumption, energy intensity and reductions, water withdrawal and sources are the main measures in the sustainable resource use. Emissions, effluents, waste issues in operations (production, transportation), products and services deal with the climate change mitigation and adaptation as well as prevention of pollution. Responsible exploitation of natural resources and impacts give feedback in terms of compliance to the rule of law (Elkington 1994; Global Reporting Initiative 2014).

Economic (of profit) dimension encompass number of long-term economic issues: economic stability, profit reinvestments and long term returns. Thus, economic performance give evidence for economic responsibility in terms of generated and distributed economic value, financial implications and other risks and opportunities for the activities due to climate change, obligations of the benefit plan and financial assistance. Market presence is covered under the ratios of standard entry level wage as well as proportion of senior management hired from the local community. Indirect economic impacts deal with economic, social and cultural rights, community involvement and development, wealth and income creation, social investment, promoting social responsibility in the value chain, respect for property rights, and access to essential services and similar activities. Procurement practices are measured as a proportion of spending on local suppliers at significant locations of operation and, as part of economic responsibility also elucidate promotion of social responsibility in the whole value chain, as well as attitudes towards wealth and income creation, community involvement and development (Elkington 1994; Global Reporting Initiative 2014).

3.2 Multifunctional Agriculture and Sustainability

Based on Hediger's (2013b) findings, the conceptions of sustainability and multifunctionality were originally formulated in the context of forest management and, as mentioned above, set the guiding principles for agricultural policy since the late 1980s. Both terms emphasize the vulnerability of ecosystems and the multiple

benefits that can be sustained through the adequate resource management. However, epistemological foundations of the terms in economic theory are rather different. Multifunctionality as a main characteristic of a production system is referred to the multiple roles performed by agriculture. Next to the primary function of production of food and fiber, number of environmental and socio-economic benefits (recreational amenities and aesthetic values of the rural landscape, non-use values of the biodiversity and habitat protection, intrinsic values of ecosystems, watersheds and natural resources of their functions, concerns about food security and safety, animal welfare and cultural heritage, rural employment and viability or rural areas) are provided by agriculture. Sustainability, as a normative conception, is concerned with a continuous evaluation of trade-offs across the various system goals and thus has never been restricted to agriculture and rural development.

Altogether, positive and negative externalities associated with agricultural activity became a strong theoretical efficiency-based argument for government intervention in a form of policy instruments and institutional arrangements. Aiming to internalize the external costs and benefits, established regulation and transfer payments constitutes to the existence of aspects of welfare economics from equity-based point of view. Further, it provides a strong welfare economic argument for government support to farmers, which depends on the normative framework applied, i.e. assignment of property rights and policy entitlements (Hediger 2013b). However, the modern welfare foundation of multifunctionality is not sufficient for the goals of sustainable development. Therefore, as stated by Hediger (2013b), a long-term and capital-theoretic perspective needs to be a basis of benefit assessment and policy design, as required by the sustainable development conception.

3.3 Endogenous Rural Development

The overall direction of better empowerment of all the rural resources next to agricultural resources composed a basis for the new conception, i.e. endogenous rural development. For this reason, to meet the new demands of the knowledge age, the focus from external factors associated to market pressure was replaced with internally accelerated processes (Vidickiene and Melnikiene 2014). Thus, the endogenous development conception stands in contrary to the classical centralized administration with strict hierarchy, bureaucracy and ‘top-bottom’ rural development decisions. As stated by Margarian (2013, p. 1) “the concept of ‘endogenous development’ currently dominates the socio-economic element of European Rural Development policy with its multiple key targets, at least rhetorically”. Endogenous development conception stresses the active role of local citizens in making decisions regarding the better distribution of local resources, and thus advocates to the so called ‘bottom-up’ approach (Fraser et al. 2006). The main aim of reaching the ultimate output from local resources is implemented with help of plans, developed

by local inhabitants, who are the best experts in the conditions of local resources and existing networks of collaboration between local government's institutions and non-governmental organizations as well as relevant information channels and flows. Social networks and family relations are employed instead of the roles performed by legal institutions. This helps when avoiding the formal institutionalization of organizational structures (Vidickiene and Melnikiene 2014).

Anyway, only internally accelerated structures in most cases can hardly survive without external support, most often because of limited resources. Therefore, rural development measures are used to accelerate the activity. According to Vidickiene and Melnikiene (2014), the preciseness in assessing the specificity of the local context is more than desirable when rural policy decisions are made regarding the financial aid. Otherwise there are threats for the essence of the conception, i.e. endogeneity might be lost in case of massiveness of the similar projects, developed under the same business model. One more important statement, is that progress of endogenous development cannot be measured by quantitative indicators, thus qualitative and structural measures are welcomed (Vidickiene and Melnikiene 2014).

3.4 Place-Based Approach

As stated by Margarian (2013), 'place-based' development is sometimes used synonymously with 'endogenous development' and 'locally-based', or with 'localized' development. However, the place-based approach in post-industrial rural development paradigm elucidates the shift from 'agrarian sector based' approach towards the regional approach on rural areas.

In its essence, the place-based approach has two fundamental aspects, i.e. regional (geographical) context in terms of social, cultural and institutional characteristics and the issue of knowledge and policy intervention (Barca et al. 2012). In other words, the village or countryside is here understood as part of the region, which has services dominant in its economic activity structure, instead of agriculture. Contrary to the main feature for distinction between rural and urban areas in industrial stage of development (i.e., agriculture is a dominant sector in rural areas, industry—in urban ones), in post-industrial paradigm, under the influence and impact of knowledge, rural regions become similar to urban ones in terms of economic structure. All sectors of economic activity in rural areas become equally important object of regulation (De Dominicis 2014). The main aim of increased competitiveness of the rural region, ultimate output and continuously increasing value of local resources is achieved through investment and joint activity of public institutions in all levels, non-governmental organizations and local leaders (Vidickiene and Melnikiene 2014).

In the twenty-first century the sole criteria—agricultural sector conditions of the region, is replaced with the complex view on a particular rural region. It is suggested to take into account the question of hierarchy of all rural area and

agrarian problems of the particular region. Then the decision on the ratio and relations between the relevant strategies for the particular rural region are on demand. Thus, being close with its essence to the ‘endogenous rural development’ paradigm, the ‘place-based’ approach puts more effort on external factors and thus stands for a more evolutionary point of view on rural development (Vidickiene and Melnikiene 2014).

3.5 *Networking*

The crucial role of knowledge in the twenty-first century accelerated the new conception of rural development, based on networking, which integrated internal and external rural development factors much greater than a ‘place-based’ approach (Vidickiene and Melnikiene 2014). The conception is based on the presumption that a collaborative network cannot be established without a particular influence from external factors and cannot operate without internal incentives. The special advantage is given to the networking conception in terms of its role in learning and innovation processes which are the main driving forces of knowledge economy.

Networking conception in rural development might be applied when building two types of relations: vertical and horizontal networks (Vidickiene and Melnikiene 2014). Vertical networks enable rural residents to become part of a food industry, while horizontal ones deals with establishing networks of solely persons operating in rural areas into a larger economic units, including other rural activities next to agriculture. Networking for rural development had not been widely discussed yet, in terms of the role and application of knowledge as an economic factor of development in learning and innovation processes in rural areas.

4 Conceptual Framework of Farmer’s Social Responsibility in Post-industrial Rural Development

Interconnectivity as well as differences among the discussed post-industrial rural development conceptions, and selected CSR paradigm (i.e. three-dimensional) to be applied in agrarian discourse helps systemize the main featured challenges for farmers to meet in the twenty-first century, conceptual approaches when dealing with them and areas of farmer’s activity in the field of CSR (see Fig. 1).

From one side, solutions for the existing featured challenges in post-industrial rural development might be conceptually met by choosing any of post-industrial rural development conceptions, which provides systematized view on the set of tools applied in a particular case. From the other, CSR propose number of tools for a farmer, who is free to develop an appropriate plan of social, environmental and economic dimensions to be implemented in the name of CSR, and thus respond to

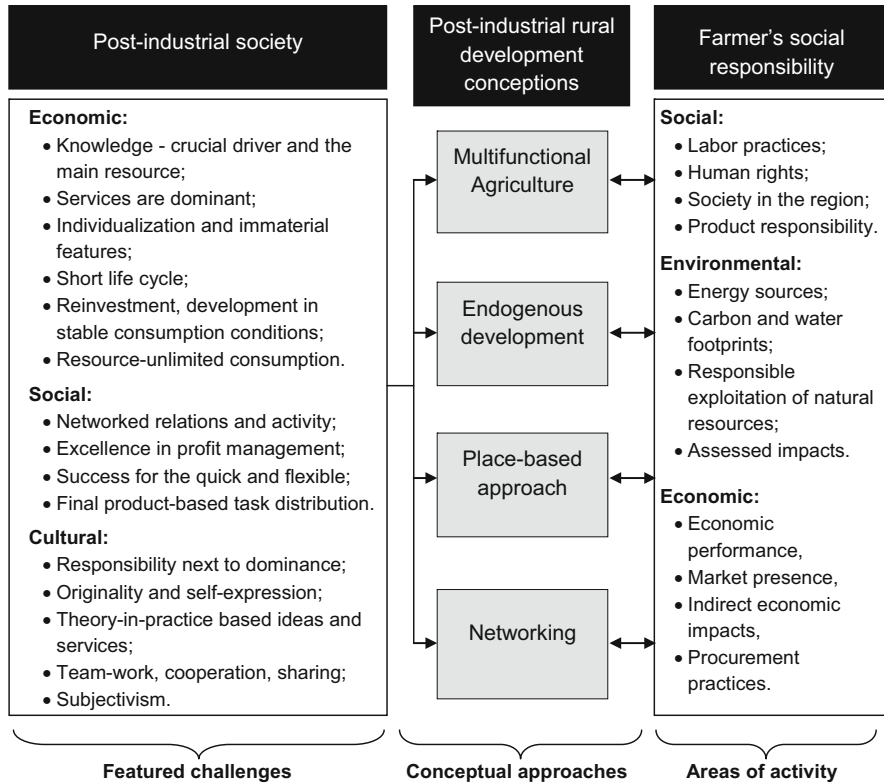


Fig. 1 Conceptual framework of farmer's social responsibility in post-industrial rural development. Source: Comprised by authors

ongoing transformations and demands. In multifunctional agriculture case, alongside the given focus on all functions, performed in rural areas, farmer's CSR activities would mainly focus on the social, i.e. community and environmental issues, and economic performance would be perceived as essential for running the agribusiness. Endogenous development will firstly stress the social dimension and give value to local leaders and resources, which will compose a CSR integrated strategy for responsible exploitation of local resources.

Place-based approach would add to social and environmental dimension economic as an equal one because of assessed external impacts when dealing with local and distanced stakeholders. Networking will engage all CSR dimensions into vertical and horizontal networks and elaborate appropriate CSR strategy with set of components for dealing in networks as in a value chain.

Thus, in a very simplified way, it becomes evident, how CSR suggest number of options for farmer's socially responsible activities when meeting the challenges of the twenty-first century, which have been already tested by business and succeeded.

However, CSR has just arrived to agrarian discourse, and necessarily needs further constructive investigations.

5 Conclusion

Origination of the main challenges for farmers in post-industrial rural development has its roots in shifts of development paradigms—from industrial to post-industrial society. In agrarian discourse, the distinguished role of knowledge as a main resource in the twenty-first century, completely reshapes the industrial paradigm, which stresses the main distinctive feature between rural (agricultural) and urban (industrial) areas. Knowledge-based solutions accelerate assimilation of living conditions in all its senses among village and city. However, a huge heritage in terms of economic, environmental as well as social impacts from the industrial stage create number of challenges for the new values-based knowledge society to deal with, climate change, demographic shifts, international competition, fast-moving technological change. Weighted stakeholder groups (OECD) suggest the ‘moving forward’ in new rural development paradigm with help of particular set of so called ‘success components’ in strategies, while scholars prefer focus on conceptual ways for dealing with on-going transformations.

Among the most popular conceptual ways of finding appropriate solutions for post-industrial rural development, i.e. multifunctionality, endogenous development, place-based approach and networking, social responsibility of a farmer has been fragmentarily addressed in seminal discussions, next to the sustainability and multifunctionality, but never to the rest. Stating the focus on self-commitment in all post-industrial rural development conceptions, CSR arrives with its multiple components to new values and expectations of knowledge-driven society in agrarian discourse as well.

Stating the vitally relevant environmental dimension in agrarian discourse, among number of views on CSR, corresponding paradigm is found in a three-dimensional approach, composed of social, environmental and economic components, which are closely related to economic, social and cultural transformations of the post-industrial society and rural development conceptions. Altogether, the three dimensions of CSR propose number of options for self-regulation of farmers when dealing with post-industrial challenges in relevant areas of concern, alongside the particular conceptual approaches. Thus CSR, being a challenge itself as a brand new concept in agrarian discourse, at the same time bring already tested self-regulation practices from other businesses to improve farmer’s activity according to current expectations and demands from society. Obviously, adaptation and application of CSR in agrarian discourse needs further investigations.

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Economic Growth and Energy Consumption for OECD Countries

Hasan Huseyin Yildirim

Abstract Following the nineteenth century, energy became an important and indispensable input to production and consumption activities in all over the world. In the meantime, energy has become a very determinant factor for growth for national economies. In this study, we aim to examine the relationship between energy consumption and economic growth for OECD countries. Panel data method and co-integration tests will be employed to analyze OECD member countries over the period 1960–2014. GDP per capita will be the proxy for the energy consumption and economic growth capita will be taken for energy consumption on an annual basis.

Keywords Economic growth • Energy consumption • Panel data analysis • Cointegration test

1 Introduction

Energy plays a vital role in the process of economic growth and development of a nation. In the absence of sufficient energy industry, transport and social life are subject to fail. Energy products constitute the largest cost item in the production processes in the modern economy. Being unable to meet the energy demand due to population growth, industrialization and rising living standards can cause social, political and military conflicts.

The increase in the world's primary energy consumption, respectively, is 2.0% in 2013 and 0.9% in 2014. The average primary energy consumption of the world in the last decade is 2.1%. In 2014, primary energy consumption growth is at least as low as during the past 10 years. OECD countries' primary energy consumption has shown a growth rate below historical growth.

Table 1 shows us the distribution of primary energy consumption in 2014. We can see the utilization of primary energy sources for the regions shows proportions

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Table 1 World primary energy consumption (2014)

Region	Oil (Mt)	Natural gas (Mtoe)	Coal (Mtoe)	Nuclear energy (Mtoe)	Hydro-Electricity (Mtoe)	Renew-ables (Mtoe)	Total	Percent (%)
Total North America	1024.40	866.30	488.90	216.10	153.50	73.60	2822.60	22
Total S. and Cent. America	326.50	153.10	31.60	4.70	155.40	21.50	692.80	5
Total Europe and Eurasia	858.90	908.70	476.50	266.10	195.70	124.40	2830.30	22
Total Middle East	393.00	418.60	9.70	1.00	5.20	0.30	827.90	6
Total Africa	179.40	108.10	98.60	3.60	27.50	2.90	420.10	3
Total Asia Pacific	1428.90	610.70	2776.60	82.50	341.60	94.20	5334.60	41
Total World	4211.10	3065.50	3881.80	574.00	879.00	316.90	12928.40	
Percent (%)	33	24	30	4	7	2		

Note: Mtoe is means "Million Tonnes of Oil Equivalent"

Source: BP (2015)

of 22% in North America, 5% in S. and Cent. America, 23% in Europe and Eurasia, 6%, in Middle East, 3% in Africa, 41% in Asia Pacific region. In 2014, oil which is the largest share of the world consumption of primary energy resources constituted 33% of whole consumption. Oil consumption is followed by coal, which is 30% of the world consumption. Natural gas is the third with 24% of primary energy consumption. 87% of world primary energy consumption is supplied by these three energy items, as a fossil source of energy.

The use of energy as a global trade goods in the ready of economic development and growth is not only requirement but highly important. Energy plays a vital part in advancing an economic system on supply and demand side. Where, on the supply side, energy is a fundamental component of production in as well as to labor, capital and materials and it appears also to play a prevailing part in the social and economic development of rural areas (Azam et al. 2015). While, on the demand side, energy being a significant merchandise of consumers, they determine to get it in order to maximize their benefits. The study further added that all these advise that there should be a causal linkage running from gross domestic product (GDP) to energy consumption as well as vice versa.

The significance of energy as an input in the development and growth process obtained more eminence following the oil price increases in 1973/1974 and 1978/1979 than at any other time. Afterwards, a notable volume of research-most of it in developed countries, mainly because of the large role energy and energy based inputs play in their production processes -has studied the relationship between economic growth and energy (Reddy 1998).

There are two contrast perspectives about the relationship between economic growth and energy consumption. First perspective proposes that energy consumption is affecting economic growth low-grade. Second perspective proposes that there is no relation between energy and economic growth. This is described as the 'neutrality hypotheses' in the literature. By the way energy consumption is thinkable key factor on economic growth. When the economy grows, it is likely to shift toward non-energy-intensive activities, which are the form of production (Mehra 2007).

There have been many studies on energy consumption and economic growth so far. The relationship between energy consumption and economic growth is analyzed using data of a single country or of a group of countries. This study examines the relationship between GDP per capita and electricity consumption per capita for 20 OECD member countries (Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States and Italy) by using panel data methodology for the time period 1962–2012.

This study consists of five sections. The first part is about global energy outlook and the importance of relation between economic growth and energy consumption. The second part presents the literature review on the economic growth and energy consumption. Section 3 explains the data and methodology. In the fourth section of the study, empirical results are presented. Last section concludes the paper.

2 Literature Review

Relationship between economic growth and energy consumption has been widely studied in latest literature (Pablo-Romero and De Jesus 2016). There have been 51 economic studies about the relationship between energy consumption and economic growth at least in the last 20 years (Menegaki 2014). This relationship has been analyzed for diverse countries. The literature offers inconsistent results on the relationship between economic growth and energy consumption after the pioneering work of Kraft and Kraft (1978). As pointed out by Toman and Jemelkova (2003), the lack of consensus may be due to the heterogeneity in climate conditions among countries, the changing energy consumption models, the structure and stages of economic development within a country and among countries, the variant econometric methodologies employed, the existence of omitted variable bias, and varying time horizons.

Joyeux and Ripple (2011) studied panel data technique to analyze the relations between income and three energy consumption series for 30 OECD and 26 - non-OECD countries. They found of causality flowing from income to energy consumption for developing and developed countries. Lee and Chang (2008) employed panel cointegration technique to examine the relationships among GDP, energy consumption and capital for 22 OECD and 16 Asian countries. They found a long-run causal relationship from energy consumption to GDP. Belke et al. (2011) indicated the presence of a bidirectional causal relationship between energy consumption and economic growth for 25 OECD countries. Costantini and Martini (2010) analyzed the causal relationship between economy and energy by adopting a Vector Error Correction Model cointegrated panel data for developing and developed countries. They found that real GDP growth drives energy consumption. Chontanawat et al. (2008) tested for causality between energy and GDP using a consistent data set and methodology for over 100 countries. They found that the causality from energy to GDP more prevalent in developed countries compared to the developing countries.

Recent studies of Chiou-Wei et al. (2008), Huang et al. (2008), and Fallahi (2011), among others, suggest that the relationship between economic variables and energy consumption might be innately non-linear. The irreconcilable findings of empirical studies make it troublesome to suggest a certain policy recommendation for OECD countries. Most previous studies did not consider the changing of causality direction, which may be due to such as business cycles, wage rates, energy crises, and structural reforms as stated by Fallahi (2011) and this creates room for a frequency-based rather than a conventional causality analysis between economic growth and energy consumption.

3 Data and Methodology

Data set covers the period from 1962 to 2012 for 20 OECD countries leading to 51 observations on annually basis. GDP per capita and electric power consumption (kWh per capita) data have been obtained from World Bank data base. Excel 2010 and E-Views 8.0 package programs have been used for processing the data and implementation of econometric analyses.

Panel data analyses embody information across both time and space. By using this approach we can bring to light the expected values and relationship between macroeconomic variables. Importantly, a panel keeps the same objects or entities and measures some quantity about them over time. Therefore we can put together observations for individuals, countries, firms and other entities for a specific period of time (Tatoğlu 2012).

Economic data are often non-stationary or have means, variances and covariances that change over time. A statistical analysis for a time series should be done whether it has a constant mean over time. The use of non-stationary data can lead to spurious regressions. If two variables are non-stationary, a regression of one on the other could have a high R2 even if the two are totally unrelated. So, if standard regression techniques are applied to non-stationary data, the end result could be a regression that looks good but fundamentally they are valueless. Such a model would be termed a spurious regression.

Recent literature recommends that panel-based unit root tests have superior power than unit root tests based on individual time series (DF, ADF, PP, KPSS)¹. While these tests are widely termed “panel unit root” tests, theoretically, they are simply multiple-series unit root tests that have been analyzed to panel data structures. These tests can be done for multiple series.

In this study, Levin, Lin and Chu *unit root tests* and Fisher ADF and Fisher Philips and Perron *panel unit root tests* are employed. Levin et al. (2002) panel unit root test assumes that each unit has the same autoregressive parameter. In other words, they propose a test which has an alternative hypothesis that the ρ_i are identical. Because ρ_i is fixed across i , this is one of the most sophisticated of the tests because the data from the varied individuals need to be unified into a single final regression. Three models can be applied:

$$\text{Model 1 : } \Delta Y_{it} = \rho Y_{it-1} + u_{it} \quad (1)$$

$$\text{Model 2 : } \Delta Y_{it} = \alpha_{0i} + \rho Y_{it-1} + u_{it} \quad (2)$$

$$\text{Model 3 : } \Delta Y_{it} = \alpha_{0i} + \alpha_{0it} + \rho Y_{it-1} + u_{it} \quad (3)$$

The Fisher-ADF and PP panel unit root tests let for individual unit root processes so that ρ_i may vary across cross-sections. The tests are all characterized by the

¹Levin et al. (2002), Breitung (2000), Im et al. (2003), Fisher-type tests using ADF and PP tests (Maddala and Wu (1999) and Choi (2001), and Hadri (2000).

assembling of individual unit root tests to derive a panel-specific result. Panel unit root tests are similar, but not same, to unit root tests carried out on a single series. Fisher tests use unit root tests for each entity and then p-values obtained from these tests constitute the basis for executing the whole test.

Levin, Lin, and Chu tests assume that there is a usual unit root process so that ρ_i is similar across cross-sections. According to the null hypothesis, there is a unit root, while under the alternative, there is no unit root. The LLC method necessitates an identification of the number of lags used in each cross-section ADF regression. On top of it, the exogenous variables used in the test equations must be specified. There is an option to embody no exogenous regressors, or to embody individual constant terms (fixed effects), or to employ individual trends and constants.

An alternative solution near to panel unit root tests uses fisher's results to derive tests that relate the p-values from individual unit root tests. This idea has been offered by Maddala and Wu (1999) and by Choi (2001). The exogenous variables for the test equations and the number of lags employed in each cross-section ADF regression must be particularized for Fisher tests. Since Fisher tests allows us to use unbalanced panel data, they are more flexible.

Once you have been able to separate your variables as stationary, we are in position to classify long-run and short-run set up in your model, and to set up a model where statistical presumption will be significant.

The prevalent relevance in and the availability of panel data has led to an accenting on stretching several statistical tests to panel data. Ultimate literature has focused on tests of cointegration in a panel setting (Pedroni 1999, 2004; Kao 1999 and a Fisher-type test using an underlying Johansen methodology Maddala and Wu 1999).

Pedroni (1999) enlarged his panel cointegration testing steps for the models, where there are more than one independent variable in the regression equation. The Kao test follows the same basic approach as the Pedroni tests, but specifies cross-section specific intercepts and homogeneous coefficients on the first-stage regressors. Kao (1999) Panel Cointegration tests are based on DF (Dickey Fuller) and ADF (Augmented Dickey Fuller) tests. Under the null hypothesis, there is no cointegration ($H_0: \rho = 1$).

$$y_{it} = X_{it}\beta + z_{it}\gamma + \varepsilon_{it} \quad (4)$$

Based on the results obtained from cointegration analyses for panel data, panel causality tests are employed. In order to perform a causality test a Vector Error Correction Model can be predicted by using VAR.

4 Empirical Results

In this analysis, GDP per capita and electric power consumption per capita data have been used for 20 OECD member countries and all data have been obtained from World Bank data base. Panel data analysis has been employed to investigate whether there is a relationship between GDP per capita and electric power consumption in the countries.

Levin et al. (2002) ADF, PP panel unit root tests have been conducted for the set of variables to see whether they are stationary or not.

In Table 2 above stationarity level results for two variables are shown. Under these hypotheses,

H_0 : Variable is non-stationary. There is unit root.

H_1 : Variable is stationary. There is not unit root.

The null hypothesis cannot be rejected for GDP per capita with intercept, with intercept and trend at 1% significance level. Moreover, for electric power consumption variable the null hypothesis cannot be rejected with constant and trend at 1% significance level. Since they are not stationary, stationarity process has to be employed.

When we take the first difference, both variables become stationary at 1% significance level as shown in Table 3. At this stage of the study, a cointegration test has been conducted to see the relationship between two variables. The results are shown in Table 4:

Under the null and alternative hypotheses,

H_0 : There is no cointegration

H_1 : There is cointegration

Table 2 Results of unit root test (level values)

Unit root test type	Include in test equation	Variables	
		GDP per capita (current US\$)	Electric power consumption (kWh per capita)
Levin, Lin and Chu	Individual intercept	4.786 (1.000)	-6.111 (0.000)
	Individual intercept and trend	-1.143 (0.126)	7.047 (1.000)
ADF-Fisher Chi-square	Individual intercept	3.318 (1.000)	75.671 (0.006)
	Individual intercept and trend	40.945 (0.428)	14.802 (0.999)
PP-Fisher Chi-square	Individual intercept	1.381 (1.000)	77.081 (0.004)
	Individual intercept and trend	25.598 (0.962)	10.662 (1.000)

Table 3 Results of unit root test (first difference)

Unit root test type	Include in test equation	GDP per capita (current US\$)	Variables
			Electric power consumption (kWh per capita)
Levin, Lin and Chu	Individual intercept	-16.608 (0.000)	-9.152 (0.000)
	Individual intercept and trend	-17.062 (0.000)	-12.340 (0.000)
ADF-Fisher Chi-square	Individual intercept	341.99 (0.000)	191.89 (0.000)
	Individual intercept and trend	297.87 (0.000)	240.15 (0.000)
PP-Fisher Chi-square	Individual intercept	385.33 (0.000)	458.78 (0.000)
	Individual intercept and trend	333.29 (0.000)	486.24 (0.000)

Table 4 Panel cointegration test results

Test type	Test statistics	GDP per capita dependent variable		Electric power consumption per capita dependent variable	
		Statistic	Prob.	Statistic	Prob.
Pedroni (Engle-Granger Based)	Panel v-Statistic	-0.6666	0.7475	-2.0515	0.9799
	Panel rho-Statistic	-26.379	0.0000	-26.392	0.000
	Panel PP-Statistic	-18.218	0.0000	-18.293	0.000
	Panel ADF-Statistic	-16.949	0.0000	-17.696	0.000
	Grup rho-Statistic	-20.874	0.0000	-26.664	0.000
	Grup PP-Statistic	-18.438	0.0000	-21.488	0.000
	Grup ADF-Statistic	-16.438	0.0000	-16.395	0.000
Kao (Engle-Granger Based)	ADF	3.0050	0.0013	8.8417	0.000

Pedroni test statistics confirm with majority that the cointegration relationship exists. (six out of seven test statistics). Kao cointegration test statistics also confirm the same results at 5% significance level. In other words, the analysis affirms that GDP per capita in OECD countries and electric power consumption per capita are cointegrated in the long run and they move together. Granger causality test results are shown in Table 5.

When we examine the results, we conclude that two variables are affecting each other. GDP per capita causes Electric Power consumption and the vice versa is also valid. According to this result, if GDP “Granger-causes” electric power consumption, then past values of GDP should contain information that help predict electric consumption above and beyond the information contained in past values of electric power consumption per capita alone.

Table 5 Granger causality-block exogeneity Wald test results

	Dependent	Independent	Chi-square	Prob.	Direction
Models	First difference of GDP per capita (current US\$)	First difference of electric power consumption (kWh per capita)	52.9706	0.0000	Unidirection
	First difference of electric power consumption (kWh per capita)	First difference of GDP per capita (current US\$)	80.3349	0.0000	Unidirection

5 Conclusion

There are many research papers on searching the relationship between economic growth and energy consumption with mixed findings. Some of them support and claim that energy consumption leads an economic growth, and many other analyses claim that economic growth leads energy consumption. In some research, we find a bilateral relationship between the set of variables. In this study, we investigate the relationship between energy consumption and economic growth for OECD countries. Panel data method and co-integration tests have been employed. At the first stage of the study, the stationarity transformation has been made by taking the first difference of the variables and then cointegration and Granger causality tests are applied to GDP and energy consumption data for 20 OECD countries over the period 1960–2014.

GDP and energy consumption per capita variables are cointegrated and Granger cause each other. First conclusion would be that energy consumption per capita affects GDP per capita. In other words, a growth or reduce in energy consumption will increase or decrease GDP. Energy consumption plays an important role on economic growth, directly on labor and capital component and indirectly on production process as well. Electric consumption is an incentive factor and indispensable insurance for a sustainable economic growth. Second conclusion would be that GDP per capita affects energy consumption per capita. That is, an increase or decrease GDP per capita will increase or decrease energy consumption per capita. Developing countries that are increasing their aggregate GDP and their production are subject to demand more and more energy sources. Countries that are in short providing the appropriate energy demand will be importing energy. This might eventually cause current and trade deficit.

Another result of the increase in energy consumption due to the economic growth is that it comes with environmental problems. The exploitation of fossil fuels as a source of energy consumption increases carbon emissions. The largest contribution to the provision of energy demand without increasing carbon emissions will be provided by renewable energy sources. While developing and

developed countries are making economic progress, they should consider using renewable energy sources so that they will at least reduce most costly environmental problems.

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A Regional Scale Analysis of Economic Convergence in Poland in the Years 2004–2012

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Abstract The article concentrates on the problem of economic convergence in Poland in the years 2004–2012 at the regional level. In the year 2004 Poland accessed the European Union, which was a significant development impulse for the economy. The year 2012 is the last year where the data was available. The major objective of the article is to analyse the convergence process at the regional level in Poland with the application of two spatial regimes that allowed grouping the regions to two homogenous groups: the western area, consisting of the regions with high levels of socio-economic development, and a much weaker economically eastern area. In connection with the proposed objective, club convergence was analysed, where additionally a spatial autoregression of independent process was assumed. For both spatial regimes, the conditional β -convergence was analysed, where the average investment level for regions was taken as an independent variable determining the steady state. Estimation of the parameters of a spatial switching regression model allowed the identification of spatial interrelations of the GDP per capita and its growth rate for the sub-regions in Poland. The study also allowed the identification of differences in the convergence process for the two assumed spatial regimes. In the case of the western sub-region, the convergence process was confirmed, whereas in the case of the eastern one, a lack of convergence process was noted. This means that in Poland there is a phenomenon of economic polarization in the case of the two assumed spatial regimes. Poland's accession to the EU gave an impulse for a stronger development of western regions with a good socio-economic situation. On the other hand, a much slower development of the eastern area in the years 2004–2012 was observed, which in the long term may contribute to the preservation of low level of economic development of the eastern area. Additionally, there is a tendency to drain the most valuable resources from the eastern to the western area. It means that in the case of lack of

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more effective regional policy than the one implemented in the analysed period, the eastern sub-region can suffer further economic deterioration, which will contribute to the problem of unsustainable growth in the country.

Keywords Regional convergence • European Union • Spatial econometrics • Spatial switching regression model • Spatial dependence

1 Introduction

This paper seeks to analyse regional convergence in Poland based on the division into the western area consisting of sub-regions with high levels of socio-economic development and a much less developed eastern area. In connection with the intended objective, club convergence for the years 2004–2012 was examined, where, in addition, the spatial autoregression of the explanatory process was assumed. Within each area the existence of the conditional β -convergence was assumed, where an average investment rate for the sub-regions was taken for the economic process determining income in a steady state.

Within the study conducted we formulated two research hypotheses. The first hypothesis assumed that GDP per capita in Polish sub-regions and its growth rate possess the property of positive spatial dependence. In the second hypothesis set in the research it was assumed that in Poland there is a polarization of economic development within the above-mentioned two groups of sub-regions.

Verifying the first hypothesis called for examining spatial autocorrelation for GDP growth rates. For this purpose Moran's test was applied. The second hypothesis of a regional polarization of Poland's groups of sub-regions by economic development was verified by examining the club β -convergence using a spatial switching regression model. The occurrence of the significant differences in the convergence process for the two assumed spatial regimes together with the existence of positive spatial dependence between the sub-regions makes an important argument in favour of the hypothesis of a significant and lasting polarization in the development of the considered clubs in Poland.

2 The Role of the Convergence Process in the Study of Macroeconomics and the Economic Policy

The issue of β -convergence constitutes a significant problem addressed in macro-economic research. Confirming the hypothesis of β -convergence means identifying long-term trends in the evolution of the level of per capita income and other fundamental economic categories, which are related to the income of the surveyed countries or regions. An additional advantage of the research on the phenomenon of β -convergence is the ability to determine whether the countries and regions with a

low level of economic development are able to eliminate the existing development gap. For these reasons, the issue of convergence and the factors determining it has been an important area of empirical research for almost three decades (see: Baumol 1986; Barro and Sala-I-Martin 1991, 1995; Mankiw et al. 1992; Quah 1993a, 1996b; Sala-I-Martin 1996a; Balcerzak and Pietrzak 2015; Balcerzak et al. 2016a; Balcerzak and Rogalska 2016; Próchniak and Witkowski 2016).

Creating conditions for a possible rapid convergence at the regional level is one of the key elements of the economic policy for sustainable development in the European Union (Pietrzak and Balcerzak 2016a, Balcerzak and Pietrzak 2016e). This is an important part of the main European long-term economic development strategies, such as, for instance, the Lisbon Strategy and Europe 2020 strategies (Balcerzak 2015). Despite this, empirical studies on the convergence process in Europe at the regional level have exhibited lasting persistence of differences in the economic development. This phenomenon cannot be restricted in a significant way, in spite of the substantial investments made from European funds dedicated to regional development (Quah 1996a; Le Gallo and Ertur 2003).

The research taking into account the spatial regimes allowed distinguishing the groups of regions differing from each other in terms of economic and social development, within which, however, a similar level of development was noted. This indicates a permanent polarization of the regional development in the European Union. Abundant empirical research conducted on spatially separated groups of regions confirms the phenomenon of club convergence. Additionally, in the case of regional research, positive spatial dependence of the process of economic growth were verified. This means that the selected regions have a significant impact on the rate of income growth in neighbouring regions. The occurrence of club convergence means that within the clubs regions develop permanently, however, in a different way. When combined with spatial dependence, this may result in a deepening polarization at the regional level. Effective prevention of this phenomenon by specific countries of the community is conditioned by the use of a coordinated multi-level development policy, whose effectiveness requires permanent monitoring of development processes with the consideration of spatial effects. The econometric study proposed in the next part of the paper should be included into this trend.

3 Analysis of the Club Convergence and Conditional β -Convergence in Poland, with the Consideration of the Spatial Regime

The analysis concerns 66 sub-regions in Poland (NUTS 3 classification). The data were obtained from the Central Statistical Office and were divided into the following two sub-periods: 2004–2008 and 2009–2012. The logarithmic return rate of GDP was taken for the dependent process in the considered sub-periods, and the



Fig. 1 The identified spatial areas. Source: Own work

logarithm of the average share of investment outlays in GDP in the sub-periods and the value of the logarithms of GDP in the early stages were taken for the explanatory processes. We analysed the values of the processes of GDP and per capita investment outlays. For each sub-period we received 66 observations, assigned to the subsequent sub-regions. The data used in the estimation were derived by combining the data from the two sub-periods and consisted of 132 observations.

The next step saw the identification of two spatial regimes in Poland which allowed for the disparity of the socio-economic development of the country (Pietrzak et al. 2014a, b; Pietrzak and Balcerzak 2016b). To determine the regime, the rankings of sub-regions (NUTS 3) were used, where the position within the ranking was determined by average wages, GDP per capita (both processes concerned the year 2008) and the average level of investment outlays in companies per capita for the years 2005–2008¹. In the case of investment outlays made by companies we used the average of the years 2005–2008 due to the high volatility of the process. In this way the western area characterised by a high level of socio-economic development was created and the eastern one with a much lower level of development. Figure 1 shows the resulting sub-division into two areas, which in the

¹The detailed description of the method applied for obtaining the rankings is given by Reiff et al. (2016).

Table 1 Moran's test results for GDP growth rate

Years	I Moran statistics	p-value
2004–2008	0.152	0.017
2009–2012	0.145	0.020

Source: Own estimation

study of club convergence were assumed to be spatial regimes. This enabled us to take into account the differences in the studied areas in terms of economic development as well as to assess the volatility of the process of convergence in both regimes.

The study began with the verification of positive spatial dependence for GDP growth rates within the analysed period. For the process of GDP per capita Moran's test was performed (Clif and Ord 1973; Bivand et al. 2008; Pietrzak 2013). The results are contained in Table 1, where the test statistics confirm the existence of positive spatial dependence of the process of GDP in Poland for the subsequent years.

The identification of the properties of spatial dependence for GDP growth leads to the conclusion that the strongest interactions are expected to occur between the regions that are spatially close. Economic growth in any region, on the one hand, has a positive impact on the economic growth of the neighbouring region; on the other hand, it may contribute to a decline in economic activity, migration of workers and businesses, at the same time causing impoverishment of neighbouring regions. In the long run it is conducive to regional polarization. In terms of positive spatial dependence there appear groups of regions with a high degree of development and groups of regions characterised by a significantly lower level of development. With the passage of time the two groups may form growing clusters, which results in the formation of two clubs economically heterogeneous.

Table 2 shows the value of GDP and investment outlays per capita in the subsequent years. Analysis of the data contained in Table 2 shows significant differences in the formation of the average value of the assumed processes for the subregions representing area 1 and area 2. Thus, in the case of the economic development, strong spatial dependence of the mentioned economic processes and the polarisation of the entire system can coexist. Moreover, the observed spatial dependence is the result of the existing economic mechanisms that may contribute to the perpetuation of the phenomenon of polarization over time.

The determination of significant differences concerning the level of investment for the identified two areas, enforces testing for the conditional β -convergence, where it is assumed that each region in the long run tends to its own path of income in a steady state. The level of income in a steady state for the considered regions is determined by the fundamental economic factors and processes, such as, for instance, the long-term investment activity allowed for in this study and the situation on the labour market (see: Müller-Frączek and Pietrzak 2011; Wilk et al. 2013; Biczkowski et al. 2014; Pietrzak and Balcerzak 2016d), the quality of institutions (Balcerzak 2009; Balcerzak and Pietrzak 2016d, f), the quality of

Table 2 The values of investment outlays and GDP in the eastern and western subregions

Years	2004	2005	2006	2007	2008	2009	2010	2011	2012
Investment outlays per capita (thousand PLN)									
Western subregion	1.24	1.34	1.56	1.94	2.29	1.97	1.82	1.89	1.88
Eastern subregion	2.04	2.51	2.65	3.38	3.75	3.41	3.04	3.25	3.23
GDP per capita (thousand PLN)									
Western subregion	18.56	19.53	21.06	23.25	25.39	27.83	29.98	32.65	34.12
Eastern subregion	25.06	26.65	28.66	31.92	34.58	37.83	39.21	42.56	45.98

Source: Own estimation

human capital (Balcerzak 2016a; Balcerzak and Pietrzak 2016a, b; Pietrzak and Balcerzak 2016c), the technological potential (Balcerzak and Pietrzak 2016c; Balcerzak 2016b), the development and effectiveness of the financial markets (see: Faldziński et al. 2016; Zinecker et al. 2016; Balcerzak et al. 2016b; Pietrzak et al. 2017), trade relations holding at the regional and international levels (Pietrzak and Łapińska 2015).

In the case of the conditional β -convergence, all of the regions under consideration would seek to achieve the same income level, provided that they are similar in terms of the level of the assumed economic processes determining income in a steady state. The issue of the conditional β -convergence was presented in the works of Barro and Sala-i-Martin (1992, 1995) and Sala-i-Martin (1996b). An interesting analysis concerning testing for the dependence of the level of GDP of different economic determinants was carried out by Levine and Renelt (1992).

The hypothesis of the conditional β -convergence is tested by estimating the following model:

$$\ln Y^* = \beta_0 + \beta_1 \ln Y_0 + \alpha X + \varepsilon, \quad (1)$$

$$Y^* = \frac{1}{T} \ln (Y_1/Y_0), \quad (2)$$

where: Y_1 , Y_0 represent the value of the process of GDP per capita in the initial and final periods, Y^* stands for GDP growth rate, X is the matrix of variables that determine income in a steady state, T represents the number of studied periods.

After taking into account a model of spatial dependence of the dependent process, Eq. (1) is extended with a spatial autoregression to the form expressed by the formula below.

$$\ln Y^* = \beta_0 + qWY^* + \beta_1 \ln Y_0 + \alpha X + \varepsilon. \quad (3)$$

where: q is a spatial autoregression parameter, and W is the adjacency matrix.

In case of the acceptance of investment outlays per capita as a variable determining income in a steady state, the model hypothesis of the conditional

β -convergence for sub-regions in Poland in the years 2004–2012 will take the following form:

$$\ln Y^* = \beta_0 + qWY^* + \beta_1 \ln Y_0 + \alpha_1 \ln I + \varepsilon, \quad (4)$$

where: I represents the level of investment outlays per capita.

The above theoretical considerations as well as the results for the disparities in the level of investment outlays in regional terms contained in Table 2 indicate the need to use, while conducting empirical research for Poland, the concept of club convergence (Durlauf and Johnson 1995; Quah 1993b, 1996a). As already indicated, the concept of club convergence takes into account both such phenomena as the polarization of economic development and the formation of regional clusters of wealth and poverty. Thus, the club convergence in contrast to the absolute β -convergence, where all of the studied regions tend to achieve the same level of balance, considers the possibility of the occurrence of a different β -convergence process within the accepted groups of regions (clubs). This means that the development of a tested region largely depends on the group (club) it belongs to.

In empirical studies, a frequent way to analyse club convergence is a separate analysis of the β -convergence process for the previously accepted clubs of regions. In turn, in case of simultaneous analysis of club convergence performed for all clubs, a switching regression model is frequently applied. With a view to taking into account the properties of spatial dependence, a spatial switching regression model is used. For two spatial regimes, this model was expressed by means of formula (5). This model also assumed the heteroscedasticity of the random component, where the variance changes depending on the selected regime (Anselin 1988).

$$Y^* = \gamma_0 + qWY^* + Y\beta + X\alpha + C\varepsilon, \quad (5)$$

where:

$$Y^* = \begin{bmatrix} \ln Y_1^* \\ \ln Y_2^* \end{bmatrix}, \quad Y = \begin{bmatrix} \ln Y_{01} & 0 \\ 0 & \ln Y_{02} \end{bmatrix}, \quad \beta = \begin{bmatrix} \beta_1 \\ \beta_2 \end{bmatrix},$$

$$X = \begin{bmatrix} \ln I_1 & 0 \\ 0 & \ln I_2 \end{bmatrix}, \quad \alpha = \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix}, \quad C = \begin{bmatrix} \delta_1 & 0 \\ 0 & \delta_2 \end{bmatrix},$$

$$\varepsilon \sim N(0, I),$$

where: indexes 1 and 2 are fixed spatial regimes, X is the matrix of the level of investment outlays per capita determining income in a steady state, and δ_1, δ_2 are the parameters of the variance of the random component.

Parameter estimation of a spatial switching regression model allowed examining the club convergence for Poland, with the assumption of the process of the conditional β -convergence for the earlier adopted space regimes. A different impact level of investment in each of the spatial regimes was assumed. The parameter α_1

Table 3 The results of the parameters estimation of the spatial switching regression model

Parameters	Estimates	p-value
γ_0	0.198	≈ 0.000
β_1	-0.075	0.001
β_2	-0.029	0.067
α_1	0.082	0.006
α_2	0.032	0.134
q	0.316	0.016
δ_1	0.019	≈ 0.000
δ_2	0.037	≈ 0.000
I Moran statistics	0.021	0.317
Pseudo- R^2		0.613

Source: Own estimation

corresponds to the impact of investment in regime 1 and the parameter α_2 in regime 2.

The estimation results are shown in Table 3. In the case of regime 1, the parameters α_1 and β_1 were found to be statistically significant. A positive assessment of the parameter α_1 indicates that the level of the investment rate significantly differentiates the GDP growth rate in the western area. Simultaneous statistical significance of the parameter β_1 verifies the hypothesis of the conditional β -convergence in regime 1. In contrast, the parameters α_2 and β_2 proved to be statistically insignificant, which indicates not only the lack of influence of the level of investment rate on GDP growth rate in regime 2, but also allows the rejection of the hypothesis of the conditional β -convergence in this area. The autoregression parameter q is statistically significant and indicates the existence of positive spatial dependence of the GDP growth rate.

4 Discussion on the Results Obtained

The hypothesis of the conditional β -convergence was verified in the case of regime 1, while it was rejected for regime 2. This indicates the existence of significant differences in the process of convergence for fixed spatial regimes. The verification of the hypothesis of the conditional β -convergence for regime 1 demonstrates the possibility of the occurrence of the convergence process, provided that the average investment rate is at a similar level for all the sub-regions of the area. The resulting estimation of the parameter β_1 equal to -0.075 indicates a high average rate of convergence amounting to 7.79% of the distance yearly².

The achieved significant difference in the convergence process of the two spatial regimes along with the existing positive spatial dependence of the GDP growth rate

²The average annual rate of the β -convergence was determined in accordance with the formula $b = -\ln(1 + T\beta_1)/T$.

represent a significant argument in favour of the hypothesis of the polarization of the economic development in Poland.

5 Conclusions

The article verified the possibility of the occurrence of the process of the regional economic convergence in Poland after its joining the EU structures. The study was conducted at the level of sub-regions (NUTS3) in the years 2004–2012, and Poland's territory was divided into two areas. Due to the criterion of the economic development of subregions, the division into a highly developed western area and the significantly less developed eastern area was adopted.

The assumption of the conditional β -convergence for the determined areas allowed us to verify the hypothesis of the convergence process for the first regime covering the highly developed western area and its rejection in the case of the second regime. Thus, the analysis of the club convergence allowed the identification of differences in the course of this process for fixed spatial regimes.

Taking into account the existing positive spatial dependence, we achieved a significant argument in favour of the second hypothesis, according to which in Poland there is a polarization of economic development at the regional level based on the adopted division into sub-regions. This means that, on the one hand, Poland's EU accession allowed the strong development of the sub-regions of the western area that was then already characterised by a good socio-economic situation; on the other hand, however, the process of the European integration did not cause the same positive effect for the eastern area, where a much weaker socio-economic situation improved but to a small degree only.

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Shadow Economy and Economic Growth in Turkey

Ahmet Salih Ikiz

Abstract As a developing country Turkey faces a shadow economy problem. After providing short literature review in our research, we will explain causes and consequences of shadow economic activities in Turkey. The main dynamics of economic development is depending upon economic growth. Thus, the paper will summarize recent paths of GDP growth and the volume of shadow economy.

Keywords Turkish economy • Shadow economy • GDP growth in Turkey

1 Introduction

Shadow economy is very complex issue to be searched and solved for both developing and developed countries with its causes, results and the working mechanism owing to its serious economic impediments. This overwhelmingly sophisticated part of this sector has many ramifications. So it has referred as hidden economy, second sector, informal sector, black economy and underground economy in different contexts. In general terms, shadow economy can be defined as monetary volume of the whole economic activities which cannot be measured and covered by official statistics. Shadow economy is the research area of many sciences such as economics, law, sociology, public finance and statistics. Thus each of those social sciences defines those activities according to its research area and agenda. For example, criminal framework is crucial in legal definition but the tax base and tax evasion has priority in public finance.

