Studies in
Fiscal Federalism and State–local Finance

The Political Economy of Inter-Regional Fiscal Flows

Measurement, Determinants and Effects on Country Stability

Edited by
Núria Bosch Marta Espasa
Albert Solé Ollé

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STUDIES IN FISCAL FEDERALISM AND STATE–LOCAL FINANCE

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Núria Bosch, Marta Espasa and Albert Solé Ollé

Universitat de Barcelona (UB) and Institut d'Economia de Barcelona (IEB), Spain

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Preface and acknowledgements

In many countries, the struggle over the inter-regional allocation of taxes and spending is continuous. In Spain, Belgium, Italy and Canada – to cite just some of the case studies examined by this book – politicians, academics and the media alike spend considerable amounts of time and effort arguing over how much each region gets or should get from the central government budget. At a more technical level, this debate centres on the measurement of fiscal flows, where the 'net fiscal flow' or 'fiscal balance' represents the difference between what the residents of a region receive in public services and what they must pay in taxes to the central government. In some countries, these calculations are made by the central government itself, while in others a plethora of bodies publish what are, at times, contradictory results.

The first objective of this book, therefore, is to provide a practical guide to the calculation of 'fiscal flows'. The theory of tax incidence and spending – which underpins the methodologies applied – was established decades ago, which means that in this respect we have little to add. However, a number of years ago – when computing the 'fiscal balances' for the Spanish regions – we realized that there was no comprehensive methodological survey available on this topic that might be of help to the applied researcher. Further, given the relatively few interpretative studies available, we also felt there was a need to clarify the utility of performing such calculations, to discuss the different methodologies used and to offer some suggestions as to how best to interpret their results. For this reason, here, we have chosen to complement the methodological chapters with country studies. The second objective of the book is to look beyond the results of these calculations and to provide the reader with the instruments that will enable them to understand why some regions are treated better than others. Although there is a growing body of literature on the political economy of the inter-regional allocation of intergovernmental grants and other public programmes, the utility and implications of these results for the debate on the magnitude of 'fiscal flows' are not well understood. It is only by gaining an understanding of the political forces behind the fact that money flows to some places but not to others that we can begin to comprehend the use that different agents make of measures of this type.

It is our hope that this volume will serve as a useful source of reference and be a practical tool for academics and practitioners seeking both an overview of the state of the art of measuring inter-regional fiscal flows and sound interpretations of the usefulness of this task and of the meaning of the results. We are grateful to the participants at the IEB's 5th Symposium on Fiscal Federalism – held in Barcelona in June 2008 – whose insightful comments have helped the authors in the revising of their papers. We acknowledge the financial and organizational support of the IEB – Institut d'Economia de Barcelona, Universitat de Barcelona, the Chair of Fiscal Federalism at the IEB and the IEA – Institut d'Estudis Autonòmics, Generalitat de Catalunya. Thanks are also due to the Director of the IEA, Carles Viver Pi-Sunyer, who first contacted us with the idea of organizing an event tackling this issue, to the IEB's Director, Martí Parellada, who gave his wholehearted support to this project from the word go, and to M. Àngels Gómez from the IEB office, for her efficient organization of the symposium and her assistance during the editing of this book.

Núria Bosch
Marta Espasa
Albert Solé Ollé

1. Inter-regional fiscal flows: introduction to the issues

Núria Bosch, Marta Espasa and Albert Solé Ollé

1 INTRODUCTION

In many countries, intergovernmental finance debates are typically embroiled in arguments as to how much each region receives or should receive from the central budget. Such behaviour might purely be a symptom of the opportunism that afflicts many countries, though it might just as equally reflect longstanding, and as yet unresolved, financial conflicts within the territory. At the practical level, this issue is made manifest through the measurement of inter-regional fiscal flows or 'net fiscal flows', that is, the difference between what the residents of a particular region receive in terms of public services and what they actually pay in taxes to the central government.

The first objective of this book, therefore, is to attempt to make sense of the usefulness of computing inter-regional 'fiscal balances', and in so doing to provide some guidelines as to how best to interpret the various methodologies adopted and the results to which they give rise. This is done by reporting the experiences of a number of countries. We seek to provide answers to such questions as: Why compute inter-regional fiscal flows? Is there a correct methodology for such computations? How should inter-regional fiscal flows be interpreted? What is the role of central government in the provision of information for this exercise? Can such data help enlighten the debate (and ease the territorial conflict) or do they simply serve to add more fuel to the fire of discontent (and exacerbate the conflict)?

However, this book seeks to go beyond a simple presentation of the results of these analyses and to ask, in the case of inter-regional fiscal flows in regional programmes (for example, intergovernmental transfers and public investment), why some regions end up receiving more than others (that is, what exactly determines fiscal flows?). And so the book also seeks to answer such questions as: What political reasons underpin the bias in

these programmes against (in favour of) rich (poor) regions? Does this bias differ across countries and, if so, what accounts for these differences? Does the basis for this bias lie in the constitution or does it reflect short-term electoral politics? To answer these questions the book undertakes a review of the literature on the political economy of grant allocation, examines in detail the politics of intergovernmental transfers in Spain, and undertakes a comparative analysis of the drivers of the inter-regional allocation of public investment across EU countries, again with a specific focus on the case of Spain.

And finally, the book turns its attention to the relationship between the intensity of these fiscal flows and country stability, since those who use these calculations to their advantage are frequently the supporters of secession in the country's richer regions. Thus, the book seeks to answer such questions as: Are fiscal flows merely the image of national citizenship rights and, as such, do they constitute the glue that binds the citizens together, endowing the country with stability? Or, rather, if the net-fiscal flows become too great, might they lead to the disaffection of the rich regions, fostering territorial conflict and jeopardising the future of the union? These questions are analysed both conceptually and by examining the experiences of individual countries so as to understand better how these arguments are used in the on-going debate on the future viability of a country.

This introductory chapter summarises the main findings of the book. Section 2 focuses specifically on questions related to the measurement of inter-regional fiscal flows, dealt with here in Part I of the book. Section 3 discusses the determinants of the inter-regional allocation of intergovernmental grants and public investment, included here in Part II of this book. Section 4 examines the relationship between inter-regional fiscal flows and country stability, dealt with here in Part III. Finally, section 5 concludes by assessing our knowledge of the political economy of inter-regional fiscal flows, and outlines various avenues of future research.

2 INTER-REGIONAL FISCAL FLOWS: MATTERS OF MEASUREMENT

The analyses undertaken in the chapters that make up Part I of this book illustrate that there is a long tradition, in more than one country, of estimating the 'inter-regional fiscal flows' that result from the fiscal activity of the central government. It clearly makes sense to estimate 'net fiscal flows' among regions so as to measure the degree of inter-regional redistribution or the impact of the federal public sector on regional production and

consumption. This said, however, the problems encountered in making this estimation should not be underestimated, while the interpretation of the results often leads to different conclusions depending on whose hands they are in. The two main contributions in this part of the book, provided by Guiseppe C. Ruggeri and François Vaillancourt, specifically address these two issues: measurement and interpretation.

Ruggeri's look at the issues involved in measurement claims that the theory of the territorial incidence of public sector action constitutes the most appropriate methodological approach to the estimation of fiscal flows. However, there is no one universally accepted approach to doing this. According to Ruggeri, three approaches are typically adopted in empirical studies: the (1) cash-flow; (2) benefit; and (3) economic gain approaches. The cash-flow approach focuses on the location where revenues are collected and in which disbursements are made or materialise. But the obvious shortcoming to this approach is that allocating taxes according to the place in which they are collected often makes little sense and so, in order to overcome this, Núria Bosch proposes in her comments on Ruggeri's chapter, the assignment of tax revenues to the territory in which the economic capacity that is being taxed is located. Such a system of allocating taxes would certainly appear to be more homogeneous and symmetrical with the way in which expenditures are allocated under the cash-flow approach.

In the benefit approach, Ruggeri explains how the focus shifts to the residence of the individuals that receive the benefits of government services and who bear the tax burden of their financing. As such the approach is directly linked to fiscal incidence analysis. The third approach, that of economic gain, takes elements from the two preceding approaches. Thus, it assigns central revenues on the basis of where their burden is borne, albeit directly on the aggregate (collectively by its residents), and it allocates the central purchases of goods and services in terms of the economic gains received by a region, measured by the factor income generated in that region by central expenditure.

The comments provided by Núria Bosch and Antoni Zabalza agree, in the main, with these methodological proposals, though they make a number of additional suggestions. Bosch proposes, as we mentioned above, an alternative method for allocated revenues and, in addition, addresses the question of which methodology should be used in practice. She claims that the methodology chosen ought to reflect the goal pursued in the estimation of the 'fiscal balances'. Zabalza proposes a method for dealing with central surpluses and deficits in the measurement of regional balances, an aspect over which considerable controversy hangs. Thus, the flow approach is the most appropriate when the study seeks to measure

the economic impact of central public sector actions on a specific territory. However, if the study aims to measure the effects of central public sector activities on the welfare of people living in a territory, then the benefit approach is more apposite.

Having computed the fiscal flows, how then are they best interpreted? François Vaillancourt examines this question in a study of the Canadian case and proposes various geographical, historical, demographic and political determinants. Vaillancourt also identifies who he believes should undertake these calculations and stresses the importance of not entrusting a single body with the production of fiscal flow estimates, since this can stifle creativity both in producing estimates and, more importantly, in analysing them.

The book also presents the specific experiences of several countries, namely Italy, Belgium, Canada and Spain, when estimating fiscal flows. The discussion of the case of Italy, undertaken by Maria Flavia Ambrosanio, Massimo Bordignon and Floriana Cerniglia, raises the highly relevant question of how funds between Italy and the European Union should be treated. Paul Van Rompuy's analysis of the Belgian case discusses the relative weight given to different kinds of fiscal flows. Ruggeri's description of the case of Canada makes an interesting use of statistical indices to examine the contribution of net fiscal balances to changes in regional disparities. Finally, the examination of the case of Spain, provided by Marta Espasa and Núria Bosch, looks at the factors that determine the sign and magnitude of fiscal flows. To conclude, the comments by Guillem López-Casasnovas discuss the normative principles that could be used to assess the magnitude of 'net fiscal flows' of Spain's richer regions. The comments by Ramon Barberán focus on the use of the different methodologies proposed and the interpretation of the results obtained in the Spanish case.