The definition and legal boundaries of shadow economy is also interrelated with geographical locations and cultural habits of countries. It can be systematic outcome of transformation to the market economy such as ex-communist countries where changing nature of production modes is not considered as shadow. In some countries, shadow activities are not personal income generating activities rather a collective conscious of the society. Portes et al. (1989) commented on Brazilian

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economy that favelas is a collective way of living in informal sector rather than individual utility maximization. The historical literature of shadow economy was first initiated to search with cause and effect relation of the sector. Further studies investigated the structural parts and focused to search monetary volume of the sector in GDP.

There is a high tendency that developed countries with strong economic performances have gradually low level of shadow economic activities. The estimation of volume of shadow economy enables us to see real values of many macroeconomic indicators and variables. The main reason behind the rise of shadow economic activities in developing countries is their intention to follow flexible labor and capital control policies in order to integrate global markets. Changing nature of competition in world markets force employers to make reductions in labor costs in order to improve profitability and productivity which can be achieved via flexible manufacturing systems. The political priority of contemporary governments must combat shadow economic activities. Shadow economy is directly correlated with income distribution in a specific country. Disadvantaged groups and people with low income prefer to supply their labor in informal sector in order to increase their benefits which in turn increases moonlighting and child labor.

There are two mainstream theoretical models for the explanation of shadow economic activities. First group of theories are mainly developed in western world and considers shadow economy as a main threat for well-functioning economic system. Under this framework politically correct developed countries, budget revenues and expenditures with other macroeconomic indicators are very reliable parameters for future estimations. Increasing shadow economy reduces the main sources of public finance for education and health expenses in developing countries and creates welfare loss (Johnson 1989). The shanty towns in mega cities have poor facilities for education and human development that they cannot find suitable position in formal job market in urban areas (Mitra 1994). Some western academics projected on GDP levels in transition economies that are higher than real figures due to shadow economy and macroeconomic variables would be unreliable (Feige 2008).

Second approach originated from Latin American countries has the assumption of positive impacts of shadow economic activities as a tool for economic growth and stability. They argue that shadow economy creates innovative production process in private sector in spite of conservative, giant state bureaucracy and red tape (Anderson 1998). The reflection of that perception in politics is lax measures to combat shadow economy. Latouche (1993) considered shadow economy as a crucial part of formal economy and commented its inevitable share in world economic order. De Soto (1988) defined shadow economy as a rising power of middle class entrepreneurs against dictator rulings in Latin American countries.

In global perspectives, one can easily differentiate those countries with the outcomes of poor development level and low economic growth rates. Countries with low share of shadow economy to GDP ratio have good economic development record with high per capita income. Contradictory to that low GDP per capita accompanied with high share of shadow economy.

2 The Causes of Shadow Economy

There are different drives behind shadow economic activities in Turkey. We can explain them under three different sub categories. Those drives are explained in details as follows.

2.1 *Economic Drives*

These are mainly driven by supply demand relations under the market conditions. Economic actors try to avoid some regulations by operating in shadow economy for profit maximization. Government economic policies, foreign trade regime, inflation rate and unemployment level are the main factors. The outsourcing and subcontracting in manufacturing process is one of the drives in developing countries. In Turkey, companies with high scale production are subcontracting some parts of manufacturing chains to independent small firms out of the main production plant in order to reduce production costs (İkiz 2000). Textile producers and construction companies are subcontracting most of the production process. Those small subcontractors can easily get off the hook from state inspection and avoid taxation process.

The price instability and volatility in markets increases uncertainty and riskiness of business life. In order to reverse the burden of possible loses, companies prefer to hide official transactions from public inspections. High volatility in market, forces buyers and sellers to deal and exchange in shadow sector in order to get rid of riskiness of price volatility.

Improper and unpredictable economic policies of policy makers are crucial element for shadow economy. Political decision makers may change taxes and public expenses in different terms of governments. That will affect public sector borrowing rate, tax ratios. In most of the cases, if policy vector aims to boost monetary base faster than economic growth, it creates fiscal and monetary instability and increases the volume of shadow sector. In many cases weak financial sources of state expenses may boost shadow sector. Nation state budget shows annual expenses and revenues of governments in detailed explanation. Governments may choose to finance state expenses and investments without tax collection such as borrowing and central bank sources. The direct implications of those policies are demand pull inflation and booming of shadow sector.

Short term shadow capital inflow creates excess demand in national income without generating increase in production level and total supply. Speculative foreign monetary inflows (hot money) reached enormous amounts in today's globalized world. Low exchange rates with high yield of interest rates attract those funds to Turkish economy. Most of the speculative financial investments are funded by shadow foreign resources. It is quite obvious that most of that capital inflow is not shown in official statistics that the Turkish balance of payments has

huge amount of errors and omissions which reveals inflow of unrecorded financial resources to country. Thus whole process creates shadow economic activity.

2.2 *Fiscal Drives*

In developing countries public sector service quality and efficiency is creating pressure on economic life. Poor public sector infrastructure, discrepancies in state revenues and expenses, public sector functioning parameters can be classified as main reasons. Public finance authority and tax collection process sometimes would not be quite simple and must be reorganized.

Organization of taxation authority would be insufficient and ineffective to combat shadow economic activities. State bureaucracy in taxation process is not quite effective in Turkey. Applications of indirect taxation, tax exempt for petty traders and small artisans are eroding tax base. Shallow tax base harms tax collection capacity. Turkish public finance is heavily based on indirect taxes on energy and communication sector products. The high share of indirect taxes to direct taxes in whole economic structure diminishes taxation and increases shadow economy.

State expenses and revenues out of budget restrictions is another fiscal drive for shadow economy. Government agencies are creating their own revenues besides budget restrictions. Creation and establishment of those special funds, foundations for special purposes in governmental institutions increase shadow economic activities of state without budgetary controls.

2.3 *Sociological Drives*

Even if sociological superstructure is interconnected with economic infrastructure, the unique social patterns of cultural codes of each country woven with its own geographical historic roots. That impacts the informal sector volume in those countries. For example, the number of shanty areas and settlements has very material impact on shadow economy. Shadow economic activities and informal sector can be the result of sociological superstructure change in society. The urbanization in Turkey has radically increased since 1950s. The main outcome of that spontaneous policy choice is mega cities with poor infrastructure and employment opportunities.

Internal migration and unplanned urbanization is a key element in moonlighting. Disguised unemployment and low income are the main causes of internal migration to cities from rural areas for years in Turkey. The terms of internal trade rise against agricultural sector for years. That seriously hampered the income level of farmers and created internal migration. Those migrants constructed shanty villages at the edge of urban areas those mega cities. The main function of those settlements is to

act as bumper mechanism for newcomers to integrate to center from peripheral parts of the town. The newcomers serve as inexpensive labor force for different parts of the city informally. Exceedingly population rise increases labor supply and sometimes could not be matched by demand for workforce. High population growth may create unemployment when it is not absorbed with an increase in investment level which in turn increases informal unemployment. Unemployed masses become the main pool for informal employment. Low paid workers without social security creates social disorder in different segments of society. That may impose high public unrest with social violence as recently happened in Arab countries.

Deformation in moral values is the core source for shadow economy. State citizens are bounded by some moral codes and ethics which are not written or legislated. As long as citizens are willing to obey those social codes and rules without any hierarchical sanctions, the social ties are utterly constructed and there is not crisis of confidence among citizens and state. The perfect case is Anglo-Saxon and Scandinavian countries where people do have high confidence on each other. Even though nation state is always conceptualized as sacred phenomena in eastern cultures, there is a high record of disobedience to written laws, moral codes and regulations. In western societies, there are few attempts to disregard to activities of tax authority. In contrary countries in Middle East are very reluctant to perform their duties to tax authorities.

3 The Outcomes of Shadow Economy

Shadow economic activities have important outcomes on macroeconomic activities in Turkey. The political, economic and social layers in society are radically affected by the informal sector activities. Those outcomes create harmful impediments to the economic growth and development efforts of countries. Firstly shadow economy distorts free market economy by creating unfair competition. Companies operating in shadow sector have low cost advantages in production process of goods and services compared to formal companies. In this case, companies with perfect record of tax payments, social security payments and other official requirements will face with unfair competition. Also companies in formal sector use much more innovative production techniques and they are very competitive in world markets. Increase in shadow economic activities in companies create dualist economic structure in Turkish economy where companies with western standards in formal sector and unregistered informal companies produce under the same market conditions. Since both conservative unregistered and contemporary formal companies operate in same country, former has unfair cost advantage against later owing to the poor working conditions with low payments in informal sector. This pattern and production process in dualist model is not sustainable and borne to social unrest and high social violence.

Main source of public finance for state expenditures are compulsory transfer of partial income of country citizens to state authority by taxes. That is the financial

source of nation state public expenditures. Unregistered economic activities of companies create redundancy in revenue declaration to tax authorities. Shadow economy shrinks tax base and hampers tax revenues. That triggers budget deficits in country which has inflationary effects. Also tax evasion efforts of individuals and companies decrease budget revenues which are the essential parts of public finance. The main functions of welfare state cannot be maintained without those incomes. The low level of tax revenues threatens budget resources for education and transfer payments for disadvantaged groups from lower segments of society. Shadow economy exterminates public consensus for state of law. The citizens of nation state have equal rights and duties. One of the main duties is tax levy which is the most important source for public finance. Increasing volume of shadow activities increases tax evasion and hampers income distribution. Unfair income distribution is main threat to public consensus. For sure public consensus in countries is main pillar for well-functioning democracy.

Reliability of statistical data becomes very vulnerable with shadow economic activities. Macroeconomic variables are the main source of analytical device for political decision makers. If gathered data does not reveal correct figures and tendencies, main macro-economic variables such as inflation and economic growth can be misinterpreted with policy implications. For example, if economic policy makers have inflation rate figures less than real values, expansionary monetary policy will create fiscal disorder and inflationary spiral.

Moonlighting in informal sector has serious impediments on social security system deficits. Informal employment reduces compulsory social security payments by employers and hampers social security companies' assets. Insufficient assets of those institutions create financial weakness in social security companies. This, in turn, affects the whole social security system. Shadow economy has adverse effects on economic growth. Even if informal sector increases gradual employment in short term, in long term, it dampens robust economic growth. Most of the production and employment in shadow sectors are not very productive and inefficient. Production technologies are old fashioned and energy consuming that they are not high income and profit generating with low value added products. Thus whole performance of country in macroeconomic level cannot reach robust economic growth. Low economic growth also increases informal employment and shadow economy. During the economic crises, slow growth rate and declining national income increases shadow economic activities. In 1994 and 2001 economic crises, the volume of shadow economic activities peaked half of the national income in Turkish economy.

4 Shadow Economy and Economic Growth in Turkey Since Millennium

Shadow economy has been important phenomena in Turkey for years. More than half of the whole national income is unregistered during the economic crises (Davutyan 2008). In 2001, the share of shadow economic activities was 46% and gradually declined with austerity measures to 30% in 2005. In 2008, it was 28% but it accelerated again after global economic crisis and reached 30% in GDP. Recent privatization policies overcome the deficiency of tax evasion due to shadow economy. In overall, the volume of shadow economy is declining in Turkish economy after it peaked in the end of 1990s.

Subcontracting in construction sector, production under the stairs, petty trade and street vendors are the main causes of shadow economy in Turkey. The construction boom in Turkey created lucrative opportunities in this sector. Loose controls and monitor in this sector both created unsafe work environment and shadow economic transactions. Rather than hiring own construction workers in construction plants large companies tend to subcontract each part of construction process to small companies operating informally. Small and Medium Size Enterprises try to avoid government financial regulations in order to produce more competitive prices. Since those manufacturers operate in small detached basements they called under stair companies. Especially in textile sector this is quite common way for manufacturers. In those business most of the daily trade is unregistered and informal employment is quite high. In Turkish mega cities in almost every part you come across peddlers selling everything. These transactions are totally in shadow sector working illegally and threatening official business selling same products.

For years Turkish public finance is overwhelmingly depend upon public debt and borrowing. Inevitably that created high public sector borrowing rate due to high yields of government bonds. The main outcome is drying financial resources for private business due to the crowding out effect. When this policy accompanied by low exchange rate level the volume of short term capital inflow to Turkey has accelerated. Short term capital movements cured high current account deficits of Turkey for years. The dilemma is it also cause artificial increase in supply level in macroeconomics with superficial remedies of cheap imports. Turkish products become expensive for both internal and external markets and companies find to operate in shadow sector much more profitable. Thus low exchange rate against Turkish lira with high interest rate policy cured balance of payments deficits at the expense of promoting shadow economy. The absence of following that policy radically diminished the volume of shadow economy in Turkey.

After 2001 economic crisis, following measures are implemented to combat shadow economy under the action plan (Yılmaz 2012). Tax authorities are reorganized by full automated computer systems. New tax offices are established. New measures are taken to broaden tax base and fight against unregistered activities aiming to reduce shadow economy. In labor market the penalties for informal employment are applied. In governmental programs and strategic action plans,

combating shadow economy has priority and emergency decisions are taken. The Special Committee to Combat Shadow Economy is held under the State Planning Organization in development plans for Turkey. That committee prepared a special report and drew attention on this issue (SPO 2001). In the following years, there was little implementation of the recommendations of the committee in legal framework. After 2010 this issue rose in media and got public awareness with the solid support by Ministry of Finance under the framework of Recorded Economy Policy Program.

Implementation of law 6111 for tax fraud and smuggling of tobacco and alcohol strongly prohibited sharply increased government revenues (Revenue Administration 2009). Credit card usage is encouraged in order to track whole economic transactions electronically. That discouraged miscellaneous activities in shadow sector and forced SME's to operate in formal sector. Companies asked to present official fiscal invoices and receipts in public grants and incentives in order to prevent shadow economy.

Turkish Statistical Organization reorganized GDP data set in 2003 with new variables in order to get rid of inflationary effects of previous years. By the same token, price index basket products were rearranged in order to reach unbiased estimations. The value and of macroeconomic variables omitted from historical distortions and became clear signal of daily economic policies of ruling governments. The new data set in official statistics led to correct estimations for the volume of shadow economy in Turkey.

It is obvious that stable economic growth diminishes shadow economy. Low budget deficits, fast privatization and new regulations in labor market have positive impacts on formal sector. Turkey managed to maintain reasonable high growth rates in 2002–2015 periods. Declining share of shadow economy in GDP led to strong fiscal stability in public finance with low public sector borrowing rate. Low level of transfer payments due to the declining internal public debt created excess capacity for economic growth dynamics.

In long term, EU membership will also help to remove the volume of shadow economic activities in Turkey. EU *acquis communautaire* will reform Turkish legal system with western standards. Like in every aspects of Turkish society, it will reshape the country and will be an anchor to democratic regime. In 2004, our country started membership negotiations with European Commission and expected to harmonize whole bureaucracy and legal system with European Union. That includes the reorganization of public finance authorities in country which in turn increase the quality of public goods and services to citizens.

Current problem of Turkey is deficiency of implementing new technologies and production methods for high value added production in order to pass middle income threshold for economic growth and development. In a decade, we had sustainable high growth rate and tripled total GDP to four digit numbers. The privatization in public sector, high foreign direct investment to Turkey in different aspects of economy from manufacturers to industrial plants and well-functioning public diplomacy enabled ruling government for sustainable economic governance. In foreign markets, low international interest rates in US provide incentive for capital

flow to emerging markets such as Turkey. The crude oil prices sharply declined in previous years in international markets due to Saudi overproduction with Chinese loose demand. That momentum strictly affected Turkish balance of payments by maintaining stability to cure potential deficits.

In most of the European countries, the shadow economy is a crucial problem. Schneider et al. (2015) provide data for EU countries where Turkey is ranked quite high. That reveals that Turkish policies must be much stronger in coming years for combating shadow economy. As long as EU negotiations stand on strong and sustainable basis, there will be downward tendency in shadow sector in Turkey. Ultimate goal of EU legal framework is to enlarge western stability to every borders of the union for peace and prosperity. Especially in Balkan countries, shadow economic activity can be seen in every part of the society due to the ongoing transformation efforts and mass unemployment. The economic conditions in those countries make western European countries such as Germany more attractive to seek job with the help of free movements of goods and services. The high purchasing power in developed Western Europe is another gravitational force for new EU members such as Croatia and Romania.

The share of shadow economy in GDP is not so significant in developed members of European Union. That means in western Europe, underground economy does have insignificant share in GDP. Efficient state governance and political consensus tolerates low share of shadow economy in those parts. Recent Syrian conflict created enormous migrant waves in European continent. That created vast amount inexpensive workforce ready to work in moonlighting. Thus young generations will face adverse implications in job market due to the fierce competition from newcomers. Political reflections of this social unrest are increasing sympathies to far nationalistic views with ultra nationalist political movements. In order to combat with migrant problems, EU must treat Turkish membership with equal conditions with other members. Turkey succeeded to fulfill Maastricht criteria's during the membership negotiations process with strong economic performance. So it is expected to converge in the volume of shadow economy with western European Countries in coming future.

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Part IV
International Trade and Regional Studies

Investigation of Economic Integration of Central and Eastern European Countries

Lina Sineviciene

Abstract The paper examines trade integration indicators, which could be used not only in assessing country's economic integration but may also be useful in evaluating the possible response of an economy to shocks. In the paper, trade integration of Central and Eastern European countries (CEECs) is assessed using the set of selected indicators. The following research methods are used: the systemic, logical and comparative analysis of literature, the analysis of statistical data. The study covers 1990–2014. The results of this study show that economic integration of CEECs increased during the research period. However, such economies as Croatia, Poland and Romania remain relatively close and more dependent on domestic demand than the other CEECs. This means that these countries may be less vulnerable to external shocks but more sensitive to internal policy shocks. The CIS countries are still important trade partners of CEECs. High export and import share of CEECs to (from) the EU shows high regional but low global economic integration of CEECs. The research results show that the major trade partners of most CEECs are Germany and Russia. Therefore, changes in the economic environment of these countries should be observed very carefully in order to mitigate the effect of external shocks that could spread to the CEECs through the real channel.

Keywords Economic integration • Economic shocks • Indicators of trade integration • CEECs

1 Introduction

The idea of economic integration has received a lot of attention in recent years both in literature and in policymaking. High economic integration can enhance the level of demand and productivity of the country, and determine higher its specialization,

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but it can also have negative effects such as higher sensitivity of the country to external shocks through direct and indirect economic relations of the countries. There is a strong relationship between economic and financial integration. According to Kučerová (2013), financial integration is an important factor in increasing the efficiency of financial system and lowering the costs for business as well as for consumers. Financial integration and international diversification of assets can reduce the risk of economic recession, but some negative effects can be linked with this process through capital flows. Kučerová (2013) highlights the importance of trade integration because trade integration is an important factor influencing financial integration. Contrarily, Tang (2016) argues that the higher stock market and banking sector development have negative rather than positive effect on CEECs exports during 1994–2013, and the higher CEECs skill endowment has boosted exports before their EU membership. According to Antimiani and Constantini (2013), the EU enlargement process has produced an overall larger positive impact on export flows for new Members, thus for CEECs, than for old ones, and more importantly that sectors with the higher technological content have received the strongest impulse. Yang and Hamori (2013) argue that an increase in trade connects countries more closely both in the real economy and in financial markets, and integration process determines the higher vulnerability of markets to outside macroeconomics shocks. Kose et al. (2005) argue that, according to empirical literature, an increase in the degree of trade openness leads to higher output volatility, especially in developing countries. Fitzová and Židek (2015) state that international trade has both positive and negative effects. It may be a crucial factor of the economic growth during the period of economic transformation. Thus, economic integration, especially through international trade, and its impact on the economy remains an important issue in the literature.

The purpose of the paper is to select and to systemize trade integration indicators, which could be useful not only in assessing country's economic integration, but may also be useful in evaluating the possible response of an economy to shocks, and to assess trade integration of Central and Eastern European countries (CEECs) using the set of selected indicators. The CEECs' sample is selected because these countries are especially vulnerable to the economic shocks and development of trade integration in these countries are especially important. The novelty of the paper is that the analysis focuses on how the use of indexes may be useful in evaluating the possible response of an economy to shocks. The research object: trade integration indicators. The following research methods are used: the systemic, logical and comparative analysis of literature, the analysis of statistical data. The empirical analysis focuses on the data of the Central and Eastern European countries.

2 Indexes of Trade Integration

There are many empirical studies that assessed economic integration in the samples of different countries. Various authors use different methods of integration evaluation. Each method has advantages and disadvantages. The choice of the method depends both on the research aim and on the available data. According to Pelipas et al. (2014), at the earliest, preliminary stages of the economic integration research, it is advisable to use simple and informative methods of analysis—namely, index calculations.

According to Krings et al. (2014), the indicators that can be used to evaluate the structure of trade, are direct measures and indirect measures. Most commonly used direct measures of bilateral trade are such as the trade-to-GDP ratio (where trade is defined as the sum of imports and exports of goods and services) and the trade deficit-to-GDP ratio (where trade deficit is defined as the difference between imports and exports). The first one is a measure of the trade integration of a country within its environment. The second one is a measure of trade imbalance between a country and its partners. The shortage of these indicators is that they take into account the interaction of one country with its trade partners, but they cannot evaluate indirect linkages between trading partners (Krings et al. 2014).

Pelipas et al. (2014) and Mikic and Gilbert (2007) propose a greater variety of indexes that enable to evaluate integration more comprehensively. The trade indexes are summarized in Table 1. The possible usefulness of indexes in the evaluation of the possible response of an economy to shocks is shown in Table 1.

The indexes of trade directions that take into account a geographical concentration of international trade (see Pelipas et al. 2014) can also be used in order to assess trade integration. These indexes are not analyzed in this study, because, first, according to author's primarily results, the most of the international trade flows of CEECs countries are directed towards EU countries, second, due to a limited volume of this paper. Indicators of a sectoral structure of trade may also be used. According to Pelipas et al. (2014), these indexes are very relevant for formulation of development strategies, as they show directly or indirectly the competitive ability of countries or region's economic sectors or activities.

The conducted analysis shows that the indexes of trade integration can be used not only for the assessment of economic integration, but they can also be useful for the evaluation of the possible response of an economy to shocks.

3 Research Methodology

In this paper, the indexes of trade integration: trade dependence indicators and direction of trade indicators (see Table 1) are evaluated. The source of data used in index calculation is *The World Bank's World Development Indicators* (WDI) database and IMF DOTS (Direction of Trade Statistics) database. Some of the

Table 1 Indexes of trade integration

Index	Formula	Description	The usefulness of the index
<i>Trade dependence indicators</i>			
Trade dependence index (TDI)	$\frac{\sum_s EX_{ds} + \sum_s IM_{sd}}{GDP_d} \times 100$	Measures trade (or economy) openness. The larger the ratio the more integrated the countries trade is	–
Import penetration index (IPI)	$\frac{\sum_s IM_{sd}}{GDP_d - \sum_s EX_{ds} + \sum_s IM_{sd}} \times 100$	Measures the proportion of domestic demand that is satisfied by imports	Helps to understand an economy's vulnerability to certain types of external shocks (e.g., exchange rate changes, falls in export prices)
Export propensity index (EPI)	$\frac{\sum_s EX_{ds}}{GDP_d} \times 100$	Measures the share of exports in GDP	
Marginal propensity to import index (MPI)	$\frac{\Delta \sum_s IM_{sd}}{\Delta GDP_d}$	Measures how much imports can rise for a given rise in the value of GDP	May be useful in evaluating the possible response of an economy to external or internal (policy) shocks

d—the country under study, s—the set of all other countries, X—total bilateral exports, M—total bilateral imports, GDP—gross domestic product (of country d), Δ—the change operator

Direction of trade indicators

Normalized trade balance index (NTBI)	$\frac{\sum_{sw} EX_{sw} - \sum_{ws} IM_{ws}}{\sum_{sw} EX_{sw} + \sum_{ws} IM_{ws}}$	Shows a country's trade transactions with the rest of the world (or region) normalized on its own total trade	–
Export/import coverage index (CI)	$\frac{\sum_{sw} EX_{sw}}{\sum_{ws} IM_{ws}}$	Shows whether or not a country's imports are fully paid for by exports in a given year	–
Export share index (ESI)	$\frac{\sum_{sd} EX_{sd}}{\sum_{sw} EX_{sw}} \times 100$	Shows how important a particular export partner is in terms of the overall	May be useful in evaluating the possible response of an economy to external shocks.

(continued)

Table 1 (continued)

Index	Formula	Description	The usefulness of the index
Import share index (ISI)	$\frac{\sum_{sd} IM_{sd}}{\sum_{wd} IM_{wd}} \times 100$	export profile of an economy Shows how important a particular trade partner is in terms of the overall import profile of an economy	Show possible channels (countries) of external shocks
Trade share index (TSI)	$\frac{\sum_{sd} EX_{sd} + \sum_{ds} IM_{ds}}{\sum_{sw} EX_{sw} + \sum_{ws} IM_{ws}} \times 100$	Shows how important a particular trade partner is in terms of the overall trade profile of an economy	
Global market share index (GMS)	$\frac{\sum_{db} EX_{db} + \sum_{db} IM_{db}}{\sum_{db} EX_{db} + \sum_{db} IM_{db}} \times 100$	Shows the relative importance of the country's trade with a given destination in the global market	
Total trade intensity index (TTI)	$\frac{(\sum_{sd} EX_{sd} + \sum_{sd} IM_{sd}) / (\sum_{sw} EX_{sw} + \sum_{sw} IM_{sw})}{(\sum_{wd} EX_{wd} + \sum_{wd} IM_{wd}) / (\sum_{wy} EX_{wy} + \sum_{wy} IM_{wy})}$	Shows whether or not a country (region) trades more (as a percentage) with a given destination than the world does on average	
Export intensity index (EII)	$\frac{\sum_{sd} EX_{sd} / \sum_{sw} EX_{sw}}{\sum_{wd} EX_{wd} / \sum_{wy} EX_{wy}}$	Shows whether or not a country (region) exports more (as a percentage) to a given destination than the world does on average	

(continued)

Table 1 (continued)

Index	Formula	Description	The usefulness of the index
Import intensity index (III)	$\frac{\sum_{sd} IM_{sd} / \sum_{sb} IM_{sb}}{\sum_{wd} IM_{wd} / \sum_{wy} IM_{wy}}$	Shows whether or not a country (region) imports more (as a percentage) from a given destination than the world does on average	

s—the set of countries in the source, d—the set of countries in the destination, b—the set of members in the trade bloc (destinations), EX—total bilateral exports, IM—total bilateral imports, W and y—the set of countries in the world

Compiled by the author [Sources: Krings et al. (2014), Pelipas et al. (2014), Mikic and Gilbert (2007), Kose et al. (2005), Babetskii (2005)]

indexes are extended in order to evaluate the importance of particular country's trade partners more comprehensively. The extension and interpretation of the extended indexes are presented in Table 2.

In this paper, the countries' trade shares with a particular trade partner are not presented due to limited space of the paper. Instead of that, the countries' main trade counterparties are ranked according to the shares of total trade with a particular country, the share of exports and the share of imports. The ranking is done considering only those trade counterparties which share of the international trade (imports, exports) is greater than 10% of all the country's volume of international trade (imports, exports) at least one year. The ranking is done taking into account the averaged values of the research sample. This study is carried out using annual data of the CEECs countries (Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Romania, Poland, Slovenia, and Slovakia). The research sample was determined by the heterogeneity of the data. The study covers 1990–2014. In the paper, only the values of 2003, 2007, 2010, 2014 years indexes are presented.

4 Research Results

The values of trade integration indexes are presented in Tables 3 and 4.

The research results show that the trade openness increased during the research period. Therefore, the economies of Croatia, Poland and Romania are relatively closed. There is a low proportion of domestic demand that is satisfied by imports in these countries and relatively small share of exports in GDP in these countries. In most of the CEECs, the decreased import has a negative impact on GDP; the trade balance has a tendency to be negative, except in Check Republic, Estonia and Slovenia.

Table 2 Indexes of trade integration: extension and interpretation

Indexes	Notation	Interpretation
Export share index (ESI)	ESI(CIS)	Shows how important CIS countries (the Commonwealth of Independent states), EU countries, and CIS countries plus EU countries are in terms of the overall export profile of an economy
	ESI(EU)	
	ESI(CIS+EU)	
Import share index (ISI)	ISI(CIS)	Shows how important CIS countries, EU countries, and CIS countries plus EU countries are in terms of the overall import profile of an economy
	ISI(EU)	
	ISI(CIS+EU)	
Global market share index (GMS)	GMS (E_CIS)	Shows the share of country's exports to CIS countries compared with the total World's exports to CIS countries
	GMS (E_EU)	Shows the share of country's exports to EU countries compared with the World's exports to EU countries
	GMS (I_CIS)	Shows the share of country's imports from CIS countries compared with the World's imports from CIS countries
	GMS (I_EU)	Shows the share of country's imports from EU countries compared with the World's imports from EU countries
	GMS (T_CIS)	Shows the share of country's trade with CIS countries compared with the total World's trade with CIS countries
	GMS (T_EU)	Shows the share of country's trade with EU countries compared with the total World's trade with EU countries
Total trade intensity index (TII)	TII(CIS)	Shows whether or not a country trades more (as a percentage) with CIS countries than the World does on average
	TII(EU)	Shows whether or not a country trades more (as a percentage) with EU countries than the World does on average
Export intensity index (EII)	EII(CIS)	Shows whether or not a country exports more (as a percentage) to CIS countries than the World does on average
	EII(EU)	Shows whether or not a country exports more (as a percentage) to EU countries than the World does on average
Import intensity index (III)	III(CIS)	Shows whether or not a country imports more (as a percentage) from CIS countries than the World does on average
	III(EU)	Shows whether or not a country imports more (as a percentage) from EU countries than the World does on average

Export share index (ESI) and Import share index (ISI) (see Table 3) show that CIS countries are important for CEECs, especially for the Baltic countries. The import share of most of the CEECs from CIS countries is relatively high, except Slovakia. The research results do not show that dependence of CEECs on CIS countries decreased in recent years. Thus, the vulnerability of CIS countries economies, exchange rate changes and other factors remain a real threat for CEECs. All CEECs are dependent on the EU countries as trade partners. The EU

Table 3 The values of trade integration indexes (1)

Country	Year	TDI	IPi	EPI	MPI	NTBI	CI	ESI(CIS)	ESI(EU)	ESI(CIS+EU)	ISI(CIS)	ISI(EU)	ISI(CIS+EU)
BGR	2003	79.2	40.6	34.5	0.55	-0.13	0.77	3.6	64.4	68.0	17.9	58.3	76.2
BGR	2007	125.8	60.8	53.3	0.96	-0.15	0.74	5.9	61.7	67.6	20.2	58.8	79.0
BGR	2010	113.1	56.4	55.1	-1.29	-0.02	0.95	6.0	62.9	68.9	21.7	59.3	81.0
BGR	2014	136.5	68.1	67.9	0.53	-0.01	0.99	5.2	63.3	68.4	17.8	62.5	80.4
HRV	2003	85.2	43.1	38.9	0.49	-0.09	0.84	1.8	68.3	70.1	5.2	73.2	78.5
HRV	2007	85.3	43.1	39.0	0.46	-0.08	0.8	2.1	60.3	62.4	10.8	64.7	75.5
HRV	2010	75.9	38.0	37.7	0.40	-0.01	0.99	2.9	61.6	64.5	11.6	60.2	71.9
HRV	2014	89.4	44.6	45.7	-0.60	0.02	1.05	4.0	63.0	66.9	7.2	75.7	83.0
CZE	2003	95.3	47.7	47.1	0.56	-0.01	0.98	2.1	88.1	90.2	6.0	72.0	78.0
CZE	2007	130.7	65.7	66.6	0.71	0.02	1.04	3.7	85.7	89.5	6.2	80.1	86.3
CZE	2010	129.3	65.1	66.2	13.6	0.02	1.05	3.8	84.8	88.6	7.3	74.9	82.3
CZE	2014	160.4	82.4	83.6	-2.63	0.04	1.09	4.0	83.1	87.1	6.1	77.2	83.3
EST	2003	123.4	60.8	57.5	0.66	-0.07	0.87	15.7	73.0	88.7	16.6	62.2	78.7
EST	2007	135.3	66.2	63.2	0.67	-0.07	0.88	11.4	70.0	81.5	12.9	78.7	91.6
EST	2010	143.9	73.4	75.1	-15.16	0.04	1.09	14.1	73.6	87.7	6.3	84.2	90.5
EST	2014	166.8	84.3	84.7	0.21	0.02	1.03	11.5	74.5	86.0	5.7	84.7	90.3
HUN	2003	117.2	58.3	56.6	0.62	-0.03	0.93	2.9	85.0	87.9	8.0	64.7	72.7
HUN	2007	156.5	78.5	78.6	0.88	0.00	1.01	5.9	80.4	86.3	9.0	69.7	78.7
HUN	2010	159.9	81.6	82.6	37.07	0.03	1.07	6.3	79.8	86.1	9.0	68.5	77.5
HUN	2014	172.7	89.2	90.0	0.01	0.04	1.09	5.0	82.2	87.2	8.5	76.5	85.0
LVA	2003	84.8	43.2	36.1	0.64	-0.15	0.74	9.9	79.5	89.3	14.5	75.7	90.1
LVA	2007	96.2	48.4	38.5	0.50	-0.20	0.67	18.0	72.7	90.7	13.7	77.5	91.2
LVA	2010	107.4	53.7	53.0	-0.64	-0.01	0.97	20.1	67.8	87.9	15.4	76.3	91.7
LVA	2014	118.9	59.2	58.0	0.17	-0.02	0.95	19.7	69.0	88.7	11.4	80.7	92.1
LTU	2003	98.2	49.1	46.2	0.41	-0.06	0.89	17.0	61.7	78.7	25.2	56.7	82.0
LTU	2007	113.9	56.2	50.4	0.56	-0.12	0.79	24.5	64.8	89.3	21.9	68.4	90.3

LTU	2010	132.7	66.0	65.4	-14.20	-0.01	0.97	27.1	61.1	88.2	36.0	57.1	93.1
LTU	2014	163.4	81.7	81.8	0.51	0.00	1.00	32.5	55.4	88.0	26.7	66.0	92.7
POL	2003	69.4	35.1	33.4	0.77	-0.04	0.93	7.0	82.2	89.2	9.7	69.7	79.4
POL	2007	81.0	40.8	38.8	0.50	-0.04	0.92	10.1	79.2	89.2	11.1	73.3	84.4
POL	2010	82.8	41.5	40.5	0.85	-0.02	0.96	8.1	81.9	90.0	10.4	73.9	84.3
POL	2014	93.7	46.8	47.5	0.97	0.01	1.03	7.7	79.9	87.6	11.4	72.0	83.4
ROM	2003	77.0	39.3	34.8	0.47	-0.10	0.82	2.1	76.2	78.3	12.4	68.5	80.9
ROM	2007	72.5	37.9	29.3	0.40	-0.20	0.68	5.7	72.5	78.3	10.3	71.5	81.8
ROM	2010	76.6	38.9	35.4	17.00	-0.08	0.86	5.5	74.1	79.5	9.1	73.1	82.1
ROM	2014	82.2	41.1	41.1	0.11	0.00	1.00	6.4	72.2	78.6	9.5	75.7	85.2
SVN	2003	102.1	51.1	50.9	0.51	-0.00	0.99	2.5	87.5	90.0	12.7	81.8	94.5
SVN	2007	136.5	68.0	67.6	0.88	-0.01	0.98	4.0	87.1	91.1	10.4	74.7	85.1
SVN	2010	127.1	63.8	64.3	-1.00	0.01	1.02	3.8	89.2	93.1	10.9	73.9	84.8
SVN	2014	145.5	74.7	76.8	0.68	0.06	1.12	3.1	89.1	92.2	8.9	77.3	86.3
SVK	2003	126.1	62.8	62.1	0.62	-0.02	0.97	4.4	77.3	81.8	3.1	80.2	83.2
SVK	2007	168.2	83.7	83.5	0.82	-0.01	0.99	6.2	77.3	83.5	2.4	78.4	80.8
SVK	2010	154.4	76.8	76.5	21.57	-0.01	0.98	5.1	77.8	82.9	1.5	72.6	74.1
SVK	2014	179.7	91.6	91.9	0.57	0.02	1.05	6.0	75.5	81.4	1.9	69.2	71.1

Source: Author's calculations [Data source: World Bank (2016) (for calculations of indexes: TDI, IPI, EPI, MPI, NTBI, CI) and IMF (2016) (for calculations of indexes: ESI, ISI)]

Table 4 The values of trade integration indexes (2)

Country	Year	GMS (E_CIS)	GMS (E_EU)	GMS (I_CIS)	GMS (I_EU)	GMS (T_CIS)	GMS (T_EU)	EI (CIS)	EI (EU)	III (CIS)	III (EU)	TII (CIS)	TII (EU)
BGR	2003	0.20	0.16	0.94	0.21	0.653	0.183	2.6	2.0	8.2	1.8	6.7	1.9
BGR	2007	0.28	0.21	1.18	0.34	0.786	0.273	2.6	1.9	6.6	1.9	5.5	1.9
BGR	2010	0.34	0.24	1.00	0.30	0.743	0.269	3.2	2.3	7.3	2.2	6.1	2.2
BGR	2014	0.31	0.30	0.92	0.36	0.663	0.330	2.5	2.5	6.1	2.4	4.9	2.4
HRV	2003	0.09	0.14	0.37	0.35	0.003	0.002	1.3	2.1	2.4	2.3	2.4	2.2
HRV	2007	0.06	0.14	0.53	0.32	0.003	0.002	0.9	1.9	3.5	2.1	3.0	2.0
HRV	2010	0.09	0.14	0.43	0.24	0.003	0.002	1.5	2.2	3.9	2.2	3.5	2.2
HRV	2014	0.11	0.14	0.24	0.29	0.002	0.002	2.0	2.5	2.5	2.9	2.4	2.8
CZE	2003	0.77	1.40	1.67	1.36	0.013	0.014	1.5	2.7	2.8	2.3	2.3	2.5
CZE	2007	1.16	1.93	1.42	1.82	0.013	0.019	1.6	2.7	2.0	2.6	1.8	2.7
CZE	2010	1.44	2.14	1.69	1.88	0.016	0.020	2.1	3.1	2.5	2.8	2.3	2.9
CZE	2014	1.44	2.38	1.42	2.00	0.014	0.022	2.0	3.3	2.1	3.0	2.0	3.1
EST	2003	0.67	0.13	0.65	0.17	0.007	0.002	11.2	2.2	7.6	2.0	9.1	2.1
EST	2007	0.32	0.14	0.39	0.24	0.004	0.002	5.0	2.2	4.2	2.6	4.6	2.4
EST	2010	0.43	0.15	0.13	0.20	0.002	0.002	7.5	2.7	2.1	3.1	4.2	2.9
EST	2014	0.37	0.19	0.15	0.25	0.002	0.002	5.7	2.9	2.0	3.3	3.4	3.1
HUN	2003	0.93	1.18	1.87	1.04	0.015	0.011	2.0	2.6	3.7	2.0	3.1	2.3
HUN	2007	1.42	1.41	1.67	1.28	0.016	0.013	2.6	2.5	2.9	2.3	2.8	2.4
HUN	2010	1.69	1.43	1.45	1.20	0.015	0.013	3.4	2.9	3.0	2.5	3.2	2.7
HUN	2014	1.13	1.47	1.32	1.33	0.012	0.014	2.5	3.2	2.9	2.9	2.7	3.1
LVA	2003	0.22	0.08	0.38	0.13	0.003	0.001	7.0	2.4	6.7	2.4	7.2	2.4
LVA	2007	0.37	0.11	0.41	0.23	0.004	0.002	7.8	2.3	4.5	2.5	5.7	2.4
LVA	2010	0.54	0.12	0.33	0.18	0.004	0.001	10.8	2.4	5.2	2.8	7.2	2.6
LVA	2014	0.59	0.16	0.30	0.24	0.004	0.002	9.7	2.7	3.9	3.1	6.2	2.9
LTU	2003	0.93	0.15	1.22	0.19	0.011	0.002	12.1	1.9	11.6	1.8	12.2	1.8

LTU	2007	1.06	0.20	1.03	0.32	0.010	0.003	10.6	2.0	7.1	2.2	8.6	2.1
LTU	2010	1.60	0.24	1.53	0.26	0.016	0.003	14.5	2.2	12.1	2.1	13.2	2.1
LTU	2014	2.16	0.29	1.38	0.38	0.017	0.003	16.0	2.2	9.2	2.5	12.0	2.4
POL	2003	2.85	1.45	3.26	1.60	0.031	0.015	5.0	2.5	4.5	2.2	4.7	2.3
POL	2007	3.56	2.04	3.57	2.34	0.036	0.022	4.4	2.5	3.6	2.4	4.0	2.4
POL	2010	3.57	2.42	3.25	2.52	0.034	0.025	4.3	2.9	3.5	2.7	3.9	2.8
POL	2014	3.35	2.77	3.63	2.56	0.035	0.027	3.8	3.1	3.9	2.8	3.9	2.9
ROM	2003	0.29	0.44	1.47	0.55	0.010	0.005	1.5	2.3	5.7	2.2	4.5	2.2
ROM	2007	0.59	0.54	1.41	0.97	0.011	0.007	2.5	2.3	3.4	2.3	3.2	2.3
ROM	2010	0.75	0.69	1.02	0.90	0.009	0.008	2.9	2.7	3.1	2.7	3.1	2.7
ROM	2014	0.91	0.82	1.11	0.99	0.010	0.009	3.2	2.8	3.3	2.9	3.3	2.9
SVN	2003	0.39	0.59	1.47	0.65	0.010	0.006	1.8	2.7	5.8	2.6	4.4	2.6
SVN	2007	0.59	0.94	1.23	0.87	0.010	0.009	1.7	2.7	3.4	2.4	2.7	2.6
SVN	2010	0.66	1.05	1.27	0.94	0.010	0.010	2.0	3.2	3.7	2.7	3.1	3.0
SVN	2014	0.53	1.21	1.08	1.05	0.008	0.011	1.5	3.5	3.1	3.0	2.4	3.2
SVK	2003	0.43	0.32	0.21	0.37	0.003	0.003	3.2	2.4	1.4	2.5	2.1	2.4
SVK	2007	0.47	0.43	0.15	0.48	0.003	0.005	2.7	2.4	0.8	2.5	1.6	2.5
SVK	2010	0.42	0.43	0.08	0.44	0.002	0.004	2.7	2.8	0.5	2.7	1.4	2.7
SVK	2014	0.45	0.45	0.10	0.39	0.002	0.004	2.9	3.0	0.6	2.7	1.6	2.8

Source: Author's calculations [Data source: IMF (2016)]

Table 5 The main trade counterparties of CEECs and their ranking (TSI, ESI, ISI indexes)

	AUT	BIH	CZE	EST	FIN	FRA	DEU	GRC	ITA	LVA	LTU	NLD	POL	ROM	RUS	SVK	SVN	SWE	UKR	GBR	TUR
BGR							1/1/2	-3/4	3/2/3					-5/-	2/6/1				-1/5		-4/-
HRV		-3/-					2/2/2		1/1/1						-1/4		3/4/3				
CZE							1/1/1								-1/3	2/2/2					
EST					1/1/1		4/5/2			5/4/6	-1/5				3/3/4			2/2/3			
HUN	2/2/2						1/1/1								3/-3						
LVA					-1/4		2/2/1				3/3/3		-1/5		1/1/2					-4/-	
LTU				-5/-			2/2/2			-3/-		-5/-	-1/3		1/1/1					-4/-	
POL							1/1/1								-1/2						
ROM							1/1/1		2/2/2						-1/3						
SVK			2/2/1				1/1/2		-1/3						3/-3						
SVN	3/3/3					4/-4	1/1/1		2/2/2												

Notes: First number shows the position of counterparty country in the total country's trade volume

Second number shows the position of counterparty country in the total country's export volume

Third number shows the position of counterparty country in the total country's import volume

countries as export markets are very important for all CEECs, but especially for Check Republic, Hungary, Poland and Slovenia.

The share of CEECs international trade with CIS countries and the EU countries compared with the share of the World's trade is relatively small (see Table 4). This means that despite the fact that the CIS countries and the EU countries have a great impact on CEECs through international trade; the impact of CEECs on CIS countries and the EU countries is very small. The strongest position has Poland; and it may be determined by the size of the economy of Poland. Trade intensity indexes confirm the importance of the CIS countries and the EU countries for CEECs because the share of CEECs trade with CIS countries and the EU countries exceeds several times the share of the World's trade with these countries. The trade of Bulgaria, Latvia and Lithuania with CIS countries is especially intensive.

The ranking of the countries' main trade counterparties according to the shares of total trade with a particular country, the share of exports and imports is presented in Table 5.

The research results show that the major trade partner of CEECs is Germany. Russia also plays an important role in the international trade of CEECs countries, especially Lithuania and Latvia. The research results show a high dependence of Lithuania and Latvia on Russia, and there is a strong relation between Latvia and Lithuania. This shows that high direct and indirect cross-border contagion risk exists for these countries. According to Benkovskis et al. (2014), Russia represents the EU's fourth-largest trade partner in terms of direct export shares, while the EU is Russia's largest trade partner. However, the degree of integration varies greatly among the EU Member States. The Baltic countries are notably more dependent on value added from Russia than vice versa (Benkovskis et al. 2014). According to Bussière et al. (2005), CEECs have made progress towards more complete trade integration into the world economy and made progress in a reorientation away from trade with the former Eastern European countries. However, the CEECs trade less with smaller or more distant countries both in Europe and in the world economy (Bussière et al. 2005). These conclusions support the research results, and this means that CEECs have a potential to increase global integration. The major trade partners are the major sources and transmission channels of cross-border contagion risk. Therefore, high attention should be paid to these countries business cycle in order to mitigate cross-border contagion risk.

5 Conclusions

The conducted analysis shows that the indexes of trade integration can be used not only for the assessment of economic integration, but they can also be useful for the evaluation of the possible response of an economy to shocks. Indicators of trade dependence show increasing economic integration of CEECs. However, such economies as Croatia, Poland and Romania remain relatively close and more dependent on domestic demand than the other CEECs. This means that these

countries may be less vulnerable to external shocks but more sensitive to internal policy shocks.

Indicators of trade direction show a high dependence of CEECs on CIS countries as CIS countries are important trade partners. High export and import share of CEECs to (from) the EU shows high regional but low global economic integration of CEECs. The research results show that the major trade partners of most CEECs are Germany and Russia. Therefore, changes in the economic environment of these countries should be observed very carefully in order to mitigate the effect of external shocks that could spread to the CEECs through the real channel. The main task for CEECs countries is to seek higher diversification of international trade because high dependence only on a few trade partners raises cross-border contagion risk through the real channel.

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Trade Between the European Union and African-Caribbean-Pacific Countries

Wioletta Nowak

Abstract The paper discusses trade relations between the European Union and African, Caribbean, and Pacific (ACP) countries over the period from 2000 to 2014. The analysis is based on the data retrieved from the UN Comtrade Database. The EU-ACP trade is analyzed in seven regional groups (Central Africa, Eastern and Southern Africa, East African Community, Southern African Development Community, West Africa, Caribbean, and Pacific) separately. The EU has been negotiating Economic Partnership Agreements (EPAs) with those groups of countries since 2008. The European Union is a major trading partner for ACP countries. However, it has been gradually losing its role as their most important trading partner for Asian giants. The EU dominates in trade with West Africa and the Caribbean countries. China and India have been more important trading partners for Eastern and Southern Africa since 2007, Pacific (2009), East African Community and Southern African Development Community (2010), and Central Africa (2014). Moreover, the Asian giants' trade with 80 ACP countries has been surpassing the EU-ACP trade since 2012. It seems that South-South cooperation which has been intensively developed by China and India with ACP countries wins with the EU-led trade liberalization and its EPAs.

Keywords ACP countries • Asian giants • EPA • Trade liberalization

1 Introduction

Economic and trade cooperation between the European Union (formerly the European Communities) and African, Caribbean and Pacific (ACP)¹ countries began in the mid-1970s. Exports from ACP countries to the EU were covered by

¹The African, Caribbean and Pacific Group of States (ACP Group) was formally created by the Georgetown Agreement and by the first Lomé Convention signed in 1975. Initially, ACP Group was composed of 46 countries. In 2016, the group comprised 49 countries from Sub-Saharan Africa, 16 from the Caribbean and 15 from the Pacific.

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non-reciprocal preferences. However, that system of preferences was not compatible with the rules of the World Trade Organization. In the twenty-first century, the EU changed its trade policy towards African, Caribbean and Pacific countries and began to negotiate Economic Partnership Agreements (EPAs) with them. The new special trade agreements are supposed to promote sustainable development in ACP countries, regional integration within the ACP and poverty reduction.

The impact of the new European trade policy on the trade with ACP countries is relatively scarce and the European Union has been gradually losing a position of the largest trading partner for ACP. On the other hand, a rapid growth of merchandise trade between Asian giants and African, Caribbean and Pacific countries has been observed. The trade expansion of China and India undermines the importance of the EU as a major trading partner for ACP countries.

The aim of the paper is a presentation of trade relations between the EU and ACP countries over the period from 2000 to 2014. The EU-ACP trade is analyzed in seven regional groups: Central Africa, Eastern and Southern Africa (ESA), East African Community (EAC), Southern African Development Community (SADC), West Africa, Caribbean, and Pacific, separately.² The EU has been negotiating EPAs with those groups of countries since 2008. The analysis is based on the data retrieved from the UN Comtrade Database. As the trade data for South Sudan are available from 2012, they were combined with the data for Sudan in the following study.

The main contribution of the paper to the discussion on the EU-ACP trade in the twenty-first century is a comparison of the level of the EU's trade with the trade between the Asian giants and that group of countries.

2 Trade Relations Between the EU and African, Caribbean and Pacific Countries in the Twenty-First Century

Since 2000, the commercial relations between the EU and African, Caribbean and Pacific countries have been defined by the Cotonou Agreement. It replaced Lomé Conventions (Lomé I—Lomé IV bis) that granted non-reciprocal trade preferences

²**Central Africa** covers countries: Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, and São Tomé and Príncipe, **Eastern and Southern Africa**: Comoros, Djibouti, Eritrea, Ethiopia, Madagascar, Malawi, Mauritius, Seychelles, Somalia, South Sudan, Sudan, Zambia, and Zimbabwe, **East African Community**: Burundi, Kenya, Rwanda, Tanzania, and Uganda, **Southern African Development Community**: Angola, Botswana, Lesotho, Mozambique, Namibia, South Africa, and Swaziland, **West Africa** countries: Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo, **Caribbean**: Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and Grenadines, Suriname, and Trinidad and Tobago, and **Pacific**: Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

to ACP countries. The Cotonou Agreement assumes that trade between the EU and ACP countries will be based on the principles of free trade. The EU granted ACP products full duty-free and quota-free access, except for products competitive with those falling under the Common Agricultural Policy (Nowak 2016a). The standard request from the European Union is that ACP countries gradually open 80% of their markets to imported goods from the EU. In order to replace longstanding unilateral trade preferences with reciprocal ones, the EU has been negotiating EPAs³ with African, Caribbean and Pacific countries.

The European Union has signed the EPAs with several African countries. In 2009, four countries from the Eastern and Southern African region (Madagascar, Mauritius, Seychelles, and Zimbabwe) signed interim EPA. Five years later, the East African Community (Burundi, Kenya, Rwanda, Tanzania, and Uganda) finalized the negotiations for a region-to-region EPA. In 2016, the EU signed Economic Partnership Agreement with the SADC EPA Group comprising Botswana, Lesotho, Mozambique, Namibia, South Africa, and Swaziland. Moreover, three African countries signed free trade agreements with the EU. The free trade areas have been in force with South Africa since 2000, Côte d'Ivoire (2009), and Cameroon (2014) (WTO 2016). Generally, different groups of African countries have negotiated separate EPAs with different tariff phase-down commitments, different exclusion lists and different rules of origin (Sanders 2015).

The European Union signed the CARIFORUM-EU Economic Partnership Agreement⁴ with 14 Caribbean countries⁵ in 2008. The agreement opens up trade in goods and trade in services and investment between the two regions.

The EU concluded also an interim EPA with Papua New Guinea and Fiji in 2007. The agreement liberalizes merchandise trade with the EU but does not cover trade in services. Currently, the EU is negotiating a comprehensive EPA with the Pacific countries (except Timor-Leste). The new EPA would cover trade in goods, trade in services, development cooperation, technical barriers to trade, food health, agriculture, sustainable development, and competition (EC 2016).

The remaining African, Caribbean and Pacific countries that are in final stages of negotiating EPAs can export to the European market under the EU Generalized System of Preferences (GSP) or the GSP+ sub-regime if they ratify and implement international conventions relating to human and labor rights, the environment and

³There are a lot of studies on Economic Partnership Agreements, for instance: Meyn (2008), Bach (2011), Vickers (2011), Hurt (2011), Hurt et al. (2013), and Kwa et al. (2014).

⁴CARIFORUM includes: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, the Dominican Republic Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

⁵Haiti signed the agreement in 2009.

good governance, or under Everything but Arms (EBA) sub-regime of GSP if they are classified as least developed countries (LDCs).⁶

Negotiations on EPAs with ACP least developed countries are complicated. The EBA grants them duty-free and quota-free access to the European markets for all their export products with the exception of arms and ammunitions. They have an access to preferences that do not require them to liberalize access to their own markets. As a result they have limited incentive to negotiate reciprocal agreements. What's more, the acceptance of reciprocal agreement deprives them to protect their domestic industries and they lose tariff revenues which constitutes high proportion of their total government revenues. As a result, negotiations and implementation of reciprocal trade agreements with ACP least developed countries may take many years to finalize (GAO 2015).

The trade relations between the EU and African, Caribbean and Pacific countries are strengthened by trade related development assistance (aid for trade). The aid is provided by the EU Institutions and Member States to support trade policy and regulations, trade development, trade-related infrastructure, building productive capacity, trade-related adjustments, and other trade-related needs in beneficiary countries (Nowak 2016b).

3 The EU's Merchandise Trade with ACP Countries in the Years 2000–2014

Over the period 2000–2014, the EU-ACP merchandise trade increased nearly three times. It was growing annually by 7.5%. The value of bilateral trade in goods between the EU and ACP countries rose from USD78.3 billion in 2000 to USD211.9 billion in 2008 and USD232.4 billion in 2014. During 15 years, ACP countries increased their share in the EU's total trade from 4.6 to 5.0%.

The European Union imported more goods from ACP countries than it exported there. In the years 2000–2014, exports from ACP countries to the EU comprised 4.8% of the EU's total imports. At the same time, the EU exported 4.9% of its goods to that group of countries. The average annual growth rate of the European imports from ACP countries was 7.4% while the growth rate of exports to ACP countries was 7.7%. The trends in merchandise trade between the EU and 80 African, Caribbean and Pacific countries are presented in Fig. 1.

Since the beginning of the global financial crisis, the EU has been gradually losing its significance as the most important trading partner for ACP countries. The

⁶As of February 16, 2016, 40 ACP countries are classified as LDCs: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Tanzania, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu and Zambia (UN 2016).



Fig. 1 The merchandise trade of the EU with ACP countries, 2000–2014 (USD billion). Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

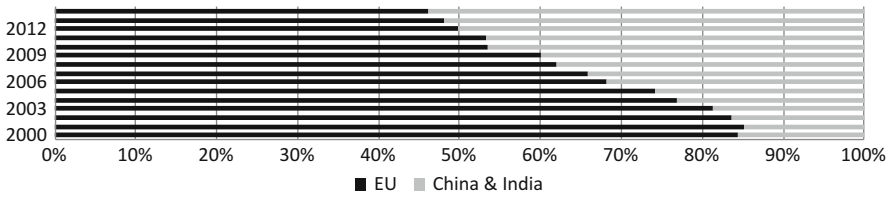


Fig. 2 The bilateral trade of the EU and Asian giants with ACP countries, 2000–2014. Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

European influence on African Caribbean and Pacific countries has been undermined by China and India. In 2000, the bilateral trade of ACP countries with the EU accounted for 84.4% and with the Asian giants accounted for 15.6% of ACP trade with those partners while 15 years later those shares were 46.1% and 53.9%, respectively (Fig. 2).

The Asian giants’ trade with ACP countries has been surpassing the EU-ACP trade since 2012. In the years 2000–2014, the China and India together increased their trade with ACP countries nearly 19 times, from USD14.4 billion to USD271.1 billion. The Asian giants-ACP trade grew annually by 21.6%. In 2000, the value of bilateral trade of the EU with ACP was 5.4 times bigger than the trade of the Asian giants with ACP, while in 2014 it was over 14% smaller.

In the years 2000–2008, the value of bilateral trade of Asian giants with ACP countries was higher than the EU’s one in the case of 15 countries. However, over the period from 2009 to 2014, China and India dominated in trade with 34 ACP countries (Table 1).

In the years 2009–2014, the EU increased its share in trade only with six countries: Congo, Dominica, Equatorial Guinea, Lesotho, Togo, and Vanuatu.

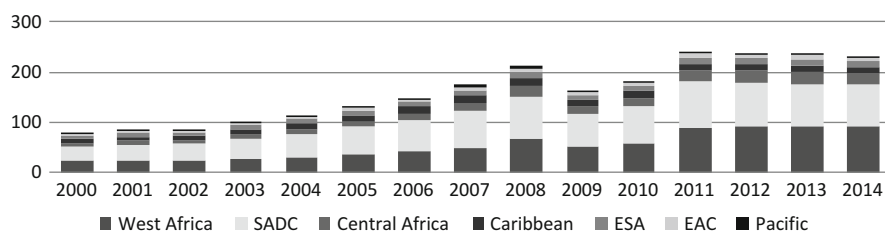
It seems that China’s and India’s trade preference schemes⁷ and their South-South cooperation with ACP countries generate more exports from those countries than the EU-led trade liberalization and its EPAs.

⁷China implemented duty-free, quota-free (DFQF) market access program for LDCs in 2010 and India Duty Free Tariff Preference Scheme in 2008.

Table 1 African, Caribbean and Pacific countries for which the EU was less important trading partner than the Asian giants

Period	ACP countries
2000–2008	Sudan, Angola, Congo, Benin, Djibouti, Solomon Islands, Somalia, Dominica, Tuvalu, Gambia, Micronesia, Guinea-Bissau, Nauru, Vanuatu, and Samoa
2009–2014	Angola, Sudan, Tanzania, Zambia, Kenya, Liberia, Benin, Congo, Democratic Republic of Congo, South Africa, Marshall Islands, Djibouti, Bahamas, Ethiopia, Solomon Islands, Sierra Leone, Somalia, Papua New Guinea, Gambia, Zimbabwe, Antigua and Barbuda, Mozambique, Eritrea, Timor-Leste, Haiti, Guinea-Bissau, Samoa, Tuvalu, Fiji, Tonga, Kiribati, Nauru, Micronesia, and Palau

Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

**Fig. 3** The bilateral trade of the EU with EPA groups, 2000–2014 (USD billion). Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

The European Union traded principally with two groups of ACP countries (Fig. 3). In the years 2000–2014, the SADC EPA Group accounted for 39.5% of the EU's bilateral trade with all ACP countries and West Africa accounted for 32.8%. The shares of the remaining EPA groups in the EU-ACP trade were the following: 9.2%—Central Africa, 7.8%—the Caribbean, 5.8%—Eastern and Southern Africa, 3.5%—East African Community, and 1.4%—the Pacific countries.

From 2000 to 2014, 16 West African countries experienced a 9.8% point increase in the EU-ACP trade and 15 Pacific countries increased their share from 0.7 to 1.5%. The EU decreased its trade with 16 Caribbean countries by 6.6% points and with 13 ESA countries by 2.9% points. The remaining EPA groups recorded the following declines in trade with the EU: EAC by about 0.5% points, Central Africa by 0.4% points, and SADC by 0.3% points.

The European Union was increasing fast the two-way merchandise trade with its biggest trading partners. The average annual growth rate of the EU-West Africa trade was 9.6% and the EU-SADC trade grew annually by 7.5%. The growth rate of trade between the EU and Central Africa was also high (Table 2).

Compared with the Asian giants, the EU dominates in trade with West Africa and the Caribbean countries. During the analyzed 15 years, the value of the bilateral trade between the EU and the West African countries was two times bigger than the trade between the Asian giants and that African region. In turn, the EU-Caribbean

Table 2 The average annual growth rate of the trade of EU with EPA groups, 2000–2014

EPA group	Exports of goods (%)	Imports of goods (%)	Bilateral trade (%)
Central Africa	8.2	6.6	7.2
Eastern and Southern Africa	5.7	3.0	4.4
East African Community	8.1	4.8	6.6
Southern African Development Community	8.5	6.6	7.5
West Africa	8.7	10.5	9.6
Caribbean	1.8	2.6	2.1
Pacific	17.5	9.8	12.8

Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

bilateral trade was three times bigger than the trade of China and India with that group of countries.

However, the Asian giants have been the largest trading partners for Eastern and Southern Africa since 2007 and for the Pacific countries since 2009. Moreover, China and India together overtook the EU in trade with SADC EPA Group and East African Community in 2010. Recently, the EU lost its position of the largest trading partner for Central Africa. The EU held the number one position in trade with that EPA group prior to 2014.

The Southern African Development Community was a major supplier of the EU's imports, providing 40.0% of total imports in the years 2000–2014. Besides, SADC EPA Group took around 38.9% of the EU's total merchandise exports to ACP countries. West Africa provided 32.8% of the EU's imports from ACP countries.⁸ It was also the second largest market for the European goods (32.7%).

The European Union sells to ACP countries mostly manufactured goods and pharmaceutical products while exports to the EU from ACP countries are dominated by natural resources and food (Table 3).

In the years 2000–2014, the European Union traded mostly with South Africa (29.0% of the EU's bilateral trade with ACP countries), Nigeria (18.1%), Angola (6.6%), Côte d'Ivoire (3.3%), and Ghana (2.9%). The ranking of the EU's top ACP trading partners is presented in Table 4.

The EU traded principally with several resource-rich ACP countries. During 15 years, the top ten ACP importers accounted for 68.1% of European exports to ACP countries and the top ten ACP exporters accounted for 75.9% of the EU's imports from that group of countries.

⁸Since 2011, West Africa has been the largest supplier for the EU.

Table 3 Merchandise trade between the EU and ACP countries

Trading partner	Imports from the EU	Exports to the EU
Central Africa	Machinery and mechanical appliance, equipment, vehicles, foodstuffs, pharmaceutical products	Oil, cocoa, wood copper, bananas, diamonds
Eastern and Southern Africa	Machinery and mechanical appliance, equipment, vehicles, pharmaceutical products	Copper, crude oil, sugar, coffee, fish, tobacco
East African Community	Machinery and mechanical appliance, equipment and parts, vehicles, pharmaceutical products	Coffee, cut flowers, tea, tobacco, fish, vegetables
Southern African Development Community	Vehicles, machinery, electrical equipment, pharmaceuticals, processed food	Diamonds, oil, aluminum, platinum, agricultural products (beef, fish, sugar, fruit)
West Africa	Fuels, food products, machinery, chemical and pharmaceutical products	Fuels and food products
Caribbean	Boats and ships, cars, construction vehicles and engine parts, phone equipment, milk and cream, spirit drinks	Petroleum gas and oils, minerals (gold, corundum, aluminum oxide and hydroxide, iron ore products), bananas, sugar, rum, fertilizers
Pacific	Electrical machinery and equipment	Palm oil, coffee, coconut, fish and caviar

Source: EC (2016)

Table 4 The EU's top ten trading partners, 2000–2014 (USD billion)

Rank	Exports of goods to ACP		Imports of goods from ACP		Bilateral trade with ACP	
	Trading partner	Value	Trading partner	Value	Trading partner	Value
1	South Africa	358.3	South Africa	341.9	South Africa	700.1
2	Nigeria	160.8	Nigeria	276.3	Nigeria	437.0
3	Angola	72.7	Angola	86.0	Angola	158.7
4	Ghana	36.9	Côte d'Ivoire	51.9	Côte d'Ivoire	80.3
5	Senegal	36.3	Equatorial Guinea	45.5	Ghana	69.5
6	Côte d'Ivoire	28.4	Cameroon	38.4	Cameroon	61.1
7	Cuba	26.6	Ghana	32.5	Equatorial Guinea	55.3
8	Kenya	25.0	Botswana	30.9	Kenya	44.5
9	Togo	23.7	Trinidad and Tobago	24.3	Senegal	43.0
10	Cameroon	22.7	Mauritius	19.9	Cuba	37.6

Source: Own calculations based on data retrieved from <http://comtrade.un.org/data/>

4 Conclusion

The European Union is a major trading partner for African, Caribbean and Pacific countries. However, its role in ACP trade has been declining since the beginning of the global crisis. In the recent years, the EU has dominated in trade only with two

out of seven ACP regional groups. The EU is the largest trading partner for West Africa and the Caribbean countries. It held the number one position in trade with 13 Eastern and Southern African countries up to 2006 and in trade with 16 Caribbean countries up to 2008. Since 2010, the Asian giants have been the largest trading partners for EAC and SADC countries and in 2014 they overtook the EU in the trade with Central Africa. In the years 2012–2014, the Asian giants' merchandise trade with all African, Caribbean and Pacific countries surpassed the EU-ACP trade.

It seems that the impact of EU trade liberalization on preference-dependent ACP countries' exports is lower than the effects of the Asian giants' trade policy towards that group of countries.

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The Evaluation of EU Countries Population At-Risk-of-Poverty: The Aspect of Income Inequality Changes

Rasa Balvociute

Abstract To begin with, comparability and change are important for the poverty assessment, so, over 10 years, chosen poverty risk relative ratios and their trends in the EU countries have allowed to look at population's economic situation in the individual countries, at the extent of their groups and community. In those countries, substantial differences are related to changes in income inequality, which determine different poverty risk. The study allows denying assumption that poverty risk always moves in the same direction as the income inequality. Such synchronicity was established only in the case of income inequality growth. In countries, where income inequality has been relatively stable, the risk of poverty was increasing—population with the lowest income went up. In the group with declining income inequality, the risk of poverty has also decreased, but at a significantly slower pace and the largest effect was not in the poorest, but in slightly higher income strata.

Keywords Income inequality • At-risk-of-poverty threshold • At-risk-of-poverty rate • At-risk-of-poverty gape

1 Introduction

Population's income inequality can be evaluated according to its influence on various social and economic processes. Scientists' opinions investigating the sequence of economic and social income inequality vary—some of them claim that income inequality makes positive effect on mentioned processes, whilst, the others claim vice-versa. In the period from 1930 to 1980, population's income inequality in most countries decreased significantly, thus, the aim of social rightness was less relevant in comparison with guarantee of economical effectiveness. It was believed, that work stimulus decreases equalizing work income and profit, interest and rent. Besides, the tendency to save and invest decreases as well.

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Moreover, people become less active and unwilling to take risk. On the other hand, it was tried to control income inequality by applying objective socio-economic policy means.

The situation has changed at the beginning of this century, when population income inequality in most EU countries started to increase and a part of citizens came into conflict with poverty problem. Poverty exists, as we cannot live according to the accepted standard of living due to the lack of resources. This may be a consequence of rising income inequality, says Ackerman et al. (2000).

Due to economic crisis, the number of people who are at risk of poverty and social exclusion, has increased significantly and differences between member states are increasing simultaneously too. Since the beginning of the crisis in 2008 till 2012, Europeans, who are at-risk-of-poverty or social exclusion, increased in the number for 8.7 million (Croatia is not included) and in 2012 it accounted for 25.1% of total EU 28 population. The effects of the crisis were mostly felt by the working age population—primarily, this was due to increase in unemployment, low employment and household work and the number of people living in poverty. In 2012, in the EU, 28 million working age people out of approximately 80 million taken into account, lived in income not exceeding 60% of the national median equalized disposable income after transfers, while 49.6 (2014—41.5) million persons experienced a great material deprivation. In 2012 10.9% of 18–59 years old citizens lived in households where no one was working. The survey shows that rapidly growing number of employed whose income is at or below the poverty threshold—in 2014 was accounted for 17.2 % of working people.

In theoretical and empirical studies, the poverty problem is quite often analyzed. The originators of modern concept of poverty can be regarded Rowntree (1901) and Booth (1902) who were probably the first to describe the minimum human needs in order to ensure the ability to work and the need to meet such needs. Later, scientists to minimum human needs list has included an increasing number of important physical, social and cultural needs, which were thought could satisfy the modern man. In this area, the relevant studies were made by Lipton (1970), Sen (1983), Townsend (1985), Chambers (1988), Cutler and Katz (1992) and others.

2 Poverty Concept and Measurement

In the modern researches, poverty measurement and comparability problems have become urgent. Since the time when Orshansky (1963) in the USA first proposed the use of at-risk of poverty measurement, this method was widely criticized and improved. Eventually, income, which scientists and politicians later adopted as the poverty limit, were added together with no cash income. They had to cover not only necessary food and other physiological needs, but also, the effect of inflation, introduced by the difference of the geographical and living conditions, household size, type of activity and other population differences. Poverty measurement differences between the United States and Europe are based on different principles: the

United States appeals to the *absolute* poverty and the poverty threshold, while the EU economic research and policy decisions are based on *relative* poverty concept. However, in both cases, there are important population changes in poverty studies, which can reveal many years continuing unfavorable trends and propose solutions to stop them.

In this study, the concept of poverty is based on the individual's standard of living which is measured as the ratio between the individual's income and the distribution of the average disposable income of all population, or, in other words, the ratio of individual's standard of living with the average standard of living in the country. In such case, the destitute are people whose budget (income or expense) in the country is significantly less than average (Alcock 2006; Besharov and Couch 2009).

Starting 2005, poverty measurement methodology acceptable to all EU countries was used, according to its main index at the risk rate of poverty after social transfers. To estimate the poverty risk rate, comparative poverty threshold was used, which is equated to 60% of median equalized disposable income. Equalization of poverty measurement methodology in EU countries helps to equalize easier the rate of poverty risk in various countries. However, it is important to note that the relative risk of poverty threshold is appropriate to use for measuring poverty in the developed EU countries where the standard of living and, therefore, personal income and consumption expenses average indexes are high, and, according to them, calculated on the poverty threshold fully guarantee the minimum satisfaction (Sileika and Zabarauskaitė 2009). While in Lithuania, as in most other Central and East European countries, for the part of population, the problem of minimal personal satisfaction remains actual till now (Skuciene 2008). At-risk-of-poverty threshold in these countries was 3–4 times lower than in the “old” EU countries. Although, during the last decade, the poverty risk threshold in the “new” EU countries (which joined the EU after 2004) increased rapidly, but in 2014 it was still 2–2.5 times lower (see Table 1). The variation rate in the EU is too big that a direct comparison of poverty risk could not be possible. In order to take into account differences in the cost of living, it is often expressed in **purchasing power standards (PPS)**. That is, the extent of population poverty risk is shown by a dispersion level of poverty risk (dispersion around the at-risk-of-poverty threshold), relative median at-risk-of-poverty gap and changes of these rates. Dispersion around the at-risk-of-poverty threshold is calculated as the percentage of persons with an equalized disposable income respectively below 40%, 50%, 60% and 70% of the national median equalized disposable income. Relative median at-risk-of-poverty gap—difference between the at-risk-of-poverty threshold (set at 60% of the national median equalized disposable income after social transfers) and the median equalized disposable income of persons below the every at-risk-of-poverty threshold—is expressed as a percentage of the at-risk-of-poverty threshold.

The evaluation of these rates change was performed in three groups of countries (see Tables 1, 2 and 3), which have been established by presenting 28 EU countries members of the household disposable income and income inequality analysis from 2005 to 2012 (Balvociute 2014). The study showed that income grew especially

Table 1 EU countries with decreasing income inequality at-risk-of-poverty threshold and their changes in 2005–2014

EU country	At-risk-of-poverty thresholds in PPS		Change from 2005, %
	2005	2014	
Estonia	2835	5545	195.6
Italy	8208	9165	111.7
Latvia	2350	4392	186.9
Lithuania	2308	4557	197.4
Poland	2855	5736	200.9
Portugal	4942	6075	122.9
Ireland	9048	9598	106.1
United Kingdom	10,137	10,160	100.2
Stdev	3289	2351	
Average	5335	6904	
Var	0.62	0.34	

Source: EUROSTAT data. Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li01&lang=en [Accessed 10 May 2016]

Table 2 EU countries with relatively stable income inequality at-risk-of-poverty threshold and their changes in 2005–2014

EU country	At-risk-of-poverty thresholds in PPS		Change from 2005, %
	2005	2014	
Belgium	9320	11,755	126.1
Czech Republic	4585	6654	145.1
Denmark	9513	11,992	126.1
Germany	9391	11,580	123.3
Luxembourg	16,538	16,962	102.6
Hungary	3337	4535	135.9
Malta	7054	9300	131.8
Netherlands	9612	11,283	117.4
Austria	10,317	12,997	126.0
Slovenia	6946	8597	123.8
Slovakia	2394	5883	245.7
Finland	8474	11,550	136.3
Sweden	8648	12,368	143.0
Stdev	3582	3352	
Average	8163.8	10,419.7	
Var	0.44	0.32	

Source: EUROSTAT data. Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li01&lang=en [Accessed 10 May 2016]

rapidly in the four “new” countries (Estonia, Latvia, Lithuania and Poland), but even at the end of the analyzed period, their disposable income was 2–8 times lower than in the “old” countries. Income inequality, despite the steady downward trend, remained the highest. The decline in income inequality has also been found in the

Table 3 EU countries with growing income inequality at-risk-of-poverty threshold and their changes in 2005–2014

EU country	At-risk-of-poverty thresholds in PPS		Change from 2005, %
	2005	2014	
Bulgaria	2253	4052	179.8
Croatia	4131	4644	112.4
France	8702	11,584	133.1
Cyprus	8866	9457	106.7
Greece	6450	5166	80.1
Spain	6896	8517	123.5
Romania	1726	2439	141.3
Stdev	2917	3325	
Average	5575	6551	
Var	0.52	0.51	

Source: EUROSTAT data. Available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li01&lang=en> [Accessed 10 May 2016]

four “old” EU countries: Italy, Portugal, Ireland and United Kingdom. These countries are accounted for one group, where the risk of poverty and its changes were evaluated.

The other group consisted of eight “old” EU countries and the Czech Republic, Hungary, Malta, Slovenia and Slovakia, where income inequality was the lowest during the analysis period and remained almost unchanged. That study identified five countries where income inequality in terms of two methods (the Gini index and household disposable income quintiles I and V ratio) moved in opposite directions. In three countries Greece, Spain and Romania; a gap appeared between the richest and poorest sections of the population income, and in the middle layer, income inequality declined. In France and Cyprus, inverse processes were observed— increase of middle income population differences appeared, but the income ratio of “marginal” layers remained almost unchanged. These countries were accounted for the third group (see Table 3).

At-risk-of-poverty threshold in 2005–2014, in all other EU countries, income inequality changed unevenly, but the overall change is positive, except for Greece. This indicator is generally determined by applying basic needs’ calculation method, which is determined by the minimum value of the products, but the biggest changes appeared in the “new” EU countries, which were not associated with an acceleration of price growth, but with recent and “old” countries’ convergence and the objective settings of impartial poverty threshold.

3 At-Risk-of-Poverty Changes in EU Countries

At-risk-of-poverty people living in the EU economic situation can be assessed in terms of the poverty level of risk dispersion, which indicates the share of the population to receive less than 40, 50, 60 or 70% of the median disposable income. The poorest part of the population with incomes were estimated below 40% of median income in 2014, appeared to be the biggest in Bulgaria (10.8%), Spain (10.6%) and Greece (10.4%) and slightly lower in Italy (8.7%) and Portugal (8.6%). The poorest part of the population increased in all groups of countries (see Fig. 1), but in countries where income inequality is relatively stable or growing, low-income population risk of poverty rate grew more strongly. This reflects that growing disposable income and almost unchanging income inequality in these countries do not provide at least a minimum economic welfare for the poorest residents. In the other two countries' groups during the period of analysis, this part of population has increased 3–5%, so, it can be stated that in all EU countries, the number of poorest people increased from 2.3 to 4%. Another important aspect of the study is that the declining income inequality in the countries' group, rapidly declined not the lowest, but slightly higher—up to 50% of the median disposable income targeting income of the population. The poverty risk threshold population with marginal income in all three groups changed in analogous directions, only changes have been slower—a relatively stable and growing income inequality in these countries groups increased for about 1.5% during the analyzed year.

An important indicator for measuring poverty is the relative poverty gap, which is used to calculate the minimum amount of resources needed to eliminate poverty

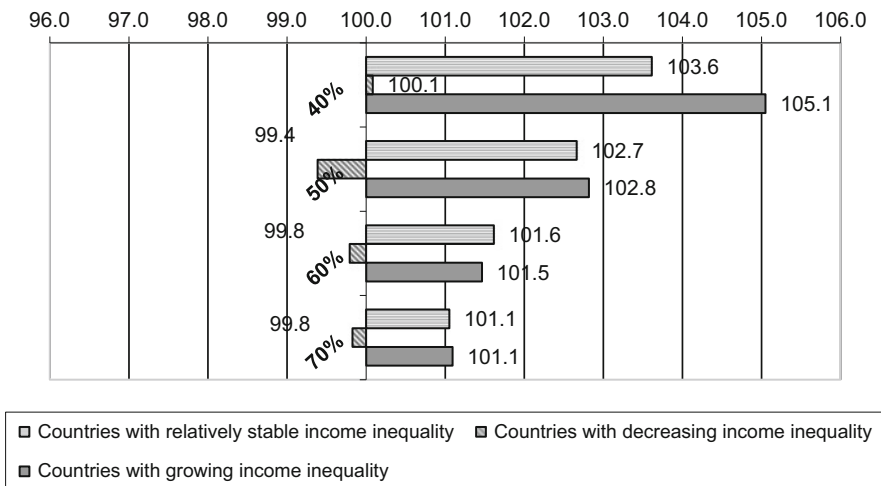
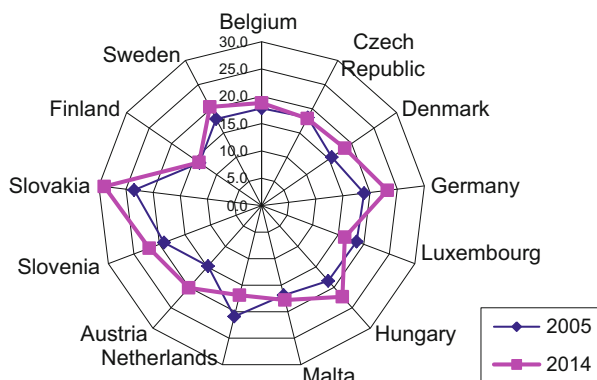


Fig. 1 Population poverty risk dispersion, calculated 40, 50, 60, 70% of the median disposable income changes in 2005–2014. Source: Authors' calculations from the EUROSTAT data. Available at: <<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tessi126&plugin=1>> [Accessed 10 May 2016]

Fig. 2 The EU countries' relative poverty gap (the cut-off point: 60% of median equalized income) in countries with relatively stable income inequality in 2005–2014. Source: Authors' calculations from the EUROSTAT data. Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li11&lang=en [Accessed 10 May 2016]



in the country and provides important information for poverty prevalence assessment in the country. This indicator shows the depth of poverty risk—how much, in percentage terms, the poorest population average income is below the poverty risk threshold. In relatively stable income group of countries (see Fig. 2), the poverty risk depth was increasing in almost all countries, except the Czech Republic, Luxembourg and the Netherlands. However, this growth was different: in many countries the change was 3–18%, but in the more developed EU countries—Austria and Germany—the depth of poverty increased by 36 and 23% respectively. In countries with increasing income inequality (see Fig. 3) the depth of poverty risk was very different—in Bulgaria it exceeded 60%, in Greece and Spain—20–31%. In the deepest poverty countries during 2005–2014, poor share grew even more, with the exception of Romania; in Cyprus—it declined, while in France it remained almost unchanged. In many countries, with a decreasing income inequality (excluding Italy and Portugal), the depth of poverty declined (see Fig. 4). This trend was particularly marked in Poland, where the figure fell by almost 23% and it is the same as in Germany. Although, the risk of poverty depth decrease can be attributed to the decline in income inequality, but in these countries in 2014 the poverty is deeper 3.6% on average, than in the group of countries where income inequality is relatively stable.

At-risk-of-poverty rate “before social transfers” and “after social transfers” during 2005–2014 in group of countries with the growing income, inequality changed in the same direction, only the magnitude of change was different (see Fig. 5). The most significant changes were in Bulgaria, Greece and Spain.

Changes in the other two groups of countries were different:

- In relatively stable income inequality countries at-risk-of-poverty rate “before social transfers” has dropped slightly, but after social transfers, it increased by almost 19%—mainly in Sweden (58.9%) and Germany (36.9%);
- In declining inequalities countries at-risk-of-poverty rate “before social transfers”, increased by 5%—the most in Estonia (17.4%) and Ireland (15.2%), while

Fig. 3 The EU countries' relative poverty gap (the cut-off point: 60% of median equalized income) in countries with increasing income inequality in 2005–2014. Source: Authors' calculations from the EUROSTAT data. Available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li11&lang=en> [Accessed 10 May 2016]

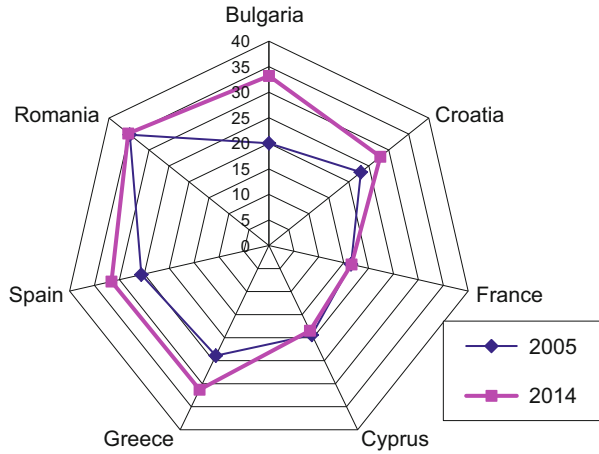
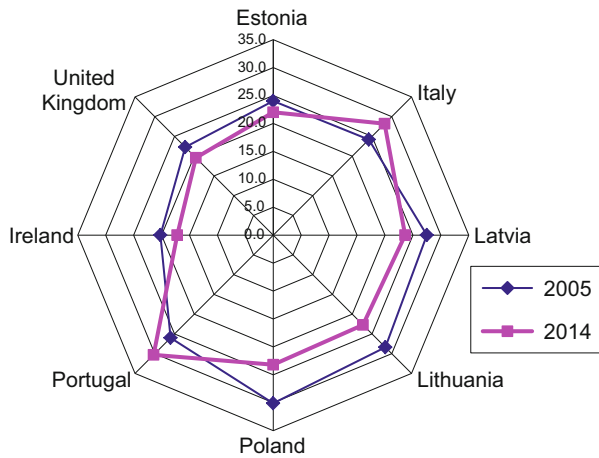


Fig. 4 The EU countries' relative poverty gap (the cut-off point: 60% of median equalized income) in countries with decreasing income inequality in 2005–2014. Source: Authors' calculations from the EUROSTAT data. Available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li11&lang=en> [Accessed 10 May 2016]



“after social transfers”—decreased by 0.8%, but in some countries a significant growth was seen in Estonia (19.1%) and Latvia (9.3%).

In 2005, the median at-risk-of-poverty rate was 14.3% and in 2014, it had been already accounted for 15.9% for all EU countries. This shows that not only for countries characterized by the increasing income inequality, but also, for economically strongest EU social security system countries, it was difficult to cope with the increasing poverty of the population.

Social security, tax and benefit systems' efficiency by reducing poverty shows the poverty risk level difference “before” social transfers and “after” social transfers. This index declined in relatively stable income inequality countries (except Luxembourg and Malta) and grew in rising and declining income inequality countries (except for Poland and France). At the beginning of the period, due to

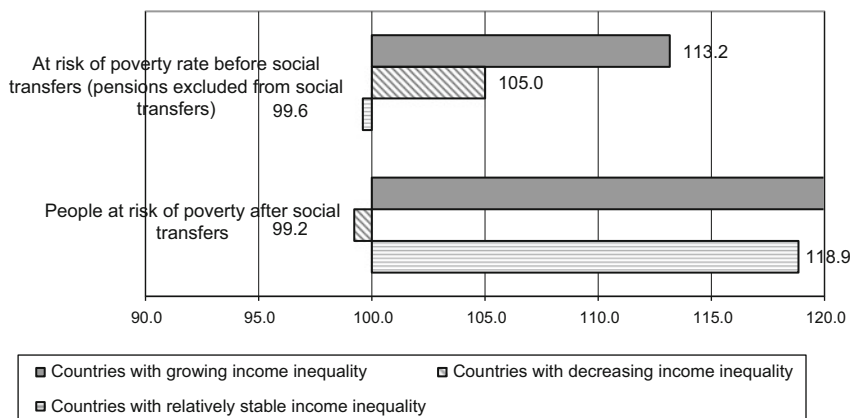


Fig. 5 At-risk-of- poverty level changes in percent “before” and “after” social transfers from 2005 to 2014. Source: Authors’ calculations from the EUROSTAT data. Available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li09&lang=en> [Accessed 10 May 2016]

social security system functioning, the reduction of level risk poverty mostly decreased in Sweden (19.2%), Denmark (18.1%) and Finland (16.3%). However, at the end of this period, the unquestioned leader was Ireland, where, for the proper application of social security measures, poverty risk decreased by 24.4%. In other countries, this process was much less effective.

The analysis results show that the last economic crisis significantly affected the situation of citizens living at risk of poverty. In many countries “before” social transfers changed uneven: until 2008 it declined, during 2008–2011 it grew and from 2012 it declined again, but, on the whole, the overall trend is risk of poverty growing: EU households’ disposable income actually started to grow only at the end of 2013, after for almost 4 years of continuous decline. It is difficult to predict, whether the progress of these years had been kept, as workplaces are being developed slowly, social expenditure growth weakened because in the recovering countries, fiscal stimulus measures were stopped to apply as gradual refuse of automatic stabilization mechanism as well. Since 2011 social expenditures decreased, despite the continuous deterioration of economic and social conditions and the most recent data in 2014 indicates the existence of another economic downturn.

4 Conclusion

It can be said that analyzing and evaluating the risk of poverty always raises an aspect in its relationship with income inequality. Many researchers point out that poverty is a consequence of inequality in income, in other words, they are close and constantly influence each other. However, analyzing the very concept of poverty, it

must be said, that its views and ways of measuring are different and continuously improved in order to explain the reasons and uncover declining opportunities. Comparability and change are important for the poverty assessment, so the chosen poverty risk relative ratios and their trends in the EU countries over 10 years has allowed to look at population's economic situation in individual countries and at the extent of their groups and community. Direct comparison of the population at-risk-of-poverty is not meaningful due to high disposable income, income inequality and differences in other factors. The poverty risk threshold shows calculation methodology in the EU countries which is based on the principle average incomes calculation. This threshold is different 5–6 times in different countries. The poverty threshold is growing at different rates in the “old” and “new” EU countries due to measures of promoting the convergence, inflation and other reasons, which are similar for all countries. Substantial differences are related to changes in income inequality, which determine different poverty risk in the countries. The study allows denying the assumption that poverty risk always moves in the same direction as the income inequality: such synchronicity was established only in the case of growth of income inequality. In countries, where income inequality has been relatively stable, the risk of poverty was increasing—population with the lowest income went up. In the group with declining income inequality, the risk of poverty has also decreased, but at a significantly slower pace and the largest effect was not in the poorest, but in slightly higher income strata. In the “new” EU countries, poverty reduction through social protection and support tools are becoming more efficient, but “old” countries' social security systems are becoming more difficult to cope with the growing poverty in these countries.

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How do Housing Market and Mortgage Solve. The Housing Problem in the Regions of Russia?

Liudmila Guzikova

Abstract Today in Russia solving of the housing problem is one the focuses of social and economic development. The country has large territory and characteristics of its regions are different, so the regional specifics should be taken into account in the housing problem solving. The objective of current research is to identify the specifics in the development of regional housing markets and mortgage lending in the regions of Russia and to assess their impact on the status of the housing problem. The research was implemented by the use of qualitative and quantitative methods including structural and dynamic analysis, typologization and elements of correlation analysis based on the data of state statistics. In the paper, the regional aspect of the housing problem was studied, the results of mortgage crediting development were examined, the situation in the housing market was described. The principal conclusion is that in spite of significant difference in their quantitative characteristics, neither housing market nor mortgage became the key tools for solving the housing problem in regions and should be considered as such tools in future.

Keywords Housing problem • Housing stock • Housing market • Mortgage crediting

1 Introduction

UN documents determine the forms of housing problem manifestation: homelessness; living in the housing not meeting sanitary and hygienic standards; overcrowding; forced living in the financially burdensome housing (UN HABITAT 2015). Practical analysis and quantitative measurement of these manifestations are impeded by spatial and time variation of understanding the quality of living situation due to scientific and technical progress and social and

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economic development. Changes touched the reasons of homelessness, the ideas of healthy housing, the requirements for personal and family space, absolute and relative price and value of housing.

The right for housing as a basic and inalienable human right is proclaimed in the 40th article of the Constitution of Russian Federation. Russia is a federal state, including in its membership more than 80 regions united in 9 federal districts (FD). Regions of Russia have widely diverse climatic conditions, demographic characteristics, cultural traditions, intensity of migration, economic development and investment attraction and other parameters. Severity of the housing problem in combination with the heterogeneity of situation in the regions demands to focus on regional housing and mortgage markets turning from the average data for the whole country to the regional level. Now in each region of the country, all forms of housing problem are present although the extent of their symptoms varies widely.

As Hoek Smit (2016) argues, the housing finance is critical to solve the housing problem, increasing, as it does, the number of households that can afford to acquire a house in the formal market, which in turn will make large scale development of middle and lower middle income housing possible. The Russian authorities pay much attention to the housing problem and consider that market methods can help to solve it. But question arises to what extent the housing market and mortgage market contribute to solving the housing problem in the regions of Russia. The objective of the study is to identify differences and similarities in the development of regional housing markets and mortgage lending in the regions of Russia and to evaluate their impact on the status of the housing problem.

2 Methodology

The analysis undertaken in the current research was implemented by qualitative and quantitative methods. For the qualitative study, the author consciously uses the reference base consisting predominantly of the works of Russian researchers and practitioners. The genesis of housing problem in Russia is similar to that in most of the post-socialist countries and therefore looking for the common approaches and using positive experience in housing problem treating is appropriate. But the situation in Russia is complicated by its scale and by strongly expressed regional factor. In practice of the housing problem solving, the government and local authorities use the advices of domestic experts because they know the situation from inside and their ideas and proposals, we hope, absorb the experience of the other countries and the views of foreign researchers. Quantitative methods include structural and dynamic analysis, typologization and elements of correlation analysis. The analysis was based on the statistical data represented in the websites of Russian Federation Federal State Statistics Service (www.gks.ru) and Agency of Mortgage Housing Lending (www.rosipoteka.ru).

3 Basic Positions and Results

3.1 *Housing Problem in Russia*

Current status of the housing problem in Russia is caused by the following reasons: poor quality of the existing housing stock, its inadequacy to the current requirements and the lack of funds for its maintenance, operation, reconstruction and renovation; changes in social and housing policies aimed to transfer the main costs of housing acquisition and maintenance to the consumers; reduction of the social housing; and appearance of homelessness. Though homelessness in Russia is not neglectable small phenomenon, this component of housing problem requires separate study and specific ways of treating far away from housing market and mortgage. So now, we will examine the housing situation from the standpoint of other three forms of problem manifestation.

The main indicator of housing conditions in the state statistics is the total area measured in square meters per person. The regional average figures in all regions were higher than federal social housing norm equal to 18 m^2 of total area and varied from 20.0 m^2 in North Caucasus FD to 25.1 m^2 in Central FD. The only exception was the Crimean FD where the total area per person was equal to 16.6 m^2 . Though the average total area per person increased from 16.4 m^2 in 1990 to 23.7 m^2 in 2014, it still remains much lower than in the USA and European countries including the countries of CEE region. In 2014, total number of dwellings was equal to 64 mln. Apartments consisting of two rooms dominate and joint with the share of one room apartments constitute 63% of total housing stock. This ratio coincides with the tendency for smaller families.

The number of families formally acknowledged as being in need for housing in 2014 constituted 2.716 millions that was equal to 5% of the total number of families. But only 138 thousands families of being in need improved their living situation in that year. Experts estimate the additional strategic need in housing stock for the Russian population as 1.5 billion m^2 . It is necessary to mention that some Russian researchers note the inadequacy of housing situation assessment in the Russian regions caused by the use of the federal social housing norm constituting 18 square meters of total area to analyze the need for housing and by the neglect of qualitative characteristics of housing (Korostin 2015).

A significant part of the housing stock consists of houses built 40 or more years ago. The distribution of the housing stock by year shows that the most part of housing stock (approximately 40%) was constructed in the period 1971–1995, more than one fourth of housing stock was built in the period 1946–1970. Official statistics on construction time and percentage of depreciation refer to 2011 and is shown in the Table 1. More than 35% of the housing stock has high (over 30%) percentage of wear. In some regions (e.g. Tula and Bryansk regions belonging to Central FD) about 50% of houses were built before 1970 and 40% or more of the housing stock have wear percentage of over 30%.

Table 1 Distribution of the housing stock by year of construction and the percentage of wear in 2011, %

	Total housing stock	Number of individual houses	Number of apartment houses
Year of construction: before 1920	2.6	4.9	4.4
1921–1945	4.5	10.2	7.2
1946–1970	29.7	43.3	36.9
1971–1995	42.5	27.7	44.1
after 1995	20.7	13.9	7.4
Depreciation: 0–30%	62.1	39.5	39.4
31–65%	34.3	53.5	51.5
66–70%	2.6	5.2	6.6
More than 70%	1.0	1.8	2.5

Source: Russian Federation Federal State Statistics Service, (2016) http://www.gks.ru/bgd/regl/b12_04/IssWWW.exe/stg/d06/2-00.htm

Analyzing the changes of housing stock due to construction process, we can see that newly constructed stock do not replace wreck and dilapidated stock (Table 2). Taking into account the large number of old houses, the slowing of dilapidation process cannot be expected. It is worth to mention that in 2013 the method of state statistics collection was changed—local administrations became the source of data on housing stock but their information is incomplete because it does not include all housing owners.

The level of housing equipment is the significant indicator of the housing problem because the current sanitary and hygienic standards as well as the standards of comfort and technical utilities suppose the housing to be provided by water pipes, sewerage, heating, hot water supply, shower or bath, gas or electric stove. From the Table 3, it is clear that, in total, the level of equipment is relatively low and in recent decade had no significant progress which is especially true for the urban housing. Moreover, for all positions of urban housing stock except electric stoves, the situation became worse. It can be connected with the new order of data collection but in any case, it is the signal of dramatic situation. Based on the data of housing equipment, the number of people living in housing unequipped by water supply can be estimated as about 30 million, sewage—35 million, with heating—more than 20 million., hot water supply—more than 45 million people. The lowest level of housing complex equipment takes place in the Republic of Altai, where less than 15% of housing has complex equipment. 22 regions belonging to different federal districts (excluding Crimean FD) have that level lower than 50%.