3 BEYOND THE DATA: WHY DO SOME REGIONS RECEIVE MORE?

The chapters making up Part II of the book seek to identify the causes of 'inter-regional fiscal flows'. And here the main focus is on regionally-based spending programmes, since while it is clear that inter-personal redistributive programmes provided and funded directly by the central government will generate 'net fiscal flows' that are negatively correlated to income, the a priori relation of the former to regional income is not so obvious. Thus, the first three chapters (by Jonathan Rodden, Stuti Khemani, and Sandra León, respectively) focus on intergovernmental transfers, and

the remaining two (by Achim Kemmerling and Andreas Stephan, and by Albert Solé Ollé) analyse public investment executed by the central government.

The political explanations of inter-regional fiscal redistribution offered by these studies fall into two categories. The first (see the chapters by Rodden and Solé Ollé) treats 'inter-regional fiscal flows' as a product of redistribution from rich to poor regions. Here, 'fiscal flows' are considered to be driven by the deal struck in the country's constitution, where the political power of rich vis-à-vis poor regions is determined. Solé Ollé refers to this kind of redistribution as *programmatic*, indicating that the central government is forced to adhere to certain objective principles and, therefore, to use income-based allocation formulae. The second category of explanations treats 'inter-regional fiscal flows' as the product of the tactical manoeuvres of centrally based politicians. 'Tactical redistribution' (in Solé Ollé's terminology) refers, therefore, to the allocation decisions of the central government that are not constrained by any normative criteria, but rather that are governed exclusively by short-term electoral considerations. The chapters in this section differ in terms of the weight they apportion to these two explanations. While Rodden places the emphasis exclusively on *programmatic* redistribution – without denying, however, the importance of tactical considerations – Khemani and León disregard rich-to-poor redistribution and focus solely on short-term politics, while Kemmerling and Stephan and Solé Ollé give weight to both types of redistribution.

Rodden provides evidence to show that the redistributive power of intergovernmental grants varies widely across a small set of countries. While in some –namely Spain, Canada, Germany and Australia – there is considerable redistribution, elsewhere, for example, the USA, India, Brazil and Argentina – this is not the case. Rodden offers several institutional explanations for this stylised fact. Thus, he claims that inter-regional redistribution is higher in parliamentary democracies than it is under presidential systems, since in the former power tends to be concentrated in the hands of government, thereby easing the use of programmatic national appeals and permitting the emergence of a national low income coalition. He also reports that redistribution can prove more problematic in countries in which rich regions are over-represented in the legislature. Finally, he stresses that these institutional traits depend on the initial constitutional bargain. Thus, in countries such as the USA, Brazil and Argentina, there is less inter-regional redistribution precisely because rich regions retain the power of veto acquired at an early stage in constitutional contract negotiations. Elsewhere, in countries such as Canada, Spain, Italy, Belgium and the UK, the rich regions have neither inherited these powers nor were they ever granted them in the first place. In these latter countries, national

majorities of poor individuals (residing in poor regions) have been able to impose higher levels of redistribution. Hence, it is quite normal to find that rich taxpayers living in rich regions are in favour of more tax decentralisation and/or reduced levels of redistribution both in the allocation of intergovernmental grants or public investment. A permanent struggle takes place between territorial aspects of public finance and intergovernmental grants in these countries, where sectors of the population might even seek secession. This explains why the main examples for the calculation of 'inter-regional fiscal flows' or 'fiscal balances' documented throughout this book come precisely from these countries (see Part I for the cases of Canada, Italy, Belgium and Spain, but also Part III for the case of Scotland). Certainly, the relationship between 'inter-regional fiscal flows' and territorial conflict is a complex one (meriting a complete section in this book). This complexity is highlighted in Carles Boix's comment on Rodden's chapter, in which more refined (yet untested) predictions are derived regarding the amount of inter-regional redistribution, based on a consideration of the effect of external shocks and the possibility of renegotiating the federal bargain.

The chapters by Khemani and León both focus on the politics of intergovernmental grants, but concentrate on short-term *tactical* aspects. The existing literature tends to suggest that governments will allocate discretionary transfers to one of three jurisdictions: *swing districts* – where a high proportion of voters remain indifferent to both incumbent and opposition, to party strongholds – where a high proportion votes for the incumbent, or to jurisdictions controlled by the same party – to avoid political credit going to the opposition. Khemani and León seek to extend this literature by showing that the institutional arrangements in each country have an impact on the actual type of tactical incentives that politicians choose to adopt in practice. More specifically, both chapters examine the interaction between political tactics and the degree of decentralisation, broadly understood either as spending decentralisation or as the creation of a new subnational jurisdiction. Khemani focuses on this latter aspect, arguing that politicians might be interested in creating new local jurisdictions, which will be grant-financed, in order to better exploit short-term political tactics (that is, to better target *swing* voters). She offers convincing evidence of this from India. León, on the other hand, does not treat decentralisation as endogenous but rather shows how the extension of the decentralisation process in Spain has affected the political tactics adopted by the central government in the allocation of transfers to the regional authorities. She argues that as decentralisation has advanced, the ability of sub-national politicians to obtain credit for the services funded by these grants has grown, and thus it has become more convenient for the central government

to allocate more resources to their co-partisans than to *swing* regions. The general conclusion to be drawn from these chapters is that short-term political tactics might be complex and contingent on the specific set of institutions. Santiago Lago's comment on these two chapters is in line with this conclusion and he highlights a number of other institutional traits (for example, the degree of nationalisation of party systems) that might further complicate the analysis.

The chapter by Kemmerling and Stephan and that by Solé Ollé shift the focus towards an analysis of public investment. The first of these studies, while recognising that the politics of inter-regional redistribution might be affected by a country's institutional structure, undertakes a comparative analysis of the determinants of transportation infrastructure investment in four European countries – Italy, Germany, France and Spain, which differ in terms of their electoral system and the nature of their federation. The exercise is of great value but has to overcome enormous difficulties, given the problem of gathering comparable data for the four countries and the institutional differences that exist between them. The authors show that considerations of efficiency and (on occasions) equity influence the territorial allocation of investment and that, when controlling for this, tactical politics are also important. Partisan strongholds in some countries and close electoral races in others seem to influence investment, while alignment between parties at the levels of regional and central government seems to matter in at least one of the federalist countries (namely, Germany). More comparative studies of this type are clearly needed if we hope to understand what underlies the differences in these countries.

Solé Ollé's study, a close examination of the determinants of central government spending in Spain between 1964 and 2004, represents another attempt in this same direction. The chapter estimates an investment equation for different subperiods (the dictatorship and eight democratic terms-of-office) in order to gauge the relative importance of *programmatically* and *tactically* motivated redistributions, concluding that both have influenced the regional allocation of public investment in Spain. Tactical motives have been of some importance in each of the eight democratic terms-of-office, with the central government investing more in jurisdictions where: (1) there are more *swing* voters (proxied by the *margin* of victory in the previous election), (2) it is cheaper to buy a seat (measured by the ratio *votes/seats*), (3) there are regional parties which are *pivotal* in the central legislature, and (4) there is partisan alignment between the central and the regional executives. Programmatic motives have also been important, reflected in the following findings: (1) the allocation of investment is not only efficiency oriented, (2) the orientation towards efficiency was high during the dictatorship and decreased with the arrival of democracy,

equity being also more important with left-wing governments and EU funds, and (3) the allocation also shifted away from equity as a result of a lower correlation over time between income and a district's political power (a measure which includes the four tactical variables identified above). The results suggest, therefore, that the intensity of programmatic inter-regional redistribution depends a great deal on constitutional provisions that mandate a redistributive use of public investment and established an electoral system that discriminated against populated rich electoral districts. However, party ideology and the political circumstances surrounding each election are also important in understanding which districts obtain more investment. Germà Bel's comment on this chapter acknowledges these basic empirical findings, but suggests that the strong equity orientation found in some of the periods might be due to the meta-political objective of fostering political centralisation by promoting investments in infrastructure networks geographically centred on Madrid (for example, roads and railways).

4 INTER-REGIONAL FISCAL FLOWS AND COUNTRY STABILITY

Part III of the book comprises several studies that analyse the effects of the intensity of 'inter-regional fiscal flows' on the degree of territorial conflict and, ultimately, on the possible formation or break-up of the country. The section opens with an interesting conceptual discussion by Enrico Spolaore, in which he asks if inter-regional redistribution is helpful or not in preventing territorial conflict and (supposedly) undesirable secessions. His opening premise is straightforward: if a unified country is a Pareto improvement, then redistribution, by compensating those parts of the country that lose out, should remove all incentives to secede. However, as Spolaore recognises, the practice is somewhat more complicated. If regions differ according to their preferences, then redistribution towards regions with markedly different preferences from those of the national average will mitigate pressures of secession. But if regions differ according to their income levels, redistribution whereby the rich compensate the poor for staying in the country might also have centrifugal forces. Spolaore concludes that inter-regional redistribution cannot be successful in impeding secessions in all instances. He also analyses the effects of policy decentralisation, which will tend to reduce the heterogeneity problem. In some cases, however, the effects of greater autonomy might be just the contrary, increasing the ability of minority regions to secede. Moreover, the empirical evidence surveyed in the chapter suggests that redistribution

and decentralisation only help mitigate conflicts in the absence of ethnic fragmentation and in democracies. Massimo Bordignon's comment on Spolaore's chapter adds an additional dose of scepticism to the ability of these policy prescriptions to solve territorial conflicts in the real world.