According to the 30th article of the Housing code of Russian Federation, every citizen has the right to possess, to use and to dispose the housing that he owns. The ownership structure of housing stock was predetermined by largescale privatization which was conducted in the country as the part of transition to market economy. In

Table 2 Housing stock changes in 2005–2014

Indicator	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total housing stock, mln m ²	2,955.7	3,003.0	3,060.0	3,116.0	3,176.6	3,229.0	3,288.2	3,349.0	3,359.0	3,453.0
Capitally renovated stock, mln m ²	29.1	11.7	3.8	5.6	5.3	6.7	12.4	17.3	8.7	4.3
Newly constructed stock, mln m ²	43.6	50.2	60.4	63.7	59.8	58.1	62.3	65.7	70.5	84.2
Wrecked and dilapidated stock, mln m ²	94.6	95.9	99.1	99.7	99.5	99.4	98.9	99.9	93.9	93.3
Newly constructed stock, %	1.48	1.67	1.97	2.04	1.88	1.80	1.89	1.96	2.10	2.44
Wreck and dilapidated stock, %	3.20	3.19	3.24	3.20	3.13	3.08	3.01	2.98	2.80	2.70

Source: composed by the author according to the data of Russian Federation Federal State Statistics Service, (2016) http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/housing/

Table 3 Housing equipment (%)

	Type of utility						
	Water pipe	Sewerage	Heating	Shower or bath	Gas	Hot water supply	Electric stove
Total housing stock							
2005	76	71	80	65	70	63	17
2015	81	77	85	69	67	68	22
Urban housing stock							
2005	88	86	91	81	68	79	23
2015	91	89	92	82	64	81	27
Rural housing stock							
2005	43	34	52	26	75	22	3
2015	57	45	67	34	74	33	6

Source: composed by the author according to data of Russian Federation Federal State Statistics Service, (2016) http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/housing/

the February 2016, the terms of housing privatization were prolonged one more time for one year and there is a plan to establish unlimited duration of the process. Now up to 80% of housing stock is in private ownership and, consequently the owners are obliged to bear the financial burden for housing maintenance and repair.

3.2 *Mortgage in Regions of Russia*

Today not many Russian authors examine mortgage. The represented works can be divided into two categories: those devoted to the survival and development of the mortgage crediting system; and those devoted to particular problems in the mortgage relations. In the works of the first group, macroeconomic aspect is clearly expressed (Derbeneva 2015), attempts to assess past experience, current situation and determine the prospects for the development of mortgage crediting system (Bondar et al. 2015), to examine it as a social and economic institution (Sorokina and Nikitina 2013) and the subject of public policy (Butrova 2016) are undertaken.

The opinion that mortgage can destabilize the banking system is widely spread (Borsch 2014). So the government interested on the one hand to have reliable banking system and on the other hand to solve the housing problem of population should subsidize mortgage supporting the banks in this way. For instance, earnestly proving that mortgage is a popular bank product, Kuleshova and Lapina (2012) conclude that this product allows solving the housing problem in Russia and suggest that the measures interested entities should execute to ensure sustainable development of mortgage crediting. In such interpretation, the development of mortgage crediting becomes rather an end in itself whereas it is one but not the only tool to improve living situation and we doubt that it can solve the housing problem fully and finitely. In our opinion, more justified are the questions in what

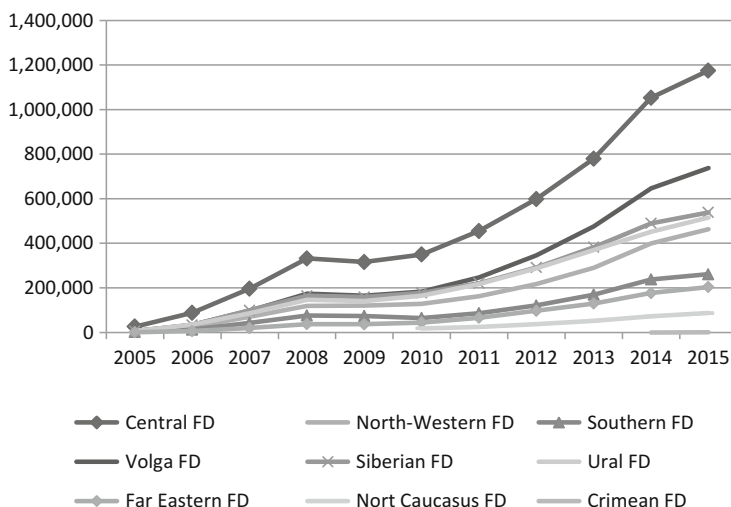


Fig. 1 Dynamic of the total volume of mortgage in 2005–2015 (mln rub.). Source: composed by the author according to the data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytcs/statis/>

extent the mortgage can serve to this purpose in certain circumstances, what maximal effect it can give and what measures are necessary to provide this effect.

The current stage of mortgage crediting began in 2005 when the legislative base of this activity was formed in general. In further period changes followed as the reaction on some discussable situations and were focused rather on elaboration and improvement. Total volume of mortgage increased more than 200 times since the beginning of 2005 to the end of 2015. Figure. 1 reflects the dynamics of the total mortgage volume in federal districts. It should be mentioned that the share of housing stock constructed by investments of population—both own and borrowed resources—did not change significantly. In 2005, it constituted 40.14% and in 2015 it was equal to 41.27%.

By the end of 2015, 50% of mortgage debt was concentrated in 13 regions belonging to different federal districts wherein Moscow, Moscow region and Saint-Petersburg together had almost 25% (Table 4). The regions mentioned in the Table 4 are relatively densely populated and include large urban agglomerations (excluding Khanty-Mansi Autonomous Area), their total population constitutes a little less than 40% of the whole of the country. Values of average income shown in the right column differ in wide range and in six regions the average income is noticeably lower compared to that for the whole country equal to 30,225 rub.

Total transformation of population to housing owners accompanying by current and future financial burdening on our opinion should not be considered as an indicator of the housing problem overcome. Purchasing dwelling in ownership, including that with the use of mortgage, should not be regarded as a universal method of the housing problem solving. This position is confirmed by the number

Table 4 Mortgage debt and average income in leading regions in 2015

Region	Federal district	Mortgage debt (mln rub.)	Overdue mortgage debt, %	Share in total mortgage debt, %	Average income per capita (rub.)
Moscow	Central	454,286	1.66	11.4	59,567
Moscow region	Central	313,878	4.52	7.9	38,396
Saint Petersburg	North-Western	206,296	3.41	5.2	39,845
Sverdlovsk region	Ural	134,826	1.86	3.4	34,696
Khanty-Mansi Autonomous Area	Ural	131,830	1.47	3.3	44,520
Krasnoyarsk region	Siberian	104,634	0.50	2.6	26,854
Novosibirsk region	Siberian	96,887	1.47	2.4	23,793
Krasnodar region	Southern	96,808	1.42	2.4	31,376
Republic of Bashkortostan	Volga	96,434	1.66	2.4	27,815
Chelyabinsk region	Ural	94,479	1.00	2.4	24,464
Republic of Tatarstan	Volga	92,431	1.77	2.3	31,391
Tyumen region	Ural	85,926	0.80	2.2	29,131
Samara region	Volga	85,494	0.79	2.1	26,917

Source: Composed by the author according to data of Russian Federation Federal State Statistics Service, (2016) http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/level/ and Agency for Housing Mortgage Lending, (2016) (<http://www.rosipoteka.ru/ru/agency/analytics/statsis/>)

of low income regions among regions leading by volume of mortgage debt that can be explained by significant income differentiation in combination with the banks' risky mortgage crediting policy. However, the purchase of dwelling both by own funds or by use of mortgage can reduce the problem, reduce the financial burden on local authorities, enhance public satisfaction with living conditions. The resulting structure of ownership should be balanced according to the social and income structure of population. What about the problems that can be generated by mortgage to the banks, from the Table 4, it is evident that the share of overdue debt in the richest regions is bigger than in the poorest and this fact can be partly explained by negative selection.

During the period under consideration, the growth of the total mortgage debt was many times more than the growth of income that is reflected in the Table 5. In Southern and Far Eastern FDs, the growth rate of mortgage debt was the highest. The lowest rate was observed in the densely populated Central FD and it affected the overall indicator. It should be mentioned that in recent years, the rapid growth of

Table 5 Rates of income and total mortgage debt growth

Federal District	Growth of average income (2015 to 2005)	Growth of mortgage debt		Growth of mortgage debt per capita (2014 to 2005)	Ratio of mortgage debt per capita to average month income per capita in 2014, %
		2014 to 2005	2015 to 2005		
Russian Federation	3.87	66.84	75.44	65.19	86.82
Central	3.61	40.82	45.55	39.13	77.05
North-Western	3.74	77.03	89.21	75.76	100.64
Southern	5.16	122.53	134.39	199.98	69.90
Volga	4.37	93.68	106.88	96.34	90.52
Ural	3.60	71.10	81.11	70.88	120.49
Siberian	3.59	87.74	96.49	89.29	119.28
Far Eastern	4.26	173.48	199.94	182.44	89.07
North Caucasus	2.27	3.97	4.77	3.88	36.05

Source: composed by the author according to the data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytics/statsis/>

mortgage debt took place on the background of reducing income and decreasing purchasing power of ruble caused by general economic situation. The data on the North Caucasus are highlighted because they are calculated on the base of 2010 (instead of 2005) when the district was administratively formed.

An expressive indicator of the mortgage credit burden is the ratio of mortgage debt per capita to average month income per capita shown in the Table 5. In three federal districts, this indicator already exceeds 100%. These values show that even if population of these districts pays an amount of money equal to its monthly income the debt of mortgage borrowers still cannot be repaid. The districts which had the biggest growth of income had also the biggest growth of mortgage debt—Southern, Volga and Far Eastern FDs.

The difference between the rate of mortgage debt growth and the rate of mortgage debt per capita growth reflects the demographic dynamics caused by childbirth, mortality and migration flows and is indirectly connected with the attractiveness of the region from the standpoint of living conditions.

Assessing the impact of mortgage crediting on the housing problem, we can pay attention to the Fig. 2 where each region is represented as a point with horizontal coordinate shows population of the region and vertical coordinate is the potential for housing situation improvement. The last indicator is calculated by division of the regional volume of mortgage debt by the average price of one square meter of housing, then by the standard of housing provision equal to 18 m² and further divided by number of population. Thus we get some kind of upper level of the share of population whose housing situation can be potentially improved by existing mortgage. It can be observed in the Fig. 2 that low populated regions have higher potential

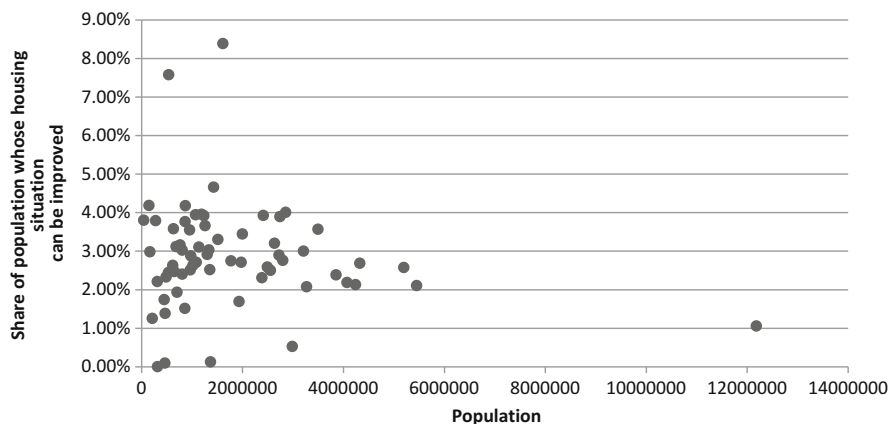


Fig. 2 Potential of mortgage for the housing situation improvement in regions. Source: composed by the author according to data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytics/statis/>

of housing situation improvement by means of mortgage. Two regions outstanding from the most part by vertical are Khanty-Mansi and Yamal-Nenets Autonomous Areas where significant part of population is connected with gas-oil industry and has income more than two times exceeding the average. Two regions outstanding by horizontal are Moscow and Moscow regions where the high level of income differentiation is characteristic and which are attractive for persons with high income from other regions of the country. The indicator of potential for housing situation improvement indirectly characterizes the power of regional construction complex.

Comparing the data on wreck and dilapidated and newly constructed housing taking into account the share of private investments, we can conclude that this part of housing problem cannot be solved or significantly compensated by mortgage even in theory. From the standpoint of practice, this conclusion is confirmed by the fact that families occupying wreck and dilapidated housing in most part have low income and also have no start capital for improvement because their housing was not the subject of privatization and in any case, it is impossible to sell it. It should be added that for significant part of population not only mortgage but payment for utilities is financially burdensome. In 2014, the share of families who get subsidies for housing and utility services constituted 6.1% and 25% of total population got social support for the same purposes.

3.3 *Housing market in regions of Russia*

Some researchers of the housing problem believe that now the society is not simply moving from a welfare state towards a neo-liberal regime, in which social housing is increasingly a 'residual' option. On their opinion the society is rather moving

from the situation in which families’ welfare strategies depend on state redistribution to one where they depend on the asset value of their homes which becomes the base for savings and the insurance against life’s problems and necessities’- an equity-as-welfare state (Lowe 2011). This position is not fully topical in Russia because the authorities should not keep aloof from housing problem solving, but partly the housing market brings it to life.

It is worth to say that significant part of mortgage loans was issued to fund the purchase not of the newly built housing but the housing in the secondary market. In the most of such purchases, the mortgage loan repays only the difference between the purchased and already owned housing. Official statistics give no data on the regional secondary housing markets and do not register the purpose of mortgage in relation with the market where purchase should be executed though the banks distinguish their mortgage programs from this standpoint.

The characteristic feature of the housing market in Russia is the exceeding price of the secondary market compared to that in the primary. It can be explain the following way. Constructing of new housing is not accompanied by creating of infrastructure objects; newly constructed buildings create the extra load to transport and utility networks. So living in new territories becomes less comfortable than in well assimilated, so nominal solving of the housing problem turns to dissatisfaction accomplished by financial burden. In 2015, average prices in the housing market differed in regions in 5.72 times: minimal value was equal to 32,008 rub. (Bryansk region) and maximal was equal to 183,141 (Moscow). The second value from the top was reached in Saint-Petersburg—87,581 rub (Fig. 3).

It should be noted that the Russian housing market throughout its development has been characterized as highly speculative, and the mortgage market has liberal entry conditions and the high price of credit. The housing often played the role of investment asset, so the actual picture of market impact on the need for housing can appear distorted.

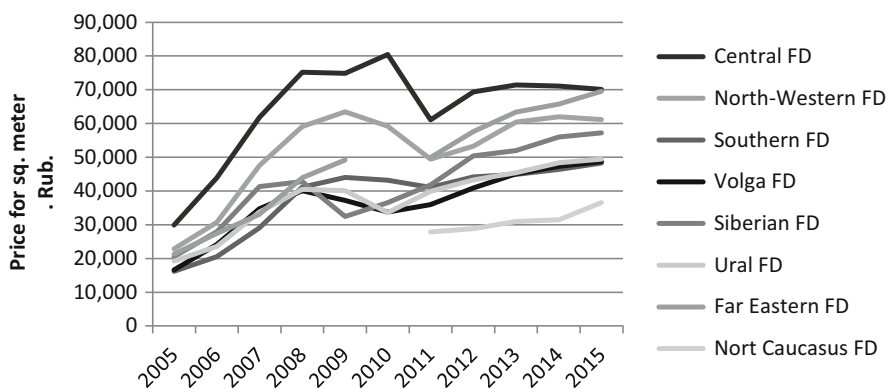


Fig. 3 Dynamics of prices in the housing market, rub. Source: composed by the author according to the data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytics/statsis/>

Analysis of the current situation in the secondary housing market of Russian regions (large cities with populations over 500 thousand, except of Moscow and St. Petersburg) in the end of 2015 detected the growth in the real estate market only in 7 and the drop in 27 cities (Churin 2016). Before 2015, the clearance between supply and demand prices usually constituted 2–5%, but in 2015, it increased to 15–25%, and the share of sales with discount constituted 60–80%. In general, in the housing market the growth of supply (30–60%) was accompanied by the significant decrease of demand (10–60%).

For housing affordability assessment, international practice uses housing affordability index—housing price to income ratio—which calculates as ratio of median housing price to median annual income of household and shows how many years it will take for household to save up the sum for housing purchase by laying aside all income it gets (Demographia 2010). In Russia, due to the lack of data on median income and median housing prices, in accordance with the procedure of the Federal Targeted Program “Housing” for 2011–2015 published in December 2010 housing affordability index is calculated based on the values of the following indicators: the average price of 1 m² of housing, per capita income multiplied by 3 (family of three persons), and corresponding to family size social standard for housing area—54 m².

In current circumstances, the housing affordability index, which initially is very conventional, loses its representativeness and practical usefulness due to following reasons: uneven and unpredictable dynamics of housing prices; significant difference between prices of primary and secondary market; unreality of housing norm used in calculation; not taking into account the rate of mortgage; decreasing of nominal income and its purchasing power; not taking into account the part of income using for current needs. In our opinion, simpler housing purchasing power indicator which shows what housing space (measured in m²) can be purchased at average price by average income is more expressive and more useful for comparison though it is also an instantaneous shot. Distribution of the regions by this indicator in 2015 is shown in the Fig. 4. We can see that in the most regions from 0.5 to 0.6 m² can be bought on average monthly income. In all federal districts, the average values of the indicator are in the same range except Siberian FD where it is one grade lower.

Compared to the past year, affordability of housing has grown in 28 regions, but in 49 regions the situation has got worse. From theoretical standpoint, the decrease of interest rate on mortgage can also contribute to the growth of housing affordability. But if in 2014 the range of mortgage rates in FDs was 12.3–12.6%, in 2015 it shifted to 13.2–13.5%. Contrary, the average weighted term of mortgage loans decreased in average from 180 to 176 months.

If we turn to the list of mortgage leaders, in can be seen (Table 6) that in relatively low income regions (Chelyabinsk, Samara, Krasnoyarsk), housing is more affordable compared to “richer” regions (Moscow, Moscow region, Saint-Petersburg). In Khanty-Mansi Autonomous Area, high average income is combined with high affordability. Large volumes of mortgage in the regions with low housing affordability can be explained by following factors or their combinations: “over-heated” housing market with the inadequately high prices; risky mortgage policy or poor risk management in the mortgage issuing banks; great differentiation by income; and strong influence of noneconomic factors.

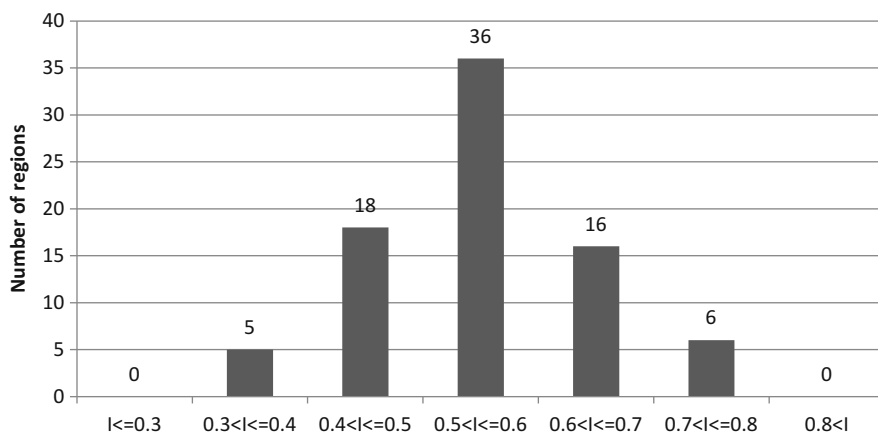


Fig. 4 Distribution of the region by housing purchasing power indicator. Source: composed by the author according to the data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytics/statsis/>

Table 6 Housing purchasing power indicator in regions—mortgage leaders

Region	Housing purchasing power indicator
Moscow	0.34
Moscow region	0.49
Saint Petersburg	0.43
Sverdlovsk region	0.57
Khanty-Mansi Autonomous Area	0.78
Krasnoyarsk region	0.55
Novosibirsk region	0.46
Krasnodar region	0.55
Republic of Bashkortostan	0.52
Chelyabinsk region	0.62
Republic of Tatarstan	0.56
Tyumen region	0.72
Samara region	0.55

Source: composed by the author according to the data of Agency for Housing Mortgage Lending, (2016) <http://www.rosipoteka.ru/ru/agency/analytics/statsis/>

Intensification of demand in the primary market in connection by the news about the end of the program of preferential mortgage leads to the rapid implementation of all the existing supply and to further reduction of supply which will affect the secondary market (Fedotova et al. 2016). Now there are more than 2 square meters per person unsold in Russia while in 2011 the figure was 0.85 square meters. The growth of this indicator is expected in 2016 as well as further decrease of secondary market price. In this case, nominal affordability of housing could increase if the purchasing ability will not drop rapidly due to consumer prices growth. But the latter seems low probable.

4 Conclusions

In Russia, the manifestations of the housing problem are evident. In spite of significant variation of regional circumstances, the difference in regional parameters of the housing problem has rather quantitative but not qualitative nature. Official state statistics do not give data characterizing regional housing stock creating limitation for analysis and further conclusion making for certain regions. But general data allows assessing the housing situation as crucial and requiring the attention of state and local authorities.

The volume of mortgage grows steadily in all regions as well as mortgage credit burden but the relative levels and the tempos differ. In spite of the growth, the mortgage can serve to improve housing situation only for minor part of population. The half of total mortgage volume is concentrated in 13 regions with approximately 40% of total population. In leading regions, housing affordability varies in wide range. Large volumes of mortgage in the regions with low affordability of housing is connected with housing market “overheating” resulting, risky mortgage policy of banks, great differentiation by income and influence of noneconomic factors.

Low income is the most significant factor that does not allow widening the use of mortgage for mass housing problem solving. There are no reasons to expect the rapid income growth in the nearest years, so taking into account the severity of housing problem, the federal and regional authorities should take part more in construction of social housing than in subsidizing the interest on mortgage. It is necessary to admit that housing ownership brings financial burden which can be backbreaking for low income families. In spite of significant difference of quantitative characteristics, neither housing market nor mortgage became the key tools for solving the mass housing problem in regions and should be considered as such tools in future. This conclusion is confirmed by the values of potential of mortgage for the housing situation improvement in regions.

The results of current research can be useful for state and local authorities in working out social and economic policy, for construction companies in housing planning, for banks in planning their activity in mortgage market, for real estate agencies in planning their operation in regional housing markets.

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The Changing Nature of Countryside and Farming: Towards a Socially Responsible Provision of Public Goods in Transition Economies

Lina Pareigienė, Aldona Stalgienė, and Rita Vilké

Abstract Needs and ways of managing natural resources in a sustainable and responsible way are under the scientific discussions for nearly three decades, since the environment was perceived as a public good. Major areas of concern range from environmental to social and ethical issues, which are close to corporate social responsibility (CSR) paradigm. This study examines the changing nature of countryside and farming from the Soviet period till nowadays, aiming to find out the main factors, which shape the trends of rural development in transition economies and compose the demand for socially responsible provision of public goods. Main objectives of the study are: to analyze common rural development features of Soviet period since 1990s; to define the key features of rural development in Lithuania as a country of transition just after the regained independence and in recent years, which affected the general provision of public goods and to project the main factors for its demand. Statistical data analysis, generalization, systematization and projection methods were applied. Research results show that the demographic and environmental issues are the top concerns, and these will probably form major groups of factors for the demand of socially responsible provision of public goods in the nearest future.

Keywords Corporate social responsibility • Farming • Provision of public goods • Transition economies • Lithuania

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1 Introduction

In recent years, the results of an intensive industrialization after the World War II, numbers of further government interventions and latter bottom-up approaches, became evident in all sectors throughout the globalized value chains. The impacts of production and its processes had become increasingly questioned by the public society in general, and particularly—in agricultural sector. The attitudes towards agricultural activity shifted from food and fiber manufacturer's to those increasingly valued additional functions of agriculture. Attention was focused not only on agricultural production and its intensification at the lowest costs, but the multifunctionality of agriculture as well, alongside the ability to create brand and other non-commodity goods, i.e. public goods. Multifunctionality and sustainability has become a fundamental concept of agricultural policy debates since the early 1980s (Hediger and Knickel 2009). Since the environment was perceived as a public good, environmental issues had become increasingly important topic of discussion in society. Scientists, politicians and the public society start raising concerns about the environment, food safety and quality, animal welfare issues. Alongside, agriculture starts being recognized as the most important provider of public goods and landscape maker. When the need for responsible and sustainable management of natural resources emerged, farmers occupied a central role in the process. The very first agri-environmental measures were introduced in 1980, and environmental protection had become one of the cornerstones in agriculture. To counterbalance the negative effects of agricultural activities certain economic measures were on demand. Economic regulatory issues of agricultural externalities entered into constructive discussions since the last decade of the twentieth century (Vazonis and Startienė 2009). According to Slee and Thomson (2011), the importance of public goods can be seen in the very first objectives of the Common Agricultural Policy (CAP), however clear declaration of support for public goods appeared in 1986, in the Single European Act, Article 130R. It requires that environmental protection requirements must be one of the Community trends, including the CAP as well.

Every single country has its own course in public goods provided through agriculture. It normally depends on political, economic awareness and possibilities as well. Lithuania for a long time was a dependent country and should go in line with foreign countries' indications and conceptions. The so called 'iron curtain' put a great restriction to the flow of modern knowledge and practices from the west. After the regained Independence in 1990, Lithuania's political situation had changed greatly. Alongside, the newly arrived European values, views, political decisions and modern practices from developed countries had accelerated great changes in the nature of countryside and farming in post-soviet countries, including Lithuania.

Despite the fact, that the terms 'multifunctionality' and 'public goods' in agricultural discourse in Lithuania for the first time was mentioned by Treinys (2002), number of movements towards the issue of environmental protection and,

simultaneously, provision of public goods in agriculture, had progressed from the early years of Lithuania's independence, i.e. early 1990s. Recent research (Baločkaitė and Rinkevičius 2008; Poviliūnas 2008) give evidence for the strong ties between the increased ecological consciousness, societies' discontent regarding the nature state, production and related initiatives of independent social movements. According to Baločkaitė and Rinkevičius (2008), in the late 1980s, the questions of environmental protection were among the basic issues for which society had mobilized to express distrust on government principles. This resulted with the raised social concerns regarding the soviet industry in terms of devastated and depleted nature and chemically contaminated agricultural production. Those movements of independence strongly coincided with the movements of greens.

The state of public goods (agricultural landscape, culturally valued landscape, farmland biodiversity, water quality and availability, soil functionality, climate stability, air quality, resilience to flooding, fire and natural disasters, food security, rural vitality, animal welfare), depends on agriculture greatly, due to the immediate interconnectivity among agricultural activity and nature with its resources. The provision of public goods is firstly concerned with a rational exploitation of ecosystems and renewable resources of nature (Treinys 2002). There are number of cases when the suspended agricultural practices give a cause to the process of depopulation in rural areas. The decreased production of private goods decreases the provision of public goods, and subsequently composes impacts on degradation of ecosystems (Treinys 2005). Thus the provision of public goods is closely related to farming practice as well as living conditions in the countryside.

Main objectives of the study are to analyze common rural development features of Soviet period since 1990s; to define the key features of rural development in Lithuania as a country of transition just after the regained independence and in recent years, which affected the general provision of public goods and to project the main factors for its demand. Statistical data analysis, generalization, systematization and projection methods were applied.

2 The Common Changes and Features of Countryside and Farming in the Soviet Union

Before the collapse of the Union of Soviet Socialist Republics (USSR) in 1990s, i.e. the period of transition economy, the Soviet agrarian politics was based on large-scale merchant collective agricultural farms, which were guided by state.

From the very beginning of Soviet period considerable rearrangements progressed in the fields of agrarian land ownership and countryside. Farmers' ownership rights on one's lands and forests were collectivized, or in number of cases, even forfeited. The demographic situation in some rural regions of USSR changed fundamentally. In particular, the decline in USSR's rural population between 1959 and 1970 was observed in Russia, Ukraine, Byelorussia and the

Baltic states, while urban areas continued to grow rapidly, by 31% in Russian Soviet Federated Socialist Republic (RSFSR). The decline was mostly concentrated in the central region near Moscow, while situation in other regions was diverse. For instance, in Lithuania, in the period of 1940–1990 rural population decreased from 2.3 to 1.2 million people. Some scholars state that USSR's rural decline was essential to maintain city-growth rates, especially in the early industrialization push (Becker et al. 2012), while others raise number of political circumstances closely related to the processes, as Soviet deportations from Lithuania, were in series of 35 mass deportation in 1941 and between 1945 and 1952, at least 130 thousand people were forcibly transported to labor camps and other forced settlements in remote parts of the Soviet Union (Anusauskas 2005). The system of spatial rural settlements was modified—granges were rearranged and established artificial settlements were composed to serve the particular form of a collective farm in Soviet Union, called 'kolkhoz'. Since the industrialization phase began, land cultivation techniques and technologies moved forward. Rural landscapes undergone huge changes due to the implemented technical assistance (i.e., melioration), sometimes scarcely radical from environmental, social and ethical point of view: straightened valleys of natural river flows, new settlements established instead of previously wild swamps, barraged streams and artificial lakes, composed instead of villages with cemeteries in operation, etc.

The strictly centralized Soviet system with 'top-bottom' approach was focused on production, productivity and fertility. The main 'public good' was the Soviet system, and any concerns towards protection of nature, species and natural habitat use to be miserable in terms of a 'public value'. The heritage from conventional farming, when the farmer was universal and knew all farm activities, had dwindled. Thus, farmers were bereft of the ownership of lands and forests, and manufacturing property was broken-down economically—the salary in the soviet collective farms was scarce. Centralization and concentration on production, high specialization of the work process and relocation or rural residents from granges to bigger, special built settlements totally reshaped both the countryside and farming practice. Because of the low salaries, the shortage in food production and traditions to grow agricultural goods by own, rural residents were given an opportunity to have little plots of rural areas in the soviet collective farms for subsistence, but not for the market—production could not be realized, because product markets and input supply channels were strongly controlled by the central Soviet governments and any forms of private business, enterprises as well as ownership were prohibited (Lerman 2001).

During the Soviet period, a lot of attention was paid for the settlements around the large-scale agricultural farms—they should be of such a size that could satisfy the demand for work resources. The settlement should fulfill the basic needs of residents and this was the reason to develop it. Eventually the graduates from Soviet agricultural schools and universities occupied prearranged vacancies in the collective farms. However, they were not farmers literally; they were free hired employees, with clearly specialized work functions (Poviliūnas 2012). In the collective settlements, the residents of rural areas were able to get the necessary

public services, such as kinder garden, primary and secondary education for children, medical care, cultural and sport facilities and events, etc. The roads were built and the public transport system was well developed. The government applied number of tools, from one side, to detain rural residents from migration to urban areas (difficulties to get accommodation, to get registration, which was necessary) and from the other, to develop rural settlement as an attractive place to live. Step by step situation in rural areas was getting better: salaries had grown up and working conditions in fields and farms eased mainly due to the applied machinery and automation.

Since the main purpose in Soviet period was to increase the amount of land for agricultural exploitation, melioration processes were very intensive. The arable lands were artificially leveled down. From the one side, melioration improved the physical and chemical features of the land, made easier the work processes in dried lands, alimentary substances were more easily achieved for plants and fertilization was more efficient (Poviliūnas 2008). From the other, melioration devalued huge amounts of natural landscapes in terms of biological variety. Throughout melioration processes many little streams and rivers were modified into channels. In the last decades of the twentieth century more than two-thirds of Lithuanian swamps' ecosystems, which could be prescribed to regenerative biological resources, were destroyed (Environmental Protection Agency 2008; The Ministry of Agriculture of the Republic of Lithuania 2007). The negative impact on biological variety was especially evident when granges were destroyed together with natural microclimate around. Worldwide debate regarding the scarce environmental conditions and its future protection began at the end of the twentieth century. In Europe, agri-environmental measures were introduced in 1980s (Vinciūnienė and Vitunskienė 2013).

Despite the large-scale agriculture, Soviet collective farming system was inefficient (Lerman et al. 2004). Shortage of food production was especially felt in cities, where long queues by the shops used to be daily practice. Scholars give a reason for inefficiency by stating that efficiency itself and low-cost policy was never an objective of socialist agriculture; the priority was to obtain production targets at any cost (Lerman et al. 2004). According to Lerman et al. (2003), the Soviet Union was spending 10% of its national income, or 20% of the government budget on food subsidies. A large share of this support was devoted to reducing consumer prices, but producer prices were also supported generously. In Lithuania, the producer subsidy equivalent in the late 1980s was between 70% and 80%, while at the same time the average for the OECD countries was less than 40%.

As the main purpose of Soviet collective farming system was production based, miserable attention was paid on agriculture as provider of public goods. A huge attention was paid to productivity, but not the quality (Poviliūnas 2008). A big amount of hilly areas were not suitable to cultivate for techniques of that time. These areas overgrown by bushes, saplings, just lie in waste; some wet hollows swamped (Jurkonis 2012; Ribokas and Milius 2008). The environmental protection requirements were not followed, huge amounts of chemicals were used for the provision of highest production results; nonexistence of cleaning equipment

triggered pollution of groundwater and rivers, atmospheric pollution also increased. Simultaneously, all indicators of ecology was getting worse and worse (Pečiulis 2008; Poviliūnas 2008). The fertilization norms were not followed everywhere, abundant amount of chemicals were used in the infertile lands (Gutkauskas 1997). For instance, in Lithuania, on average, it was used about 10% more fertilizers (kg/ha) than in other industrialized countries (Lerman et al. 2003). The monitoring of water and air quality was irregular and non-systemic. Land monitoring and questions of waste management were actual only in economic context, i.e. increased productivity (Tuskenytė and Volungevičius 2015), while water quality had been affected in rivers, lakes and drinking water wells. In general, knowledge about the meaning and significance of environmental preservation was very poor. Data concerning the conditions of natural resources and chemicals were hidden. Any data in the pollution field could not be reached in USSR because it was very strictly controlled information, and society had no real opportunity to understand actual situation of environmental conditions. Questions regarding agri-environmental protection, which is among the main sources of public goods, were not among actual concerns. Ecological crisis of nature in USSR was discussed by Baločkaite and Rinkevčius (2008), stating the facts that in late 1980s, questions regarding environmental protection were the ones which mobilized the society to express distrust on government principles and raise social concerns about soviet industry, i.e. devastated and depleted nature and chemically contaminated agricultural production. Ecological commitments, strongly concerned with public goods, kept growing and the movements of independence finally coincided with the movements of greens.

Analysis of the main processes undergone by agriculture in Soviet period of time gives evidence for reasoning crucial social, economic and environmental transformations occurred in USSR. The common agricultural heritage from the Soviet period might be summarized under the following features (Lerman 2001; Lerman et al. 2004):

- Centrally planned agriculture, based on very large commercially oriented collective farms, collectively managed and cultivated thousands of hectares of land, and a lot of member-workers employed;
- Very small collective household plots for individual subsistence;
- Strictly state-controlled production market;
- Centrally, i.e. top-down, prescribed production targets.

Conditional farming was ruined as the posterity of the old farmers' generation obtained different professions, had changed their place of residence and thus altered the endogenous relationship between the nature and the human. Number of implemented activities, such as melioration, establishment and development of new rural settlements, building of new roads, electrification and communication grids radically changed rural infrastructure and countryside. Under the process of collectivization, private agribusinesses, farms, granges and even houses were nationalized. Thus, the conventional farming system with its long history and culture was totally ruined (Lerman 2001). However, the viability of Soviet

collective farming was not in its advantages compared to individual, i.e. private farming systems, but in the strict centralized planning and support from central government. This is the main reason for the collapse of Soviet collective farming system alongside the collapse of Soviet regime. At the same time, the collapse of USSR in 1990s implied that the rural areas, settlements and residents were facing one more radical shift in farming system.

3 Lithuanian Countryside Conditions and Farming Just After the Collapse of Soviet Union

Analysis of further changes regarding the environment of farming and agriculture is based on Lithuanian case, because of the nonexistence of comparable data relevant for major transformations in transitional economies since the collapse of the USSR.

3.1 Social, Economic and Environmental Features of the Countryside

Starting from 1990, when Lithuania regained independence, rural areas start depreciating from social, cultural as well as economic points of view. Many changes in quality of rural life were affected by significant shifts in political situation and policy, lack of financial resources, unclear distribution of governance structures (central, regional, local or territorial) with intersecting duplicated functions and whole instability, as well as many changes related to soviet-made-shifts in collective and individual habits and values.

Previously, administrations of Soviet collective farms were responsible for living conditions in rural settlements. After the agrarian reform, transmission of these and some other functions to newly-established territorial self-governments, i.e. municipalities, caused significant downturn. Continuous lack of financial resources resulted with reduced accessibility to public services, i.e., decreased number of kinder gardens and schools, medical care and cultural institutions.

In Lithuania, proportionally large share of population used to live in rural countryside. Population census in 1959 fixed that the rural population composed 62.0%, in 1970—50.1%, and in 1979—40.0% of total population. In 1989, rural population composed 32.1% of total population. Despite the intensive emigration processes, the decline of population was observed both in rural and urban areas. The percentage of rural dwellers stabilized from 1989 and consisted one third of population till 2015. The main reason for decline in population is negative nets of international migration, the parallel reason—negative natural increase. Since 1990s, Lithuania's rural areas lost 221.5 thousands or 18.7% of residents. The analysis of internal population migration tendencies between 1990 and 2014

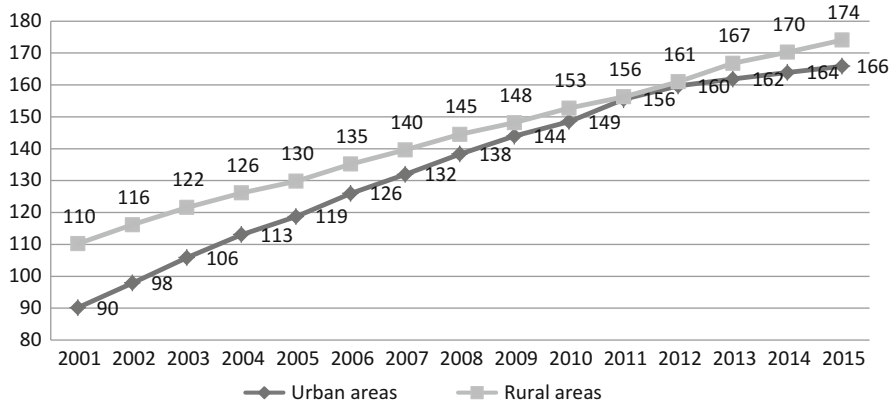


Fig. 1 Index of ageing in Lithuania, 2001–2015 (estimate at January). Source: Data of Statistics Lithuania (2016)

shows that the greater number of residents chooses urban areas as a new place for living, major share is residents from rural areas. Analysis of migration tendencies elucidate that rural residents tend to migrate to urban areas, urban residents more frequently prefer rural areas as a new place for living. The biggest changes in internal migration were in 1991 and 1995. After 1995 the internal migration processes got slower. Comparing conditional index—how many migrants gain thousands of residents, it can be seen that rural residents are more active in migration processes. In 2014, the number of migrants per 1000 in rural areas was 25, in urban areas this index reached 14. Compared to 1990s, these indexes were 33 and 17.

Age composition of Lithuania's rural residents (see Fig. 1) undergoes changes mainly due to the decline in birth rates, increased life duration and migration processes. The rural areas, as urban, confront with ageing processes. The index of ageing, which shows the ageing processes in population (numbers of persons aged 60 over per 100 children under 15) over the whole period in rural areas was bigger than in urban, but the tendencies of growing are slower.

Decomposed large collective farms left rural residents without workplaces and stable income and thus unemployment and poverty emerged (Mačiulytė et al. 2013). In Lithuania, for a long period of time employment in agricultural sector in rural areas was the main activity compared to employment in industry and service sectors. However, from the 2007, it took the second, in 2008—even third position in employment structure. In 2009, employment in agricultural sector took the second position again until now. Since 2010, employment situation in rural areas by sectors remains stable (see Fig. 2).

Employment in agriculture compared to the whole country's employment in the period from 1998 to 2015 decreased by 52.3%. In agricultural sector, number of employed rural workers decreased from 257.4 thousands in 1998 to 110.7 thousands in 2014, by 56.9%.

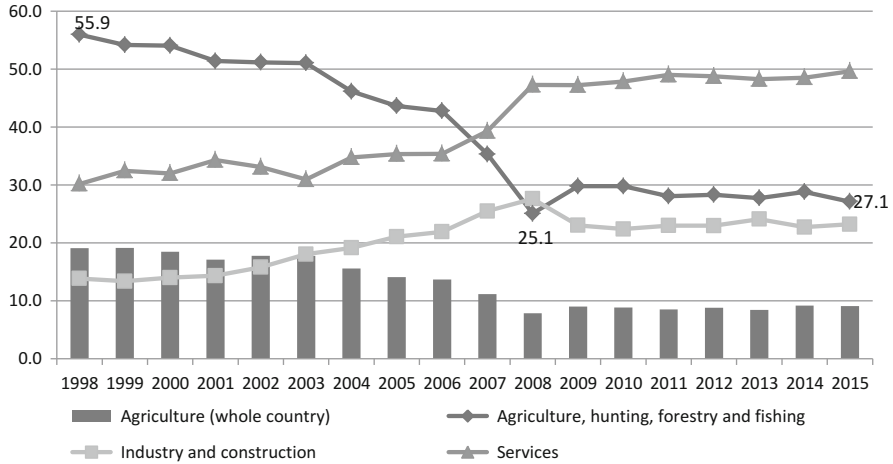


Fig. 2 Employment in Lithuania’s rural areas by sectors in 1998–2015 (percentage). Source: Data of Statistics Lithuania (2016)

After the regained independence, Soviet collective farms were abolished and huge complexes of buildings left empty. Furthermore, remaining unusable, they decomposed and disfigured the countryside. Huge amounts of chemical manure left in these buildings from Soviet times, polluted the environment and caused danger. These challenges influenced the abilities of rural regions to produce and sustain environmental, cultural and social goods.

3.2 Changing Conditions of Farming

Alongside the regained independence in Lithuania, agricultural sector faced huge transformations. The first and the biggest—the Land reform, i.e. shift in land ownership management. Implemented restitution restored property rights for the endogenous pre-Soviet land owners. Land reform in Lithuania was implemented step by step, by three stages. The first stage was to restore property rights to former owners or for their descendants, despite the willingness of them to prosecute agricultural activity. The second stage was to grant 2 or 3 hectares of land for all rural residents, who worked in Soviet collective farms. The third stage—elimination of previous collective farms (Poviliūnas 2012). The collapse of Soviet regime and the restitution of land composed opportunities to numerous people to access land, enter agricultural activity and shift to individual farming. In the first years on independence most of the land was used by newly-established agricultural partnerships and enterprises, but later, after rebuilt private land ownership, more and more land was identified as private (see Fig. 3).

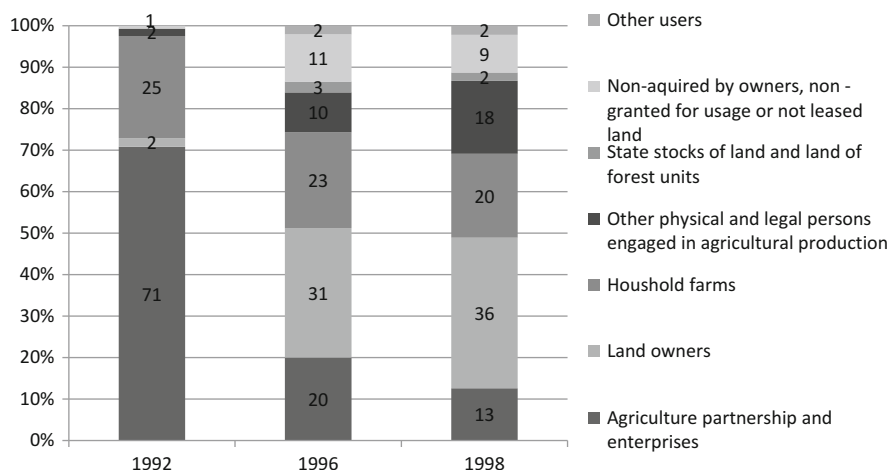


Fig. 3 Lithuania's Agriculture land by users in 1992–1998 (percentage). Source: Department of Statistics to the Government of the Republic of Lithuania (1996, 1997, 1999)

Throughout the Land reform in 1991 till 2015 years 784.2 thousands of requests to restore lands ownership were claimed, 770.9 thousands (99.5%) were satisfied (Kuliešis 2015). The land ownership provided the opportunity to manage land by themselves, by owners needs and to apply different methods of management. Agricultural economy from the direct administration was reorganized to market relationships; the support for agriculture was considerably reduced.

In 2012, the share of 84% of all agricultural land was private land (land of natural and legal person). Other part was identified as state land, which consist of land of households (2%), land of agricultural companies and enterprises leased from the state (2%), land of natural persons leased from the state (8%), land not granted for usage or not leased (4%).

According to Poviliūnas (2012), the lack of clear agrarian reform vision became the factor of rural destruction. Until independence, rural areas were closely related to agriculture, but in transition economy strong ties were lost. Some owners recaptured land just as property, not for the farming activities (Poviliūnas 2007).

In some regions of Lithuania, the agricultural activity was loss-making; some new farmers could not adjust to completely changed market conditions and new possibilities. The small family farms were lacking agricultural mechanisms and financial resources to purchase them. Some land owners had no intension to engage in farming, they just kept the land as property. So, in the beginning of independence, the agricultural land was poorly supervised, previously cultivated plots start accreting by bushes and trees. Because of economic decline, rising prices for fuel, the meadows and pastures were used less intensively. Previously less favorable lands for farming were desolated, which from the other side was particularly important for biological diversity. Because of desolation, the natural habitat variety decreased and the danger arose for many species to disappear. In 1992, new

network of protected areas were created, but the very important move was the “Natura 2000” initiative.

The changed form of land ownership from the public to mixed (public and private) kept changing the land use. From 1990 until 2001, in Lithuania, common crop area decreased by 26.5%, decreased a number of livestock and the amount of agricultural production (Melnikienė and Volkov 2015). The lack of financial and other resources, government investments in turn caused the scantily maintained systems of melioration to deteriorate; some territories began to turn to swamps.

The independent Lithuania faced the countryside and landscape changes, which were greatly affected by melioration: declined ecological stability, modified hydrological regime (unregulated regime of rivers, drought, the chemical substance concentration in rivers, the ranked rivers) reduced biodiversity (Aleknavičius and Aleknavičienė 2000; Jurkonis 2012; The Ministry of Agriculture of the Republic of Lithuania 2007), uncultivated land accreted by weed and bushes. Altogether, the quality of land decreased and alongside devaluated the cultural heritage (Treinys 2002). From the opposite, economic downturn caused the reduced application of chemicals, so the nature starts recovering.

The civic commitments towards environmental protection become a new increasingly valued direction. The first movements with the ecological and environment protection purpose started in 1987. In 1992 accepted Constitution of the Republic of Lithuania, government and persons were obligated to protect environment from harmful influence, to take care of natural environment, wildlife, plants, individual objects of nature and particularly to take care of protection of valuable areas, to ensure sustainable use, restoration and increase of natural resources. This article prohibits the destruction of land, underground and water, to pollute water and air, to make radioactive impact for environment and to deplete flora and fauna. Later a number of environmental protection laws were initiated, Lithuania joined international legal agreements, convinced a number of international conventions (1997 Kyoto protocol) which obligated to follow international environment protection standards.

The features of public goods intend to supply benefit for a wide society in the whole country, or even in a global sense. Farmers experienced expenditures in terms of profit while providing them. Thus, the important role started being played by government in policy and measures in particular for the supply of public goods, which raised the concerns about environmental protection and highlighted the provision public goods beyond the farmers’ attitudes and motivation.

Since the regained independence in 1990s, the government of Lithuania acknowledged the significance of agrarian sector roles in economic, social, environment protection, ethnic and cultural sense, that’s why the agricultural sector is supported by government. In 1993, the first strategic document was confirmed—National rural development program until 2000 (Poviliūnas 2008). In the first decade, the young country had very limited financial resources to support farmers. The first funds, intended to support agricultural activity were established in 1992.

The changed political, economic situation, reduced support to agriculture sector, decreased profit from agriculture, changed land property structure—not all land

owners tended to engage in farming—changed the agricultural sector. The decline of rural residents' number, the ageing of them, the old age of farmers, descending employment in agriculture, and decrease of young residents' number influenced the decrease of potential employees in agriculture sector, decreasing quality of life and infrastructures changed the countryside and became an important challenge to future countryside. The lack of knowledge, technique, willingness, and finances threaten to remove from agriculture sector what could cause land dereliction. Alongside, conditions of public goods in countryside and rural areas highly depend on particular residents' viewpoints and attitudes upon activities they are engaged in and upon environment in general.

What is the situation of public goods depends on human potential and agricultural, environmental protection practice implemented by them. Therefore, the main factors for the provision of public goods are residents (their age, knowledge, use methods, awareness, consciousness, occupation) and the political measures and support.

4 Recent Rural Development Features and Provision of Public Goods

Provision of public goods is directly interconnected with farming practices. Organic and ecological farming is among them. The very first society movements towards environmental protection arose in the end of ninth decade. Besides, as stated by Baločkaitė and Rinkevičius (2008), this was the first impulse for the movements of Lithuania's independence.

4.1 Ecological Shifts towards Socially Responsible Provision of Public Goods

During the first stage from planned to market economy, the use of chemicals in agriculture was strongly reduced. When comparing the year 1989 to 1993–1994 the use of fertilizers for agricultural purpose decreased by 13 times, amount of pesticides used for plant protection was reduced by 18 times. Dramatically reduced consumption of chemicals composed promising conditions concerning pollution of water, soil and the whole environment, but rapidly decreased agricultural production (Gutkauskas 1997).

Despite the decreased use of chemicals, which resulted with decline in state supply, some more changes were on demand to reconstruct agriculture practice as sustainable and environmentally friendly. Since 1990s Lithuania start implementation of ecologic policy. The community of Lithuanian ecological agriculture “Gaja” was established, which in 2005 became an association and unified farmers,

concerned with ecological production growth. In 1991 Lithuanian government confirmed “Tatula” fund which was designed to support and ensure the transition from traditional farming to sustainable and ecological attempting to protect ground water. Measure began to implement in ecologically sensitive agrarian territory in the North of Lithuania, later this program turned into “Tatula program” and expanded throughout all territory. The basis to transform traditional agriculture to sustainable, environmental responsible was created. In 1993, the first nine farms were registered. From the 1997, the direct payment from the national budgeted for the hectare of crop land started to pay. The program motivated to produce and to consume ecological production, assisted to sell production, organized ecological fairs, educational activities (Skulskis et al. 2006). The payments in 1997 reached 172 thousands Litass, support increased and in 2000—0.5 million, in 2003—4.2 million Litass. Especially support increased when Lithuania joined EU, the support amount in 2004 reached 41.04 million Litass from EU fund and 10.26 million Litass from national fund (Jasinskas and Kazakevičius 2008).

After “Tatula” program, which was practiced in sensitive agrarian regions, ecological agriculture support was extended to the all country by rural support fund (Vinciūnienė and Vitunskienė 2013). The same fund in 1996 started to support agricultural activity in less favorable land, because of fast abandoned farmland in 1990–1995, which was closely related to such public goods: cultural landscape, biodiversity, soil functionality and others. If lands are abandoned, they are not cultivated and a circle of problems, concerned to demography, social, environmental economic starts. Public support for the less favored areas and organic farming was 24.2 million Lt in 1996–2003 (Vinciūnienė and Vitunskienė 2013). The later enlarged national and especially EU support for ecological agriculture particularly stimulated ecologic farming (see Fig. 4).

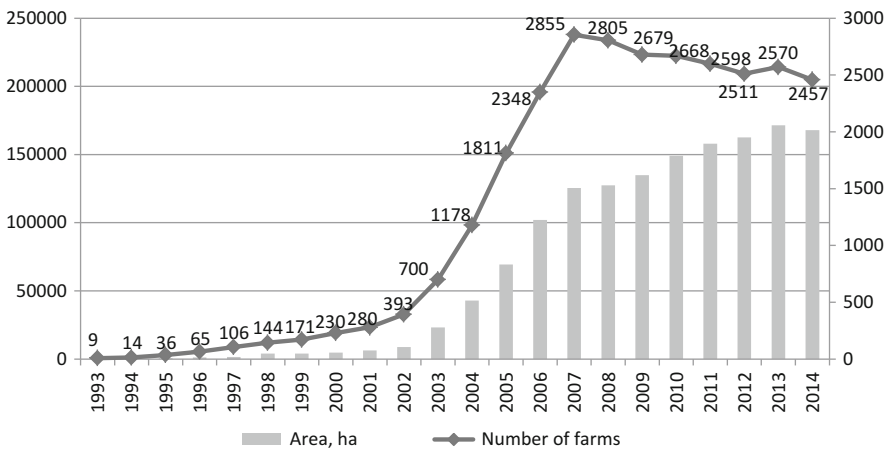


Fig. 4 The number of ecologic farms and area in Lithuania in 1993–2014. Source: Public agency Ekoagros (2014)

The number of ecological farms increased from 9 to 2457, the area from 148 to 167810 ha in 2014, which means the 4.8% in total agricultural land. As the result increased an area of lands were friendly for environment practices, closely related to public goods, applicable.

From the beginning of implementation of ecologic farming measures, the area of farms increased, only in the last year fixed decrease, which could be explained by connection of farms and retire of small scale farms, because of complicated bureaucratic administrative procedures, operational risk and responsibility.

Not only the measures and payments for ecological management motivate farmers to develop ecological farming. The expanding market increased awareness of safe food and willingness to consume healthy production as well as environmental commitment and thus raised the demand for safe and clean products. At the same time, income of people increased thus forming the possibility to pay more for ecological products.

4.2 Support from the European Union for the Provision of Public Goods

The tradition to support development of agri-environmental public goods in EU began in mid-1980s, while Lithuania began implementation of agri-environmental and ecologic policy a decade later—from 1990. When Lithuania expressed willingness to enter European Union, the necessity to produce competitive, marketable agriculture production emerged by that created necessity to use farming methods, which were beneficial, and protecting environmental—the values that EU proposed—arouse. In transitional period, for the reason better to recognize EU implemented agricultural and rural development politics, rules and procedures, for the candidate countries financial aid 2000–2006 was provided due Special accession program for agriculture and rural development (SAPARD). The main aim of the program was to maintain agricultural modernization, competitive possibilities, takeover of environment protection, hygiene, veterinary standards, to encourage rural development and alternative sources of income.

The attention on providing of public goods increased since 2004 after entering EU and the implementation of Rural Development Plan 2004–2006 and the last 2007–2013. The core of these plans was three points of sustainability: economic competitiveness, protection of environment, social integration of rural communities (Mincytė 2011).

As the EU politics was pointed to delivery of public goods, a plenty of applicable CAP measures are related to public goods provision. The measures of CAP gave an opportunity for Lithuania to implement the goals, which old EU countries implemented in earlier political stages. That is the main reason why Lithuania in all programming periods from 2004 tended to use the widest range of measures.

Almost all EU rural support measures have a connection to provision of public goods, which could be divided in two groups on the ground of objective:

1. Measures directed towards environmentally friendly farming practices,
2. Measures directed to human resources, human capital quality—improvement of knowledge and skills.

The purpose of first group of measures—to maintain friendly for environment farming systems, investments in more efficient, sustainable for environment technologies, improvement of irrigation systems, growing of energy crops, improvement of livestock housing facilities, modernization of farms, maintain semi natural farming, environment protection, extensive grazing, arable practices, improvement or/and creation of infrastructure for the agriculture and forestry and other measures to ensure sustainable development of countryside. The biggest role in the provision of public goods in the first group of measures, occupies agri-environmental measures (European Network for Rural Development 2010), participation in which directly supply environmental public goods. Under agri-environment schemes, payments are paid for applicants who implement agri-environmental commitments, which are not compulsory, but useful for the environment.

As the EU paid a considerable attention to sustainable rural development, environmental protection, the multifunctionality of agriculture activity, the importance of public goods, Lithuania in Rural development plans incorporate a huge amount of agri-environmental measures. That was the important factor which promoted the production of public goods, because farmers get very important financial stimulus to contribute to provision of public goods without decline in profit. In 2007–2013 for the agri-environmental measures were invested 815 million Euro. As stated by Čiegis (2009), because of agri-environmental measures over the last years significantly decreased the use of mineral fertilizers, the use of pesticides in agriculture decreased more than 5 times.

The purpose of the second group of measures is to change human resources, human capital—that means to attract younger farmers, to educate farmers in public goods provision sphere by a great number of trainings, seminars.

By demographic data, Lithuanian farmers are quite old, the biggest amount of farmers are 50 years and older. Sustainable development in agriculture particularly depends on farmers' demographic situation. Many old age farmers had no special knowledge about farming, they appeal on their experience, old knowledge about farming. From the perspective of public goods provision, the conservative viewpoint to farming was not beneficial, because they used old methods of farming, old technique. Lithuania pursued to stimulate young rural residents' participation in rural development policy measures; together the generation change questions were alleviated. To change the situation few measures were implemented to encourage young generation involvement in agriculture practice: the early retirement measure and the help for setting up young farmers. The analysis of construction of the farmer population in full time unit from 2003 and 2013 data showed that number of persons under 44 years old in the total number of workers increased from 45.9%, to 48.6% (Melnikienė and Vidickienė 2015).

The big concern in the start of independence was the education of farmers. Very few farmers had a special education related to farming. The old age of farmers, the disappeared old farming knowledge until Soviet Union practice, when the human and nature connections were tight, the heritage of Soviet Union agriculture practice traditions, the old technique was a big challenge to develop agriculture activity in changed value society. The state organized courses for farmers, but the huge impact was from the 2003, when Lithuania stated willingness to enter EU and get a big support for farmers training. Farmers and other rural residents, who planned to embrace EU support, to adjust to EU requirements, of environment protection, production, animal welfare, hygiene, were lack of awareness. The education of farmers and rural residents was the core element of entering EU. The different 57 programs were organized with a help of SAPARD program only in 2003 including environment protection, ecological farming, sustainable farming, landscape development, plant protection, wealth of animals and other directly concerned to farming as a provider of public goods. In 2003 the 549 teachings were organized for more than 10,000 farmers and rural resident (Narušytė 2004). Some training is voluntary, some were compulsory, if farmers wanted to get support. For example, young farmers should get a certificate. In such a way, the basic knowledge level was ensured.

5 Socially Responsible Provision of Public Goods

The concept of corporate social responsibility (CSR) emerged in Lithuania rather late, at the beginning of the twenty-first century. The very first legal attempts to start own private businesses began when Lithuania regained independence in 1990, after 50 years of Soviet occupation. Thus private business traditions were not deep and as such mainly arrived from shadow practices of 50 years of forcible incorporation into USSR—socialist planned economy. For raising the concept of CRS business surrounding was totally immature. The absence of CSR tightly correlated with the features inherited from the former Soviet system and was primarily caused by the state of economic backwardness compared to the West. In the very first years of independence ‘socially responsible’ business was a synonym to the wasted profit, therefore—decreased competitiveness and even bankruptcy. The core business goal was seeking for profit and social responsibility was basically understood as tax-paying, following the rule of law and creating work places. Progressively, the increasing demand for foreign cooperation accelerated Lithuanian young businesses to change their approach from profit as the solely aim and start thinking about ethical values and social responsibility in their business practices (Vasiljeviene and Vasiljev 2005). Thus step-by-step businesses have started reacting to raising consumers’ awareness towards social responsibility.

Throughout the last 20 years, society’s awareness about positive and negative environmental effects of agriculture increased as well. Society requires strong and fair reasoning of subsidies for agriculture and rural development. The attitude

towards agriculture has changed from the viewpoint of production for the least price to the requirement of the quality, healthy production, safe and clean environment. Producers recognize that consumers wish for production without violation of social, ethic values and norms. That was among the reasons for changes in producers' consciousness towards environmental concerns alongside the social and economic issues. The perception is strengthening on how ethically produced environmentally-friendly production enhances competitiveness. The CSR concept, which has traditions in business, arrives to agricultural discourse. Society in the twenty-first century calls for the socially responsible provision of public goods. The review of recent literature in the field (Behling and Auer 2008; Friedrich et al. 2012; Genier et al. 2008; Hartmann 2011; Hediger and Knickel 2009; Heyder and Theuvsen 2008, 2009a, b, 2010; Jasinskas and Simanavičienė 2009, 2010; Kissinger 2012; Maloni and Brown 2006; Mazur-Wierzbicka 2015; Mueller and Theuvsen 2014; Tallontire and Greenhalgh 2005; Vazonis and Startiene 2009) propose several CSR-stimulating factors in the provision of public goods in agrarian discourse, which is placed next to the undergone periods of transition (see Fig. 5).

As Lithuania belongs to the EU community, the same incentives for Lithuanian farmers to act in a socially responsible should exist as to the rest of Europe. Agricultural activity alongside the production processes causes negative externalities for soil, water, air quality, biodiversity, landscape. The farmers are asked for practicing socially responsible ways of production, deliberate methods in using common resources (water, air, soil) of society, especially considering the financing

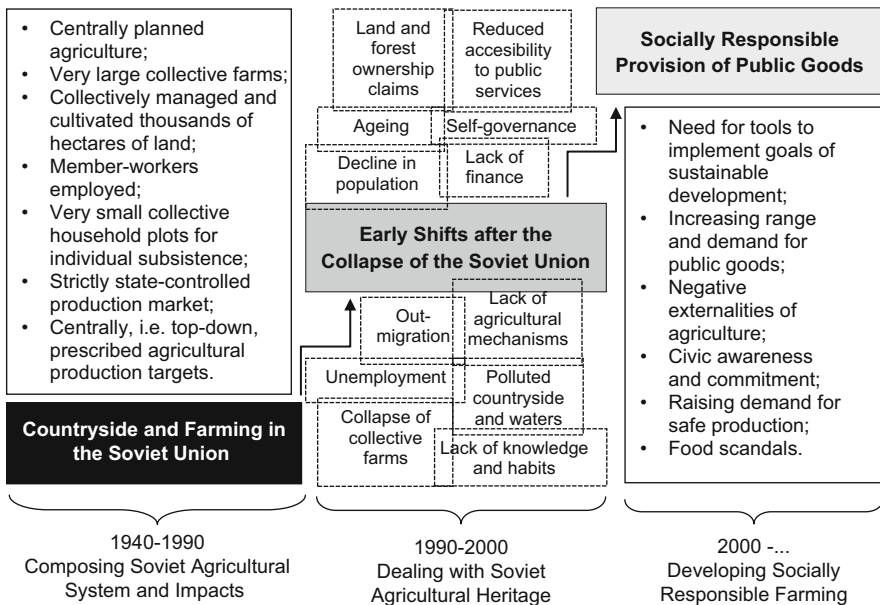


Fig. 5 Main factors for the demand of socially responsible provision of public goods. Source: created by the authors

of farming activities by public funds. The society is increasingly willing to get public goods, which are produced and provided in a socially responsible way. This fact elucidates the public concern regarding the support for agriculture which keeps direction together with sustainable development goals. The pressure from society had issued animal welfare and veterinary concerns and people more and more often refuse to consume production made in unsafe, harmful methods for environment and animals. In advanced countries, farmers start losing competitiveness if they apply such practices. Public goods provision is closely related to safe production. The growing demand for ecological production enhances expectations for farmers to produce in environmentally friendly way. As stated by Vasiljeviene and Vasiljev (2005), the society of Lithuania became less tolerant to socially (politically and economically) irresponsible decision-making business activities of local and multinational enterprises, and agricultural enterprises as well. Especially the demand for socially responsibly produced goods rose after the scandals, associated with food production, harm to nature, and harm to animal welfare. The lost society's faith in farmers might be renewed with help of CSR practices in farming (Mazur-Wierbicka 2015). Socially responsible provision of public goods would help accelerate the CAP towards sustainable development goals with range of tools and thus drive agricultural politics towards actual implementation of broad sustainability goals.

6 Conclusion

Agriculture in the Soviet Union's period was large-scale, intensive practice, which used a huge amount of fertilizers, was unhealthy and distorting. It had left a significant impact on public goods in rural areas. The new demographic and environmental challenges threatened to enlarge the negative impact. Lithuanian countryside conditions and farming just after the collapse of Soviet Union are featured by the following rural development processes: the reducing number of residents in Lithuanian rural regions, out-migration, ageing farmers and society in common, the regained property rights of land and start of new market economics and business, the reducing number of employees engaged in agricultural activity. The provision of public goods in the rural countryside start mainly depending on residents living in those areas: their actions, occupations, viewpoints; therefore, the conditions of public goods highly depend on applied farming and living practices.

The very first concerns about the real state of environment and its protection movements originated in Lithuania at the end of the twentieth century, and continued to grow further when Lithuania regained independence in 1990s. The ecological wave made an exponential growth at the beginning of the first decade of the twentieth century, and then remained stable with small decrease till nowadays. Alongside, the range of ecological products received high popularity from consumers. In recent decade, the EU support measures made a huge impact on widening the concept of provision of public goods in agriculture.

Socially responsible provision of public goods becomes topical alongside the raising awareness of society for better quality, healthier and safer life: healthy food and products, safe production methods without harm to environment and animals, etc. The scandals about food production accelerated raising standards for agriculture. This was reflected in CAP purposes such as sustainability, reduction of negative impacts of farming, rational use of natural resources. This cannot be achieved without sustainable, reasonable, ethical provision of public goods. From the other side, farmers receive increasing amounts of evidence on how production in a socially responsible way raises competitiveness, opens new markets and thus gives back to farmers. Thus CSR, already tested by other businesses, might help farmers add to the sustainability when dealing with the changed nature of farming and agriculture in of the twenty-first century.

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Part V
Management and Marketing

Mobbing: A Qualitative Analysis of Cases from Turkish White-Collar Employees

Sefa Zeynep Siretioglu Girgin and Cigdem Asarkaya

Abstract The impacts of workplace bullying on employees can be psychological as well as physical, and in turn affect organizations. Mobbing is a relatively new research area in Turkey, where there is need for more academic studies. In order to better understand the reasons lying behind workplace bullying and to generate effective policy recommendations, we aim to go beyond general conceptions towards a more detailed analysis of organizational as well as personal contexts in this paper. Using a convenience sampling method, we made 17 interviews with full-time white-collar workers in different sectors. We adopted an inductive approach, in which we aim to reach some general conclusions about mobbing experiences of white-collar employees. There are many possible and usually multiple causes of workplace bullying; causes within the organization, the perpetrator, the victim or the social environment, which are often interconnected. Our findings indicated that workers, who are relationally less powerful, are more likely to be victimized. This group includes those with little professional experience, lower positions, and those of minority status.

Keywords Mobbing • Bullying • White-Collar Employees • Turkish

1 Introduction

In Turkey, which has a high unemployment rate, there is a common belief saying “you are lucky if you have a job”. Therefore, employees try their best to tolerate mobbing cases. Similar to the taboo of sexual harassment 40 years ago, workplace bullying is “seen as part of the cost of being employed” (Yamada 2003, p. 409).

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However, workplace bullying can have serious consequences on employees—the stress associated with mobbing can surpass that of a combination of overtime and excessive workload (Hodson et al. 2006). The impacts on employees can be psychological as well as physical, and in turn affect organizations.

In order to better understand the reasons lying behind workplace bullying and to generate effective policy recommendations, we aim to go beyond general conceptions towards a more detailed analysis of organizational (Hodson et al. 2006) as well as personal contexts in this paper. Mobbing is a relatively new research area in Turkey, where there is need for more academic studies. In this regard, we believe that our study will be a valuable contribution to the literature regarding the examination of the strong relationship between ‘workplace bullying’ and (ab)use of ‘power’.

2 Theoretical Background

The following definition of workplace bullying will be the basis for this paper: “Bullying at work means harassing, offending, socially excluding someone or negatively affecting someone’s work tasks. In order for the label bullying (or mobbing) to be applied to a particular activity, interaction or process, it has to occur repeatedly and regularly and over a period of time. Bullying is an escalating process in the course of which the person confronted ends up in an inferior position and becomes the target of systematic negative social acts” (Einarsen et al. 2003, p. 15).

It must be underlined that to understand workplace bullying, any mono-causal explanations will be insufficient. Instead, a “broad range of potential causes of bullying has to be considered, which may lie within the organization, the perpetrator (the bully), the social psychology of the work group, and also the victim” (Zapf and Einarsen 2003, p. 166). In other words, explanatory variables include (i) personality characteristics of the victim and the perpetrator (individual antecedents), (ii) characteristics of human interactions inside organizations (social antecedents), and (iii) factors related to the work organization of a contextual or environmental nature (Hoel and Salin 2003).

Zapf and Einarsen (2003) have discussed theoretical and empirical evidence on individual antecedents of bullying from both sides of the act. Some of the individual antecedents from the perspective of the perpetrator are the protection of self-esteem, lack of social competencies, and micro-political behavior. Individual antecedents from the victim’s side are the salience and outsider position of the victim, vulnerability (with regard to social competence and self-esteem), overachievement and clash with group norms, and claiming victim status.

Empirical studies show that ‘personality’ is involved to varying extents in different workplace bullying cases (Matthiesen and Einarsen 2001; Zapf 1999a, b). Although the personality of the victim can be relevant for explaining her perception of and reaction to bullying, it cannot be seen as relevant for explaining

the behavior of the bullying person (Zapf and Einarsen 2003). Beside these individual factors, social antecedents of workplace bullying exist. The latter implicate “words and/or deeds of individuals/actions that elicit or condone aggression” (Neuman and Baron 2003, p. 186). The norm of reciprocity (in the sense of return of injuries for retaliation), and injustice perceptions (perception of unfair treatment by management and/or co-workers) contribute to the emergence of aggression and violence in the workplace.

Organizational antecedents of bullying are categorized as the changing nature of work, work organization, organizational culture and climate, and leadership (Hoel and Salin 2003). Several scholarly studies have emphasized two main dimensions affecting the likelihood of workplace bullying: firstly increased risks for structurally weak employees (Einarsen et al. 2003), referred to as ‘relational powerlessness’ in the workplace by Hodson et al. (2006); and secondly, the role of mismanagement and poor leadership which create permissive environments for bullying (Folger and Skarlicki 1998), referred to as ‘organizational coherence’ by Hodson et al. (2006). Relationally powerless workers are those who have insecure jobs, have minority status or are engaged in low-skill service positions.

Cross-sectional studies indicate that robust conclusions cannot be made with regard to causality (Zapf et al. 1996). The antecedents of bullying are interconnected. Organizational antecedents can combine and interact with individual antecedents. Power and control are concepts of major importance while explaining workplace bullying. Power is perceived in relative terms, as an “imbalance of power between the parties, where the situation of the target is identified with a perceived power deficit vis-à-vis the perpetrator” (Hoel and Salin 2003, p. 204). This power imbalance can either reflect formal power relationships or can refer to perceptions of powerlessness resulting from the bullying process itself (Hoel and Salin 2003).

In case of co-worker bullying, individuals of seemingly equal power get into conflicts, leaving one of the parties increasingly defenseless. On the other hand, if bullying is related to managerial behavior, power can be abused based on the power structure and can be associated with control over rewards and punishment (Hoel and Salin 2003).

Power and powerlessness are not static but relational attributes of individuals or groups of individuals, defined by ongoing rights and relationships (Hodson et al. 2006). However, in cases of mobbing, oftentimes there is a one-way snow-ball effect. Especially in stable employment environments, some employees have more power than others. Those with less power are more vulnerable to workplace bullying, and thus mobbing continues in an escalating manner. Although relationally powerless people are more likely to experience workplace bullying, employees who threaten the sense of superiority of their colleagues or make them feel vulnerable can become targets (Yamada 2000).

Race and ethnicity are two attributes which can be seen as ‘visible markers of potential vulnerability’ to workplace bullying (Hodson et al. 2006). Workplace

bullying can be motivated by racism since bullies may consider employees of different ethnic backgrounds easy targets, as these may be facing social isolation outside the workplace as well. Individuals employed in low-status service positions are another vulnerable group to workplace bullying (Hodson et al. 2006). Moreover, “when people interact more, it is more likely that personalities will clash and that individuals who possess bullying tendencies will have opportunities to act upon them” (Yamada 2000, p. 6).

Empirically, less evidence is found on the effects of gender on the likelihood of workplace bullying. According to Zapf et al. (2003), the proportion of the two genders who have experienced mobbing is similar. However, this may be reflecting the fact that the mobbing research considered by Zapf et al. (2003) is carried out in European societies. We hope that our study can point to gender differences in other contexts, such as those in Turkey. Finally, occupational differences among the genders may partially be the result of gender differences in bullying (Hodson et al. 2006). Last but not least, mobbing is less likely to occur in workplaces with higher organizational transparency and accountability; whereas organizational coherence and managerial competence are central to such accountability (Hodson et al. 2006).

3 Approach and Methodology

We have made 17 interviews with full-time white-collar workers in different sectors. We have explicitly chosen people who have experienced mobbing at their workplaces. We used a convenience sampling method to determine our respondents. They are residing in Turkey, Austria or Germany, and are of Turkish origin. Our questions consisted of ten open-ended questions we formulated; and a 63-item inventory, which we generated using the scale development studies of Tınaz et al. (2010) and Toker Gökçe (2012). The inventory consists of four major dimensions of bullying behavior—(i) work-related bullying, (ii) debasement (activities to harm the self-esteem), (iii) (socially) excluding activities, and (iv) oral, written, physical or psychological violence. We adopted an inductive approach, in which we aim to reach some general conclusions about mobbing experiences of white-collar employees.

The people questioned have at least an undergraduate degree. Some of them also have a graduate degree or a Ph.D. Table 1 summarizes the characteristics of the sample.

We used the Qualitative Comparative Analysis (QCA) technique based on case-oriented Boolean logic (Ragin 1987). The technique was chosen for its ability to combine qualitative with quantitative analysis, and to examine all possible combinations of causal factors, and for its feasibility for small-to-intermediate-N (5–50 cases) research design.

Table 1 Characteristics of the study group

		n	%
Age	30–40	12	71
	41–50	2	12
	>50	3	18
Gender	Male	4	24
	Female	13	76
Sector	Private sector	13	76
	Public sector	4	24
Industry	Education	3	18
	Health	3	18
	Other	11	65
Total work experience	1–5	6	35
	6–10	5	29
	11–15	3	18
	> 15	3	18

4 Main Findings

Based on the QCA analysis we conducted, we reached the results presented in Table 2 A, B. The most common themes that emerged in our interviews are: higher position of bully, bully’s better relationships with decision makers; micro-political behavior, inferiority complex of the bully, the obsession to show/ feel own power; victim’s relational powerlessness, salience, outsider position, vulnerability with regard to social competencies, overachievement/ higher qualifications; words and/or deeds of individuals/actions that elicit or condone aggression, injustice perceptions; and poor leadership.

Table 3 demonstrates the items (among the 63-item list) that were most frequently selected by our respondents, and their frequencies. The items that were found highly intolerable by our respondents are that people around them ignored them, that their responsibilities were restricted or taken away, and that they were overloaded with duties.

4.1 Antecedents

In some cases, workplace mobbing is based on bully’s perceiving her/himself as inferior in some respects, when s/he makes comparisons between self and the victim; and try to make the victim feel inferior or powerless in other respects. This may also be an unsolved problem of the bully with her/himself. For instance, the bully may be unhappy about a characteristic of her/his own. If s/he comes across to a “better quality” of that characteristic in the victim (such as a better educational; socio-economic, cultural background); s/he generally perceives this as a threat, and reflects an anger or a lack of tolerance while interacting with the victim. In fact,

Table 2 Results of the qualitative comparative analysis

Respondent number	(A)										Lack of trust in self	Obsession to show/feel own power	Sexism	Racism	
	Facilitators					Individual/Personal antecedents									
	Higher position of bully	Seniority of bully	Bully's relationship with decision makers	A group of bullies	Protection of self-esteem	Lack of social competencies	Micro-political behaviour	Inferiority complex	Lack of trust in subordinates	Lack of trust in self					
1	x		x		x	x		x		x					
2	x							x				x			x
3		x		x				x				x			
4	x						x					x			
5			x	x				x				x			
6	x		x	x											
7	x			x											
8	x		x					x				x			
9	x														
10	x														
11															
12	x	x						x							
13	x		x												
14		x		x											
15	x		x												
16		x	x												
17	x														
12		4	7	6	0	5	8	9	1	3	12	2	3		

(B)											
Individual/Personal antecedents											
Respondent number	Victim										
	Relational powerlessness	Saliency	Outsider position	Vulnerability with regard to social competencies	Vulnerability with regard to self-esteem	Overachievement or higher qualifications	Clash with group norms	Claiming victim status			
1	x	x									
2	x		x								
3	x		x	x		x	x				
4											
5	x	x	x			x					
6	x		x	x		x					
7	x		x	x		x				x	
8											
9	x	x									
10	x	x	x	x							x
11		x	x			x					
12	x	x	x			x	x				
13	x										
14	x	x	x	x		x					
15	x				x						x
16	x	x		x	x						x
17	x	x		x	x		x				
14		9	9	7	2	8	3			4	

(continued)

Table 2 (continued)

Respondent	(B)									
	Social antecedents/Human interactions					Organizational antecedents				
	Words or deeds that elicit or condone aggression	Norm of reciprocity	Injustice perceptions	Mismanagement and poor leadership	Organizational culture and climate	Leadership	Changing nature of work	Work organization		
1	x	x		x		x				
2	x		x	x	x	x				x
3	x	x	x							
4	x		x	x						
5	x		x	x		x				
6	x		x	x	x	x				
7	x		x	x		x				
8	x		x	x		x				
9	x	x		x		x			x	x
10	x		x	x		x				
11	x		x	x	x	x				
12	x	x	x	x	x	x				
13	x		x	x		x			x	
14	x	x	x	x						x
15	x	x	x	x	x	x			x	x
16	x		x	x	x	x				x
17	x	x	x	x	x	x				
	17	7	15	16	6	14	3	5		

Table 3 The most frequently selected mobbing scale items

	Frequency
Attacks towards professional practices/one’s job: As people do not trust me, the things I do are checked in detail.	4
My questions and requests are not replied.	4
My responsibilities are restricted or taken away.	5
I am charged with duties that others do not want to have.	3
I am overloaded with duties.	5
The tasks I am responsible for are changed or assigned to someone else without informing me.	3
Effects/damages on reputation:	
Negative glances and mimics are directed to me.	3
Using gestures, glances and intimations, they interfere with my communication.	3
Behaviors that are socially excluding/ Effects on social relationships:	
People around me behave as if I am not there./ They do not talk to me.	6
People gossip about me.	3

what the bully wants is to appear more powerful than the victim. Knowing that this is not possible (for that specific characteristic), s/he becomes rageful.

Another possibility is that the bully has a request from the victim, which s/he cannot openly communicate. In such a case, e.g. if the bully wants the victim to resign from the job, s/he may perform bullying acts. Still another form of bullying may be in form of sexism and racism, through undervaluing the victim due to her/his sex, nation and/or origin. In sexist cases in our research, the bullies are men. The problem about sexism and racism cases is that the bully overvalues her/himself, and patronizes the victim.

The most work-related reason of bullying is probably based on perceiving the victim as a competitor for promotion. In such cases, the bully may try to make the victim feel sick and tired of being bullied, and resign. The victim’s being inexperienced and/ or new at the workplace, via its making the victim be perceived as relatively powerless by the bully, may also be a facilitating factor. Victim’s salience is still another factor. In these cases, it is easier for the bully to practice mobbing behavior.

A rare example from our research includes a fight for leadership among two managing partners, which is reflected on the victim in form of bullying by one of the managers. In this case, the individual and organizational antecedents are intertwined. Rarely, bullying may come from both supervisors and subordinates. In our example for this type, both of them were displaying racist behavior.

4.2 Facilitators

In general, the bully is in a higher position than the victim. However, in some cases the bully is in the same position, but has seniority. Therefore, position- or seniority-

based power may facilitate bullying acts. Rarely, bullying comes from a subordinate. Based on our research, such cases may have a racist basis.

Often, bullying cases escalate. This escalation is also fed by the socially restricted behavior of the victim when faced with a bully. This may have a simple logic behind: if you are attacked, you close yourself to outsiders to protect yourself. In some cases, a group of people act as bullies. As the responsibility is shared among all of them, each person may feel less guilty.

The bully may have better or longer-lasting relationships with business owners, supervisors, and/or decision makers. Such a support may be perceived (both by the bully and the victim) as an assurance for bully's job. This also feeds the relative sense of power of the bully, which makes her/ him feel more comfortable while bullying. Another problem is authority's (supervisor, owner etc.) indifferent or non-constructive approach while dealing with the issue, when s/he recognizes the situation, or when the victim makes a formal complaint. An indirect way of supporting racist bullying acts is authority's (e.g. manager) racist approach while dealing with the issue. By racist approach, we mean, acting different when faced with a victim from a different national origin.

4.3 Consequences

4.3.1 Work-Related Consequences

One of the most common consequences of exposition to mobbing is the decision to change the workplace. When the problem cannot be resolved either by an authority or the victim, in most of the cases, the victim considers changing the department, leaving the organization or the industry. In all of our cases, the work performance of the victim was negatively affected due to their worsened psychological state and lowered self-esteem. In addition, due to activated self-defense mechanisms, most victims declared that they started to socialize less at the office.

4.3.2 Non- Work-Related Consequences/Spillover Effects

Victim's private life and social life are negatively affected, due to the psychological and physiological influences caused by being bullied at work. This way, the victim becomes less powerful, not just at work but also in other areas of her/ his life. Multiple respondents have told that they had got physiological problems such as difficulty in breathing, migraine or psora due to being exposed to mobbing.

5 Conclusion

Mobbing stands at the dark-side of organizational power. The strongest form of power is the one of defining the normal, natural and necessary. Consequently, powerful people can silence legitimate interests. There are many possible and usually multiple causes of workplace bullying; causes within the organization, the perpetrator, the victim or the social environment, which are often interconnected. The role of organizations or professions in creating subordinate roles for low status categories, such as immigrants and women was also of interest in this study. Moreover, potential facilitators, reducing factors, work- and non-work-related consequences were examined.

Workers, who are relationally less powerful, are more likely to be victimized. This includes those with little professional experience, lower positions, and those of minority status. Bullying is most likely to occur where relational powerlessness is coupled with the absence of organizational transparency, accountability, and capacity (Hodson et al. 2006). In our study, we detected a serious lack of constructive leadership.

It is evident that individual performance is positively related to organizational performance. Therefore, mobbing negatively affects not only employee's psychology and career, but also organizational sustainability. Based on our analysis, we have to emphasize a strong need for active and constructive leadership in the prevention and resolution of mobbing cases.

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Entrepreneurial Intentions and Cultural Orientations. An Exploratory Analysis in Italian and Turkish Universities

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Abstract The entrepreneurial intention (EI) framework is nowadays considered as a consolidated area of inquiry where different models can be used to understand what is behind an individual willingness to start a new venture in the future. Exploring entrepreneurial intentions of individuals represents a challenge not only for scholars but also for university education and policy-making aiming to monitor, contribute, and support entrepreneurial behaviours. We decided to join the EI scientific conversation through a two-country analysis. Our theoretical choices draw upon the Theory of Planned Behaviour applied to entrepreneurship emergence, which assumes that personal attitude, perceived behavioural control, and social norm influence the way an entrepreneurial career is perceived to be a possible choice. In our model, we originally decided to test for the effects of scenario-based cultural orientations. We administered a cross-national questionnaire to two samples of students of belonging respectively to an Italian and a Turkish university. Data are finally analysed through PLS-SEM techniques. Our results suggest that variations in EI may be attributed to uncertainty avoidance and power distance. As well, an important role is played by entrepreneurship education.

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1 Introduction

Among entrepreneurship studies on cognition, the entrepreneurial intention (EI) is considered as a vivid field of inquiry which has been drawing scholars' attention for almost three decades (Liñán and Chen 2009; Liñán and Fayolle 2015; Liñán et al. 2010). EI has a substantial role either for education (Bae et al. 2014; Solesvik et al. 2014) or policy makers (European Commission 2013, 2015). The promotion and the stimulation of entrepreneurship are supposed to affect the economic potential and environment of a country (Wu and Wu 2008). Moreover, EI knowledge can be used to strengthen an entrepreneurial culture especially in young people, who can receive a plethora of societal stimuli shaping their predispositions, desires or choices of an entrepreneurial career. Indeed, most of the studies employ samples of university students which actually seem to be truly appropriate to seek initial cues of an entrepreneurial predisposition (Engle et al. 2010). Also, researchers have been involved in testing EI theoretical models in single or multiple country-specific contexts (García-Rodríguez et al. 2015; Moriano et al. 2011), shedding light on variations and factors related to individuals' willingness to start or own a business.

All this considered we aim at making the following contributions to EI literature and cross-cultural management:

- (1) To provide additional empirical evidence at country level about the EI model;
- (2) To explore the effects of country variations in EI due to different cultural practices.

Although the body of knowledge about internal and external factors related to the entrepreneurial intention is rather wide, we intend to add new evidence from two different contexts: Italy and Turkey. To the best of our knowledge, literature is still scant of contributions in these countries (Şahin and Asunakutlu 2014; Scafarto and Balzano 2012), despite the success of the application of model elsewhere (Engle et al. 2010; Krueger and Carsrud 1993; Liñán and Chen 2009; Lüthje and Franke 2003).

We will explore the simultaneous effects of multiple factors and look for significant differentiations in the two-country samples considered. Beside factors at personal levels—such as gender, age and job experience—we also take into account the exposure to environmental influences—such as for instance, university education and family business. We considered cultural issues from an individual point of view, through the use of the so-called *Scenario-based Cultural Orientation* (König et al. 2007).

The paper is structured as follows. We briefly summarise the theoretical background in the next section providing for relevant literature and definitions to be further used in the empirical part. Then, we propose the theoretical model and

hypotheses to be tested through the methodology and applied to two samples of university students from Italy and Turkey. Results from the PLS-SEM relating to the links between the proposed variables are reported for the two samples, and for the combined one. Findings of differences in significance and intensity of effects supplement the analysis. Finally, we present discussion and conclusions.

2 Literature Background and Hypotheses

2.1 TPB: A Model for Entrepreneurial Intention

Entrepreneurial intention framework is nowadays considered as a consolidated conversation in the scientific community. It encompasses the willingness of an individual to choose to be an entrepreneur as a career path. Two of the most influential intentionality models applied to entrepreneurship research are known as the *Theory of Planned Behaviour* or TPB (Ajzen 1991; Fishbein and Ajzen 1975) and the *Entrepreneurial Event Model* or EEM (Shapero and Sokol 1982). Their success can be justified with the core assumption, in the reference psychological literature, that intention is one of the strongest precursors of human behaviour (Ajzen et al. 2009; Armitage and Conner 2001).

Even if different in the conceptualization of the core antecedents of EI, the two models mentioned above are not incompatible. Indeed, they present, some points of convergence (Bird 1988; Boyd and Vozikis 1994, Krueger et al. 2000) and, overall, they both call for a convincing applicability of constructs, theories and tools from psychology to entrepreneurship. For our study, we will focus on the TPB model, which considers three main constituents of human intentions, namely personal attitude, subjective norm and perceived behavioural control.

Personal attitude (PA) toward a behaviour can be described as a person's perception of how attractive is a specific action, which in our case is to start a new firm. In other terms, PA is the degree to which performance of the behaviour is positively or negatively valued; moreover, this concept is similar to perceived desirability of the EEM.

Subjective norm (SN) is an individual's perception of the support received from closer people, which can positively encourage or hinder the intention to become an entrepreneur. Thus, SN is the perceived social pressure exerted by important referents (such as, for instance, family or colleagues) to engage or not to engage in the entrepreneurial behaviour. Specifically to EI model, literature has found that SN can operate either directly or indirectly on entrepreneurial intention.

Perceived behavioural control (PBC) refers to people's perceptions of their ability to perform an entrepreneurial behaviour, which leverage on their perceptions about the presence of factors that may facilitate or impede it. PBC is closer to the concept of perceived feasibility developed by Shapero and Sokol (1982) or, somehow, to that of self-efficacy proposed by Bandura (1993).

For the purposes of the present research, we develop the following hypotheses:

H1 *Personal attitude has a positive direct influence on entrepreneurial intention.*

H2 *Perceived behavioural control has a positive direct influence on entrepreneurial intention.*

H3a *Subjective norm has a positive and direct influence on entrepreneurial intention.*

H3b *Subjective norm has a positive and indirect influence on entrepreneurial intention through the mediation of personal attitude.*

H3c *Subjective norm has a positive and indirect influence on entrepreneurial intention through the mediation of perceived behavioural control.*

Many studies have been conducted to investigate the EI framework. Interestingly, Liñán and Fayolle (2015) have recently offered a systematic literature review on the topic, and categorise the research sub-fields. According to the authors' findings, besides studies focusing on testing the EI core model, other factors have been then included by scholars to have a better picture of the potential influences. These include fundamentally: personal-level variables, entrepreneurship education, institutions and context, and entrepreneurial process.

As suggested (Krueger and Carsrud 1993; Krueger et al. 2000), new factors do not affect directly entrepreneurial intention, but rather they do through its antecedents (PA, SN, PBC). Hence, we chose to test for cultural orientation (CO) dimensions, which will be explained in the next section.

2.2 *Entrepreneurial Culture and Business Owner's Cultural Orientation*

In entrepreneurship literature, it is recognised that context interacts with the individual in determining his/her entrepreneurial intention. Features of context, such as institutional environment or economic conditions, play indeed a crucial role in shaping people's choices to start a new venture (Duygulu 2008; Engle et al. 2011). Moreover, culture is the other side of the coin which can promote or impede entrepreneurial activity (García-Rodríguez et al. 2015; Moriano et al. 2011). A positive entrepreneurial culture—i.e. a set of cultural norms, values and practices supporting entrepreneurship—can also encourage people to become entrepreneurs.

As Krueger et al. (2013) suggest, this occurrence operates through a double mechanism. On one side, when social legitimization of an entrepreneurial career becomes valuable, people will attempt to start a business because attractive. In other words, that means that social valuation contributes to strengthening entrepreneurial attitudes and intentions of individuals. On the other side, and contrary to this vision, some studies suggest that the decision to become an entrepreneur can also be due to dissatisfaction towards national values and norms.

However, the concept of culture, or even entrepreneurial culture, is still ambiguous. Mainstream studies support the idea that culture can be considered as a set of common values which contributes to shaping a country profile and its people at a certain time. In this regard, it is doubtless reasonable to recognise that the notion of culture may not be stretched as equal for all individuals, because of the possible presence of multiple cultures and sub-cultures in specific country groups (such as communities, ethnicities, and societal clusters) during a certain period. As well, if one accept these ideas, it becomes adequate to study culture at multiple levels of analysis, such as societal, organisational and individual ones.

In our study, we adopt an individual level of analysis either for culture, and so we prefer to look at *cultural orientation*, which is consistent to the micro-perspective adopted for considering entrepreneurial intent. To the best of our knowledge, most of the studies dealing with the culture at individual level consider perceptions of cultural contexts and use scales based on Likert items. As suggested by cross-cultural scholars, cultural orientation should be measured through a scenario-based approach, anchoring people's behavioural preference to concrete social situations. Accordingly, König et al. (2007) developed a scenario-based cultural orientation scale for business owners, which has been tested for cross-cultural invariance in two specific country sub-samples.

However, despite its usefulness, the application of such perspective is still in its infancy, and only a few studies have tried to adopt it. For instance, Rauch et al. (2013) revealed the interactions of either national culture or entrepreneurs' cultural orientation to affect the innovation-growth relationship.

In our paper, we decided to adopt scenario-based cultural orientation scale for business owners to measure perceptions of students about judgments on typical business practices they could face if they were entrepreneurs. The cultural orientation's variables in the scenario-based approach are adapted from the GLOBE project (Chhokar et al. 2007; House et al. 2004, 2014), an academic effort to advance over other cultural dimensions earlier introduced by others (Hofstede 1991). In the GLOBE project, a cross-country analysis is performed to link leadership behaviours to national specific cultural orientations. These do not refer only to values ("should be" perceptions), but also to practices ("as is" perceptions). Results of the study surprisingly suggest that when individuals think about effective leader behaviours, they are more influenced by the value they place on the desired future than their perception of current realities. Borrowing this approach, we consider practices of entrepreneurs because these can be linked to behaviours (Frese 2007). Thus, we intend to explore the effect of specific dimensions of business owner's cultural orientation on the components of the TPB model, namely uncertainty avoidance (UA) and power distance (PD).

Our dimensions are very similar to the ones measured by the GLOBE Project, but unlike in this one, we used them at a micro-level of analysis to measure their effects on students' intentions to become future entrepreneurial leaders.

Uncertainty avoidance (UAV) can be defined as the extent to which entrepreneurs strive to dodge uncertainty by establishing social norms, rules, and procedures (House et al. 2004; Rauch et al. 2013). Literature findings of the

association between UAV and entrepreneurial activity are controversial because the direction and intensity of the relationship are sensitive to context, time and other factors. Therefore, high UAV individuals could be less favourable to undertake a risky business, because in search for stability and security. Even, we could think that UAV could discourage innovative behaviours because people perceive a greater fear of failure or scant institutional support. Despite these reasonable assertions, one could argue that opportunity entrepreneurship can also arise under UAV since individuals are dissatisfied with their context characteristics (national culture) and decide to make a change by starting a business. In our research, we assume that UAV affects negatively and indirectly on EI through the mediation of PBC. We justify this assumption because we think that university students who desire to start a business are self-confident in their capabilities to succeed and thus they are more likely to tolerate uncertain situations. Accordingly, we assume that:

H4 *Scenario-based uncertainty avoidance indirectly affects entrepreneurial intentions via perceived behavioural control, so that the lower uncertainty avoidance, the higher perceived behavioural control.*

Power distance (PDI) is the second dimension of scenario-based cultural orientation used in our analysis. It signifies that “business owners promote acceptance of power being distributed unequally”. A high power distance means that there is a strong dependence of employees on entrepreneur’s decision, because of the hierarchy in relationships. On the contrary, lower power distance indicates that, beyond their top organisational positions, entrepreneurs prefer for consultation with their subordinates either because these can question their authority or for the business environment stimulates shared decision-making process. And this kind of situation can be reasonable, for instance, in start-up teams. Since a high level of PD would mean that entrepreneurs are more self-confident about their decisions (i.e. they show a higher PBC), we suppose that this can positively affect entrepreneurial intention. Conversely, as a low level of PD implies better interaction and involvement of employees in the decision-making process, we hold that potential entrepreneurs are more likely to be influenced. In other terms, subjective norm (i.e. the perceived influences from close people as employees) is supposed to be negatively associated with power distance. At last, we also argue that individuals who exhibit a positive attitude towards command can be associated with a high power distance cultural orientation. In brief, we hypothesise that:

H5a *Scenario-based power distance indirectly affects entrepreneurial intention via perceived behavioural control, so that the higher power distance, the higher perceived behavioural control.*

H5b *Scenario-based power distance indirectly affects entrepreneurial intention via subjective norm, so that the lower power distance, the higher subjective norm.*

H5c *Scenario-based power distance indirectly affects entrepreneurial intention via personal attitude, so that the higher power distance, the higher personal attitude.*

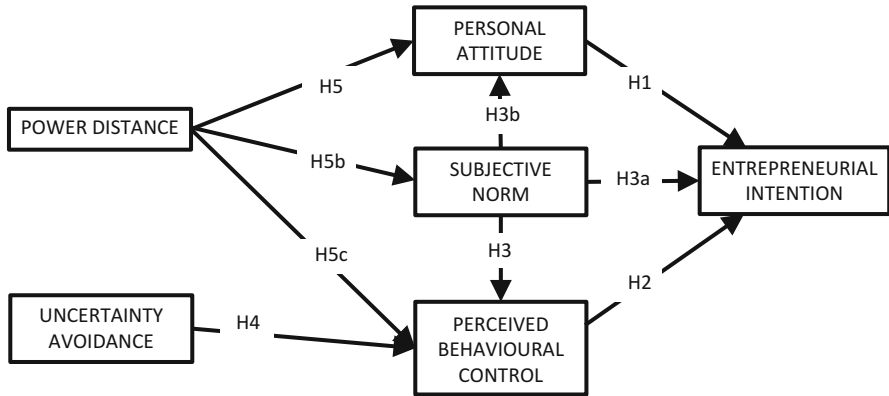


Fig. 1 Theoretical model of the entrepreneurial intention and cultural orientation dimensions

We finally present our theoretical model in Fig. 1, which will be further tested accordingly to the methodology proposed in the next section.