Finally, this part includes three region/country studies which aim at illustrating the role played by public finance and 'inter-regional fiscal flows' in the discussion regarding the desirability of secession. The cases dealt with are those of Catalunya (Spain), Québec (Canada) and Scotland (UK). In all three instances there exist cultural differences that mean that a unified country necessarily imposes certain costs on the inhabitants of these regions. In the first case, that of Catalunya, the region is richer than the country's average region and – given the strong redistributive orientation of Spanish public finances – bears a highly negative 'net fiscal flow'. Elisenda Paluzie's chapter on Catalunya illustrates how regional redistribution contributes to feelings of dissatisfaction among sectors of the population with the unified Spanish state, and discusses how these feelings interact with other costs and benefits of the relationship between the region and Spain. François Vaillancourt's chapter on Québec illustrates the case of a region that is culturally very distinct from the rest of Canada but which, having an income level lower than average, benefits from a positive 'net fiscal flow'. Vaillancourt notes that this positive flow has grown over time, together with the support for sovereignty, which might suggest that these factors are needed to reduce secessionist pressures. The case of Scotland, described by David Bell, also illustrates the importance of economic considerations in any discussion of the convenience of secession. As Bell shows, Scotland benefits from a positive 'net fiscal deficit' in the UK, suggesting once again that this might operate as a side payment reducing secessionist pressure. The chapter also illustrates the role that projected North Sea oil revenues play in computing the economic benefits of an independent Scotland.

5 CONCLUSION

The book documents the cases of several countries in which there is a constant struggle over the regional allocation of taxes and spending. It shows that regional income is the main factor in this conflict, with rich regions unhappy with their negative 'net fiscal flows'. The book offers various explanations for the different degrees of 'inter-territorial redistribution' observed and also for the different levels of territorial conflict to which it has given rise. Rodden claims that the redistributive power of grants is not so great in countries where rich regions retain some of the power from

earlier constitutional bargains. Boix suggests that redistribution is affected by the real options open to regions at times of constitutional renegotiation. Dissatisfaction with an earlier constitutional agreement made under very different conditions might, therefore, result in conflict. Spolare analyses the exact role of inter-regional redistribution in mitigating this conflict and preventing undesirable secessions. Can the precise calculation of 'inter-regional fiscal flows' and the dissemination of this information help attenuate this conflict? Several authors believe that 'fiscal balances' can indeed help in this way, but that a certain amount of caution needs to be exercised. First, it seems essential to reach a basic agreement on the methodology to be adopted in computing these fiscal flows, otherwise – given the variety of approaches and outcomes – the parties to a conflict are apt to interpret them differently. It remains unclear as to whether one official institution should be entrusted with this task, though Vaillancourt is of the mind that it is better to engage several institutions in order to encourage greater competence and to obtain the best outcome. In countries in which a basic consensus exists as regards methodology and interpretation this should be feasible. All in all, one clear conclusion emerges from this book: despite the disagreements, a basic consensus does exist, at least among academics, as regards the best methodology to adopt. It is our hope that this collection can help in bringing this idea to a wider audience.

PART I

Counting monies: measurement and practice of inter-regional fiscal flows

2. Inter-regional fiscal flows: measurement tools

Giuseppe C. Ruggeri

1 INTRODUCTION

Two fundamental functions of government are to mitigate fluctuations in economic activity (stabilization) and to reduce inequality of opportunities and outcomes among individuals and families (redistribution). In unitary states these functions are performed by one order of government, although programme delivery may be decentralized. In federations, both federal and regional (states or provinces) governments perform these functions. Moreover, federations usually incorporate inter-governmental fiscal relations to address regional differences in size, resource endowments, economic performance, and fiscal capacity.

The fiscal relationship between federal and sub-national governments raises three main equity issues. First, does the federal fiscal system reduce regional economic disparities (regional development and inter-regional redistribution)? Second, does it restore a reasonable balance between the revenue-raising powers and spending responsibilities of the federal government and the regional governments combined (vertical fiscal balance)? Third, does it reduce fiscal disparities among regions (horizontal fiscal balance)?

This chapter addresses primarily the first question. The change in the relative economic position of different regions due to federal fiscal activity may be called inter-regional redistribution. It differs from income redistribution because it compares average income levels among regions rather than income levels among individuals, regardless of their place of residence. While the two concepts are related – a province with a larger share of low income residents will likely have a lower average income – they address different issues within a federation.

All items in the federal revenue structure can potentially generate inter-regional redistribution. Federal spending comprises two major groups: (1) programmes delivered directly by the federal government (federal programmes) and (2) joint programmes delivered by regional governments

but partly financed by the federal government through conditional or unconditional grants. Both components may generate inter-regional redistribution.

To measure inter-regional redistribution economists compute net fiscal flows (the difference between what the residents of a region gain from federal government direct spending and intergovernmental transfers and what they contribute to the federal coffers). They also use selected indices of inter-regional redistribution to facilitate comparisons over time within a country, or international comparisons for a given year. Some of the measurement issues arising from the calculation of regional fiscal flows and indices of inter-regional redistribution are evaluated in this chapter.

The study of inter-regional redistribution requires four major steps. The first step develops the methodological tools for calculating net fiscal flows (section 2). The second step develops the economic concept for the analysis of inter-regional redistribution (section 3). Section 4 presents various indices of inter-regional redistribution. The fourth step – interpreting the estimated indices – is performed in section 5. The final section contains some concluding remarks and some suggestions for further research.

2 THE CALCULATION OF NET REGIONAL FISCAL FLOWS

The calculation of net fiscal flows requires separate allocations for the following elements of the federal fiscal system: (1) the regional allocation of federal revenues, (2) the regional distribution of federal grants, and (3) the regional distribution of direct federal spending, which comprises (1) purchases of goods and services, (2) transfers to persons and business, and (3) interest on the public debt.

Before discussing the approaches to the inter-regional allocation of federal revenues and expenditures, it is necessary to address some general methodological issues. First, inter-regional redistribution strictly interpreted involves shifts of fiscal resources among regions through the intermediation of the federal fiscal system. Therefore, the analysis should be confined to a country's residents only. This means that federal taxes borne by non-residents and payments to non-residents should be excluded from the calculations. Second, tax structures incorporate tax bases, statutory rates, and special tax preferences and spending programmes delivered by the tax system (tax expenditures). Recorded data on federal revenues are net of the effects of tax preferences and tax expenditures. Because net fiscal flows are calculated as the difference between federal revenues and expenditures assigned to a region, these balances remain unaffected if tax

expenditures are treated as spending items or as negative taxes. The official data incorporate the specific approach to the regional distribution of tax preferences and tax expenditures used by the agency that makes the allocation. A more consistent, but time-consuming, approach would allocate the gross revenues first and then apply the same methodology to allocate tax preferences and tax expenditures.

Alternative Approaches

There is no universally accepted approach to the measurement of federal fiscal flows. Three different approaches have often been used in empirical studies: (1) cash flow; (2) benefit; and (3) economic gain.

The cash-flow approach focuses on the location where revenues are collected and disbursements are made. It has more of an administrative than an economic foundation because federal flows are measured according to record-keeping procedures. This feature makes the cash-flow approach the preferred option by statistical agencies. As it is often applied, this approach has two main shortcomings. Its regional allocation of federal revenues may have little connection with the burden that is borne by the residents of a region. Also, its focus on the way expenditures are recorded sometimes leads to inconsistent approaches. For example, in Canada's provincial economic accounts, the allocation of federal payments for wages and salaries is based on the place of employment, reflecting the location where factor income is generated. Federal purchases of other goods and services, however, are allocated where these items are consumed.

The benefit approach focuses on the residence of the individuals who receive the benefits of government services and make contributions to their financing. It is a direct extension of fiscal incidence, adding the residence dimension to the analysis. The contributions of a region to the federal coffers and its gains from federal spending are the aggregation of the contributions made and benefits received by the residents of that region. Being directly linked to fiscal incidence analysis, this approach presents the same measurement difficulties in the allocation of government purchases of goods and services. Since the focal point is the individual, the comparison among regions and the interpretation of the federal fiscal flows under the benefit approach is based on consumption rather than income. This means that estimates of the degree of inter-regional redistribution based on this approach are interpreted from a welfare perspective.

A third approach has recently been proposed by Ruggeri and Yu (2000). Called the economic gain approach, it contains elements of the cash-flow and benefit approaches, but focuses directly on jurisdictions. Its conceptual foundation is the recognition that inter-regional redistribution deals

with the economic position of different regions in a country, therefore, measures of this type of redistribution should be linked directly to jurisdictions, not individuals. Moreover, the comparison of regional economic conditions is based on income rather than consumption, a feature more consistent with the way regional economic disparities are measured and analysed.

The economic gain approach avoids some of the measurement issues associated with the other two approaches. It assigns federal revenues on the basis of where their burden is borne (as in tax incidence studies), but directly on the aggregate. Thus, it measures the contribution that a region makes to the federal coffers through the tax burden borne collectively by its residents. It allocates federal purchases of goods and services by the economic gains received by a region, measured by the factor income generated in that region by the federal expenditure. By focusing on the economic activity of a region, the economic gain approach bypasses the issues of how to allocate different types of public goods (pure public goods, impure public goods, etc.).

Allocation Methodology

While these three approaches differ in terms of the conceptual foundations and the method of measuring federal fiscal balances, large shares of federal revenues and expenditures would be allocated in the same manner under each of these approaches. The specific allocation under each approach is discussed below.

Federal revenues

Although revenue structures differ among countries, there are sufficient similarities to allow for a general approach to the regional allocation of federal revenues. First, a distinction is made between tax and non-tax revenues. The latter usually includes five items: (1) royalties, (2) investment income, (3) fines and penalties, (4) sales of goods and services and (5) miscellaneous non-tax revenues. Tax revenues may be grouped into four major categories. Income taxes include taxes on individual income and on corporate profits. Payroll taxes are taxes on wages and salaries levied usually on both employers and employees for social insurance contributions (old age pensions and unemployment insurance) and for health care insurance. Real property taxes include taxes levied on immovable property owned by individuals and businesses and capital taxes paid by corporations. Taxes on goods and services may be direct (on the consumer) or indirect (on the producer). They may be broad-based (general sales taxes) or product-specific (excise taxes, custom duties), and they may include the

remitted profits of government enterprises. They also include a variety of fees and charges, such as motor vehicle fees and licences.