3 Methodology

Our study adopts an individual level perspective for the whole variables of the theoretical model and considers two sub-samples of university students from Italy (IT) and Turkey (TK). Despite their history and large differences, we selected these countries because, at a national level, they showed similar scores on many dimensions of the cultural competencies according to the GLOBE Project results about practices (House et al. 2004). For example, assuming a scale ranging from 1 (low) to 7 (high), uncertainty avoidance scores are 3.85 (IT) and 3.67 (TK), while power distance values are 5.45 (IT) and 5.43 (TK). Similarities do not mean at all that the countries can be grouped in the same cluster, but we suppose that Italy and Turkey can be similar to specific cultural orientation practices.

As to other comparative dimensions, if we take a fresh look at the last Global Entrepreneurship Monitor report (Singer et al. 2015), one can immediately note that Italy presents a level of the entrepreneurial intention indicator equal to 11%, while for Turkey is of 14.7. This indicator refers to the percentage of the 18–64 population who are latent entrepreneurs or who intend to start a business within 3 years. By translating these estimates in absolute values, one can assume that there would be about 4.0 million people in Italy willing to start a business (Italian population: 60 million citizens; age class 18–64 is about 61%). Also, in Turkey, there are some 7.0 million potential entrepreneurs (Turkish population: 75 million citizens; age class 18–64 is about 63%). Interesting is the difference between TEA’s (Total early-stage Entrepreneurial Activity) values. This indicator measures the percentage of the 18–64 population who are either a nascent entrepreneur or owner-manager of a new business. The TEAs values are respectively of 12.2% for Turkey and barely a

4.4% for Italy. Surprisingly, the majority of GEM countries rates a declining TEA after the global economic crisis as happened in Italy. In Turkey, the figure is above the average and indicates a more positive outlook toward entrepreneurship. These indicators (entrepreneurial intention and TEA) can also be associated with relative fears of failure, which are higher for Italy (49%) and lower for Turkey (30%). As well the perceived opportunity to start a business in the immediate environment (within 6 months) is 27% in Italy and 31% in Turkey. Finally, perceived capabilities (which can be conceptually equated to perceived behavioural control) indicates that on average, over the respective population aged 18–64, in Italy 31% of adults believe that they have the required skills and knowledge to start a business, while this percentage is higher in Turkey, corresponding to 49%.

All this considered one could expect that entrepreneurial intention of students and perceived behavioural control, if compared to the national values, will differ the same way, with a higher value for Turkey. As well, from a cultural orientation perspective, variations in EI and its immediate antecedents could also be due, *ceteris paribus*, to different significant effects of UAV and PDI. Indeed, we aim to “explore” if significant variations both in business cultural orientations and entrepreneurship intentions exist or not in the national samples of university students. Thus, national level views—as reported in the two mentioned GLOBE project and the GEM report—offer us relevant cues to see what is going to happen to a different level of analysis (micro-view). For the purpose of our studies, we will proceed hereafter in testing the theoretical model firstly for the entire sample (regardless the nationality of respondents); then, we will get into a comparative study of potential differences of findings for each country sub-sample.

3.1 Samples

The data used in our research were collected in University of Tor Vergata (Rome, Italy) and Dokuz Eylul University (Izmir, Turkey) during period March–May 2015. We used a questionnaire administered both online and during classes, to maximise the rate of responses. At the end of the period, after preparing the data, we elaborated a dataset of 149 valid responses for the Italian sample, and of 146 for the Turkish one, out of an initial number of over 350 responses. Deleted cases were due to excessive amounts of missing values or because of sample matching reasons. The samples’ descriptions are shown in Table 1. As one can see, students’ populations are well-enough balanced in the distribution of their relative characteristics.

Table 1 Characteristics of the Italian vs. Turkish sample of university students

Description	Italy (149)			Turkey (146)			Italy and Turkey (295)					
	N	%	Mean	SD	N	%	Mean	SD	N	%	Mean	SD
Age (years)	149	100.0	24.04	1.42	146	100.0	22.89	2.07	295	100.0	23.47	1.86
Gender	149	100.0	-	-	146	100.0	-	-	295	100.0	-	-
Male	81	54.4	-	-	71	48.6	-	-	152	51.5	-	-
Female	68	45.6	-	-	75	51.4	-	-	143	48.5	-	-
Degree studied	149	100.0	-	-	146	100.0	-	-	295	100.0	-	-
Economics/Business	147	98.7	-	-	133	91.1	-	-	280	94.9	-	-
Engineering/Technology	1	0.7	-	-	8	5.5	-	-	9	3.1	-	-
Others	1	0.7	-	-	5	3.4	-	-	6	2.0	-	-
Working experience	149	100.0	-	-	146	100.0	-	-	295	100.0	-	-
Yes	81	54.4	-	-	90	61.6	-	-	171	58.0	-	-
No	68	45.6	-	-	56	38.4	-	-	124	42.0	-	-
Months of experience	149	100.0	10.78	20.01	146	100.0	7.79	11.97	295	100.0	9.30	16.57
Entrepreneurship education	149	100.0	-	-	146	100.0	-	-	295	100.0	-	-
Yes	93	62.4	-	-	76	52.1	-	-	169	57.3	-	-
No	56	37.6	-	-	70	47.9	-	-	126	42.7	-	-
Role model (<i>Family business</i>)	149	100.0	-	-	146	100.0	-	-	295	100.0	-	-
Yes	64	43.0	-	-	71	48.6	-	-	135	45.8	-	-
No	69	46.3	-	-	74	50.7	-	-	143	48.5	-	-

Source: Own elaboration on the dataset

3.2 Measures

We employed the *Entrepreneurial Intention Questionnaire* (EIQ) developed by Liñán and Chen (2009) to measure the core component of the TPB model for the entrepreneurial intention. The advantage to borrow such an instrument is valuable since it is recognised that EIQ exhibits psychometric properties and it is eligible for cross-cultural purposes. It draws upon existing theoretical and empirical literature, and it is well known and shared among the scientific community.

We used a 7-point Likert scale ($1 = \text{completely disagree}$, $7 = \text{completely agree}$) for measuring the items related to PA (5 items), PBC (6 items), SN (4 items) and EI (6 items). Reverse-coded items of the EIQ were rescaled for ensuring consistency.

For the cultural dimensions, we used the questionnaire proposed by König *et al.* (2007) for the scenario-based cultural orientation of business owners. As previously stated, this employs validated cross-cultural measures based on entrepreneurial business practices, and questions are organised on contrasting scenarios with six positional options (scored 1–6). This kind of questionnaire is indeed useful for measuring culture at an individual level of analysis. Of course, as we presume that students are not business owners, we asked them to imagine playing the role. We think this approach is consistent with their self-ideas of being entrepreneurs. UAV was measured through 3 items, converging in the same direction, while PDI employed 5 items.

We also decided to control for the effect of the demographic variables (age, gender), personal background (job experiences), the presence of role model (family business) and exposure and entrepreneurship education as control variables.

Demographical and personal level variables were measured in the following ways: AGE in years; gender (GEN) on a dichotomous scale (0 = female; 1 = male), working experience (JOB) in months. Also, the environmental influences were measured through 1/0 (yes/no) scales; in particular, we wanted to control for the presence of a family business (FB) and if students had previously never been involved in entrepreneurship education (EED) program/courses.

However, as most of the questions in our final questionnaire borrowed several constructs and items from other research, we initially developed a version of the original language used (English). Then we proceed through a back-translation procedure to turn all the questions in the Italian and Turkish language first, and then we translate the new versions in the original language again. For bilingual translations, we relied on independent expert translators to avoid inconsistencies among meanings, which could threaten the accuracy of results and jeopardise their truthfulness. This procedure is quite common in cross-cultural research to improve the reliability and validity of research methods.

As to the statistical approach followed to test the theoretical model, we decide to use Partial Least Square Path Modelling (PLS-PM) method. PLS-PM is a component-based soft approach where no strong assumptions about the data distribution, the sample size, and the measurement scale, are required. It is commonly used in management, marketing, accounting, and organisational studies to analyse

the simultaneous relationships between different factors (latent constructs), each measured through a specific set of indicators (observed variables). It is particularly useful for exploratory purposes.

PLS-PM analyses were conducted by using Smart-PLS 3 statistical software (Ringle et al. 2015). We followed a three-step procedure. Firstly, we run a PLS algorithm to produce estimates for the R^2 coefficient of determination, the standardised path coefficients, the indicators of convergent validity, the reliability of measures, and their discriminant validity. In the second step of the PLS-PM analysis, we performed a bootstrap procedure (5000 bootstrap samples) to assess for the significant of the path coefficients and R^2 values. At last, we decided to compare the results for each country sub-samples to highlight significant differences.

4 Results

Correlations among variables in our theoretical model (even including the control variables) are reported in Table 2. For variables measured through multiple items, we used their mean value to calculate Pearson's correlations (r). The calculation was made for the entire sample, irrespectively of the nationality of respondents.

As showed in the correlations matrix, all the EI core components were significantly and positively associated with the entrepreneurial intention, with a moderate correlation between SN and EI ($r = 0.332$). Stronger correlations to EI are exerted by PA ($r = 0.601$) and PBC ($r = 0.537$). Positive correlations between SN and PBC ($r = 0.322$) as well as between SN and PA ($r = 0.406$) have also been found. The UAV is significantly associated with PA ($r = -0.194$), PBC ($r = -0.122$) and EI ($r = -0.150$) with a weak strength of the relationships and a negative direction. As to the PDI, the only significant and positive relationship seems to be with the EI ($r = 0.296$). Correlations with age, gender, job experience and entrepreneurship education are reported in the lower part of the matrix. Even in this case, significant associations are highlighted in bold.

Since correlation analysis let us understand some preliminary insights about the existence of statistical associations between the variables, we further tested for causality of the hypothesised relationships through a PLS-PM procedure. To this aim, we firstly conducted a study of the measurement model, and then we analysed the predictive capabilities of the structural relationships.

Thus, we initially tested for validity and reliability of the measurement model, through which the relationships between the constructs (PA, SN, PBC, EI, UAV, PDI) and their indicators (items) are examined. Results in Table 3 show the items correlations with the respective constructs, as explained by the positive values of the outer loadings, which are almost all above the suggested 0.5 cut-off for exploratory research (except the item PA01). We then run a non-parametric bootstrap routine (Hair et al. 2014) to evaluate the significance of the retained outer loadings, which was statistically verified for all of them. Besides considering the outer loadings of the indicators, we also calculated the average variance extracted

Table 2 Correlations matrix

Type	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EI model core dimensions	(1) PA	—									
	(2) SN	0.406 ^{***}	—								
	(3) PBC	0.413 ^{***}	0.322 ^{***}	—							
	(4) EI	0.601 ^{***}	0.332 ^{***}	0.537 ^{***}	—						
Cultural orientation dimensions	(5) UAV	-0.194 ^{***}	-0.065	-0.122 [*]	-0.150 [*]	—					
	(6) PDI	-0.079	-0.043	0.003	0.021	0.296 ^{***}	—				
Control variables	(7) AGE	-0.029	-0.041	0.083	0.040	-0.086	0.160 ^{***}	—			
	(8) GEN	0.024	0.003	0.019	0.094	0.119 [*]	0.212 ^{***}	0.124 [*]	—		
	(9) JOB	0.036	0.079	0.181 ^{***}	0.087	-0.096	0.059	0.423 ^{***}	0.033	—	
	(10) EED	0.082	-0.039	0.102	0.050	-0.118 [*]	-0.077	0.061	-0.028	0.064	—

Note: *p-value < 0.01; **p-value < 0.05

Table 3 PLS-PM: Measurement model results

Constructs	Items	Outer loadings	AVE	α -Cronbach	C.R.	AVE > Corr ²
PA	PA01	0.491*	0.607	0.828	0.882	0.607 > 0.361
	PA02	0.837*				
	PA03	0.845*				
	PA04	0.862*				
	PA05	0.799*				
SN	SN01	0.818*	0.546	0.717	0.825	0.546 > 0.171
	SN02	0.688*				
	SN03	0.833*				
	SN04	0.590*				
PBC	PBC01	0.742*	0.580	0.854	0.891	0.580 > 0.288
	PBC02	0.861*				
	PBC03	0.859*				
	PBC04	0.660*				
	PBC05	0.657*				
	PBC06	0.764*				
EI	EI01	0.875*	0.803	0.951	0.961	0.803 > 0.361
	EI02	0.904*				
	EI03	0.899*				
	EI04	0.931*				
	EI05	0.877*				
	EI06	0.887*				
UAV	UAV02	0.822*	0.668	0.502	0.801	0.688 > 0.029
	UAV03	0.812*				
PDI	PDI03	0.913*	0.540	0.638	0.772	0.540 > 0.035
	PDI04	0.598**				
	PDI05	0.653**				

Note: *p-value < 0.01; **p-value < 0.05

(AVE). As shown in the table, all the AVE estimates are higher than .50, and this means that, on average, each construct explains more than half of the variance of its indicators.

The consistency of measures for each construct was tested through the calculation of the alpha Cronbach coefficients. All the indicators for the EI core model (PA, SN, PBC, EI) were consistent with the α -values above the threshold of 0.7. For the cultural orientation dimensions (UAV, PDI) the consistency alpha estimates were under the general acceptance threshold (with α equal to 0.502 and 0.638 respectively), and this was essentially due to the scenario-based scales which tend to show lower internal consistencies than scales based on Likert items. In this regard, (König et al. 2007) observed that scenario-based scales capture more situational and behavioural aspects of concrete social situations and decisional options, and therefore counterbalance the less accurately descriptions of Likert scales, which consist of general abstract statements and standardised scale

responses. For these reasons, we decided to ignore the Cronbach criterion and consider a different measure of the internal consistency reliability, which is referred as to Composite Reliability (C.R.). Composite reliability values of 0.60 and 0.70 can be regarded as satisfactory in exploratory research, and in our analysis, the C.R. indicators all scored quite high above 0.7. Finally, we evaluated the discriminant validity among constructs, by using the Fornell–Larcker criterion. This latter determines whether the AVE of each construct is greater than the squared correlation with any other construct. The results in the last column of Table 3 illustrate that even the discriminant validity is established, and therefore is possible to continue with the analysis.

Accordingly, Table 4 shows the results of the assessment procedure for the structural (causal) model. It involves examining if the hypothesised relationships between the variables directly or indirectly affecting the EI of university students are significant and relevant. The standardised values for path coefficients (p_c) shown in Table 4 indicate the intensity and the direction of the causal relationships among the constructs, and thus if the hypotheses between EI core determinants and cultural orientation dimensions can be accepted or rejected. The coefficient of determination (R^2) measures how much variance of the EI is accounted for its predictors. The estimates have been calculated either for the overall (combined) sample (Italy and Turkey: column 2) and for each national sub-sample (Italy or Turkey: columns 3, 4). After running the PLS-PM algorithm, the obtained values for the structural model have been next tested for significance through the application of the bootstrap procedure and the examination of the p -values (significance is highlighted in bold).

Turning to the results, hypotheses 1 and 2 stated a positive relationship respectively between PA and EI and PBC and EI. Regarding the combined sample (Italy and Turkey, column 2), these two hypotheses are supported with a relative direct effect of PA ($p_c = 0.439$, $p < 0.01$), which is stronger than PBC's ($p_c = 0.355$, $p < 0.01$). These findings are consistent with the literature on TPB for EI. Surprisingly, SN is not a good predictor of EI, since path coefficient is low and not significant ($p_c = 0.025$, *n.s.*). Thus, we must reject Hypothesis 3a. Conversely, we find out the existence of an indirect effect of SN over EI, through two mediational and significant causality paths towards PA ($p_c = 0.407$, $p < 0.01$) and PBC ($p_c = 0.326$, $p < 0.01$). In other terms, Hypotheses 3b and 3c receive support.

As to the effects of cultural orientation dimensions, Hypothesis 4 stated that UAV was related to PBC, but we did not find any statistical significance for this presumed relationship ($p_c = -0.072$, *n.s.*). Further hypotheses, previously stated, consider the effects of PDI on PA ($p_c = -0.095$, *n.s.*), PBC ($p_c = 0.003$, *n.s.*) and SN ($p_c = -0.126$, *n.s.*). Even in this case, no significant relationships were found; hence, hypotheses 5a, 5b and 5c are rejected.

Finally, we find interesting results about the effects of control variables on the antecedents of EI. Age, gender and working experiences were not significant, while the presence of family business exerted a positive effect on PBC ($p_c = 0.114$, $p < 0.05$). Finally, the exposure to entrepreneurship education programs did not produce significant effects either directly or indirectly on EI of students.

Table 4 PLS-PM: Structural model results for the combined/compared samples

Path coefficients (p_c)	Italy and Turkey	Italy	Turkey
Control variables			
AGE -> PA	-0.000	-0.124	0.011
AGE -> PBC	-0.004	-0.020	0.129
AGE -> SN	-0.064	-0.037	-0.068
GEN -> PA	0.048	0.135	-0.024
GEN -> PBC	0.032	-0.031	0.132
GEN -> SN	0.048	-0.062	0.160
JOB -> PA	-0.008	0.072	-0.063
JOB -> PBC	0.105	0.134	0.035
JOB -> SN	0.112	0.136	0.040
FB -> PA	0.059	-0.050	0.128
FB -> PBC	0.114**	0.097	0.114
FB -> SN	-0.007	0.050	-0.059
EED -> PA	0.094	-0.006	0.143
EED -> PBC	0.101	0.038	0.170**
EED -> SN	-0.052	-0.075	-0.021
Main variables			
PA -> EI	0.439*	0.206**	0.611*
PBC -> EI	0.355*	0.339*	0.328*
SN -> EI	0.025	0.122	-0.028
SN -> PA	0.407*	0.417*	0.413*
SN -> PBC	0.326*	0.336*	0.316*
UAV -> PBC	-0.072	-0.041	-0.242*
PDI -> PA	-0.095	-0.141	-0.091
PDI -> PBC	0.003	-0.036	0.119
PDI -> SN	-0.126	-0.037	-0.216**
R ²	Italy and Turkey	Italy	Turkey
PA	0.194*	0.217*	0.226*
PBC	0.161*	0.176*	0.247*
SN	0.027	0.033	0.057
EI	0.465*	0.271*	0.674*

Note: *p-value < 0.01; **p-value < 0.05

Overall considered, for combined sample the coefficients of determination show that 19.4% of the variability of PA, and 16.1% of the variability of PBS, are explained by SN ($p < 0.01$). A relative contribution to the prediction of PBC is also exerted by the presence of entrepreneurs in the family. Conversely, PA and PBC together explain a moderate portion of the variance of the entrepreneurial intention ($R^2 = 0.465, p < 0.01$)

The ultimate effort in our statistical analysis was targeted to detect variations across country sub-samples. As shown, the variance explained by the model for the EI is significantly different for the two national cases, with a major value for

Turkish students (R^2 value is 67.4% for Turkey versus 27.1% for Italy). This means that in Turkey (column 4 of Table 4), the interviewed students are more intentioned to become entrepreneurs, and they are directly influenced by PA ($p_c = 0.611$, $p < 0.01$) and PBC ($p_c = 0.328$, $p < 0.01$). In this case, the effect of SN on EI is not significant ($p_c = -0.028$, *n.s.*), while entrepreneurship education (EED) seems to contribute to the prediction of EI by reinforcing the PBC of students ($p_c = 0.170$, $p < 0.05$). With regard to the cultural orientation dimensions, the hypothesised negative effects of UAV on PBC ($p_c = -0.242$, $p < 0.01$), and of PDI on SN ($p_c = -0.216$, $p < 0.05$) are in this case both significant.

For the Italian sample (column 3 of Table 4), the findings prove some similarities for the direct effects of PA ($p_c = 0.206$, $p < 0.05$) and PBC ($p_c = 0.339$, $p < 0.01$) on EI. SN is still a mediator of PA ($p_c = 0.417$, $p < 0.01$) and PBC ($p_c = 0.336$, $p < 0.01$) on EI. Thus, hypotheses H1, H2, H3b and H3c hold for each subsample. Hypothesis H3a is not verified in both cases, and this is consistent with the findings for the combined sample. For Italian students, none of the cultural orientations dimensions is significant. Neither is entrepreneurship education.

5 Discussion, Limitations and Conclusions

Our findings can help to strongly support the core EI model, with PA and PBC being the most important explaining factors of entrepreneurship intentions of students. Social support, as measured through SN, is not directly linked to EI. Turkish students (TK) find entrepreneurship more attractive since their personal attitudes are quite higher than Italians (IT).

Conversely, the perceived behavioural control of Italian students is slightly higher, for it seems they are more convinced they can pursue an entrepreneurial career. The higher value for PBC in the Italian sample can be connected to a bigger influence of reference people since also the intensity of the path from SN to PBC is stronger. In other words, these results suggest that maybe in Italy there are further environmental factors, such as the institutional support or socio-economic situation, which indeed can discourage the orientation of students to become entrepreneurs. Several reasons can be postulated in this sense. For instance, a lower entrepreneurial intention can be distracted by a diverse career goal, such as a managerial job or being employed in the public sector. Further, students do not perceive Italy as a good place to start a business for a variety of reasons (regulations, access to capital, business information or educational system). Surprisingly, also entrepreneurship education is not perceived as a sufficient boost in fostering attitudes and intentions, and this poses a challenging quest for future actions at the university level in enhancing teaching and training practices.

In the Turkey sample, external factors are indeed very relevant for entrepreneurial intentions. Turkish students perceive being entrepreneurs as very satisfactory, and this can be due to the positive economic and institutional situation the country has been experimenting during the last decade, as the last GEM report suggests.

Moreover, entrepreneurship education in Turkey is perceived to contribute to form students' entrepreneurial spirit. As to cultural orientations, we found that if one can cope with uncertainty, it is more likely for it to start-up in the future, since the less UAV, the higher its conviction to possess the needed skills to achieve (in other words, the higher TPB). Apparently, Turkish students call for less hierarchical relationships and a better involvement in business decision-making; as well, the lower power distance, the higher is the support they receive from parents, colleagues and other close people. These findings can be consistent either with the hypothetical assumption that many students have a family firm or, even if they do not, their immediate people approve and maybe are ready to join their entrepreneurial aspirations.

This paper offers interesting insights, which have to be taken cautiously, because of the exploratory nature of the study. Also, the effect of entrepreneurship education needs further investigations, while institutional influences (such as entrepreneurship national and local policies for example) and macro-environmental factors (such as the effects of the global economic crisis on the national economies) may also have contributed to produce differential effects in Italian and Turkish entrepreneurial activities.

All this considered the present paper had addressed some still underdeveloped aspects of entrepreneurship intention-culture linkage from an original point of view namely, the scenario-based cultural orientations. It also has added fresh new evidence about the robustness of the TBP model for two countries (IT and TK), which have been somewhat overlooked in previous empirical studies. Our findings confirm that entrepreneurial intention can be stimulated by factors aimed to strengthen personal attitudes, perceived behavioural control and subjective norms. Surely, it is still debated what factors can better perform in a certain period and context, but we have offered interesting cues about the need to stimulate several changes either in education or policy and institutional support. Culture plays an important role in some countries, even if it is still complicated to discern a clearer effect on entrepreneurship, depending on the level of analysis and the measurement approach scholars employ. In this regard, we tried to disclose some aspects from an individual point of view, and our results are confined to samples of students belonging to specific universities. A future follow-up study will be useful to explore better and tentatively address the issues emerged in this exploratory work. As well, further research in Italy and Turkey could be developed to confirm or confute our findings in new university samples.

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Drivers of Consumer Decision Making- Comparative Analysis of Behavioral and Neuroeconomics Models

Anida Krajinina and Vildana Karalić

Abstract When making choices, more precisely purchase decision making, the consumers are everything but rational. Behavioral economics is the whole science dedicated to examining this phenomenon. Freud has constructed the model that reveals the inner motivators for decisions, including the purchasing one as well. However, behavioral models are not solely enough as the practice has proved that consumers' brains are much more complex than it has been thought. There is always a good chance that habits will fail. Inconsistencies in the way consumer process information will be undone due to the presence of emotions. That is highly consistent with the fact that humans are not rational creatures meaning they are not governed solely by reason in any decision making process. This gives the ground for more enhanced research on decision making and introduction of the neurological aspects. Skeptical or not, currently there are inventions of the neural- economics combination that tend to be widely spread. Another suggestion in favor of neuroeconomics is that when used in different direction, it can lead to the search and choice of an appropriate empirical model.

Keywords Consumer Behavior • Behavioral Models • Neuroeconomics • Decision Making

1 Introduction

The main problem that the research aims to resolve is the understanding of consumer behavior, i.e. the motivation behind the purchase act. As there have already been vast of models to tackle this, authors intended to find the correlation between chosen ones in order to show whether there were gaps in behavioral models (Freudian model of psychoanalytic motivations) and fairly new area of neuroeconomics. The aim of this comparative analysis includes several points:

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- (a) Revealing the main postulates of Freudian model of psychoanalytic motivations as a model used for understanding the motivations behind purchase.
- (b) Understanding the gaps of the aforementioned models and research of alternatives to fill the gaps.
- (c) The use of neuroeconomics in explaining the motivations behind consumer behavior.
- (d) Comparison of the two aspects and showing whether consumer behavior needs to be viewed from different perspectives in order to be adequately understood.

Consumer behavior is constructed of various activities and consumer responses to outside stimuli can be expressed in different forms. All forms of the expressions/responses are dependent on each other. For instance, psychological responses can obtain in customer's head, when s/he imagines product, how it can be used, observing the characteristics of the product and relating them to own experience, needs and desires. On the other hand, expressive responses, for instance, are related to feelings and emotions, the way product influence customer's state of mind. In the end, example of social responses are the actions during the purchase decision making, or activity, including comparing prices, store atmosphere, ads, etc.

Understanding consumers is a long process and requires years of experience and examinations. When retailers understand desires, needs and reactions of their consumers, they can work on creating the loyal relationships between them and thus put basis for a long- term benefit for both sides. Customer needs are the number one consideration and factor in any B2C relationship. Vendors need to start from service that they can provide to ultimate consumer which implies: responsiveness, promptness, knowledge- ability, accuracy and accessibility (Kunz 2009). According to his research, Kunz (2009) concluded that in losing customers, 75% of reasons were because of the service quality, 13% referred to the product quality and the rest overlapped other reasons. The major role of consumer behavior is to provide the knowledge to marketers in order to create or adjust firm's offering on the market, so that both, the consumers' satisfaction and desired revenue goals are reached.

2 Behavioral Models

Study of decision making has been on the scene for quite some time already. Science assumed that all human knowledge and reason had come from the experience (Ornstein 1992). But it is almost absurd to imagine the mind as tabula- rasa. It needs to have some inbred premises to serve as a base for the learning and adapting process. Thus, for example, Freud supported Darwin when arguing that most childhood fears, like neurotic phobias, are phylogenetically endowed (Ornstein 1992).

Behavior has started to be in the focus. There are number of different approaches that have been developed in order to tackle different variables that will fill the gaps

of 'economic man' approach. Starting from 'economic man', there is psychodynamic, behaviorist, cognitive and humanistic approach that lean significantly on previously mentioned models. Gradually, economics shifted to behavioral economics. Essentially Behaviorism is a family of philosophies stating that behavior is explained by external events and influenced by factors external to the individual (Bray 2008). Furthermore, intrapersonal causation challenged the variables in behavioral approaches, which brought the Cognitivism on the stage. It is obvious that Cognitivism is related to cognitive psychology and it contributes in explaining intrapersonal processes from stimulus to response.

There are two types of Cognitive models: (1) analytical, which provides a framework of the key elements and factors influencing behavior; (2) prescriptive models, which provide guidelines to organize how consumer behavior is structured (Bray 2008). Analytical models are explained through Consumer Decision Model and Theory of Buyer Behavior, while perspective models include Theory of Reasoned Action and Theory of Planned Behavior. Present paper is not going to go further into the models, as authors want rather to show the path that has led to behavioral economics and further to neuroeconomics. Cognitive models seem to be quite close to satisfying the need for explaining the consumer behavior. However, there is a strong critic in explaining the particular aspects of behavior that are under the massive influence of emotions. Therefore, the humanistic approach seem to be the one providing the research of emotions, volition and egoism and observing the consumer as an individual (Bray 2008). Several theories were developed, out of which Bray (2008) mentioned The Theory of Trying and The Model of Goal Directed Behavior. It is clear that observing the consumers as individuals represents the imperative in case marketers want to understand the holistic view of the decision making process. Nevertheless, dealing with humans and exploring a human mind, emotions, motivations and experiences can trigger ethical questions. This can represent the main obstacle in researching the motivation for behavior.

Decision makers have shifted the focus from economic models closer to psychology and human- oriented approach. Understanding the buyers urged for behavioral models. The scientist wanted to construct the model to reveal mechanism behind the "black box" of human psyche (Kotler 1965). Still, there is no generally accepted model and the enhancements and new approaches have been appearing regularly. Kotler (1965) presented five different models of buyer's "black box" namely: Marshallian model; Pavlovian model of learning; Freudian model of psychoanalytic motivations; The Veblenian model of social- psychological factors and Hobbesian model of organizational factors.

However, it is necessary to take into consideration that each of the models reveals only a part of the buyers psyche and there is a need for the more comprehensive approach to understanding the consumer behavior.

2.1 *Freudian Psychoanalytic Theory*

Motivation as a phenomena is a term widely used in both psychology and marketing. Based on the definition of motivation, the concept represents an emotion or desire operating on the will and causing to act (Merriam-Webster, n.d.). Therefore, motivation is the actual driver of behavior; consequently it is a driver of consumer behavior. Freud's genius was in his ability to relate everyday conflicts with their roots in the human ancestor heritage (Ornstein 1992). That proves that idea of human mind as blank piece of paper is ridiculous. And every human brain and mind is story for itself. Humans are both, biological and cultural beings.

Throughout the history many different theories have been developed to explain the motivation of human behavior in many different aspects, starting from purely biological aspect to more complex and deeper investigations (Pincus 2006). This paper focuses on one concrete theory that is used to explain consumer behavior and that is Freudian motivation theory. The theory had its roots in Freudian psychoanalytic theory, which was a result of Freud's experience and work. Freudian motivation theory has its significance for analyzing the key driver of consumers' behavior and the motives that trigger their purchase decisions. In other words, the unconscious desires and motivators should be the ones that trigger consumer behavior. He compared the mind with an iceberg in which the smaller part showing above the surface of the water represents the region of consciousness while the much larger mass below the water level represents the region of unconsciousness (Hall and Lindzey 1978). This is where all the motivation is coming from. Relating that to previous experiences that were mentioned above, certain characteristics of a product remind the consumer of certain event from the past. Therefore, it is important for marketers to understand those product elements and possibilities to use them in achieving specific emotional response with the consumers. In turns, it motivates them to make a decision about the final purchase.

2.2 *Application of Psychoanalytic Motivation to Consumer Research*

The Freudian theory explaining the motivation behind consumer behavior has its roots in psychoanalytic theory. There was an entire movement or *motivationists school* that studied psychoanalytic theories and models by Freud. It applied its techniques and theories to consumer behavior and investigated the triggers behind the consumer behavior (Pincus 2006). What is specific for this perspective on the consumer behavior is the difference in comparison to direct quantitative methods of consumer behavior research. In these methods, such as survey, research is usually conducted by asking the respondents openly and directly about their reasons behind their purchasing decisions. Opposed to this direct approach, the motivational model suggests examination of circumstances that were present when the act of

purchasing happened and in that way the researchers are trying to understand the hidden motivations of consumers (Pincus 2006).

Therefore, researching consumer behavior from a motivational point of view means implementing methods that are usually used in clinical psychology in the marketing research, with the focus on consumer behavior (Obrec 1999). The need for this perspective in marketing appeared when the focus moved from the marketer to the consumers. One of the main tools that developed in this form of research was depth interview, as form of an open discussion and conversation on a particular topic. Sources suggest that there are some specific groups of products that may benefit the most from the implementation of this type of research. Those groups are labeled as “low-involvement” products that are comparable in price, performance and quality such as soap, gasoline, foods and cigarettes (Obrec 1999). Perhaps the most important characteristic of these models and this type of research is in the fact that it shows a new perspective to researchers. This perspective allowed researchers to rethink the concept of consumers, their purchasing behavior, products and service in order to understand them better and provide the final value in an optimal manner.

3 The Development of Neuroeconomics

The human brain went through a long evolutionary process, during which different structures evolved and enabled the variety of patterns of response to outside stimuli (Martins 2011). Thousands of years ago, Euclid and Decartes developed theories to explain the geometry of rational choice which were based on postulates that one needed only to think in order to be rational (Politser 2008). However, the theories neglected that feelings also guide decisions and that the process itself was not as simple as it seemed. There has been a vast literature that criticized the aforementioned theories, because they investigated the power of the brain and thinking at the broader scale. Many economists overlooked the neural and psychological processes underlying choices (Politser 2008). As the brain represents the body’s captive audience, feelings are winners among equals (Damasio 2006). Implication of the additional knowledge would later motivate the development of neuroeconomics.

Neuroscience often incorporates economic models to explain brain functions, both when researching the decision making or acquisition during learning and the data is compelling because it reveals previously inaccessible truths (Clithero et al. 2008). As neurobiology and economics alone did not solve many puzzles in decision making, more integrated view emerged and initial glimpse of the field in the mid- 1990s suggested that blending these two sciences might help understanding human abilities (Politser 2008). Thus the neuroeconomics was born, defined as the convergence of the neural and social sciences, applied to the understanding and prediction of decisions about rewards, such as money, food, information acquisition, physical pleasure or pain, and social interactions (Clithero et al. 2008). Simply

said, the use of neuroscience in economics referred to the application of knowledge from neuroscience to better understand certain economic phenomena.

3.1 Neuroeconomics Contribution

There has been a question related to how information about neural mechanisms can actually contribute to the economics and is there any mutual gain after all. The importance of the neuroeconomics for economic theory in general was explained in the papers published in 2004 and 2008 that provided both the insight in its potential benefits and deep skepticism (Glimcher 2009). Neuroeconomics positions itself as a discipline that takes into consideration the role of different motivations and does not describe behavior solely in terms of a single complete preference ordering (Martins 2011). As the brain is complex organ and decision making is much more than logical flow of events, the science needs to rely on emotions and feelings as well. Some neuroeconomics studies have already tried to sketch the correlates of expected utility functions from direct neural measures (Politzer 2008). According to some authors, there are in general two trends within neuroeconomics, where one explains the subjective utility and preferences whilst the other focuses on using neuroscience knowledge to improve economic models (Martins 2011). If this is taken into account, decision making and choices are mostly consumers related and the role of emotions in influencing brain can certainly help economists to retrieve conclusions. So far, neuroeconomics has already provided contributions to the study of how neural mechanisms influence preferences, choices and subjective well-being (Martins 2011). It has been shown that in some studies related to choice, when making economic decisions, neural activity in several brain regions reflects values of choice alternatives (Hunt 2014). Other studies within neuroeconomics argued that besides neural activity, response times (RT) and eye movements played significant role in explaining decision making process (Krajbich et al. 2014). Despite some authors question the relevance of the neuroeconomics, others advocate that neuroeconomists' findings can improve economic information about particular economic phenomena and can help economists improve conjectural models and explanations (Aydinonat 2010).

4 Data and Method

This research focused mainly on the qualitative content analysis of scientific literature. In order to achieve research goals, an exploratory review of theoretical background has been conducted. Authors reviewed the Freudian model of psychoanalytic motivations, its advantages and limitations from the secondary data. Based on gathered and selected secondary data, a comprehensive comparative analysis

was conducted. State of art has helped authors to evaluate the critics of Freudian perspective and overview how the neuroeconomics can add the missing value.

5 Findings

When making choices, more precisely purchase decision making, the consumers are everything but rational. Behavioral economics is the whole science dedicated to examining this phenomenon. Freud has constructed the model that reveals the inner motivators for decisions, including the purchasing one as well. However, behavioral models are not solely enough as the practice proved that consumers' brains are much more complex than it has been initially thought. Under this chapter, authors will show how neuroeconomics, besides some arguments against, can fill the gaps that exist within behavioral studies.

5.1 *Criticism of Freudian Perspective*

Freudian perspective of consumers and their behavior had a lot to offer but as everything else it was a subject of criticism. Therefore, the biggest argument against this research stated how it was almost impossible to differentiate thoughts a person would act upon with those that served as a substitute for an action (Obrec 1999). As Obrec (1999) explained in marketing terms this meant that these methods allowed researchers to discover some unconscious drivers and motivations behind buying a product but it did not reveal whether this motivation would be turned into action of purchasing or would they just remain as a substitute for that action.

Another criticism advocated the idea that these models were relying on Freud's theory and that therefore they were trying to impute sexual motivation to some ordinary and everyday purchasing decisions of consumers (Obrec 1999). Even though motivational theory showed relations to notions about sexual motivation from Freud psychoanalytic theory, these sexual explanations for purchasing decisions and behaviors did not include information that marketers could have actually used.

Despite these critics marketing research still relies on motivational theories, especially in the field of advertising when companies want to understand why consumers behave in certain ways. Even though this form of qualitative and explorative research goes much deeper into the matter and motivations of consumers in comparison to some other traditional marketing research methods, it still relies on the rationality of consumers and their willingness to share information with the interviewer. This is the potential gap of the theory and this approach, because it does not take into consideration the subconscious of the respondents. Respondents are willing to share and open up only to a certain point, the rest they either choose not to share or they are not aware of some emotions and attitudes they

possess. The goal of research should be to overcome superficial and verbal responses that tend to be characteristic for most of traditional marketing research techniques and to uncover subconscious, hidden and latent motivations, emotions, reactions which would be valuable input for marketers. Trends show that researchers in the domain of consumer behavior are shifting to methods that are helping bridge this gap and access domains that are difficult to examine with the usage of traditional marketing research. Hence, this gap represents a potential for neuroeconomics and its approaches to research, which will be further elaborated in this paper.

5.2 Filling Gaps with Neuroeconomics

It is natural to assume that the argument for better understanding the decision making and motivations by revealing the brain processes will be the cause of skepticism. There are certainly conceivable paths to relevant and significant achievements, which may or may not bring success (Glimcher 2009). However, skeptical or not, nowadays there are inventions of this neural- economics combination that tend to be widely spread, such as neuromarketing. Moreover, in order to understand the behavior and motivations behind purchase act, there is a need for a wide range of tests and experimentation. In addition, there is a whole range of affective states and not only one explained by individual behavioral theories such as Freud's. In principle, with comprehensive data, theorists would be able to validate, reject or refine certain hypotheses, but this fails in practice, as it is not possible to obtain all data about all behaviors (Clithero et al. 2008). Therefore, neuroeconomics can improve efficiency of collecting and interpreting data about human states.

Another suggestion that goes as an advantage of neuroeconomics is that when used in different direction, it can lead to the search and choice of an appropriate empirical model. Glimcher (2009) point out that it can be used to make out- of- sample projections. What mainstream economist should not dismiss is that the endogenous neural variables will prove useful, because it might help imputing the missing conventional variables in cases where they are not available (Glimcher 2009). Moreover, Glimcher (2009) advocates the possibility that neuroeconomics can fill the gaps and provide the tests of both standard and nonstandard (behavioral) theories of decision making even though the difficulty lays in standard economic theory (neoclassical and modern) having the agnostic approach to decision making process. According to some studies, neurobiological knowledge can introduce constraints and integrating fMRI and genetics may be critical for producing mechanistically complete and biologically plausible explanations of behaviors (Clithero et al. 2008).

The investigation of neural correlates of some behavioral economic parameters of choice clarified why some violations of axioms may occur or be justified (Politzer 2008). This is another aspect where the neuroeconomics can touch base

with the question of consumer behavior. Therefore, there are already some proposed models that accurately capture choice probabilities of subjects making choices, purchase decisions or discounting decisions. The group of authors developed neuroeconomics drifting diffusion model (DDM) that could give insights into the potential suboptimalities of individual decision making and show that the time it takes to make decision provides an informative signal about people's preferences (Krajbich et al. 2014). Their research noted that neuroeconomic models such as DDM provided strong ties between traditional choice behavior and non-choice measures, such as attention or brain activity. These results addressed important concerns about the ability of neuroeconomics to provide useful alternatives to existing models of economic behavior and striving to replace current array of behavioral models with more unified approach towards decision making (Krajbich et al. 2014).

6 Conclusions, Limitations and Future Research

There is always a good chance that habits will fail and inconsistencies in the way consumer process information will be undone for the simple reason- presence of emotions. That is highly consistent with the fact that humans are not completely rational creatures, meaning that they are not governed solely by reason in any decision making process. This gives the ground for more enhanced research on decision making and introducing neurological aspects. As some studies argue, behavioral economic research can certainly continue without neuroscience, but the increased efficiency will omit (Clithero et al. 2008). Conclusions and findings about human brain and its reactions during choices or decisions can unify the cognitive and neural theories of human behavior and thus provide more comprehensive understanding of it. Clithero et al. (2008) concluded that the joint investigation of brain and behavior would lead to greater success than either discipline could achieve in isolation.

One of the main limitations of this research paper is focusing on one model (Freudian). The continuation of this empirical research might be in further investigation of all models listed by Kotler (1965) and mentioned under the second chapter of the present paper. Furthermore, the paper is purely theoretical comparison and future research on this topic may want to conduct experiments to empirically confirm (or reject) certain postulates. Additionally, there is always a possibility that certain literature is missed in the research scope, due to the lack of availability or access.

Elaborating neuroeconomics in general, one of the major disadvantages could be the expensiveness of the equipment needed to conduct experiments in the both lab and field. However, this fairly new science attempts to take advantages of the strengths of both neurobiology and economics thus incorporating the aspects of well-being (Politzer 2008). Although behavioral sciences can solely explain certain

behavior traits, the understanding of processes behind can reveal the completely new reference point for further interdisciplinary studies.

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Expatriates' Nostalgic Brand Relationships. Case Fazer Blue Chocolate

Hanna Lemmetti and Pekka Tuominen

Abstract The purpose of this study is to describe and analyze Finnish expatriates' nostalgic brand relationships with the Karl Fazer milk chocolate. The theoretical framework is built around brand relationships with a particular focus on evolution of brand relationships. This case study is conducted as a multi-method qualitative research, where seven in-depth interviews are combined with 167 units of netnographic data. These two methods enable triangulation of data, clarify the interpretation process and provide a multidimensional understanding of the topic. The data analysis follows a narrative interpretation framework. The brand of interest is the Karl Fazer milk chocolate called as Fazer Blue, the renowned Finnish milk chocolate brand. The empirical data uncovers story-like narratives of consumption and brand experiences. Brand relationships are found to play a prominent part in identity transition. In the case of Fazer Blue, the long-term brand relationship is protected by love felt toward the brand. Fazer Blue evokes strong meanings and memories. Clear evidence of the evolving nature of brand relationships emerges from the empirical data. Due to the distance, the importance of the brand increases. In light of empirical findings, it is suggested that in practice, expatriates and their insight should be better heard, understood and utilized in terms of brand development.

Keywords Brand Relationships • Expatriates • Narratives

1 Introduction

Expatriates come off as a very attractive target for many businesses, as they are often high earners who want premium services. In addition to their increasing number and steady income, expatriates have a number of attributes that contribute to their attractiveness from the marketer perspective. A person moving to a new country usually has a range of immediate needs upon their arrival. These needs

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include services such as banking, telecommunications and insurance, as well as a full set of ordinary household products. They are unfamiliar with the local brands and companies and are not stuck to their routines and brand loyalties.

This study employs the concept of cosmopolitanism for examining the brand relationships of expatriates. Cosmopolitanism includes various characteristics that help understand the mindset and motives of expatriate consumer behavior. Cosmopolitanism is not a new concept: the first theories around the term date back to 1957 (Cannon and Yaprak 2002). The definition has evolved since and been constantly updated to keep in the pace of the rapid change of globalization and cosmopolitanism along it. Unlike early theorists, today cosmopolitanism is not seen as citizenship of the world. A more common perspective on cosmopolitans is that they are culturally open individuals who actively seek cultural experiences. Rather than converging to a globally unified culture, cosmopolitans mix and match different cultures and create one that is unique and fits their needs and self-concept (Hannerz 1990).

Earlier research implies that when moving abroad, consumers are forced to modify their consumption behavior as the brands that they have grown accustomed to suddenly become unavailable. There are various individual characteristics and external attributes that may affect the smoothness of the process of moving and adapting into a new home country. In addition, the works of Schouten (1991), Fournier (1998), and Ahuvia (2005) form a useful framework of the role of brands in identity transitions. This study accounts moving abroad as an important life event that forces, causes or triggers these kinds of identity transitions.

The purpose of this study is to describe and analyze Finnish expatriates' nostalgic brand relationships with the Karl Fazer milk chocolate. This study aims to find out what happens to the ex-domestic brand and the relationships that consumers have built with them. Previous research offers explanations for ending brand relationships, i.e. brand divorces (Sussan et al. 2012; Fournier 1998). Another possibility may be that the consumer-brand relationship becomes stronger but changes in nature, taking on nostalgic characteristics that mark the time of identity transition and/or fulfill the individual's need to belong (Schouten 1991; Loveland et al. 2010).

2 Theoretical Framework for Cosmopolitan Expatriates and their Brand Relationships

The connection between a consumer and a brand can be thought of and described through the same terms as a connection between two human beings: a relationship. Through shared experiences, consumers form bonds with brands and create new meanings for them (Fournier 1998). The brand relationship paradigm originates from social psychology and shares many of the characteristics of interpersonal relationships (Hwang and Kandampully 2012).

2.1 *Types of Brand Relationships*

Brand relationships can vary in time, nature, duration, and level of commitment and maintenance that the relationships require in order to endure. There are a number of ways to categorize brand relationships, but the one by Solomon et al. (2012) fits this research most conveniently because it highlights both the identity connection and a nostalgic dimension along with brand love. Solomon et al. (2012) categorize brand relationships into four different types. These types include self-concept connection, nostalgic attachment, interdependence and brand love. Fournier (2015) lists an additional three types in her categorization: intimacy, personal commitment and brand-partner quality.

2.1.1 **Self-concept Connection**

Just like consumers, brands have their own narratives. These narratives are symbolic stories or extended metaphors (Brown et al. 2003). However, consumers come across hundreds of brands on a daily basis. Not all of these encounters are significant or develop into meaningful relationships. Some brands contribute to the construction of the self more than others. The brands that become the closest and contribute most to the identity narrative may be called self-expressive brands. Carroll and Ahuvia (2006) define self-expressive brands as the consumer's perception of the degree to which the specific brand enhances one's social self and/or reflects one's inner self. Self-concept connection is an important dimension in the brand relationship, because it indicates how much the brand contributes to one's identity, value and goals (Fournier 1998).