To evaluate different approaches to the measurement of federal fiscal balances, we may divide federal revenues into: (1) revenues that are not shifted and (2) revenues subject to shifting. For the first category, the person who pays the tax is also the person who bears the full burden of the tax. In this case, the location of the tax payment (cash-flow approach) is the same as the place where the burden is borne (benefit and economic gain approaches). Therefore, all three approaches would yield the same results.

Taxes not subject to shifting

The items in this category are determined with reference to tax incidence analysis. They include: (1) personal income taxes, (2) direct taxes on consumers, and (3) payroll taxes imposed on employees.

Personal income taxes In tax or fiscal incidence studies, personal income taxes are commonly allocated to individual taxpayers on the basis of their residence. This approach assumes that the person who pays the tax is also the person who bears its burden. Although recent studies suggest that personal income taxes may be subject to some degree of shifting due primarily to (1) tax-induced migration (Bingley and Lanot 2002), (2) bargaining based on after-tax wages (Lookwood and Manning 1993), and (3) human capital decisions also based on after-tax income (Montmarquette 1974), in my view, the assumption of no shifting remains valid in the case of inter-regional redistribution. Even when such shifting may occur, it is likely to be confined within a region.

Payroll taxes There are various categories of payroll taxes. Payroll taxes may be imposed on employers and/or employees. We may separate (1) payroll taxes that have direct linkages to the financing of benefits they provide (taxes that finance specific social insurance programmes) from (2) general payroll taxes with no connection to the benefits provided to those who pay them.

Payroll taxes on employees with direct benefit linkages are similar to a price for a service rather than a tax, and their inclusion in tax incidence studies is questionable. Their inclusion is more justifiable for inter-regional redistribution because the benefits may not be matched precisely by the contributions, thus creating winners and losers on the basis of residence. Moreover, the residence of a person who paid the tax may not be the same residence at the time of receiving the benefits. General payroll taxes on employees are equivalent to the portion of the personal income tax levied

on labour, and are generally allocated to the workers who pay them based on the location of employment.

The potential for shifting exists for general payroll taxes on employers. Empirical evidence indicates that, over the long run, the burden of these taxes is largely shifted back to labour, an assumption commonly used in tax incidence studies (Kesselman 1997). This assumption is even more valid for employer payroll taxes linked to the benefits they finance. In competitive labour markets, when employees realize that the payment is directly linked to the benefit, labour supply and demand curves will shift by the same degree and the tax is borne entirely by them. This means that the three approaches to the measurement of federal fiscal balances yield the same results for both employer and employee payroll taxes.

For the analysis of inter-regional redistribution, we must recognize that these taxes and their benefits (when identifiable) should be included in the calculation and that both taxes and benefits should be assigned to those who pay them and who receive the cash payments.

Consumption taxes These taxes may have a broad base (national value-added taxes) or a narrow base (excise taxes and custom duties). They may be levied on consumers or producers, thus providing some opportunities for tax-shifting.

For direct taxes on consumers, either broad-based or excises, the standard incidence assumption is based on the 'uses' side of household budgets, implying that their burden is borne by consumers in proportion to their total consumption (broad-based taxes) or their consumption of the taxed goods and services. Browning (1978) argued that, since these taxes affect the consumer price index and since most government transfer payments are indexed for inflation, recipients of government transfers are automatically compensated for this tax. Its burden, therefore, falls on factor income. Ruggeri (1993) showed that this change in incidence is not very convincing because there are sources of income other than transfers that respond to price increases automatically (for example, investment income and wages with escalator clauses) or through negotiations. Thus, at most one may adjust for the portion of transfers that are fully indexed for inflation. Within the framework of inter-regional redistribution, this potential adjustment to the standard incidence approach would affect the results only to the extent that it differed substantially across regions. The case for using the standard assumption for inter-regional redistribution may be even stronger for excise taxes because the taxed goods are more likely to be used in the region where they were purchased than overall purchases. Therefore, the revenues collected by the federal government from these taxes can be allocated among regions in proportion to general

consumption expenditures in the case of broad-based taxes and the consumption of specific goods and services for excise taxes. Thus, for direct consumption taxes, all three approaches to the measurement of federal balances are likely to yield the same results.

Real property taxes on owner-occupied residences These taxes are generally levied by local governments and their incidence has little relevance for studies of inter-regional redistribution, which focus on federal fiscal flows. Nonetheless, it may be useful to briefly summarize their treatment in tax incidence analysis.

Three components of real property taxes are subject to taxation: land, structures, and permanently installed equipment. This tax is imposed on owner-occupied residential structures, rented residential structures, and non-residential structures. For the first category, the occupant is the owner of the land and the structure and the consumer of the residential services. Therefore, he/she bears the full burden of the tax under any incidence assumption or approach to the measurement of federal fiscal balances.

Taxes subject to shifting

Three main categories of taxes are subject to shifting: (1) corporate income and capital taxes, (2) indirect consumption taxes, and (3) real property taxes other than those on owner-occupied residential structures.

Corporate income taxes Under the cash-flow approach, corporate income taxes are allocated among regions on the basis of negotiated formulas which include the location of the head office, the wages paid and other relevant information. Under the benefit and economic gain approaches, the regional allocation of these revenues requires a number of steps because of the potential inter-regional shifting of tax liabilities. First, we must deduct the portion paid by non-residents. Then we must determine who bears the burden of corporate taxes based on tax incidence studies (Auerbach 2005; Gravelle 1994; Gravelle and Smetters 2006; Harberger 1962, 2008; Judd 2006; Randolph 2006).

These studies suggest that the incidence of corporate income taxes is different for a closed economy than for an open economy with perfect mobility of capital. In the first case there is no possibility of tax exporting among countries and the tax must be borne by domestic consumers and/or factors of production. Theoretical models, starting with Harberger (1962) suggest that in a closed economy the corporate income tax is borne by all owners of capital (recipients of interest, dividends, rents and capital gains) and this approach is used in some studies of tax incidence (US Congressional

Budget Office 2001; Vermaeten et al. 1994). Since the federal corporate income tax is applied uniformly across the country, it would be borne by the owners of capital by region in proportion to their shares of capital income. Additional regional effects may be generated if there are special interactions between federal and provincial tax systems that facilitate tax exporting among regions. In open economies there is the possibility of tax exporting and the incidence of corporate income taxes is affected by a variety of economic factors. In general, we may distinguish between an average world corporate tax rate and the differential rate in each country. With respect to the average rate, the world becomes the closed economy and the associated closed economy incidence conclusions remain valid. For the differential country rate, with perfect capital mobility this component is borne largely by domestic labour. In calculating federal fiscal balances, one may use a compromise approach by allocating the tax in part to domestic consumption, in part to capital and in part to labour. Similar conclusions apply to taxes on corporate capital.

Indirect consumption taxes Some consumption taxes are levied on producers and sellers, thus generating some shifting. For firms producing tradable goods and services, these taxes may be shifted backward to labour if capital is perfectly mobile and both exporters and import-competing firms are price takers. For producers of non-tradable goods and services, there is the possibility of forward shifting to consumers. These taxes raise similar issues as corporate income taxes and how their burden is allocated among regions depends on the assumptions about their degree of forward and backward shifting.

Real property taxes Economists agree that the burden of the tax on land is borne by landowners due to its immobility. For structures, there are two conflicting views. The traditional view assumes capital mobility and immobility of renters and owner-occupiers, and market power by the owners of commercial and industrial properties. In this case, taxes on structures are borne by owner-occupants, owner-operators and renters, and consumers in general. The new view assumes that workers and consumers are more mobile than structures, therefore, the tax cannot be borne by consumers or wage earners, and its incidence falls entirely on the owners of capital. Thus, the incidence of the property tax is more like the incidence of a corporate income tax than an excise tax. In tax incidence studies, the real property tax is usually broken down into its components (residential, commercial and industrial) and each component is assigned different incidence assumptions, which sometimes reflect a compromise between these two views (Ruggeri et al. 1994; Vermaeten et al. 1994).

Non-tax revenues

Non-tax revenues include: (1) royalties from natural resources, (2) remittances from government enterprises, (3), other investment income, and (4) sale of goods and services. These revenues usually represent a small share of total federal government revenues, but raise a number of conceptual and measurement issues.

Royalties are the price charged for selling natural resources to private sector agents. In the cash-flow approach, they would be assigned to the region where the resource transaction takes place. However, these resources are usually traded in a world market where their prices are set internationally. Often they face a price inelastic demand. In this case, these royalties are mostly passed on to consumers and can be treated as excise taxes. Any excess of the domestic royalty over the average world royalty would be borne by domestic labour. If details of the sources of these royalties are known, they can be allocated on the basis of a region's consumption of the good on which the royalty was levied. If the federal government collects royalties from a variety of natural resources and data are available only for their aggregate values, regional shares of total consumption expenditures may be used instead.

Remittances from government enterprises are similar in nature to corporate profits generated by government-owned businesses and taxed at a rate of 100 per cent. However, there are no shareholders to whom the burden of this implicit tax can be shifted. The entire revenue arises from an excess of the price over the average cost (net of the corporate tax paid). Therefore, this revenue may be treated as an excise tax and may be allocated in the same manner as royalties.

Other investment income comprises largely interest payments on loans and investments and is the flip side of interest on the public debt. Its revenue is neither from taxation nor from the sale of a publicly-provided good or service. Yet it is part of the federal government's general revenue used to finance spending programmes. Since it would be allocated in the same manner under all three approaches to the measurement of federal balances, and since generally it is not large in amount, one may allocate it among regions in accordance with the regional distribution of interest income, or use the data published by government statistical agencies when available.