Sprott et al. (2009) suggest that consumers are likely to engage with brands that reflect their self-concept. Many researchers agree that brands that are highly congruent to a consumer's self-concept, i.e. the ones that resemble them, generate higher emotional attachment (Hwang and Kandampully 2012) and brand love (Wallace et al. 2014). In a perfect world, a consumer would be able to find a brand whose narrative would perfectly match the brand's narrative—resulting in an everlasting brand relationship.

Self-expressive brands highlight the notion that brands are consumed, at least in part, for self-presentation (Wallace et al. 2014). Indeed, Belk (1988) underlines how the relationship between a consumer and a brand is never two-way (person-thing) but always three-way (person-thing-person). Brands act as mediators, which communicate a consumer's identity to others. The communication of one's identity narrative is socially constructed and often reliant on mutually shared meanings, such as brands. Self-expressive brands help this quest of self-representation and allow consumers to communicate who they truly are or who they want to be (Batra et al. 2012).

2.1.2 Nostalgic Attachment

The need to belong is a basic driver of human behavior. Nostalgic attachment describes the way that consumers may use brands to build a link to a past self. Products and brands that store personal meanings function as a bridge to past life events, periods, or memories of people (Cattaneo and Guerini 2012; Belk 1988). Loveland et al. (2010) define nostalgic products as products that were more common or popular when the consumer was younger. If the concept is stretched to better fit the context of this study, nostalgic brands can be defined as brands that were more popular in a previous period of the consumer's life.

In their study, Loveland et al. (2010) explore the possibility that individuals can satisfy the need to belong through the consumption of nostalgic products. They conclude that the consumption of a nostalgic product may help strengthen a consumer's tie with his or her past. Other previous research have also confirmed that consuming brands that were popular in a consumer's former life helps the consumer feel reconnected with social communities that consumed those brands together (Brown et al. 2003). Indeed, nostalgic thoughts often have a social component: as Loveland et al. (2010) demonstrate through their findings, the consumption of nostalgic brands successfully restores feelings of belonging.

Nostalgic brand associations can be drawn from either consumer's personal or communal associations, meaning that the memory evoked may be an individual experience or a memory of belonging to a group or community. Belk (1988) remarks an individual sense of nostalgia, where personal possessions serve as materializations of memory and evoke a powerful sense of the past. Loveland et al. (2010) found that consumers who feel a stronger need to belong have a significantly higher preference for nostalgic products as opposed to consumers who less actively seek belonging. In addition they found that socially excluded individuals show an increased preference for nostalgic brand consumption.

Nostalgic attachment is a valuable starting point for building long-lasting brand relationships. Memories that are shared with a brand may establish a significant emotional connection between the consumer and the brand (Cattaneo and Guerini 2012). The brand is closely intertwined with the memory and therefore put on a pedestal because it has unique associations anchored to it. Nostalgic products help create a tangible link to the past by providing a point of focus for nostalgic thoughts (Loveland et al. 2010)—they sort of give the consumer a platform to reminisce on.

2.1.3 Interdependence

Interdependent brand relationships are built on reliance and trust and the brands are part of the consumer's daily routine (Solomon et al. 2012). They are nothing fancy, just necessary. Fournier's (1998) informant bought reliable mass brands because one of them was guaranteed to be on sale when she needed to cut back on budget.

Many interdependence brands are not bought because of the label, but because the buyer knows that it serves its purpose.

The relationship type can be described with routine and habitual (Fournier 2015). Although the interdependency brand relationships are not the most exciting ones, they may well lead to repeat purchases and word-of-mouth that falls to the convenient advice category. For the consumer, the biggest benefit of interdependent brand relationships is the way they make everyday life easier and help to get through daily tasks more efficiently.

2.1.4 Brand Love

In the 2000s, marketing research has explored the concept of love and established that consumers may experience such a feeling towards a product or a brand (Batra et al. 2012). Most conceptualizations of love propose a triangular theory of love that includes three components: intimacy, passion, and commitment (Albert et al. 2008). Aron and Aron (1996) conceptualize that when entering a love relationship, people extend themselves: the object of love becomes a part of the extended self.

Although not all instances of brand love are fully analogous to the forms of interpersonal love, there are fundamental similarities between the two phenomena (Ahuvia 2005; Carroll and Ahuvia 2006). Love is a prevalent, common feeling in consumption. In a study by Batra et al. (2012), 89% of their informants reported that they truly love at least one brand. Carroll and Ahuvia (2006) define love for a brand as the degree of passionate emotional attachment that a person has for a particular trade name. Ahuvia (2005) lists five characteristics that brand love includes: passion for a brand, brand attachment, positive evaluation of the brand, positive emotions in response to the brand, and declarations of love toward the brand.

Researchers have identified that brand love has a positive impact on brand loyalty, repeat purchase intention, resistance to negative information about the brand, and that it often leads to the generation of positive word-of-mouth (Wallace et al. 2014; Batra et al. 2012; Carroll and Ahuvia 2006; Fournier 1998). In terms of which brands are most lovable, Carroll and Ahuvia's (2006) findings suggest that brand love is greater for brands in product categories perceived as more hedonic as compared with utilitarian and for brands that offer more in terms of symbolic benefits.

2.2 The Effect of Life Changes in Brand Relationships

Periods of life transitions are associated with significant changes in consumer behavior: as people enact new roles or relinquish old ones, they experience a need to redefine their self-concept (Mehta and Belk 1991). Mathur et al. (2003) studied the impact of life events in brand preference. Their main finding was that brand preference changes may be viewed as the outcome of adjustments to new life

conditions and changes in consumption lifestyles that reflect consumer efforts to cope with stressful life changes. These shifts in brand preference can be translated into shifts in brand relationships, since a decrease in preference can be traced back to a change of nature in the brand relationship. Therefore, any period of life transition may lead to changes in the brand relationship portfolio.

Evidence of the affiliative, past-oriented brand attachment is found in Mehta and Belk's study. They found that formerly domestic brands are called on to fulfill roles that family, friends and familiar environment once performed for the emigrant. When possessions are seen as part of the identity, they may allow emigrants to transport part of their former identities to a new place (Mehta and Belk 1991). Also in his earlier research Belk (1988) states that by their very nature, concrete material objects help us to maintain a personal archive. Therefore, brands could be used as a tool for maintaining a previous self. This means that the brand relationship would become stronger but different in nature.

When geographically moving oneself away from everything familiar, individual possessions are used for anchoring identity (Mehta and Belk 1991). Kleine et al. (1995) explain how special possessions can facilitate self-continuity by connecting a person with a desirable past self (e.g. memories). However, as the same brands may no longer be available and familiar habits can no longer be enacted, consumers are forced to change some parts of their routine. Previous researchers suggest that such estrangement leads to grief and therefore the migrant must go through a process of mourning before overcoming the culture shock (Mehta and Belk 1991). In addition, objects brought from home can be used as security blankets that provide comfort and store memories (Mehta and Belk 1991; Belk 1988). These transitional objects provide a sense of cultural identity and security that had been taken for granted in their homeland.

In the light of previous literature, it is reasonable to state that brands can be used to milestone the periods and changes that a consumer goes through along his or her life. Many researchers have demonstrated how their informants connect different brands to different life situations. Ahuvia's (2005) informant describes how some of her most significant brand relationships express her past as a girl from the ranch, and her present life as an urban marketer is expressed through her brand relationships with a baseball brand and some cookery brands. These milestone possessions, or self-signifying objects, help mark a path—a narrative path along which we have traveled and which has led to the present state (Kleine et al. 1995).

Reimann and Aron (2015) suggest that if a consumer has been involved in a long-term relationship with a brand, it is more upsetting to break up with that brand. It seems clear that brands that have been prominent throughout a consumer's life are hard to let go of when moving abroad. The duration of a brand relationship contributes to brand loyalty (Carroll and Ahuvia 2006), meaning exactly that the longer the relationship the harder it will be for a consumer to substitute the brand. The most significant brand relationships are likely to endure the changes a consumer goes through in their life and become even more significant, or if not, they shall remain as the aforementioned milestones that mark a certain episode in life.

Table 1 *Priori* theoretical themes connected to brand relationships

Priori theoretical themes	Supporting research
During change, brand relationships can become past-oriented	Kleine et al. (1995), Belk (1988), Mehta and Belk (1991)
Brand relationships connect a person with a past self	Mehta and Belk (1991), Kleine et al. (1995)
Objects brought from home act as security blankets	Mehta and Belk (1991)
Brands act as milestones that signify periods of life	Ahuvia (2005), Kleine et al. (1995)
Long-term brand relationships are harder to give up	Reimann and Aron (2015), Carroll and Ahuvia (2006)
Old brand relationships may be disposed of to signify change	Kleine et al. (1995), Fournier (1998)
Brand relationships can be replaced with new ones that are congruent with the new self	Mathur et al. (2003), Mehta and Belk (1991)

2.3 *Priori Theoretical Themes*

Based on the previous research, Table 1 summarizes the theories that are most relevant in this study's context. The *priori* theoretical themes include findings of expatriate and immigrant brand, object or possession consumption as well as brand relationships on a more general level that came to findings of relevance. These themes are later on treated as *priori* themes in the empirical section.

In addition to the identification of *priori* themes, i.e. potential outcomes, some potential factors that impact the process of moving abroad emerge from the literature review. Several characteristics that are tied to cosmopolitanism may influence the smoothness of expatriate identity transitions process. The level of cultural openness, expected duration of stay, and motivation for moving are all among the antecedents that are likely to affect the level of cultural convergence and how readily the consumer will modify their brand relationships (Cui et al. 2014; Riefler and Diamantopoulos 2009; Cannon and Yaprak 2002; Thompson and Tambyah 1999).

3 Conducting the Study

3.1 *Multiple Method Qualitative Research*

Qualitative research methods have been adapted to marketing research from social sciences after it became evident that quantitative research methods familiar from economics were inadequate to fully explain consumer behavior. One way of distinguishing between qualitative and quantitative research methods is the focus on numeric or non-numeric data (Saunders et al. 2009). Qualitative research attempts to examine reality through meanings, and the emphasis is on interpretation

and understanding, whereas quantitative research approaches the research problem through statistical analyses (Eriksson and Kovalainen 2016).

Qualitative research is typical for research in the interpretive paradigm, as are also small, non-probability samples and in-depth investigations (Saunders et al. 2009). The research design in this study is multiple method qualitative research, since this study uses a combination of two qualitative techniques. Using multiple methods within one study is a key advantage of case studies (Eriksson and Kovalainen 2016). This study also combines primary and secondary data since the interview data is generated first-hand, whereas the netnographic data already exists. To conclude, a multiple method research design provides a multidimensional understanding on the topic. Triangulation in data generation methods is also considered to increase the credibility of a study (Eriksson and Kovalainen 2016).

3.1.1 The Narrative Research Method

Narrative research is based in the literature tradition of collecting narratives and analyzing themes in those narratives, as is done in literary analysis. The method is specifically designed to capture aspects of the narrative mode of thinking which people use to organize and interpret their life experiences (Elliott 2005). Narratives make the experiences meaningful and are a way for consumers to make sense of their lives (Stern et al. 1998). Indeed, narrative research is based on behavior rather than based on opinions, which means that it generates insights into likely or actual consumption experiences, not simply opinions or feelings around a particular question (Webster 2009; Shankar et al. 2001).

The narrative research method provides a bunch of benefits particularly suited for this research area and these research objectives. According to Shankar et al. (2001), narratives are a good way of interpreting consumers' experiences. Many studies that are similar in topic and focus have utilized the narrative method and it has proved most useful and capable of producing valuable insight into consumer-brand relationships. Consumer researchers have adopted the narrative ideology to develop a richer understanding of different aspects of consumption—such as the role of consumption in the construction of the self (Shankar et al. 2001).

Most market research methods ignore the contextual aspects of consumer behavior. When a person tells a story about a given scenario without being guided by a pre-formed question or hypothesis, the responses offer the researcher unbiased insights into how people really perceive and act in a specific context, and how they may communicate about their perceptions and actions with other people in a real-time context. It is these types of contexts within a complex marketplace, which create the influences on decision-making that marketers need to understand more clearly (Webster 2009).

In addition, many methods turn their backs on the big picture: within narrative research, the meanings derived from specific consumption stories should be interpreted in relation to a broader narrative of personal history (Thompson 1997). This aspect is very evident in previous research of consumption narratives

such as the work of Fournier (1998) and Ahuvia (2005), who both look to the consumer's life history in search for explanations for brand relationships and their meanings. The narrative approach acknowledges the mistake that many methods commit: they become so involved in analyzing and breaking down data that they forget to synthesize and interpret the results against the big picture.

Mishler (1995) presents different ways of using narratives in research. This study falls to the category narrative functions, where the focus is on how narratives 'work' to create and an example of possible points of interests is how narratives create a sense of one's self (Shankar et al. 2001).

However, narrative research presents some challenges. The theoretical and methodological base of the stream is diverse, and due to the various backgrounds, many narrative approaches are incompatible. Furthermore, many researchers find it difficult to formulate the practical implications of their narrative findings (Eriksson and Kovalainen 2016). The goal of narrative research is not to present generalizable findings, but to give rich insight to the context of focus and to describe and interpret consumers' brand experience (Schembri et al. 2010).

3.1.2 In-depth Interviews

An in-depth interview is an unstructured, direct, personal interview in which a single participant is probed by an interviewer in order to derive meaning through interpretations, not necessarily facts from the informant's talk (Malhotra and Birks 2007). In-depth interviews can prove very helpful to find out what is happening and to seek new insights (Robson 2002). Unstructured interviews are typical for an interpretivist epistemology, where the aim is to understand meanings that informants ascribe to various phenomena. In-depth interviews are particularly appropriate if the topic or questions are either complex or open-ended (Saunders et al. 2009).

In business research, in-depth interviews are frequently used as the primary source of data, which is then sometimes complemented with other sources of data (Eriksson and Kovalainen 2016). In in-depth interviews, researchers usually rely on relatively few preplanned questions to elicit comprehensive narratives from participants. Rather than a structured pathway, the course of the dialogue depends on the informant's consumption experiences and meanings she/he expresses (Thompson 1997). The interviews use broad questions and participants are encouraged to describe their consumption and brand experience (Schembri et al. 2010). In order to tap into the informants' experiences and life worlds, in-depth interviewing requires a certain style of social and interpersonal interaction (Malhotra and Birks 2007). In-depth interviews build upon intimacy, to which mutual trust is a prerequisite.

The method of creating data to interpret through the narrative method was selected to be in-depth interviews. Although in narrative research literature data is often discussed as texts, it is not often that the data is originally in written form. In fact, the most common approach to narrative research is to treat and interpret the

consumer stories as texts although they have often been created through either phenomenological or in-depth interviews (Thompson 1997).

3.1.3 Netnography

Netnography as such has not been used to assess brand relationships nor the consumer behavior of expatriates. Today, an increasing part of communications is performed online. The beauty of the internet is that it transcends spatial limitations and brings people together no matter what location. Because virtual sociality is such a significant part of today's consumers' lives, virtual interaction and its phenomena must be examined (Kozinets 2010).

Netnography is a qualitative method devised specifically to investigate consumer behavior on the internet (Kozinets 2010). The logic behind netnography is to adapt ethnographic to study cultures and communities online. Ethnography has its roots in anthropology, and it is often used in sociology and other research concerned about culture and consumption. (Kozinets 2002) The core of ethnography is to integrate to the community of interest and make observations as a member of the group. This way the researcher is able to uncover meanings that are not shared with people outside the community. The aim of ethnography is to generate thick description that reports in detail the characteristics and hidden meanings of the community.

Analyzing conversations that already, organically exist online, is a very realistic research method (Kozinets 2010). Netnography is ideal to be used to supplement other research methods in order to create an efficient mix of methods. Both of the methods give the study complexity by incorporating their own strengths and versatile insight to the topic. This research does not attempt to examine the functions of a virtual community—the interest lies in how the community expresses and discusses the phenomenon that is being studied.

Netnography has several advantages compared to more traditional research methods. It is quick to conduct, simple, and affordable. It is often also a very unnoticeable and undisruptive method due to its observing nature (Xun and Reynolds 2010). Because of the internet's documentary nature, it is always possible to return to the data, unlike in ethnography or interviews, where the physical interaction is temporal and spatial. Netnography is a convenient way of deepening the understanding of a phenomenon (Kozinets 2010).

3.2 *Data Generation*

The data was created from two sources: primary interview data through in-depth interviews and secondary netnographic data through existing online conversations in a Facebook group.

The interviews as well as the netnographic data are treated as texts; stories of consumers. Indeed, the interviews consisted of a multitude of small narratives, glimpses of the informants' lives. Many of them were told in story-form, may they be experiences, memories, or rambling about everyday life. What this data succeeds in doing particularly well, is delivering authentic consumption-related experiences that are strongly tied into context—a characteristic that many other methods ignore (Webster 2009).

3.2.1 Conducting the In-depth Interviews

The non-probable sample was chosen to consist of Finnish expatriates who live abroad instead of using a varying group of currently Finnish-based expatriates of different nationalities. Although consumers who currently live in Finland may have been easier to access, as Mehta and Belk (1991) note people of different cultural backgrounds construct their identity in a different manner.

Snowballing technique was used to yield participants. Snowball sampling is recommended, when it is difficult to get in touch with members of the desired research group (Saunders et al. 2009). Twelve interview invitations were sent out, to which nine people responded and were willing to participate. A Skype date was set with seven of them.

Table 2 gives an overview on the demographic distribution of the seven informants in this study. In terms of age, the spread is from 24 to 42, countries vary from United Kingdom to all the way to Japan, and the duration of being an expatriate go from 3 to 15 years. From this perspective, the non-probable sample gives us a rich and multifaceted set of empirical data.

With over 200 min of interview material, the data was considered as sufficient and there was no need to keep gathering interview data. The seven informants were interviewed during March 2015 via Skype and the sessions lasted between 25 and 40 min.

In in-depth interviewing, the interviewer pays attention to the little stories that informants tell spontaneously in interview situation. As typical to in-depth interviews, there was no structured interview agenda or predefined list of interview questions—the informants are encouraged to talk openly (Eriksson and Kovalainen 2016).

3.2.2 Generating Netnographic Data

The original idea was to conduct this study using only netnographic data. After browsing the internet without finding an adequate source of data, the thought was given up; until one of the informants briefly mentioned a Facebook group of Finnish expatriates. The entry requirement of this group was that each member must have lived abroad for over 10 years. Altogether 167 individual messages were documented from this Facebook group.

Table 2 Demographics of the informants

Name (pseudonym)	Age	Profession	Country	Years abroad
Lisa	24	Customer Servant	United Kingdom	4
June	33	Journalist	Portugal	10
Frida	32	Human Resource Manager	South Korea	3
Valerie	40	Associate Professor	Japan	15
Stella	42	Student Administrator	Norway	6
Emma	27	Online Marketer	Germany	3
Dora	36	Translator	Turkey	13

The netnographic data available in the Facebook group consisted of versatile topics—from light everyday chatter to thoughtful self-assessment and from personal topics to totally random topics, not forgetting the most prominent topics concerning Finland and being Finnish. The discussions featured a lot of general reminiscence over the community members’ time back in Finland—which, for some, was decades ago. Overall, the need to belong to this community of former Finns came off as very strong; the sense of community was evident through the extremely active conversation. Together the members formed a strong, close-knit virtual community.

Like the interviews, the netnographic data was analyzed as narratives. Narrative analysis in netnography sets for the netnographic data certain requirements that not all online material meets: it must be story-form, which in turn requires at least some level of length. Social media discussions are often somewhat brief and may not always even form whole sentences. However, the nature of this particular community allowed its members to also share experiences, memories, and stories of both past and present with the community.

3.3 *Assessing the Quality of the Study*

Coherence and consistency often come up when evaluating the goodness of qualitative research (Eriksson and Kovalainen 2016). The quality of research can be judged by its consistency, whether the researcher has documented the process in a manner that follows the same practice throughout. This research uses the terminology introduced in the introductory and theoretical framework chapters throughout the thesis, returning to the central concepts in the conclusion phase (Mills et al. 2010). Consistency is also a matter of focus: are the title presented on the cover page, research objectives, and research findings in line with each other? The basic premises were ensured to remain cohesive throughout the research process.

Mills et al. (2010) gather an extensive list of strategies to enhance the credibility of the study. In order to establish credibility, researchers strive for data saturation. After the saturation point has been reached, it is the researcher’s responsibility to present the data in the form of thick description, which brings the case to life for

readers. In the data generation stage, the data was created until it was noticed that relevant new themes were no longer emerging. Thick description was sought through consistent triangulation of data, theory, and interpretation.

Other ways that have increased credibility in this study, a peer was also asked to review the text and comment on whether the study has been conducted with a good level of transparency. The aim has been to provide the reader as good of an audit trail as possible, where the interpretations and the process of analysis have been communicated clearly. The need for full disclosure about how and why the data has been interpreted in particular ways has been kept in mind throughout the process (Mills et al. 2010).

Triangulation can be used as a basis for evaluation. Eriksson and Kovalainen (2016) present five forms of triangulation: triangulation of methodologies, methods, data, theories, or of researchers. This study applies three of the above: it uses two different methodologies (although both qualitative) to generate data, there are multiple empirical sources that have been used to support findings, and thirdly, the triangulation of theories is strong, because understanding to the research questions has been sought from a variety of theories and theoretical discussions. Mills et al. (2010) point out that in order to enhance credibility, triangulation should also bring forth possible contradictory sources of data.

When eyeing the interplay between the two methods of choice—in-depth interviews and netnography—they to some extent balance out each other's weaknesses. Whereas in-depth interviews suffer from the interviewer impact (Malhotra and Birks 2007), netnography does not have that. Netnographic data is secondary and the creation of the data has not been impacted by any way of the researcher. On the other hand, netnography may have a poor quality of textual discourse, and due to the lack of interviewer-informant interaction flow, the meanings of messages may be left unclarified and thereby misinterpreted (Xun and Reynolds 2010).

4 The Role of Brand Relationships in Becoming Cosmopolitan Expatriate

4.1 Case Fazer Blue Chocolate

Different iconic Finnish brands were considered. Fast-moving consumer goods presented itself as the most attractive product category, since brand relationships that required repeated purchase in order to flourish seem easier for informants to comprehend. Furthermore, it made sense to rule out products that go bad quickly, since brand relationships with the kind of produce would be near to impossible to actively maintain when living in a country where the brand is unavailable. Sweets are a category that not only endures for years after packaging but also evokes strong hedonic meanings.

Finland has one strong sweets brand that beats all the rest in terms of prestige and importance, and chocolate is a universally popular sweet that only few are able to say no to. The chocolate market is strong, stable and competed, and the product itself has been found to generate rich and complex consumption experiences (Zarantonello and Luomala 2011).

Fazer is one of most successful brands in Finland and the producer of best selling Finnish sweets. Founded in 1891 by Karl Fazer, the Fazer Corporation is still a family business that is rooted in Finland. Although Fazer has expanded their business abroad, almost 50% of its revenue firmly comes from Finland and 95% of the sweets production takes place in Finland (Fazer 2015a).

The iconic Finnish milk chocolate Fazer Blue first appeared in 1922 in its famous blue wrapper symbolizing the pure Finnish nature. It is the chocolate that many Finns have grown up with and that has turned several Finns into chocolate lovers (Fazer 2015b). In addition to the brand's prestige in the hearts of Finns, the Fazer Blue brand makes a convenient case because of the company's internal interest in expansion and internationalization. The goal of the sweets business category is to gain 50% of its growth during the next five years from outside its domestic market (Fazer 2015a).

4.2 The Redefined Fazer Blue Brand Relationship

Fazer proved to be an exceptionally well-fitting case for the context. As basically all of the informants readily clarify, the Fazer brand has a very special spot in the hearts of Finnish expatriates. No matter whether the brand was in any way special or even of preference in their former, living-in-Finland-lives, moving abroad had elevated the brand relationship. Four themes emerge from the Fazer Blue –related data: a surprisingly cohesive individual-level brand image, where informants describe the brand and the meanings they attach to it; the flavor profile, which according to the data has a significance in terms of brand preference; memories—personal events, people, and experiences that the informants connect to the brand, and finally, a narrative of an evolving brand relationship, in which the way brand relationships can develop side-by-side with individual identity narratives, is evident.

4.2.1 Individual-Level Brand Image

Brands are concretized at the individual level. As Fournier (1998) puts it, brands are just a set of perceptions held in the consumers' minds. Since expatriate Finns have had to reassess their brand relationships towards Fazer, or moreover since they have had to even actively think about their stance on Fazer, has created an ideal basis for research. The values and meanings that the expatriate attaches to Fazer have been processed more than an average Finnish people living in Finland has—because the

brand is in such a mundane, effortless position that they do not have to think about. This thought process has made the expatriates small-scale experts on the field. Therefore it is extremely valuable to examine the meanings that they have attributed to the Fazer Blue brand.

I present it as a Finnish chocolate and of course it's important that it's like an old brand and that it has a kind of history, it's not anything that has just entered the market like a couple of years ago. —And since it's such a traditional brand that's probably why I bring it over so often. —(Source: Informant June)

I think it's somehow a really sympathetic brand. They've somehow managed to brand themselves really well. When thinking about the brand it brings up very positive feelings and also because it's been for so long and it's such a strong brand. And probably also because you've eaten it since you were a kid so it has strong traditions, the brand. — (Source: Informant Emma)

It's a brand that I remember since my childhood, that... It has always existed for me. And of course I know that it's a very old brand and it has long traditions. It is, one may say, familiar and safe. —(Source: Informant Stella)

Looking from here, I don't know whether it's an emotional connection, but many products such as Fazer and rye breads and stuff, they feel so old. Like there's always been the association that of course it's high quality and good, and it's sort of like respected, the brand. In comparison, here there are so many products, they come and go and there are so many brands, next to them it feels like more stable and perhaps more reliable. So maybe it's that [long history], like here's also many products that have a long history but that has no meaning for me, because it has nothing to do with my childhood, a local brand, in any way. These candy that we had lots of growing up, my grandma always had them fox candies and Fazer mixes, Fazer Blue, and you know, the same candy that there still is.—(Source: Informant Dora)

The brand image that can be labeled onto a Fazer Blue wrapping paper based on the informants' brand images of it, would be the following: Finnish, traditional, high quality, respected, sympathetic, and familiar. Altogether, the comments concerning Fazer in the interviews and netnographic data are full of positive emotion. The informants express a degree of passionate emotional attachment towards the brand. It has distinctively resulted in the five characteristics that Ahuvia (2005) lists for brand love: passion for the brand, brand attachment, positive evaluations of the brand, positive emotions in response to the brand, and, in many of the cases, declarations of love toward the brand.

When attempting to distinguish whether or not the affection the informants show towards Fazer Blue is in fact brand love or just common brand satisfaction, Carroll and Ahuvia's (2006) key differentiators are revisited. The first two requirements are clearly met, whereas the following two are somewhat harder to evaluate. Nevertheless, it is clear that the emotion the informants expressed had an affective rather than cognitive focus. Many stated that the reason for their preference was Fazer Blue's superior taste. The brand was primarily described with emotional attributes, such as the abstract values listed above, rather than utilitarian features such as price, degree of cocoa, or relief to acute chocolate cravings. Brand love stems from a

long-term brand relationship. The long traditions and memories connected to Fazer Blue make the latter an obvious choice.

4.2.2 A Matter of Taste

Drawing from the data, it seems that Fazer Blue has set the standard of how chocolate is supposed to taste. Many informants expressed their preference for Fazer Blue and its distinctive taste. According to the informants, Fazer Blue is not as sweet and has the right amount of cocoa flavor. For many Fazer is the only chocolate brand in their consideration set. Zarantonello and Luomala (2011) found that their informants got the best sensorial gratification only from their favorite type of chocolate, which is in line with the fuss and exclusivity that the informants express towards Fazer Blue.

I don't care that much for sweets, but if there's something then it's definitely Fazer Blue and the new chocolate things Fazer has. They're like the best ones. If there's chocolate then it has to be Fazer Blue, I rather don't buy any chocolate at all over here because they're just no good.—(Source: Informant Dora)

Fazer Blue is a flavor that Finnish people get used from their very childhood, one could almost say that the habit comes in their breast milk. This makes the brand attachment that the informants have with Fazer Blue, a strong, affiliative, past-oriented attachment. It connects them to their origin and is the number one chocolate brand.

Research has shown that a strong brand relationship protects the brand from competition (Fournier 1998, 2015). A loved brand becomes the benchmark, the brand that all the competing brands of the category are compared to. When interpreting the Facebook comment quoted below, it seems like loving Fazer as a Finnish person is a norm, and if one strays, they are judged upon it.

By the way, Fazer chocolate can't compete with Cadbury or Marabou at all. The taste is pretty flat in my opinion. Go ahead and crucify me, now that I disagree. (Source: Facebook comment)

A brand with strong meanings that are shared almost on a nationwide level is something that connects people of Finnish origin no matter where they live and for how long they have been away. Mehta and Belk (1991) describe how objects can be used to anchor one's identity to their origin. It is interesting to discover the Fazer Blue does that—not only in an individual case but also as a mutual anchor that most of Finnish expatriates can relate to and share.

4.2.3 Memories

The data uncovers a variety of nostalgic brand associations connected to Fazer Blue. The thought of Fazer Blue takes most of the informants straight to their childhood; many also mention a particular person that Fazer Blue reminds them

about. For Lisa, it is her grandmother, who would always give her Fazer Blue when she went over for a visit. As Belk (1988) remarks, this individual sense of nostalgia is evoked as brands serve as materializations of memories from the past. Also Zarantonello and Luomala (2011) remark that consumers often connect certain foods and flavors to their youth; in line with this research also most of their informants mentioned that chocolate brings back memories. Fazer Blue is also mentioned as a safe, familiar brand, providing the informant a sense of comfort that nostalgic brands are capable of offering (Brown et al. 2003).

Mom always has Fazer Blue.—Maybe the thing is that once you've tasted it as a kid, and now that you go back to Finland it just brings back your childhood memories.—(Source: Informant Emma)

Emma explains her memories of Fazer Blue and how for her, the fact that Fazer is not available in her current country of residence, makes it a nostalgic product that is strongly linked to when you go home and then you get Fazer.

I remember Fazer's slogan: Say Fazer when you want good and how in preschool, feeling my sweet tooth aching, quietly repeated Fazer, Fazer, Fazer... And nothing happened... (Source: Facebook comment)

Above is one of the rare individual memories that the informants hold over Fazer. Generally, informants connect Fazer to a period of life—childhood and/or the era when they still lived in Finland—or people; family and relatives. Just like Ahuvia's (2005) informants, also these people connect the brand to a certain period of life, like a milestone. As in Zarantonello and Luomala's (2011) study, the informants' nostalgia does not relate to chocolate brands consumed in the past, but rather to nostalgic consumption contexts, people, and periods of time that belong to their past and are somehow associated with chocolate. The brand marks the narrative path along which the informants have traveled to the present state (Kleine et al. 1995).

4.2.4 The Narrative of an Evolving Brand Relationship

Mathur et al. (2003) found that in an identity transition phase, consumption changes are made to reflect the changes. The changes in a consumer's identity narrative may challenge brand relationships. Sometimes the role and meaning of the brand relationship is slightly altered so that it becomes congruent to the new self-image. Yet sometimes the brand contradicts the identity narrative too radically. June has experienced such an event:

Lately I've somewhat distanced myself from it [Fazer]... I'm interested in ethicalness and sustainable consumption so for that reason I've experienced some counter reactions, because I'd rather buy fair-trade and preferably organic chocolate. So now Fazer Blue doesn't really fit in the picture any more. I may be going through a crisis in my relationship with Fazer Blue.—(Source: Informant June)

In this case June has drifted apart from Fazer Blue because the brand has not adapted the same ethical and sustainable values that she has. As she observes herself, she is going through a crisis in her brand relationship with Fazer Blue. She already feels as if she's sacrificing her values and being more forgiving for the Fazer brand as she would to any other brand. June's stance on Fazer is a perfect demonstration of the practical benefits of building strong brand relationships: consumers are more willing to forgive the faults and downsides of the brand (Fournier 2015; Reimann and Aron 2015).

Several informants described how their relationship with Fazer had changed after moving abroad. As Schouten (1991) states, consumption is an important part of the process of restoring congruity of self-concept after life-changing events. After a changing event, many informants had suddenly started craving for Fazer Blue or become fond of the brand. The reason for this could be the need to anchor one's Finnishness to a brand, a brand of mutually shared meaning of pure Finnishness.

Mostly the fact that now I even have perceptions about Fazer—I don't remember feeling anything particular towards it while I still lived in Finland. But yeah it's like...—I think I was already eating it when living in Finland, but back then it wasn't anything special to me, I don't remember having any particularly strong memories about it. So it has more like become a thing because I left Finland.—(Source: Informant June)

Somehow it has maybe even increased here, it's true that you have to go far in order to see near, in Finland I didn't think or like hype these products so much, but now that I live here then I tend to ramble about them when I'm, like, short on chocolate.—(Source: Informant Emma)

June and Emma both identify distance as a factor that has influenced the development of their brand relationship with Fazer Blue. However, not all of the informants have experienced change in their brand relationship with Fazer Blue. In the case of self-defining brands, the brand relationship is already so well established that it endures distance and remains unchanged (Albert et al. 2008). Long-term brand relationships are harder to let go of (Reimann and Aron 2015). The durance of Stella's brand relationship with Fazer Blue has resulted in a strong brand loyalty. This is visible in the persistence with which she remains dedicated to eating Fazer Blue chocolate.

I'm a friend of chocolate. And eating Fazer Blue has been my hobby for, let's say for decades, and it still is. And I can tell you that every time I go to Finland, I've got Fazer Blue in my bag on my way home.—I can't say that the way I feel about Fazer Blue has changed... It's more of a habit, which I have stubbornly continued despite all the obstacles, if I can say so.—(Source: Informant Stella)

Throughout the data, it came evident that when it comes to the most important, long-term brand relationships, expatriates are ready to put in great amount of effort for maintaining them. Each of the informants had personal experience and stories of the trouble they have gone through to be able to keep consuming certain Finnish brands. Batra et al. (2012) remark that the willingness to invest in maintaining certain brand behavior is an indicator of brand love. The special position that Fazer

Blue holds in the minds of the informants protects the brand from competition. Even if there were other chocolates, far more easier-to-access chocolates, available, the consumers would still have Fazer Blue in their mind.

The willingness to pay a generous price premium for Finnish products came up in a couple of interviews where the informants had discovered Finnish brands being sold in some local shop. It was however evident that the informants often rather waited until someone visited and brought gifts or they themselves took a trip to Finland. Then they would buy the brand of their wants and stack up on Fazer Blue chocolate. After going through great lengths to be reunited with the brand, consuming or possessing it becomes special and distinctly pleasant—the feeling of truly earning the brand relationship makes it even more significant.

When looking at the quotes above from the perspective of the theoretical framework, it is clear that the brands that the informants persistently keep buying and bringing over are a close part of their identity concept. It can be that the self-concept connection between the consumer and the brand is particularly strong, and the consumer feels like the brand reflects their inner self (Carroll and Ahuvia 2006).

5 Conclusions and Managerial Implications

When comparing the findings to the priori themes set in the theoretical framework, significant similarities emerge. Above all, long-term brand relationships are prominently used as gateways to memories of past, family and friends left in one's home country. Brands do indeed serve as strong mediators of personal memories and meaning. The informants responded readily with attributes and memories that they attach to the brand, such as quality, Finnishness, and childhood. These discoveries support the findings of Mehta and Belk (1991), Ahuvia (2005), and Kleine et al. (1995).

The nostalgic attachment became evident during the interviews, where informants expressed how Fazer was a part of their past life, a period of life that was over. Yet they love to consume Fazer as it is, a nostalgic product that has significant, special meaning attached to it. These notions support the work of Solomon et al. (2012), Kleine et al. (1995), and Mehta and Belk (1991). The fact that practically all of the informants have maintained their brand relationship to Fazer Blue although its preconditions have become significantly more challenging, support Reimann and Aron (2015) as well as Carroll and Ahuvia's (2006) claim about long duration as a contributor to brand relationship strength.

This study presents a consumer-perspective on the Fazer Blue brand, its meanings on both a shared and individual level, and how the brand relationship functions. The Fazer Group can evaluate whether or not their desired brand image matches the existing brand image. This study implicates that Fazer's long heritage and Finnish roots, along with its high quality and distinguishable taste, are the cornerstones to its success. Consumers are willing to pay a price premium for these

attributes, so rather than making changes to the product, Fazer Blue is better off by maintaining and developing its prestige.

From the company perspective, acknowledging and encouraging the building of consumer-brand relationships is important because they are one of the most reliable sources of future revenues and profits (Lemon et al. 2001). Strong brand relationships translate into repeat purchases, securing the company enduring long-term customers. Thus the strength of consumer-brand relationships is a commercial asset for the company—an asset that is likely predictive of performance and resilience to competition (Hwang and Kandampully 2012). This study indicated that Fazer Blue has managed to encourage the development of strong brand relationships. The strength of these brand relationships has in turn contributed to their endurance and the fact that neither unavailability nor new competitors have been able to shake its position on the highest podium in the minds of the informants.

The outcome of a brand relationship strongly depends on its nature. Just as there are numerous types of brand relationships, there are a variety of potential results. Brand relationships can be expected to evoke consumer behaviors such as brand loyalty, brand forgiveness, positive word-of-mouth, involvement in brand communities, or acceptance of brand extensions (Hwang and Kandampully 2012). In the case of strong brand relationships where the brand is extended to the self, loss to the brand equals loss to the self. Therefore a committed consumer may resist negative publicity concerning the brand and devalue competing brands (Reimann and Aron 2015). For many of the informants, the Fazer Blue brand relationship has managed to do exactly this: they evaluate all other chocolates negatively against Fazer Blue. For Fazer, these are signs of relief; as long as they do not alter the brand or irritate their loyal customers, these brand relationships are likely to continue to blossom.

Brands need to develop insight on how the brand relationships that consumers form with their brands evolve and change over time (Fournier 2015). Consumers tend to switch brand relationships according to life situation: as some of the informants noted, Fazer Blue had not always been significant for them. And they had also let go of many brand relationships after moving. Companies need to be aware of these shifts in order to either maintain relevance in their customers' lives or acquire new customers as they experience changes in their life and seek new brands to fulfill gaps in their identity narrative.

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European Integration, Industrial Growth and Structural Change

Rodica Crudu

Abstract Between 2000 and 2014, the EU experienced significant structural changes driven by events such as: the introduction of the euro, several waves of enlargement, increased globalization, major technology changes driven by automation and digitalization, and the economic crisis. The impacts of these events varied considerably across Member States and sectors. Considering the fact that industry is one of the driving forces of economic growth and development, the impact of EU integration upon the industrial sector of the member and partner countries is determined by major structural changes in the EU's productive structure. Productivity gains or losses explain much of the development of productive structures. Decomposition analysis at the level of the Member States help to identify those countries that, in the past 15 years, saw gains in labor productivity and what countries managed to shift resources towards sectors with high productivity growth. Preliminary research results show that structural change seems to take place within the EU countries and even within the regions rather than between them, and between the large sectors rather than within them. Therefore, the main objective of the present article is to identify and highlight the structural changes registered by the European Union's new member states.

Keywords EU • Structural Changes • Productivity • GDP • Employment • Skills

1 Introduction

Nowadays, radical transformations in different domains of activity are registered, influenced particularly by the increasing role of China and other emerging economies in the global economy. Liberalization of trade and increase of the openness level of countries, led to important changes in the geography and structure of the global trade and capital flows that transformed dramatically the nature and

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amplitude of global value chains. Internet and digital development have accelerated the speed of trading and doing business. Liberalization fueled the increased competition that motivated countries and companies to become more innovative and competitive, therefore changing the nature of the goods traded and the role and place of countries in the global economy. Additionally, it is worth to mention that in the last 15 years, two severe recessions severely hit the global economies, fallouts that still interfere the policy agenda in several countries. For example, in the EU, the 2000–2001 recession lasted five quarters and the financial crisis in 2008 led to a double-dip recession: five quarters in 2008–2009 and six quarters in 2011–2013. Moreover, in the last 20 years, important milestones were undergone in the European Union's history, the most remarkable being the introduction of the common currency Euro, almost doubling the number of the common market members (from 15 countries in 1995 to 28 members since 2013, 1st July) and active role of European Union in facing and addressing global societal challenges (climate change, population ageing, sustainable development).

The widening globalization with a faster pace than ever, the growing integration of European economies in the global manufacturing chains, development of information and communication technologies and developments in relative prices etc. determined important structural changes both within and outside the EU. These transformations driven by several factors represent an important challenge for policy-makers while they try to identify and assess the long-term structural changes registered by countries and their impacts on the country's economic growth.

The present article looks to identify the structural changes registered by the EU new member states (NMS), namely referring to those 13 states that joined EU since 1995, in comparison with the 15 EU old member states and determine what was the impact of integration upon these changes registered. This research is meant, also, to figure out the right steps that the Republic of Moldova must take for securing a strong position within the European industrial structure.

2 Literature Review on the Role European Integration on Industrial Growth of Countries

One of the main successes of European integration is the considerable growth of welfare within the member states, which is the outcome of wide variety of economic policies implemented in different sectors to the community benefit. The achievements were particularly far-reaching in the industrial field, it being accompanied by significant growth and structural changes. Therefore, the theoretical literature and researches on this matter has broadened remarkably in recent years.

Most of the scientists focused their research on the effects of globalization and regional integration and outlined the impact of European integration on the economic development and growth, industrial effectiveness and competitiveness,

financial development (mostly due to the introduction of Euro and launch of common monetary policy) etc.

Thorough researches on European integration and its impact on industrial development were made, benchmarking the structural changes recorded by the member countries since the establishment of European Steel and Coal Community and its evolution towards the Common Market, the European Monetary System and Monetary Union. According to Boltho and Eichengreen (2008), the impact of the created common economic space fostered considerably the industrial effectiveness and competitiveness in all member countries and had, afterwards, a phenomenal impact on the increase of the living standards. The European Integration stimulated the intra-industry specialization within EU and, therefore, there was registered high productivity growth of EU industry.

European integration stimulates the financial development of member countries, having an outstanding impact on the industrial activity, in terms of increase of the real value added, growth of the real output, increase of firms' number, as well as the increase of investment in diverse industrial sectors. Consequently, the financial integration has potentially large effects on the countries industrial sectors growth. In her work, Gehringer (2012) investigated the effects of financial liberalization upon productivity growth and capital accumulation, which is absolutely essential for the industrial development and structural efficiency. The author starts with the idea that the EU membership has a substantial influence upon the economic development of EU member countries due to the improving of productivity indicators, such as capital accumulation. The main conclusion of the author relies on the idea that the deeper is the integration level, the higher are the positive impacts on the industrial sector and the entire economy of these countries (Gehringer 2012).

Lichtbau et al. (2013) suggested that the industry is the most important sector of the economy having the largest spill-over effect on other sectors. Manufacturing is of more significant importance than it is given credit for, contributing more than other sectors to research and development, innovation, exports and productivity growth. Nevertheless, mismatch of EU competencies regarding industrial policy, inconsistent interaction of existing instruments, erosion of the level playing field in international competition etc. lead to counterproductive inconsistencies and negative effects on industrial competitiveness (Lichtbau et al. 2013). Besides identifying the major structural changes registered by EU, such as the shift from manufacturing towards services, integration in the global value chains, creation of innovation networks and knowledge intensification etc., the authors also mentioned that the strengthened cooperation among the members of the union allows the economic system and mechanism to react more efficient to the consequences of the world economic crisis and mostly to face the deepening global competition.

Some studies analyzed the steps undertaken by the Central and Eastern European (CEE) countries towards European integration, by highlighting the structural changes registered by these countries and outlining some recommendations for policy makers to foster industrial competitiveness. Baldwin (1994) mentioned the high importance of European Integration of East, former communist European countries for the prosperity of the region as a whole, mentioning that the

enlargement is inevitable and the effects of it would be, in the long run, mutually beneficial for the economic development of both Eastern and Western Europe, the impact of trade liberalization being a powerful driver of industrial growth as a larger consumer base is formed (Baldwin 1994).

Man (2015) investigated particularly how the European integration process of Central and Eastern European countries, taking place since 90s, has influenced their economic development and industrial restructuring, suggesting that for specified countries the integration process is the best alternative for a progressive industrial development. The systemic transformations in the CEE, driven by the integration process and its determinant factors, have determined changes in both general and spatial socio-economic status of the European Union. Petrakos et al. (2005) went deeper in their research, by analyzing the structural changes registered by different regions of the EU member countries that joined EU in 2004. According to the authors, the success of industrial development in the CEE countries that integrated into EU in 2004 is determined by the interplay of structural characteristics of their economies and geographical location. The interacting processes of transition and economic integration have contributed, to a large extent, to the enormous economic changes observed in the EU NMS regions during the pre-accession period. These processes altered the intraregional division of labor, affecting the patterns of regional specialization and increasing the level of interregional competition, in a newly emerged internationalized environment (Petrakos et al. 2005).

Therefore, according to Petrakos et al. (2005), Reinstaller et al. (2012) and Foster et al. (2013), countries and their regions, in their transition periods or after joining the EU, registered different structural changes. The nature of the effects (positive or negative) was influenced mainly by the structural policies promoted by these countries and endowment with factors of production.

Industry is the backbone of the European economy. The recent economic crisis has underlined the important role of the European Commission in supporting industry, through policies and actions that aim to increase the share of manufacturing in the economy and bring about a European Industrial Renaissance.

The last economic recessions motivated also several researchers to focus on the analysis of industrial transformations registered by the EU member countries in the wake of last financial crisis and came up with some recommendations to strengthen and foster European industrial development. In this context, Tsiapa (2014) stated that during the last years the EU experienced relentless geo-economic changes that result in the re-conceptualization of its industrial growth pattern, indicating empirically the determinants of industrial growth of EU as specialization based on the process of productive systems integration. The author mentioned that the European industrial power could be enlarged by exploiting geo-economic factors such as trade integration, accessibility, size of the internal market demand, internal specialization on high value-added products, inter-industrial input-output linkages in areas with higher labor intensive industries and human capital (Tsiapa 2014).

Shaping European industrial policy is an on-going task. Current and planned measures illustrate that industrial policies are now broader in scope, driven by the fact that there are a broader set of factors, which impact competitiveness in the

longer perspective. The differences between Member States as well as similarities between groups of Member States can enable policy learning. Sylvest et al. (2014) identified the factors that foster the growth and competitiveness industry in all EU member states: the relevance and quality of skills and the relative cost of labor; access to finance; inputs: Energy, raw materials and ICT; innovation and R&D; entrepreneurship; production and value chains; access to markets, and administrative and regulatory framework conditions. Also, authors present several policy recommendations, by sharing best practices based on rich and comparable data (Sylvest et al. 2014).

Under current conditions of increasing competitiveness, the main focus of European policy makers should be the promotion of innovation, alongside with establishing a wide range of priorities for industrial efficiency improvement that would start with optimal tax framework and would finish with assuring a functional energy security mechanism (Bosch 2014). Coherence of actions across different policy fields and across different levels of governance at international and national levels is one of the most important principles of industrial efficiency of European Union.

Industrial restructure of EU member states is a vital component for economic growth of the EU member states and represent a topic of research of several scientists. Even if there are some recent studies regarding the current situation of industrial context in the EU member states (Tsiapa 2014; Bosch 2014; Man 2015), the present article comes with several novel contributions by identifying and explaining the changes in the productive structure of the economy of 13 countries that joined EU since 2004 and its specialization patterns in the past 10–15 years and determining the implications for economic policy.