Sales of goods and services generate revenues in exchange for government-provided goods and services, in a manner similar to a private business. In theory, these transactions should be excluded from federal fiscal balances. However, for currently-produced goods and services, the cost of providing them is already included in the federal government expenditures and distributed among regions in an unknown manner. The

allocation of revenues and expenditures for this item would not be the same under the three approaches to federal balances. Under the benefit approach, the benefit and payment would be treated as a simultaneous transaction. In this case, one can neutralize this item by excluding it from the calculations of federal balances on the revenue side and then subtracting its regional distribution found in government publication from the expenditure side. The cash-flow approach in theory would assign the revenues to the location of consumption or use and the expenditures to the location of production. In practice, it is likely that both revenues and expenditures would be assigned to the location of consumption, yielding the same result as the benefit approach. The economic gain approach would differ only in the case of goods for which the place of consumption may not be the same as the place of production.

Expenditures

Six components of federal government expenditures may be identified: (1) transfers to persons, (2) transfers to business, (3) transfers to other governments, (4) interest on the public debt, (5) fixed investment, and (6) current purchases of goods and services.

Similar to revenues, a large portion of federal expenditures would be allocated in the same manner under all three approaches to federal balances. The recipients of federal transfers to persons are the beneficiaries of those transfers and are identifiable by place of residence. The governments receiving federal transfers are identifiable by jurisdiction, and are expected to spend these funds to provide benefits to their residents.

Transfers to business may be viewed as negative taxes and may be allocated in the same manner as corporate income taxes. Their regional allocation would be the same for the benefit and economic gain approach, which would follow the principles of tax incidence. The cash-flow approach would allocate these transfers on the basis of the location of the receiving business.

For fixed investment and current purchases of goods and services, the three approaches to federal balances may yield different allocations. For these two items, there are greater similarities between the cash-flow and economic gain approach.

Federal spending on fixed investment can be identified by the location of physical capital. This location determines the regional allocation of spending under both the cash-flow and economic gain approaches. Under the benefit approach, what matters is not the location of the investment, but the residence of the beneficiaries of that investment.

Under the cash-flow or the economic gain approach, federal current purchases of goods and services may be divided into a wage and a

non-wage component. Under both approaches, wages would be allocated to the region where the source of employment is located, as is done with personal income taxes, which reflect an employee's place of residence. Occasionally, as in the case of Ottawa (Ontario) and Hull (Québec), the two allocations are inconsistent when the employee works in one region and resides in another region.

The allocation differs between cash-flow and economic gain approaches for the non-wage component of federal current purchases. The former approach may not use a consistent application to this item. Relying largely on records of transactions and government recording practices, it may assign the federal spending to the region where the agency to which the spending is assigned in the budgetary process is located. When the production and consumption of the goods and services takes place in the same region, there is no inconsistency because the consumption-based allocation is the same as the allocation based on the place where income is generated. When the place of consumption is different than the place of production, the cash-flow approach yields a different result than the economic gain approach.

The economic gain approach provides a consistent method for allocating the non-wage spending. If the salary of a federal civil servant residing in a certain region is viewed as an economic contribution to that region, the same treatment should be given to the payment for the services of a consultant who resides in the same region. In practice, detailed information on the residence of those who provide services to the federal government is not available; therefore, one has to resort to an approximation. Since the focus is on payments to factors of production, one may allocate non-wage federal spending in proportion to a region's private sector factor income.

Under the benefit approach, this spending component would be allocated on the basis of which region benefits from the goods and services produced by these employees. The benefit approach follows strictly the distribution principles used in expenditure incidence analysis (Ruggeri 2005), which generally divides the purchases of goods and services into two categories. The first category includes federal spending for programmes for which the beneficiaries may be identified. It includes goods and services that could be delivered by the private sector, but are directly provided or financed by the government, either because they generate large positive externalities or to fulfill some chosen equity principles. The main examples of these 'private' goods and services are publicly funded health care and education. The second category contains federal spending for programmes that do not allow the identification of beneficiaries. It includes goods and services that would not be provided by the private sector because it would

not be possible to sell them separately to individual purchasers. Examples of these 'public' goods and services are national defence and other protection of persons and property, including the justice system, and general government.

For 'private' goods and services, the three approaches to federal fiscal balances may yield similar results. Let us consider education and assume that the federal government is responsible for its funding over the entire country, but these programmes are delivered at the local level. In this case, most of the expenditures would be made in the same region where the benefits would be received. The only portion of federal education spending that would involve different allocations under the three approaches would be the salaries of a federal department of education located in the national capital.

The only category of federal spending with a marked difference among the three approaches to federal balances is the one that includes 'public' goods and services. Empirical studies on fiscal redistribution generally use two methods for allocating these goods and services: (1) on an equal per capital basis, or (2) on the basis of some concept of income. The first method is consistent with the treatment of general expenditures as pure public goods indivisible in consumption. The second method is consistent with a principle of insurance where people with higher income receive greater benefits because they have greater assets that are protected by government expenditures. The differences in the regional allocation of general expenditures among the three approaches may be reduced by a finer disaggregation that may help identify beneficiaries on a regional basis.

Interest on the federal debt is a federal cash payment to individuals and institutions holding government bonds. It is the price that taxpayers pay collectively for their unwillingness to finance federal spending entirely through domestic revenues. The goods and services provided through deficit financing are allocated among regions in the year the borrowing is incurred. The interest on the accumulated debt continues to be paid in future years through additional taxation. Yet, these payments are neither transfer payments nor payments for goods or services received. Two approaches to the treatment of this item may be used. Under one approach, the interest payments are included in the allocation in order to offset the taxes collected to pay them. Under a second approach, the redistributional effects of these payments are neutralized by excluding them from the calculation and making offsetting reductions on the revenue side.

Under the first approach, one must address two questions: (1) what portion of these interest payments should be allocated to different regions, and (2) how should this amount be allocated?

Government bonds may be held by domestic and foreign individuals

and institutions. The interest paid to non-residents imposes a burden on domestic taxpayers because it must be paid through higher domestic taxation, but provides no corresponding income to residents. Therefore, this portion of the payment should be excluded from the calculation of federal balances. The excess of revenues over payments is implicitly allocated according to the regional distribution of federal revenues. The share of payments to non-residents may be approximated by the share of federal securities they hold.

The interest on the federal debt assigned to residents may be allocated in three different ways. It may be treated as a transfer payment and allocated to the recipients of interest income by region. It may be related to the expenditures financed by borrowing and allocated in proportion to the regional distribution of federal programme spending. Or it may be allocated in proportion to the regional distribution of federal tax revenues on grounds that borrowing allowed for lower tax rates. In my view, the first approach is more consistent with the treatment of other spending because, in the year when they are made, these payments are income received by the holders of the government bonds. Whichever method of allocation is used, including interest on the debt in the calculations of federal balances and the revenues to finance it will generate some inter-regional redistribution determined exclusively by a methodological choice.

The second approach neutralizes this potential redistribution by using the same regional distribution for revenues and expenditures. With the neutralizing procedure, the total amount of interest payments would remain unallocated on the spending side. The selected distribution of the interest payments to residents would then be deducted from the revenue side. This way, the domestic component would be excluded from the calculations in a manner that would affect both revenue and expenditures by the same amount. The interest payments to non-residents would be implicitly allocated according to the regional distribution of federal revenues.

Treatment of surpluses and deficits

Inter-regional redistribution measures the fiscal resources transferred among regions through federal intermediation. For a consistent measure of inter-regional redistribution, the allocated federal revenues must equal the allocated expenditures. The likelihood of this equality in a given year is quite low. Therefore, it is necessary to evaluate options for the treatment of excess revenues (surpluses) or excess expenditures (deficits).

Surplus Governments rarely plan for budget surpluses, which may also result in surpluses on fiscal balances. Thus, one may assume that these surpluses are unplanned excesses of revenues over planned expenditures,

caused by unforeseen economic developments affecting federal revenues. This excess revenue is not part of federal fiscal balances, but represents funds collected from all regions and not spent. Yet, it imposes a fiscal burden on all regions. In my view, this excess revenue should be placed in the income or consumption concept used to measure inter-regional redistribution because the surplus on federal balances reduces the level of income or consumption in each region. Therefore, the appropriate treatment of the surplus is to deduct the value allocated to various regions from the measure of income or consumption. If we treated this surplus as unplanned excess revenue, its regional allocation would be based on the regional distribution of federal tax revenues.

Deficit Conceptually, a deficit on federal balances is the flip side of a surplus. It should be recorded as an increase in income or potential consumption in the indicators of regional disparities. The main difference from the surplus situation is the method of its regional allocation. Whereas a surplus is usually unintended, deficits are often the result of deliberate plans to finance a portion of government spending with borrowed funds. Therefore, one can allocate the deficit according to the regional distribution of federal revenues or federal expenditures. Since the deficit-financed goods and services are consumed or used immediately while the additional tax burden is shifted to future generations, the allocation according to federal expenditures may be more appropriate.

Special issues

Before turning to federal fiscal balances, I address briefly the following special issues: (1) the marginal cost of public funds, (2) expenditure externalities and consumption versus investment, (3) the interaction between federal and regional taxes, and (4) exporting of regional taxes.

Marginal cost of public funds Taxes tend to distort the decisions of private agents. General sales taxes and payroll taxes affect the choice between work and leisure; personal income taxes also affect the choice between work and leisure and additionally influence the choice between current consumption and saving and decisions about human capital acquisition; corporate taxes affect the location of business and investment decisions. If inter-regional redistribution requires higher levels of taxation, it imposes social costs in excess of the revenue raised, which are not captured by federal fiscal balances. For inter-regional redistribution, one must ask: does the extra federal taxation result in higher overall tax burdens in all regions? The answer depends on whether overall government spending is higher because of this redistribution.