3 Integration and Changes in the EU's Productive Structure

Between 2000 and 2014, the EU registered considerably structural changes determined by various events such as: the launching of the single currency, three enlargements, rapid pace globalization, fast development of information and communication technologies and their application in different fields of activity, economic and financial crisis etc. Each events influenced in a different way each European economy and sector. Considering the fact that industry is one of the driving forces of economic growth and development, the impact of EU integration upon the industrial sector of the member and partner countries is determined by major structural changes in the EU's productive structure.

The analysis of the contribution of major economic sectors to the EU gross value added (GVA) in the period 2000–2014, highlights the net increase in the market and non-market services share (from 69.8% in 2000 to 74% in 2014) and the decrease of

GVA shares of agriculture, industry, construction and manufacturing (from 17.5% in 2000 to 14% in 2014) (Eurostat 2016).

The phenomenon of changing the economic structure of the EU is not a new one. The shift from manufacturing towards services was documented in several documents issued by European Institutions (European Commission 2014), as well as by several researchers (Veugelers 2013; Crozet and Milet 2015; Cusumano et al. 2015, etc.). The fact that manufacturing firms are no longer sole goods producers but also supply services sheds new light on the dynamics behind the deindustrialization of most advanced economies, and on the public policies designed to ease it off (Lodefalk 2015).

In the specialized literature, this process is defined as servitization. There is no common opinion regarding the concept of servitization. Its diversity of meaning determined different authors to define it in a different way. Therefore, servitization is a relatively recent concept adopted by manufacturers to deliver a service component in tandem with their traditional product—providing added value to customers, securing orders and boosting profitability. The concept of servitization was originally developed by Vandermerwe and Rada (1988) who wrote about “the increased offering of fuller market packages or ‘bundles’ of customer focused combinations of goods, services, support, self-service and knowledge in order to add value to core corporate offerings” (Vandermerwe and Rada 1988, p. 314). This idea is also promoted by Baines et al. (2009), that defines servitization as the innovation of an organization’s capabilities and processes to better create mutual value through a shift from selling product to selling Product Service Systems (Baines et al. 2009). In other words, it is typically manufacturing firms offering a potentially wide range of services linked to their products and their expertise. In this context, there are several completing notions as servitization of products, of businesses, of manufacturing etc. The servitization of products describes the strategy of creating value by adding services to products or even replacing a product with a service.

In almost all the articles and papers, the shift of manufacturing firms towards service rendering is seen as a way to increase their competitiveness on local, regional and international markets. Below are summarized the main factors that determined the shift from manufacturing activity towards services:

- Service rendering activity is more profitable than manufacturing. According to Crozet and Milet (2015), servitized firms are 3.5 percentage points more profitable in comparison with pure goods producers (which corresponds to a 7% difference given the average profit rate in our sample) (Crozet and Milet 2015);
- Increase in the elasticity of the demand for some types of services, such as: education, health, leisure related services etc. The main reason of increasing demand for these services is the increasing incomes of European countries, therefore, determining the increase of services share in the EU-28 economic structure. Other reasons rely on increase in the government consumption and increase in the demand of companies for services oriented to improve their goods and processes;

- The trend to reduce the costs of production and increase in the competitiveness, determined firms to outsource services that were previously in-house realized by the manufacturing firms;
- The competition of EU-outside lower-cost producers was stiffer for manufacturing firms than for service renders. This influenced the decision of many manufacturing companies to reallocate their production process outside the EU and reoriented their activity towards services rendering within the EU, which was less exposed to such competition;
- In the service rendering activity, productivity increased more rapidly (alongside with a slower increase in the prices) in comparison with the manufacturing field (Pashev et al. 2015);
- Increase in the value added in several business-related sectors as ICT, scientific, technical, administrative, professional, financial, accommodation, financial and insurance services. These types of services are very related with the manufacturing activity and is specific for countries with sound manufacturing base and outstanding economic growth. Given the tight connections of manufacturing with these types of services that contribute to the increase in manufacturing activity. This underlines the importance of manufacturing as a major market and hub for many service sectors.

The last factor explains the heterogeneity in the manufacturing value added across EU member countries. The analysis of national accounts in 2000 and 2014 reveals that generally, at the European level, the gross value added was higher in 2014 in comparison with 2000. Obviously, this trend was different in different EU countries. Figure 1 represents the share of EU member countries value added in manufacturing in 2000 and 2014. In 2014, the share of manufacturing in value added ranged from 5% to almost 27%.

The highest proportions of value added in manufacturing were registered by EU New Member States (those that joined EU after 2004), namely Czech Republic, Hungary, Slovenia, Romania, Slovakia and Lithuania (Fig. 1). Germany, also do register a high share, mainly due to large manufacturing bases and are highly integrated in intra-European and global value chains (Damijan et al. 2013; van Ark et al. 2013).

Nevertheless, some CEE countries as Cyprus and Malta, Latvia are placed on the other extreme, registering the lower results regarding value added in manufacturing. Despite this heterogeneity, Fig. 2 underlines a common trend—the reduction of role of manufacturing in creating value added. Since 2000, the share of manufacturing in value added creations has been increasing only in three countries: Czech Republic, Hungary and Poland. All the other countries registered sharp decreases.

From all EU member countries, it is worth to mention that 9 EU NM countries (out of 14 EU member countries) register higher shares than EU-28 average and only four countries (Cyprus, Malta, Latvia and Croatia) lower than average. Moreover, in all EU NM countries, except Croatia, value added grew faster than EU average.

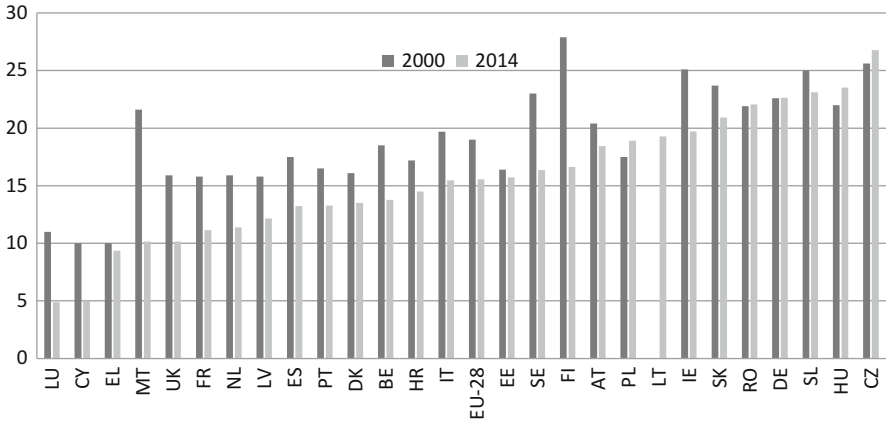


Fig. 1 Gross Value Added in manufacturing across EU Member Countries in 2000 and 2014, (%). Source: Eurostat (2016). Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?daraset=nama_10_a10&lang=en

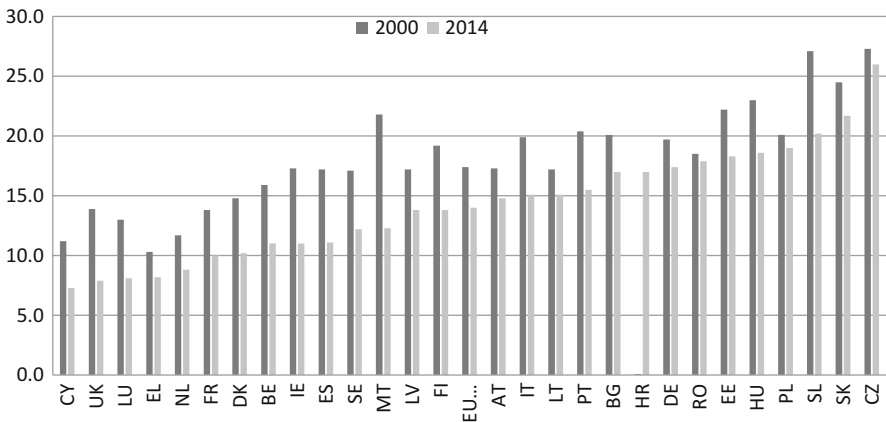


Fig. 2 Share of manufacturing in employment in the EU Member States (% of total employment). Source: Eurostat (2016)

To summarize, in the period of 2000–2014, in EU the value added in services increased their value, in real terms, at a higher rhythm in comparison with manufacturing. These structural changes were manifesting differently in different EU countries, driven by some country-specific features. Therefore, all EU NM countries do have important manufacturing basis that are integrated within the international manufacturing chains, undergo concrete steps to comply with the Europe 2020 strategy objectives in the field of industrial policy (i.e. to increase the share of industry till 20% in its national economic structure) and indicate high specialization within the EU according to Member States’ comparative advantages. These conclusions underline the increasing importance of improving business

environment and regulations and supporting firm internationalization in the respective countries.

4 Structural Changes in Employment and Labor Productivity

The downturn in the proportion of manufacturing added value in the structure of EU economy went hand in hand with the decline in its share of employment. Shares of both output and employment declined by 3.5% between 2000 and 2014. According to Pashev et al. (2015), in absolute terms, manufacturing employment declined by 16% in this period, i.e. there are about 6 million fewer jobs in manufacturing today than there were 15 years ago. The financial crisis had considerable repercussions upon employment, determining a loss of 4 million jobs in manufacturing field, while the trend of employment in services, since 2000, has been increasing steadily in both market (15 million jobs) and non-market services (8 million jobs), accounting overall for a 7.4% increase (Pashev et al. 2015). Moreover, the important increase in the employment in services was higher than the offset of manufacturing employment decline.

A short analysis of manufacturing output and employment highlights the non-correlation between these two indicators. On the one hand, the output of manufacturing has been increasing since 2000 till 2007, followed by large decreases during the financial crisis and rapid recovery afterwards. On the other hand, the evolution of employment registered a contrary trend; it has been decreasing constantly since 2000, with more evident decreases rates during the crisis (2008–2009).

In 2014, the employment in manufacturing, as a share of the total employment, varied considerably among EU member countries. The share of manufacturing in the total employment was the lowest in Cyprus, UK, Luxembourg and Greece (on average 7.6%), while Czech Republic registered the highest share—26%. The following countries which recorded in 2014 high shares of manufacturing in the total employment are Slovakia and Slovenia. The overall analysis of EU NM countries sheds the light on the fact that almost all NM countries, except Latvia, Malta and Cyprus, do register shares above the EU average. Figure 2 shows the obvious decline in the share of manufacturing in the total employment in all EU countries, in comparison with 2000, as well as the existence of huge differences among countries already recorded in 2000.

In 2014 almost all NMS (except Cyprus, Malta and Latvia) register higher shares of manufacturing in the total employment than the EU average. This is mostly explained by the fact that these countries have higher shares of industry in their total GDP. In this context, it is worth to be mentioned that the shares of manufacturing in the total employment registered by EU member countries in 2014 are even lower than those recorded before the financial crisis (2008). One reason of this downturn is given by the fact that employment in manufacturing remained concentrated in

low-tech and medium to low-tech sectors. At the same time, most of EU member countries recorded increases in the shares of medium/high-tech and high-tech sectors.

Almost all EU member states recorded declines in the employment rates in medium/low-, medium/high- and high-tech sectors. Positive trends in creating jobs were registered only by some new EU member countries, such as: Czech Republic (in high, medium/high- and medium/low-tech sectors), Poland (medium/low- and high-tech), Austria and Slovakia (medium/high- and medium/low-tech), Hungary and Slovenia (medium/high-tech) and Latvia (medium/low-tech).

Considerable losses in employment in manufacturing may lead to losses of sector and occupation specific skills which would affect future production capacity in manufacturing (Pashev et al. 2015). Manufacturing is the cornerstone of other types of economic activity (i.e. logistics, business services, manufacturing related services etc.). Decrease in the employment in manufacturing could have negative consequences, on the long run, in the employment of these sectors as well. Therefore, these potential structural changes impose meaningful policy challenges regarding the ways to strengthen the EU industrial policy framework and manufacturing basis, but also ways of fostering labor mobility and lifelong learning.

5 Productivity and Structural Change

The specialized literature underlines a wide range of tools to measure productivity, the most specific one being referring to one factor of production (i.e. labor or capital). On one hand, labor productivity is a driver of firms' or countries' competitiveness, referring mostly to those that are more exposed to trade. On the other hand, total productivity factor measures how several inputs (factors of production) influence the overall efficiency of the production process. In this context, despite some limitations identified by OECD (2001), it could be mentioned that labor productivity is a comprehensive indicator.

The analysis of evolution of labor productivity in EU since 2000 highlights the big impact of financial crisis, leading to a sharp decline, especially in the period of crisis, of the labor productivity in EU industry and manufacturing. The main explanation of this phenomenon is the labor-hoarding by firms determined by the non-possibility to dismiss personnel in the short term and by the fact that most of the firms thought the crisis to be very temporary (Leitner and Stehrer 2012). The same trend was registered by other sectors as well, while agriculture, forestry and fishery and information and communication show a much less cyclical pattern. Decomposition of labor productivity growth helps us to analyze it more in detail, by identifying its effects, and namely: within effect which comes to determine the impact of each sector to the total labor productivity and structural change effect which assesses the distribution of resources across the sectors.

Structural change effect consists of the static and dynamic effects. Static effects show the structural changes in the economy determined by the changes in the shares

of labor across the ten sectors classification of economic activities with different levels of productivity, while dynamic effects assess the structural shifts in the economy by considering the changes in labor shares across sectors with different productivity growth (Pashev et al. 2015).

The analysis of labor productivity data, calculated on the basis of ten large sectoral aggregates (representing the whole economy) shows that it increased more in the period before the crisis (2002–2007) than after the crisis (2008–2014). Most of the decline of labor productivity could be explained by the negative change in the within effect, especially in the period of crisis and the recession following the crisis, accounting only 78% in comparison with 86% in the period of 2002–2007.

Table 1 summarizes the decomposition of labor productivity growth in EU old and NM states. The top positive performances are colored in light grey, but top negative ones in dark grey color. Also, Table 1 highlights the fact that the crisis had

Table 1 Decomposition of labor productivity growth in EU member states, (%)

Country	2002-2007				2002-2014			
	Within effect	Static shift	Dynamic shift	Total change	Within effect	Static shift	Dynamic shift	Total change
EU Old Member Countries								
Austria	9.71	2.18	-0.23	11.66	4.21	0.40	-0.13	4.48
Belgium	7.90	-1.24	-0.48	6.19	-0.20	-0.09	-0.31	-0.60
Denmark	6.89	0.51	-0.41	6.99	5.94	-0.49	-0.17	5.28
Finland	17.51	-0.67	-0.95	15.90	-3.45	-1.01	0.22	-4.25
France	6.24	0.30	-0.39	6.15	3.67	-0.82	-0.11	2.74
Germany	10.27	0.60	-0.52	10.36	1.90	-0.20	-0.12	1.58
Greece	13.78	1.97	-0.56	15.19	-2.63	-4.88	-2.03	-9.55
Ireland	10.63	-1.13	-1.80	7.69	17.03	3.97	1.37	22.38
Italy	1.59	0.66	-0.40	1.85	0.20	-0.03	-0.08	0.09
Netherlands	13.06	-2.90	-0.22	9.94	8.81	-1.73	-0.35	6.74
Portugal	39.50	-0.62	0.58	38.31	14.83	-1.36	-1.88	11.59
Spain	4.67	0.93	-1.75	3.84	15.88	0.32	-2.70	13.49
Sweeden	15.83	0.26	-1.09	15.00	6.62	-1.28	-0.61	4.73
United Kingdom	12.86	1.75	-1.11	13.51	-3.68	1.55	-1.10	-2.22
EU-28	7.92	1.21	-0.39	8.75	2.93	0.78	-0.10	3.61
EU New Member Countries								
Bulgaria	8.24	4.56	0.47	13.28	11.68	6.13	-1.89	15.92
Cyprus	4.18	3.49	-0.76	6.91	2.48	-1.49	1.15	2.13
Czech Republic	27.83	1.50	-0.13	29.20	0.74	-0.30	-0.21	0.23
Estonia	43.09	-3.47	-6.93	32.70	13.23	2.42	-1.79	13.86
Hungary	21.05	1.09	-2.69	19.45	0.70	1.70	-0.25	0.75
Latvia	90.52	-1.57	-23.21	65.64	18.01	1.43	-1.11	18.33
Lithuania	-2.87	15.80	-3.18	9.75	15.64	7.49	-0.91	22.23
Poland	-6.17	4.24	-0.94	-2.86	-3.20	3.13	-0.73	0.80
Slovakia	30.91	2.73	-2.58	31.07	11.12	-1.32	0.68	9.13
Slovenia	21.57	5.61	-0.55	26.63	7.51	0.02	-0.03	7.49

Source: Adapted by the author according to Pashev et al. (2015)

a negative impact upon the labor productivity in almost all EU countries, especially EU old member states, such as: Greece, Finland, the United Kingdom and Netherlands. Most of the top performers in terms of labor productivity are NMS: Estonia, Latvia, Slovakia, Lithuania and Bulgaria. Generally speaking, the within-sector performance explains the modifications in the labor productivity.

The experience of firms during the crisis highlighted once again the role and impact of the labor force quality upon the firms' competitiveness. Moreover, the structural changes towards more intensive high-tech sectors demonstrated that human capital is not a perfectly substitutable input which can be transferred between sectors at no cost. In this context, skills and level of education are the factors that make the difference in the firm's competitiveness, that is why, sometimes, firms are reluctant to make such staff redundant during recessions. More than this, there are firm-specific skills that the labor force can acquire only within the firm (Pashev et al. 2015). Thus, skills and investments in R&D determine the potential of the economy to create and employ new technologies and innovate.

6 Conclusions

In conclusion, it can be mentioned that the structural changes registered in EU changed its economic landscape. These controversial structural changes were driven by both qualitative and quantitative factors. Increase of labor productivity goes hand in hand with decrees of employment in manufacturing. Technology development (that resulted in digitalization and automatization) stands behind the increase of labor productivity in EU member countries (Brynjolfsson and McAfee 2014; Vivarelli 2012).

Besides scientific and technological progress, outsourcing and trade with lower labor costs countries and countries abundant in cheaper raw materials represent other drivers of the increasing labor productivity in EU (Ebenstein et al. 2014). This, in fact, explains the increase in manufacturing value added and outcome in EU NM countries (countries with a lower level of development than former EU countries, countries that do have raw materials available and cheaper labor force etc.).

All these factors determined increase in the productivity driven by either lower or more available factors of production or substitution of workers by skills, technologies and equipment. The structure of employment in manufacturing activity varies, also, by degrees of technology-intensity. In EU, the loss in output in low-tech sectors is matched by even larger losses in employment. This speaks about the fact that low-intensive sectors are not reliable solutions for facing unemployment in EU, due to the reason that they are much more exposed to competitive pressures from low-cost economies and lose market shares both at home and abroad and related output and employment. These transformations driven by several factors represent an important challenge for policy-makers while they try to identify and assess the long-term structural changes registered by countries and their impacts on the country's economic growth.

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Vertical and Shared Leadership in Large Safety-Oriented Organizations. An Empirical Analysis

Daniele Binci, Francesco Scafarto, Corrado Cerruti, Andrea Appolloni, and Emir Ozeren

Abstract This article explores the relationship between leadership and safety-oriented culture, by analyzing the predictive role of vertical and shared leadership styles (and behaviors). Drawing on a sample of 68 managers from a safety-oriented organization, we develop a set of hypothesis in order to understand the different relationships between leadership styles (and behaviors) under prevention context as well as crisis situation. To test hypothesis we ran separate hierarchical regression analysis. Results highlight that vertical leadership variables account for a significant amount of variance in prevention context beyond the shared leadership variables, as well as the shared leadership variables account for a significant amount of variance over the vertical leadership styles under emergencies context. With respect to the existing literature, the paper contributes to the leadership literature and safety-oriented culture by showing how vertical and shared leadership (transformational and transactional) are related to prevention and containment processes and should be both considered in order to manage different contingencies that happen as ordinary and extraordinary events in the organization.

Keywords High-Reliability Organizations • Safety-Oriented Culture • Leadership • Transformational leader • Transactional leader

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1 Introduction

Leadership plays a crucial role in contemporary organizations, especially for those ones that are safety-oriented, representing the main process for creating, improving and maintaining a safety culture (La Porte 1996; Roberts and Bea 2001) aligning organization objectives, teams and external environments (Schein 2004). Literature agrees that safety-oriented culture is relevant to organizations of all kinds (Vogus and Welbourne 2003) even if nuclear powers, healthcare institutions, aircraft carriers as well as banks, telecommunication, electrical grids or financial networks (Kerfoot 2005) are representative examples. For such organizations failures can be very expensive in economic and, sometimes, human life terms, and their potential cost is unacceptable to society (Weick et al. 2000). Therefore, they have a strategic prioritization for safety culture (Hannah et al. 2009; Weick et al. 2000) the capacity to avoid critical situations through prevention of events that could create adverse consequences (Cox et al. 2006; Hannah and Lester 2009) by having fewer than normal errors (Weick et al. 2000). Moreover, as any complex system could have accidents in the ordinary course of operations (Perrow 1984), these organizations, known as *high reliability organizations* (HROs), are also oriented to contain unexpected events through the ability to respond rapidly to them (Levinthal and Rerup 2006), by absorbing and rebounding from them to provide services safely and continuously.

The aim of the research is to understand more about the relationship between leadership and high reliability culture, by analyzing the predictive role of leadership styles on the prevention/containment context. After a brief review about the main findings on leadership and safety-oriented organizations, we present our research question, aimed to understand what leadership styles could better enables high reliability culture in organizations. Drawing from a contingency perspective (Lorinkova et al. 2013; Yun et al. 2005), we assume that leadership should be adaptive (Hannah et al. 2009), and different styles should be associated with different situations in order to be effective. Particularly, we consider vertical and shared leadership approach (Pearce et al. 2008) and their related behaviors (directive, transformational, transactional and empowering) (Ensley et al. 2006) with the expectations that the former operates in ordinary situations while the latter should be applied in cases where crises or emergencies occur. After data analysis, we develop our discussion and finally we present a set of limitations.

2 Leadership and Safety-Oriented Organizations: Contrasting View of the Phenomenon

Leadership is a critical process for creating, improving and maintaining a safety culture (La Porte 1996; Roberts and Bea 2001), as leaders are responsible for instilling and supporting a vision for their organizations and influence employees

to align with such a vision (Pearce 2004). Particularly, in safety-oriented organizations leaders are responsible for sustaining an organizational culture (Schein 2004) towards a safety prioritization of the activities by “*influencing others to understand what needs to be done and how to do it, and by facilitating individual and collective efforts to achieve common goals*” (Yukl 2010, p. 8). Through formal position or informal power, leaders enable organizations or teams to reach their objectives and mission, by influencing the development and long-term sustainability of the organizational culture. However, to the best of our knowledge, leadership in safety-oriented organization is a quite ambiguous and overlooked topic.

Some studies, drawn from military or healthcare sector (McFadden et al. 2009), highlight the importance of the leadership process “in instilling a clear, supportive culture that nurtures individual efforts (Ruchlin et al. 2004) and that is non-punitive, just, and supportive of those who have erred (Cohen et al. 2003; McFadden et al. 2009). Overall, shared leadership appears to be a possibility for the military—and one that is needed because of the increasing complexity of missions—but efforts need to be undertaken to incorporate it into formal training and doctrine (Lindsay et al. 2011).

Related to HROs, some authors suggest that decision-making and leadership should be hierarchical during ordinary situations, characterized by routine implementation, where teams, in order to assure safety and the regularities of operations, should be aligned to leaders directive, instructions (Klein et al. 2006) and organizational routines. Conversely, under emergencies, a switch from hierarchy to competences is needed as effective leaders, especially during emergencies, should integrate the efforts of their teams also by receiving input from followers. This perspective suggests that leadership style is important to provide planning to avoid crisis event, as well as maintaining preparedness in case of urgency, as leaders’ role is related to maintain high mindfulness for the team members.

Contrary to this view, other studies, mainly focused on high-reliability context, highlight that effective leaders in threatening situations, are more directive by providing competence, support, structure, while during non-crisis situation, a consultative power may be more effective (Sims et al. 2009; Yun et al. 2005). These contrasting conclusions claim for more understanding about the relationship between leadership and safety-oriented organization.

In our paper, we explore the above-mentioned relationship drawing from a contingency perspective (Lorinkova et al. 2013; Yun et al. 2005) that supports the idea that safety-oriented culture depends, among other factors, on different leadership styles. In fact, HROs, in order to be effective, may tend to be highly administrative in their operations for anticipating extreme events (Weick and Sutcliffe 2001; Weick et al. 1999), as well as flexible in addressing critical situations, by assuring an adaptive tension (Hannah et al. 2009), between routinization and improvisation.

We analyze safety-oriented culture in regards to vertical and shared leadership, and two main related behaviors, that are transactional, which embodies leader-member exchanges through contingent personal and material reward (Bass 1995) and transformational, which elevates the interests of employees through vision,

idealism, inspirational communication, intellectual stimulation, and challenging the status quo (Bass 1995). The vertical approach is defined as an influence on team processes dependent on the wisdom of an individual leader that takes place through a top-down influence process, while the shared approach is a process where leadership is carried out by the team as a whole, rather than solely by a single designated individual, through a collaborative process.

According to HROs literature (Weick et al. 2000), we assume that the constructs of vertical and shared leadership are particularly useful to analyze the distinct aspects of prevention and containment situation. Thus, our research aims to understand what leadership styles could better enable high reliability culture by considering a model where reliability culture works as an output variable of leadership styles. Starting from this research problem, we develop a series of hypothesis in order to increase our knowledge about this under explored research domain. We suppose that different dimensions of HROs contexts require different forms of leadership, as these are necessary to leaders in order to adjust their behaviors between more administrative and adaptive forms.

3 Theoretical Development

The increasing attention of scholars in the contingency perspective (Lorinkova et al. 2013; Rosing et al. 2011) about the effect of different leadership styles on safety-oriented organizations (Hannah et al. 2009; Klein et al. 2006; Sims et al. 2009) supports the idea that culture depends on the ability to exercise and manage different combination of leader behaviors (Benner and Tushman 2003) that, together or separately, can lead towards safety.

To the best of our knowledge, safety-culture organizations studies seem overlooking the relationships within different leadership styles (vertical and shared) and behaviors (directive, transactional, transformational and empowering) (Pearce et al. 2008; Pearce and Manz 2004) that could contribute to prevention and containment culture. Drawing from this gap, we suggest that vertical and shared leadership make a difference when they are considered in the specific context of safety-oriented culture.

Particularly, in our perspective, based on HROs theory (Weick et al. 2000), a safety culture depends both on vertical and shared leadership, but it can be differently investigated if under ordinary situations or emergency ones. Thus, we propose to separately analyze the effects of different leadership approaches (vertical versus shared) under prevention and containment situations. Accordingly, we propose an illustration of our theoretical model (Fig. 1) which includes specific hypotheses contingent to safety-culture different orientations. Such hypotheses will be described in detail in the next section.

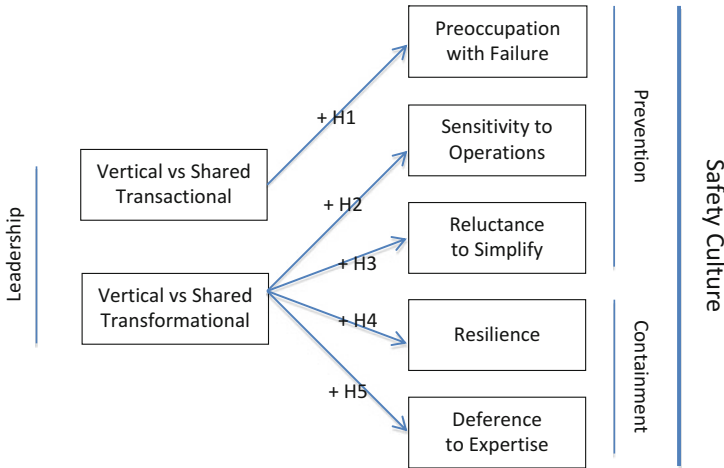


Fig. 1 Theoretical model of the relationships between leadership behaviors (vertical vs shared styles) and safety culture (prevention vs safety orientations)

3.1 The Case for HRO’s Prevention

Prevention culture usually works during ordinary situations, in which organizations are not under time pressure or under dangerous contexts. It represents the effort to avoid errors, mistakes and failure by anticipating events that can go wrong. It is the ability to follow precise routines and procedures (preoccupation with failures) in order to maintain a good fit between team performance and environment expectations. It is also achieved through a continuous communication process among team members (sensitivity to operations) as well as a mistrust attitude in order to see things from different perspectives (skepticism).

3.1.1 Preoccupation with Failure

Preoccupation with failure (Weick et al. 2000) can be defined as the ability to pay vigilant attention to recognize small mistakes, by encouraging a culture based on reporting of errors and learning from them. Usually, employees prefer to hide errors as these trigger negative affective reactions and probably signal a lack of competences. Leaders can produce a “reporting error” culture by establishing an administrative culture towards the compliance of rules, protocols and an exchange mechanism in which clear expectations about performance are addressed. Thus, in order to prevent error, leaders should be able to behave in a closed approach in terms of rules compliance—which can be enabled through transactional behaviors. We hypothesize that:

H1 *There will be positive and significant relationship between vertical transactional leadership and preoccupation with failures such that vertical transactional leadership will account for a significant amount of variance in above and beyond that which is accounted for by the shared transactional leadership.*

3.1.2 Sensitivity to Operations

Sensitivity to operations is the ability of paying close attention to company operations by maintaining what is called “situational awareness”, i.e. the comprehension about what is happening in the organization and the capability to identify rapidly anomalies and actual errors before their consequences become larger. Being sensitive to operations means working under tight coupling conditions with strong connections within and between the team. HROs tend to be more self-conscious in dealing with pressures and to “*exhibit extraordinary sensitivity to the incipient overloading of any one of its members*” (Babiak and Trendafilova 2011, p. 483; Reason 1990). Sensitivity to operations creates a big picture through on-going attention to real-time information (Weick et al. 1999). Such a big picture is the result of a regular communication and information sharing process, enabled by a participative and involving leadership in decision-making oriented to team working (Vogus and Welbourne 2003). We hypothesize that this trait could be developed especially through an open leadership style, as team should be encouraged to share information and interpretations between individuals and to create a work climate that favors high standards of communication. We hypothesize that:

H2 *There is a positive and significant relationship between transformational vertical leadership and sensitivity to operations such that transformational leadership will account for a significant amount of variance in above and beyond that which is accounted for by the shared transformational leadership.*

3.1.3 Reluctance to Simplify

Finally, reluctance to simplify means to avoid simplifications with the purpose to understand more about a situation. It can be implemented, for instance, through checks and balances, adversarial reviews, and multiple perspectives in order to recognize the range of things that might go wrong. HROs try to stimulate people to notice more in their work environment. They encourage team members to strengthen reliability through their different backgrounds, by having skepticism and criticism, and viewing things from different angles, by continuously maintaining their identities. These efforts take shape in checks and balances process during meetings, adversarial reviews and job rotation. We hypothesize that leaders could foster reluctance to simplify by building a continuously team skepticism as well as by maintaining, at the same time, a high team trust level. As consequence, this HROs’ trait calls for open leadership styles, such as transformational leadership

(which stems from a vision, intellectual stimuli and a change of the status quo). Therefore, we assume that:

H3 *There is a positive and significant relationship between transformational vertical leadership and preoccupation with failures such that transformational leadership will account for a significant amount of variance in above and beyond that which is accounted for by the shared transformational leadership.*

3.2 The Case for HRO's Containment

Containment culture should fit with a shared approach, as, during an unexpected situation, organizations or teams should work with resilience and deference to expertise. These two attributes also encourage improvisation and learning by using either emergency routines or new behaviors. Resilience and deference to expertise are not supposed to work in a hierarchical fashion, as both contribute to a different adaptation to new environmental conditions with a need for temporary flexibility without a pre-ordered structure. Thus, as leaders' directives and voices do not fit such situations or even because they may not have the right input, following formal and position leaders may not be the right choice, since it would be more important to take competences, that could arise within the team, into account. According to that, we postulate that shared leadership behaviors are expected to be mostly appropriate to safety containment situations.

3.2.1 Resilience

Resilience is the ability to contain the consequences of errors by improvising and quickly developing new plans to respond to the unanticipated. Resilience should call more for shared leadership than vertical one as improvising does not mean working with explicit specific rules or procedures, or following necessarily a formal leader, but rather following the skills. It is a bricolage activity, derived from new inputs or combinations of previous rules, which are employed to react to the environment in a completely new output, as in the case of Incident Command System (Bigley and Roberts 2001), where highly bureaucratic mechanisms become very flexible by rapidly recombining resources to deal with unexpected situations (Levinthal and Rerup 2006). Safety-oriented organizations prepare for these kinds of failure by training staff to perform quick situational assessments and practicing responses to abrupt occurrences.

We hypothesize that shared leadership behaviors, particularly transformational, enable resilience. These behaviors, through a shared style, are more indicated under containment situations, where informal or formal leaders provide verbal feedback or coaching, behaviorally help a team-mate in carrying out actions, and/or assume

and complete a task in the place of a team mate and people are empowered to act with the appropriate autonomy as well. Therefore, our hypotheses are:

H4 *There is a positive and significant relationship between transformational-shared leadership and resilience such that shared transformational leadership will account for a significant amount of variance in above and beyond that which is accounted for by the vertical transformational leadership.*

3.2.2 Deference to Expertise

The second process, deference to expertise, allows de-emphasizing hierarchy in order to most effectively prevent and face problems. The principle of de-emphasizing hierarchy is aligned to shared leadership style, as in this case, team (its members) becomes leaders according to specific competence related to specific unexpected task. It strengthens people attitudes to accept insights and recommendations from more expert individuals beyond their organizational roles, as a person who is in a higher organizational position cannot necessarily possess the information or the competence needed to deal with a crisis. Leaders should encourage communication of expertise from all levels (Wilson et al. 2005). As to develop this trait, leadership should be empowering, by enabling autonomous decision, self-problem finding process and learning, as well as transformational, by allowing team members to provide feedback, state and maintain opinions, address perceived ambiguity, initiate actions, and offer potential solutions as well. Leveraging from these assumptions, our hypotheses is the following:

H5 *There is a positive and significant relationship between shared transformational leadership and deference to expertise such that shared transformational leadership will account for a significant amount of variance in above and beyond that which is accounted for by the vertical transformational leadership.*

4 Method

4.1 Sample

The data used in this study were collected in an Italian high reliability-oriented organization operating in the electricity distribution field. The sample consisted of survey data from 68 employees (19% are Top Managers and 81% are Middle Managers), covering all the organizational structure. Age distribution of respondents is the following: 25% of them are over 56 years old, 22% are within 35–45 years and 52.9% are within 46–55 years.

4.2 Measures

HROs Culture The safety-oriented survey was adapted from (Weick and Sutcliffe 2001), also used in previous research (Ray et al. 2011) and is intended to allow managers to assess the prevention and containment culture in their organizations. We asked representative managers and researchers to review the original survey to ensure that the items made sense in the organization under investigation. At the end of the review process, a final version of 46-item questionnaire was used in the place of the 47-item initial version. Sample items are hereafter provided for each construct of our theoretical model: preoccupation with failures: “*We often update our procedures after experiencing a near miss*”; sensitivity to operations: “*We close attention to the day-to-day operations of the company*”; reluctance to simplify: “*In this organization, we strive to challenge the status quo*”; commitment to resilience: “*During an average day, people interact often enough to build a clear picture of the current situation*”; deference to expertise: “*People in this organization value expertise and experience over hierarchical rank*”. Respondents used a 4-point Likert-type scale (1 *extremely disagree* to 4 *extremely agree*).

Vertical and Shared Leadership The scale measuring vertical and shared leadership and their related behaviors was adapted from Pearce and Sims (2002). Sample items include for vertical (shared) transactional leadership (14 items): “*My team leader (members) will recommend that I am compensated well if I perform well*”; for vertical (shared) transformational leadership (20 items): “*My team leader (members) expects (expect) me to perform at my highest level*”. Still in this case, respondents used a 4-point Likert-type scale (1 *extremely disagree* to 4 *extremely agree*).

In order to ensure validity of the imported survey questionnaire, we used back-translation procedure to all the scales. So, we translated the items of the English original version into Italian language, and then we asked an independent English native translator to perform a new English translation of the Italian version.

5 Results

The means, standard deviations, correlations and Cronbach’s alpha for all variables examined are in Table 1. We used separate hierarchical regressions to test our theoretical model, previously represented in Fig. 1. Hypothesis 1–3 were tested by entering the control variable in step 1, the shared leadership variables in step 2, and the vertical leadership variables in step 3. Hypothesis (4–5) were tested by entering the control variable in step 1, the vertical leadership variables in step 2, and the shared leadership variables in step 3. The regression results are reported in Tables 2, 3, 4, and 5.

Hypothesis 1 stated that vertical leadership would be positively related to preoccupation with failure, such that the more transactional the leader, the higher

Table 1 Means, standard deviations, inter-correlations among the study variables

Variables	M	MD	1	2	3	4	5	6	7	8	9	10
1. Age	2.03	0.69	–									
2. Preoccupation with failure	2.91	0.47	0.191	(0.745)								
3. Reluctance to simplify	2.88	0.51	0.197	0.763**	(0.845)							
4. Sensitivity to operations	2.80	0.48	0.315**	0.598**	0.635**	(0.74)						
5. Resilience	2.90	0.47	0.352**	0.700**	0.645**	0.595**	(0.796)					
6. Deference to expertise	3.10	0.50	0.324**	0.671**	0.665**	0.661**	0.748**	(0.806)				
7. Vertical transactional	2.53	0.43	0.077	0.460**	0.332**	0.468**	0.304*	0.299*	(0.672)			
8. Vertical transformational	2.78	0.70	0.135	0.586**	0.465**	0.617**	0.423**	0.424**	0.701**	(0.947)		
9. Shared transactional	2.04	0.45	0.034	0.267*	0.265*	0.215	0.339**	0.157	0.201	0.144	(0.776)	
10. Shared transformational	2.54	0.67	0.154	0.363**	0.353**	0.292*	0.536**	0.323**	0.161	0.268*	0.786**	(0.937)

Note: Cronbach alphas are listed in parentheses along the diagonal. *p < 0.05. **p < 0.01

Table 2 Vertical and shared transactional leadership and preoccupation with failure

	Model 1	Model 2	Model 3
Age	0.191 (0.13)	0.182 (0.21)	0.153 (0.11)
Shared transactional		0.261** (0.02)	0.179 (0.31)
Vertical transactional			0.412** (0.03)
<i>F</i> -Ratio	2.488 (0.41)	4.928*** (0.004)	14.175** (0.02)
<i>R</i> ²	0.036 (0.23)	0.104 (0.14)	0.267 (0.11)
Δ in <i>R</i> ²		0.068** (0.02)	0.162*** (0.001)

Note: N = 68 and *p < 0.10, **p < 0.05, ***p < 0.01. p-values are presented in the parentheses

Table 3 Vertical and shared transformational leadership and sensitivity to operations

	Model 1	Model 2	Model 3
Age	0.315*** (0.002)	0.277** (0.02)	0.223** (0.03)
Shared transformational		0.249** (0.04)	0.108 (0.15)
Vertical transformational			0.558*** (0.005)
<i>F</i> -Ratio	7.271*** (0.001)	4.701** (0.03)	33.043*** (0.006)
<i>R</i> ²	0.099 (0.15)	0.160 (0.20)	0.446 (0.16)
Δ in <i>R</i> ²		0.061 (0.25)	0.286** (0.01)

Note: N = 68 and *p < 0.10, **p < 0.05, ***p < 0.01. p-values are presented in the parentheses

the prevention culture would be above and beyond that which is accounted for by shared leadership (Table 2). The effect on preoccupation with failure was positive and statistically significant. The *R*² value was, in fact, 16.2% (p < 0.01) for the vertical transactional behaviors. Therefore, H1 is supported.

Hypothesis 2–3 (Tables 3 and 4) stated that vertical leadership would be positively related to sensitivity to operations and reluctance to simplify respectively, such that the more transformational behaviors the vertical leader, the higher the prevention culture would be above and beyond that which is accounted for by shared leadership. In the model 3 (testing the H2 the individual *R*² value for vertical transformational was 28.6% (p < 0.01), beyond and above the shared leadership styles. For H3 the *R*² value determined by the introduction of the vertical styles (transformational) were 13.8% (p < 0.01), beyond and above the shared leadership approach. Thus, we can state that H2 and H3 are supported.

Table 4 Vertical and shared transformational leadership and reluctance to simplify

	Model 1	Model 2	Model 3
Age	0.197 (0.13)	0.146 (0.15)	0.109 (0.11)
Shared transformational		0.330*** (0.002)	0.232*** (0.01)
Vertical transformational			0.388*** (0.00)
<i>F</i> -Ratio	2.657 (0.12)	8.090*** (0.008)	12.367*** (0.001)
<i>R</i> ²	0.039 (0.11)	0.145 (0.19)	0.284 (0.21)
Δ in <i>R</i> ²		0.106*** (0.004)	0.138*** (0.001)

Note: N = 68 and *p < 0.10, **p < 0.05, ***p < 0.01. p-values are presented in the parentheses

Table 5 Vertical and shared transformational leadership and resilience

	Model 1	Model 2	Model 3
Age	0.352*** (0.006)	0.301*** (0.001)	0.250*** (0.01)
Shared transformational		0.383*** (0.005)	0.276*** (0.001)
Vertical transformational			0.423*** (0.006)
<i>F</i> -Ratio	9.363*** (0.001)	11.910*** (0.000)	16.221*** (0.009)
<i>R</i> ²	0.124*** (0.000)	0.362*** (0.002)	0.432*** (0.001)
Δ in <i>R</i> ²		0.144*** (0.001)	0.164*** (0.003)

Note: N = 68 and *p < 0.10, **p < 0.05, ***p < 0.01. p-values are presented in the parentheses

Turning to the containment dimensions, hypothesis 4–5 stated that shared leadership would be positively related to resilience and deference to expertise, such that the more transformational the leader, the higher the culture will be above and beyond that which is accounted for by vertical leadership. Still in this case, for this further dimension of the safety prevention orientation the Table 5 shows that the effects of the hypothesized vertical styles are positive and statistically meaningful, with a percentage of variance, accounted for the *R*² of 36.2% (p < 0.01). In the model 3 for the resilience, we found statistical support for H4, so that shared transformational style had positive and significant impact on resilience, with an *R*² change of 16.4% (p < 0.01).

Finally, in the Table 6 we illustrate the effects of vertical (model 2) transformational leadership style, plus the corresponding shared behaviors (model 3) on the deference to expertise. *R*² value for vertical styles was 25.2% (p < 0.01) and 26.5% (p < 0.01). The additional effect of shared leadership was significant for

Table 6 Vertical and shared transformational leadership and deference to expertise

Variables	Model 1	Model 2	Model 3
Age	0.324*** (0.000)	0.271** (0.03)	0.248** (0.02)
Shared transformational		0.387*** (0.001)	0.338*** (0.0069)
Vertical transformational			0.194* (0.08)
<i>F</i> -Ratio	7.725*** (0.003)	10.952*** (0.001)	8.558*** (0.001)
R^2	0.105** (0.01)	0.252*** (0.008)	0.286* (0.07)
Δ in R^2		0.147** (0.04)	0.034* (0.09)

Note: N = 68 and *p < 0.10, **p < 0.05, ***p < 0.01. p-values are presented in the parentheses

transformational style, which accounted for a R^2 change of 3.4%. Therefore, H4 and H5 are supported.

6 Discussion

6.1 Vertical Leadership and Prevention Culture

Some of our findings (H1) suggest that vertical transactional leadership is positively and significantly related to preoccupation with failures, and this behavior can enable safety-oriented culture also beyond the contribution of shared transactional leadership. Leveraging from the H1 results and, consistently with literature, we can state that a vertical style is mainly needed to prevent errors. Preoccupation with failures consists of avoiding errors by creating a highly administrative culture (Hannah et al. 2009) and strictly following routines and procedures (Reason 1990; Schulman et al. 2004; Wildavsky 1991). Accordingly, stability, efficiency and routine allow people to predict and keep under control events and mindless behaviors (Levinthal and Rerup 2006), enabled by leaders who assign goals, give instructions and commands and exchange material rewards, can improve the prevention with failure.

Other results (H2) support the idea that sensitivity to operations is enabled by the ability to share situational awareness about the environmental changes. It can allow team members to intensely exchange communications about what is happening during an ordinary task procedure. If situations are consciously shared among team members, organizational safety can improve, since individuals are alerted about latent issues, such errors or near misses; moreover, as well as impacting on decisions in terms of right choice and team coordination efforts to contain and minimize errors that occur by anticipating future adverse events. Transformational

leadership may create a context of sensitivity to operations (Vogus and Sutcliffe 2012). In fact, the possibility to have the big picture (Weick et al. 2000) is a consequence of the open communication within and between team members.

Our findings are supported in the H3, as reluctance to simplify is significantly predicted by transformational vertical leadership beyond and above the shared vertical one. Reluctance to simplify is a form of criticism to established explanations of events. Be reluctant means to resist to accepted explanations by searching also alternative way as well as provide adversarial reviews. Overcome the resistance of employees to simplify the interpretation of events, implies a transformational process where vertical leadership is a necessary condition to motivate team members to search and view things in different ways and to be inspired to change the status.

6.2 *Shared Leadership and Containment Orientation*

According to literature, under containment situation, leadership dynamics in terms of safety culture are quite different. During crises events team members should enables improvisation, flexibility and resilience. Literature has highlighted the importance of “adaptive” or shared behavior during the unexpected events (Hannah et al. 2009). Our results (H4 and H5), confirming this idea, find out that during emergency, when organization switches in the containment mode, leadership should be shared among members. Sharing the decision making process means to have the possibility to effectively manage resources by looking at the solution more than to the ranked people. We found that shared transformational leadership is significant predictor of resilience more than vertical leadership. In mindful organizations, resilience might be observed as the willingness to provide quickly a feedback to come back to the pre-crisis situation, i.e. understand a problem, engage in real-time learning, and then act to establish again the normal conditions (Ray et al. 2011). Particularly, shared transformational leadership is positive and significantly related to resilience, and it contributes to explain resilience over vertical style: in fact, shared transformational leadership explains 16.4% of the variance in the process over the vertical transformational style. Sharing the leadership through transformational behaviors means to increase trust within the team, as team members that are transformational influence (and are influenced by) colleagues by giving to team the possibility to establish the contingent vision for the crises and rely on the ability to use team knowledge in novel and rapid ways, by managing effectively a changing context.

Deference to expertise means to decide together, giving priority to the competence before the role, about a critical issue. Particularly we found the shared transformational style as significant behavior related to deference to expertise over the vertical one. To reach this type of results, team member have to be cogent and persuasive, in order to face the challenge of unexpected. Team might engage in shared transformational leadership through the creation of a shared strategic vision

or by inspiring one another to challenge the emergency and come back to ordinary situation.

7 Limitations and Conclusions

As with all research, there are some limitations to the present study. First, we have analysed a little, even if representative, sample of a large company (5.4% of the employees, 90% of top and middle managers). Therefore, results suffer of generalization. Second, the sample, focused on top and middle management level could be not representative for the operative teams of the organization, which could have different results in terms of shared and vertical leadership both on ordinary than in the unexpected events.

Despite the above limitations, the current results however provide some interesting findings, and make a useful contribution to the on-going research into the relationship *leadership-safety culture*. Our findings are consistent with a conceptual model that suggests that leadership is contingently related to the specific context that organizations deal with, both in terms of behaviors (transactional and transformational) and styles (vertical and shared). In addition, our findings contribute to theoretical research in the leadership literature by showing that for large organizations is important hierarchy enabled by the vertical one even if, the importance of vertical leader is not endless: it should be useful for managers to think about the construct of shared leadership as issue to enable and improve safety culture especially under non-ordinary context.

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