Expenditures externalities and consumption versus investment The efficiency effects of taxation are paralleled by externalities on the spending side. There is increasing recognition that government spending generates social benefits in excess of the direct benefits gained by private agents. This is particularly true for government spending on education (Davies 2003), but it also applies to health care. Spending externalities have not received as much attention in the literature as the excess burden of taxation partly because they are viewed as consumption externalities, therefore, not wealth enhancing. This oversight results partly from the continuing practice in official statistics to treat all government expenditures, except fixed capital, as consumption. Yet, social scientists recognize at least five types of capital: physical, natural, human, social and civic (Helliwell 2002).

Extending the concept of public investment beyond the purchase of fixed capital has important implications for the measurement of federal fiscal balances. The calculation of these balances does not distinguish among various components of federal spending. Yet, a dollar spent on old age pension does not generate the same long-term economic effects as a dollar spent on education. As long as government investment involved only the purchase of physical capital, this approach was justifiable. If all government expenditures are consumption, they can be treated as economically equivalent regardless of where they are directed. When a large portion of government spending is investment, this equivalence can no longer be justified.

Let us consider Canada. As a trade dependent country, Canada must pay attention to international competitiveness in terms of taxation and productivity. The federal government has placed great emphasis on both, by reducing corporate taxes and expanding its involvement in financing human capital and innovation. These measures may potentially widen regional economic disparities because large corporations, universities and research centres are mostly located in the larger and more prosperous provinces. This process is self-feeding through the interaction with provincial fiscal systems. If the economies of the richer provinces grow at a faster rate because of federal investment, their fiscal capacity will expand faster than the national average. The widening of fiscal disparities in combination with the expansion of employment opportunities in the richer provinces will stimulate inter-regional migration, which is in part fiscally-induced through the original impetus of regional imbalances in federal investment.

If regional economic disparities are widened by federal spending policy, the degree of redistribution needed to maintain existing disparities of living standards will increase automatically, and this increased regional redistribution will be recorded in federal fiscal balances. The factors that caused this increase, however, remain unexposed. The policy discussions

will focus on the increased federal transfers and the blame will be placed on the political leaders in the less affluent provinces for their alleged failures to implement growth-enhancing policies. Policy prescriptions will likely include calls for changes in federal transfers to reduce the dependency of the less affluent provinces rather than a rebalancing of federal spending policies.

Interaction between federal and regional tax systems In some federations, federal and regional governments share a variety of tax bases, a situation that facilitates interactions between their respective tax systems. Let us consider provincial payroll taxes that are deductible from federal business income taxes. For the regions that levy those taxes, their deductibility is recorded as a reduction in the contribution made by those provinces to the federal coffers. If the federal government raises its tax rates in order to replace the lost revenues, this burden will be shared by all regions. The workers in the regions with the deductible payroll taxes will gain because part of their tax burden has been exported to other regions through higher federal taxation. The changes in federal revenues are captured by federal fiscal balances, the changes in economic activity by province are captured by measures of inter-regional redistribution, but the changes in the revenues raised by the tax-importing regions will remain unaccounted.

Exporting regional taxes When taxes are shifted backward or forward, part of their burden may fall on economic agents that reside outside the jurisdiction where they are imposed. Tax exporting may be limited when a regional tax is shifted to labour and inter-regional migration of labour is extremely sensitive to small changes in after-tax wages. Tax exporting is more likely to occur when the tax is shifted backward to capital income or forward to consumers, because in those cases the taxpayers cannot escape the tax burden through migration. Inter-regional tax exporting is not captured by federal fiscal balances. It could be captured in the measure of income used in the calculation of inter-regional redistribution, but the effort to include this refinement may not be fruitful for two reasons. First, the magnitude of this effect depends largely on inter-regional differentials in tax structures and tax levels. Second, it would be very difficult to measure these effects accurately.

There may also be spillovers of regional expenditures financed partly by federal grants. In a federation, the high degree of mobility of labour and capital among regions facilitates inter-regional spillovers of the effects of public spending. Thus, over the long run, the gains for a region recorded in annual federal fiscal balances may be spread to other regions. In Canada, the less affluent provinces receive equalization payments from the federal

government to raise their per capita fiscal capacity. A portion of this unconditional federal transfer is spent on education. Post-secondary education receives an additional federal subsidy in all provinces. Given the different imbalances in provincial labour markets, there is a high degree of interprovincial migration as educated young workers migrate from the less affluent to the more affluent provinces in search of higher wages and better careers. Annual federal fiscal balances include the federal transfers to the less affluent provinces in their entirety. In subsequent years, they include the additional federal revenues from higher economic activity in the more prosperous provinces. The resulting widening of regional economic disparities would be captured by indices of inter-regional redistribution based on comprehensive income measures. The increased fiscal capacity in the more prosperous provinces is not recorded in any of these measures.

The special issues identified in this subsection can potentially affect the calculation and interpretation of federal fiscal balances, but their impact is difficult to measure. These issues provide fruitful areas for future research on fiscal federalism and inter-regional redistribution.

Federal fiscal balances

The difference between federal expenditures allocated to a region and federal revenues assigned to it are called federal fiscal balances and indicate the gain or loss to a region from federal fiscal activity. In a federation, these balances do not measure the gains or losses of being part of a federal system because the federal government can influence the economic conditions in different regions through non-fiscal instruments.

In the presentation of the results, the estimated federal balances may be divided by a region's population to provide a quick comparison of how much the economic position of the average resident was affected by federal spending and revenue-raising activities. Expressed as a percentage of a measure of economic performance, they provide a rough indication of their quantitative significance with respect to a region's economy. Any presentation other than the level of these balances by region is a step towards an inter-regional redistribution interpretation, a task that requires a more detailed discussion.

3 THE INCOME CONCEPT

To measure the redistributional impact of the federal fiscal system we need to relate federal fiscal balances to a suitable measure of regional income or consumption. For this measure we need to estimate its actual value and a selected counterfactual value.

The measure of regional economic disparities used for analysing inter-regional redistribution must be consistent with the selected approach for measuring federal fiscal balances. For the benefit approach, it is more appropriate to use a consumption measure, as this approach focuses on the federal tax burden borne by individuals in a certain region and the benefits they receive from federal spending. For the economic gain approach, an income measure is more appropriate as it focuses on the federal tax burden borne collectively by the residents of a region and the factor income generated in that region by federal spending. Although the cash-flow approach is not linked to a specific concept of regional economic disparities, on the spending side it is closer to the economic gain approach. Therefore, an income measure may be more appropriate than a consumption measure.

As shown in Ruggeri in this volume, a suitable income measure includes three main components. Here I identify its main elements. The first component is the sum of all earnings by private sector agents, which may be called 'unadjusted private income'. The second component includes a number of adjustments made primarily because of the backward shifting of certain taxes and the inclusion of private pensions. The third component includes the fiscal balances. In this respect, a choice must be made on which balances to include. If regional redistribution is based on the overall economic position of the average resident in each region, then we need to include the fiscal balances of all governments. If, instead, we focus on the redistribution generated by the federal fiscal activity alone, we need to include only the federal balances. In my view, the second option is preferable for the following reasons. First, it allows comparisons for more than one year that are unaffected by changes in regional and local balances. Second, because of the potential for tax exporting and expenditure spillovers, regional balances, if not local ones, should be calculated by using the same methodology as that for federal balances. This effort may be justified only when existing fiscal arrangements allow for direct redistribution among regions without federal intermediation.

Private income plus federal or total government balances yields the income that is used as the base for the redistributional calculations (base income). The counterfactual may be selected by making reference to the approach used in fiscal incidence studies. As suggested by Ruggeri et al. (1997), a meaningful counterfactual is the distribution of income in the presence of government activity that is distributionally neutral. Similarly, for inter-regional redistribution, the appropriate counterfactual is an inter-regionally neutral federal fiscal system, which occurs when federal revenues and expenditures are allocated among different regions in proportion to their private income. This counterfactual income is called

'neutral-fisc income'. When we adjust for surpluses or deficits of allocated balances, the total amount of federal revenues is equal to the total amount of federal expenditures, federal fiscal balances are zero in each region, and neutral-fisc income is equal to private income. Finally, both base income and neutral-fisc income are expressed in per capita values in order to adjust for different population levels among regions. Base income may be estimated for the entire federal fiscal system or for selected components. To determine the redistributional impact of any selected component, base income is calculated by using the allocated value of that component alone and comparing it to the unchanging neutral-fisc income.

4 INDICES OF INTER-REGIONAL REDISTRIBUTION

The measurement of inter-regional redistribution differs from the measurement of fiscal redistribution by replacing the average member of an income group with the average member of an entire region. There are two main types of indices of inter-regional redistribution: (1) indices based exclusively on federal fiscal balances, and (2) indices based on selected measures of income or consumption. For each main type we can distinguish local from global indices.

Indices Including Only Federal Fiscal Balances

Local Indices

The simplest local index is the per capita value of the federal fiscal balances by region. These values provide an indication of the average gain by the residents of the gaining regions and the average contribution by the residents of the contributing regions. On a graph that lists regions in ascending order of per capita income on the horizontal axis and per capita gains or contributions on the vertical axis, a neutral federal fisc under a balanced budget (zero federal fiscal balances for all regions) would be represented by a horizontal line at the origin. Inter-regional redistribution would be indicated by per capita gains and contributions lined up along a line sloping downward from left to right. The steeper the slope of this line, the greater would be the degree of redistribution.

Global indices

A global indicator in this class would be the total gain by all the receiving regions divided by the total population of the contributing provinces. This ratio indicates the burden that the average resident of all contributing

regions bears to finance the level of federal inter-regional redistribution in a given year.

These two indices provide information on which regions gained most and which regions contributed most. They provide no information on the factors determining this outcome. The main determining factor behind inter-regional redistribution is the existence of regional differences in economic performance and fiscal capacity. Indices that consider these two factors are discussed next.

Indices Based on Income or Consumption

Local indices

A local indicator of inter-regional redistribution may be developed by comparing per capita base income and per capita neutral-fisc income, following Bayoumi and Masson (1995) who regressed a region's share of base income against its share of neutral fisc income.

For each region *i*, this local index (*Id*) is:

$$Id_i = [(y_{bi}/y_b)/(y_{ni}/y_n)] \quad (2.1)$$

where y_b is per capita base income, and y_n is per capita neutral-fisc income.

By transposing terms, expression (2.1) becomes:

$$Id_i = [(y_{bi}/y_{ni})/(y_b/y_n)] \quad (2.2)$$

Since in each ratio the population is the same at the numerator and the denominator, expression (2.2) can be expressed in aggregate values, indicated by capital letters.

$$Id_i = [(Y_{bi}/Y_{ni})/(Y_b/Y_n)] \quad (2.3)$$

When allocated federal revenues and expenditures are equal, the disaggregated index is reduced to the first ratio in (2.3). The numerator and the denominator of this ratio differ by the difference between actual and redistributionally neutral federal balances. This local index, therefore, measure a region's gain or loss from federal fiscal activity as a percentage of its own neutral-fisc income.

When federal surpluses or deficits are neutralized and regional plus local balances are excluded, expression (2.3) is reduced to:

$$Id_i = 1 + (B_i/Y_{ni}) \quad (2.4)$$

Mansell and Schlenker (1995) used a variation of this indicator. The relative share of federal fiscal balances assigned to region i is:

$$RS_i = [(r_i/r)]/[(e_i/e)]/(y_{ni}/y_n)] \tag{2.5}$$

where r and e are per capita federal revenues and expenditures allocated by region.

Since the population levels are the same for each of the regional and national variables, (2.5) can be expressed in total amounts of allocated federal revenues (R) and expenditures (E), with transposition of terms, as:

$$RS_i = [(R_i/E_i)/(E/R)]/(y_{ni}/y_n) \tag{2.6}$$

The degree of inter-regional redistribution may be estimated by comparing the actual RS_i in (2.6) with their values under a neutral allocation of federal fiscal balances, namely, federal balances allocated in proportion to neutral-fisc income. Ruggeri and Yu (2003) have shown that these neutral-fisc relative shares – $RS_i(N)$ – may be expressed as:

$$RS_i(N) = y/y_i \tag{2.7}$$

which means that they are the reciprocal of relative regional income disparities.

Ruggeri and Yu (2003) developed separate local indices based on these relative shares to address the following questions: (1) does the current regional distributions of federal revenues and expenditures generate more or less redistribution than the case where revenues are distributionally neutral among provinces and expenditures are allocated on an equal per capita basis (standard redistribution)? (2) What proportion of maximum redistribution, which would equalize post-fisc income in all regions, is generated by the regional distribution of federal revenues and expenditures?

To address these two questions, the authors start with expressions (2.5) and (2.6) and develop four sets of relative shares of federal fiscal balances: the actual relative shares – $RS_i(A)$, the neutral relative shares – $RS_i(N)$, the standard redistribution relative shares – $RS_i(S)$, and the maximum redistribution shares – $RS_i(M)$.

The relative share index for the standard inter-regional redistribution – $RSI_i(S)$ – is:

$$RSI_i(S) = [RS_i(A) - RS_i(N)]/[RS_i(S) - RS_i(N)] \tag{2.8}$$

which can be transformed into:

$$RSI_i(S) = [(R_i - E_i)/E_i]/[(y_i - y)/y] \tag{2.9}$$

When $RSI_i(S)$ equals 0, there is no inter-regional redistribution; when it equals 1, the federal fiscal system generates the standard inter-regional redistribution; values greater (less) than 1 indicate higher (lower) inter-regional distribution than the standard case.

The relative share index with respect to maximum redistribution – $RSI_i(M)$ is:

$$RSI_i(M) = [RS_i(A) - RS_i(N)]/[RS_i(M) - RS_i(N)] \tag{2.10}$$

The lower and upper limits of this local index are 0 and 1. This means that the estimated value of $RSI_i(M)$ measures the proportion of maximum redistribution (equal after-federal-fisc per capita income in all regions) generated by the current regional distribution of federal revenues and expenditures.

Global indices

These indices present a single indicator of inter-regional redistribution and are derived by comparing the overall degree of inequality under base income and neutral-fisc income. If we use the Gini coefficient (G) as the aggregate measure of per capita income inequality among regions, we can derive an aggregate index of inter-regional redistribution as

$$I_a = G_n - G_b \tag{2.11}$$

where n refers to neutral-fisc income and b to base income.

When federal fiscal activity redistributes income from higher to lower income regions, actual base income is distributed less unequally than neutral-fisc income, G_n is higher than G_b and I_a has a positive value. The higher this difference, the higher is the degree of inter-regional redistribution. Cassady et al. (1996) have shown that this index is equivalent to the index of vertical redistribution for fiscal incidence developed by Reynolds and Smolensky (1977).

For fiscal redistribution, Pechman and Okner (1980) suggested an aggregate index based on the proportional change in the two Gini coefficients. Using this measure yields the aggregate index:

$$I_a^* = (G_n - G_b)/G_n \tag{2.12}$$

Following Bayoumi and Masson (1995) we can develop a global index by relating the per capita values of base income in each region to the corresponding per capita value of neutral-fisc income:

$$y_{bi}/y_b = a + m(y_{ni}/y_n) + u_i \tag{2.13}$$

where u_i refers to the error term.

The estimate of $(1 - m)$ measures the average proportion of the regional deviation in per capita neutral-fisc income that is offset by federal spending and revenue-raising activities.

Global indices may also be developed for the local relative share indices following the aggregation approach used by Cassady et al. (1996) in the development of global indices from the local indices of tax progressivity proposed by Baum (1987). For inter-regional redistribution, the global indices can be calculated as the weighted average of the local indices where the weights are the regional shares of total neutral-fisc income.

5 CONCLUSIONS

This chapter discussed the major methodological issues in the measurement of federal fiscal flows in a federation and the estimation of local and global indices of inter-regional redistribution. It identified three fundamental steps in this process: (1) the assumptions about the regional allocation of federal government revenues and expenditures; (2) the selection of appropriate income or consumption concepts for measuring the redistributional effect of federal fiscal activity; and (3) the selection and application of the appropriate measures of inter-regional redistribution.

There is little to be debated about the measure of regional economic disparities. The choice between consumption and income measures cannot be arbitrary, but must be consistent with the approach selected to measure federal fiscal balances. There is also little to be debated about the indices of redistribution. They must measure the extent to which federal fiscal activity has reduced the degree of regional disparities in the selected economic indicator. We need to distinguish between local and global indices, but estimates of both should be included in the presentation of the results to determine not only the overall degree of inter-regional redistribution, but also its inter-regional equity dimensions.

There is room for debate with respect to the selection of the appropriate approach to the measurement of federal fiscal balances. Even in this area, it must be acknowledged that all three available approaches – cash-flow, benefit, and economic gain – yield the same regional allocation for a large

portion of federal revenues (those not subject to shifting) and for a large portion of federal expenditures (transfers to persons and transfers to other governments). It seems to me that developing an approach that would receive broad acceptance should not be a daunting methodological task. The compromise between cash-flow and benefit approaches incorporated into the economic gain approach may be a useful starting point.

There are two potentially more controversial areas that require more research. The first area includes a variety of issues directly related to the calculation and interpretation of federal fiscal balances. These balances are calculated within a static framework. Yet, it is known that federal fiscal policy may have long-term effects on national economic performance and regional economic disparities. These effects are not captured by annual estimates of federal fiscal balances, even when estimates are provided on a frequent basis. To fully understand the regional impacts of federal fiscal policy the analysis must be placed within a dynamic framework, which takes into account the positive and negative effects of federal fiscal actions on regional economic and fiscal disparities. It is also important to investigate the effect of fiscal federalism on overall levels of government spending and taxation, the implications of tax exporting within a country, and the spillovers from spending by regional governments. Also, it may be useful to explore whether federal purchases of goods and services have a different effect on a region's economy than transfers to persons.

Finally, it is important to investigate the extent to which non-fiscal actions by the federal government affect regional economic and fiscal disparities. If non-fiscal activity widens regional economic disparities by 10 percent and federal fiscal actions reduce them by 10 percent, no redistribution is generated by the federal government although estimates of federal fiscal balances would indicate some redistribution.

The institutions and instruments of fiscal federalism are affected by both economic and political forces. The quality of the debate on these issues can be improved by developing consistent methodologies and measurement tools that help shift the debate from differences in methods to substantive issues of policy.

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3. Inter-regional fiscal flows: interpretation issues

François Vaillancourt

1 INTRODUCTION

The purpose of this chapter is to examine how fiscal flows to and from the central government towards a set of geographical entities and thus the fiscal balances that result should be interpreted. This task requires us to reflect on the measurement of fiscal balances, including the nature of the units for whom fiscal balances are calculated and the role of information providers; the interpretation of such balances, including their relationship with other balances (trade, migratory, environmental, etc.) and the determinants of these balances; and their interaction with fiscal federalisms arrangements, thus addressing the issues of vertical, horizontal and intergenerational imbalances. These three issues correspond to the three main parts of the chapter. An appendix presents original work with Marie-Eve Jutras on the determinants of fiscal balances in Canada over the 1966–2004 period.

2 THE MEASUREMENT OF FISCAL BALANCES; FOR WHOM, BY WHOM AND HOW

Three issues are addressed in this first section of the chapter. First, for whom should fiscal balances be measured; second, who should do these calculations and third how do we carry out and evaluate the results of these calculations.

2.1 Fiscal Balances, for Whom?

It may seem odd to ask for whom fiscal flows should be calculated as they are usually calculated for large subnational units. But the choices are numerous. Leaving aside data availability for a moment, one must decide for what subnational or sub EU area one wants to make the calculations and for what time period. The natural subnational unit for

these calculations would appear to be that of subnational governments such as autonomous communities, cantons, *Lander*, provinces or states. These are after all governments with some responsibilities for regional economic activities. But recall that we are interested in the fiscal balance on a territorial basis of the central government. Should one not then use the central government territorial units which may or may not have the same boundaries as the subnational governments on its territory? For example, Canada uses Employment Insurance (EI) Economic Regions to set the requirements (number of hours worked in a given time period) and the benefits (number of weeks of eligibility) for employment insurance benefits. There are 58 such regions,[1] with only one province and the three territories having coinciding borders with the region. Newfoundland is divided in two regions (smallest number for a province) and Ontario into 16 (largest number for a province). No region overlaps two provinces, not even in the national capital area which is in practice, one labour market straddling two provinces. They are designed using census division information. Hence should one not calculate fiscal balances for these regions and not for provinces? Especially as net flows must vary greatly from one region to another; required insurable hours before a claim is paid vary from 420 to 700 hours in the qualifying period, that is the 52 weeks before a claim is made while the number of weeks for which a claim is paid varies from 14 to 45 weeks depending on both regional unemployment and the amount of insurable hours.

Another set of candidates for fiscal balance analysis is made up of cities or metropolitan areas. In most cases, they are not subnational governments nor units of the federal government. But they are probably important engines of economic growth at the national or subnational level. Hence local politicians may want to analyse their contributions to and benefits from the national government. One difficulty in this case is that the relevant economic boundary may not coincide with the political boundary; core cities may be small and generate large payments to the central government but are not viable as such since their workers live outside their boundaries.

We see two criteria guiding the decision as to what region should be used. First, it must be a reasonably self-sufficient one in terms of its labour market; it makes no sense to have as a unit of analysis a small suburb where nobody works or a small urban core where nobody lives. The second is that the data must not only be available but be of acceptable quality. One test of this is the possibility of aggregating up to the national totals from whatever unit calculations are made for. In practice, one will be limited to units for which substantial amounts of data are available, either directly from national accounts and budgetary documents or

indirectly from household and business surveys. In practice, one observes that the decision to compute or not such balances is often a political one fuelled by factors such as historical grievances, or differences in political affiliations between central and sub-national/local politicians.

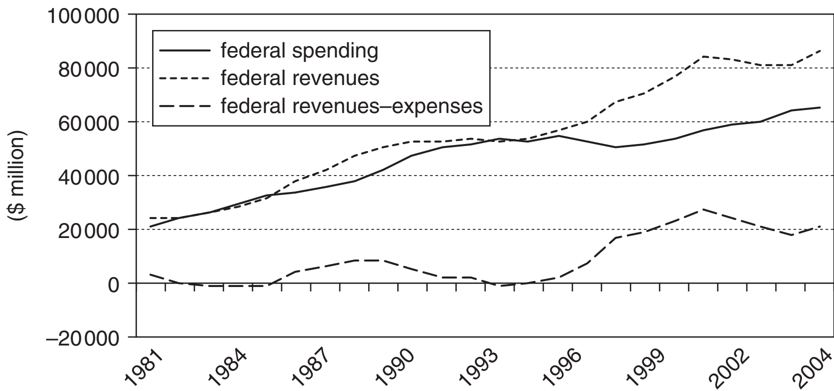
Having settled on a geographical area, one must then decide on what time period one should examine; should it be one year, calendar or fiscal? Should it be several years so as to cover a full economic cycle? This is of particular relevance if one expects some regions to have greater amplitude in their fiscal balances than others. It will not be, as noted by Vaillancourt and Bird (2005), a lifetime since regions live on forever and thus the concept, useful in individual incidence analysis, is not appropriate here. Also while this may not be optimal from a public policy perspective, budgets are set on a yearly basis and the discussion is thus carried out in terms of that period in many cases.

2.2 Fiscal Balances, by Whom

The issue of who should calculate fiscal balances put forward by the conference organizers has not been raised previously in the literature as far as we know. In Canada, where there is a long tradition of, if not research, at least debate on the regional incidence of federal expenditures and revenues (at least in a Québec–Canada context) various institutions and individuals have contributed to the debate. It was initiated in 1964 by a question to the federal minister of Finance from an opposition member of Parliament. Various studies were produced over the following ten years; they are summarized in a monograph by the C.D. Howe Institute (1977). The results for 1961 show that the evaluation of the gains to Québec from federal expenditures federal revenues range from +$CAN199 million to −$CAN139 million depending on the study cited; perhaps not surprisingly the federal government study shows a benefit and the provincial ones a loss. What we note is that these studies are produced by various bodies espousing implicitly or explicitly a specific view point. What most studies for Canada do (the exceptions are the older ones) is use the Statistics Canada provincial accounts information to calculate fiscal flows. Thus in a sense, there are official figures produced. Figure 3.1 presents evidence for Ontario.

But who should produce such numbers? Since this does not appear to have been addressed before in the literature, we chose to turn to an examination of the literature on who should set intergovernmental transfers in federal systems and who should revise the arrangements leading to such transfers.

Shah (2006) puts forward a framework to evaluate various institutional arrangements for setting equalization transfer. He uses the



Source: Statistics Canada.

Figure 3.1 Federal government, Ontario, revenues and spending 1981–2004, provincial accounts data

neo-institutional economics (North, 1990) to evaluate alternative arrangement, focusing on a comparison of an intergovernmental forum and of an independent agency in setting equalization transfers. Put differently, this compares Canadian and Australian arrangements in this area. We apply a similar framework to two possible sets of arrangements in calculating fiscal flows: a free market arrangement (FMA) where various bodies (government-national and sub-national, universities, think tanks, etc.) produce estimates of fiscal balances and a sole agency arrangement (SAA) where one agency has access to the information and provides estimates. Two kinds of SAA are considered; one is operated solely by the central government (SAAC) while the second is operated under the supervision of a board constituted of both central and subnational appointees (SAAJ). Outcomes for various objectives one may have when deciding how to produce fiscal balances are presented in Table 3.1.

Turning to the practice for reviewing intergovernmental arrangements, Gilbert and Vaillancourt (2007) reviewed the practice of evaluating equalization schemes in Canada and France. They found for Canada a series of ad hoc arrangements with reviews carried out either internally by federal and provincial civil servants when the arrangements were up for their five-year review or by outside bodies on an episodic basis. These outside reviews usually occur when equalization is under particular stress. Hence a cluster of four reports in the 2002–06 time frame by respectively a commission appointed by the Québec government (Séguin report),[2] the federal Senate,[3] the Council of the Federation[4] and

Table 3.1 Comparison of outcomes, three types of agencies responsible for calculating fiscal balances

Outcomes	FMA free market arrangement	SAAC sole agency arrangement (central government ownership)	SAAJ sole agency arrangement (joint ownership by all parties)
Diversity of approaches leading to methodological/statistical innovation	High	Low	Medium
Good public understanding of results	Low (due to multiple voices)	Medium	Medium
Buy-in of actors in results	High (for their own answers)	Low (most excluded from decision making)	Medium–High
Probability of agreeing to best methodology	High (for their own)	Medium	Low–medium (increasing perhaps with time but depends on level of cooperation)
Complexity of calculations	As needed	Higher than needed (capture by insiders)	Higher than needed

Source: Statistics Canada, CANSIM Table 384–0004.

the Expert group of the federal government.[5] These arrangements are similar to the occasional studies of fiscal balances in Canada; they are carried out on a needs basis by various organizations. One interesting point is that the Council of the federation recommended the creation of the Canadian Institute for Fiscal Information. It would 'gather information, undertake analyses, prepare reports and offer recommendations' (p. 96). This body which could have calculated fiscal balances has not been created; reporting to the proposed First Minister Fiscal Council, it would have been an SAAJ entity.

We argue that given the lack of methodological agreement in this field, governments should make data available freely and fund a research programme. If for various reasons data are not freely available, then the research programme would need a data access component. Note that we say governments; both the central and subnational governments, either separately or as a group, could fund such programmes. They would probably need to be in place for a few years and must require the publication of the results.

2.3 How

The last issue that needs to be addressed is what methodology should be used. Ruggeri (this volume) notes that there are two traditional approaches: the 'cash flow approach' and the 'fiscal incidence approach'. He then puts forward a third one the 'economics gains approach'. The cash flow approach is inappropriate as noted by Ruggeri since it does not take into account the possibility of the shifting of taxes from the point of collection to the point of effective payment or the inter-regional benefits of expenditures in one region. The economic gain approach is also inappropriate in that it assumes that all the benefits from public spending accrue to the region where it takes place; thus all spending in the capital is assumed to benefit only the capital area or the sub-national unit where it is located. Put differently there are no national public goods or at least the fact that there are public goods is not taken into account. In our opinion, given the purpose of these kinds of calculations this is incorrect. Thus the fiscal incidence approach should be the one used. That said an interesting issue is what is meant by the impact of fiscal flows. Frey (1984) examines that issue; his views are summarized in Table 3.2. One issue not raised explicitly is the capitalization of past flows in the value of properties in a given area. For example, the Belgian government agreed by the treaty of Mayence in 1839 to pay 1.5 florin per barrel (general volume unit) to the Dutch authorities for traffic flowing up the Escaut to Antwerp.[6] But in 1863, Holland was paid the sum of 36 million francs (of which Belgium paid one third and other users such as the UK the rest) as the capitalized value of future payments to abrogate this per barrel levy.[7] Thus, one would observe an annual financial flow from Belgium to Holland until 1862, a much larger amount paid in 1863 and zero financial flows afterwards. But the annual flow of benefits from the use of the port of Antwerp remains the same in 1862 or 1863 and goes up in 1864 as Dutch user fees drop to zero. But the value of free usage of the Escaut should be reflected through capitalization in the value of properties linked to port activities in Antwerp.

Evaluating the results of fiscal flow calculations will necessarily require some value judgments. That said the following criteria are useful:

Table 3.2 Impacts of fiscal flows

Time/Impact	Monetary level	Real level	Welfare level
Short run	Immediate changes of disposable income due to expenditure and taxes	Immediate changes of goods and services due to expenditure and taxes	Subjective evaluation of short-run monetary and real effects
Medium run	Final resting place of expenditure and taxes after shifting	Changes of goods and services after shifting	Subjective evaluation of medium-run monetary and real effects
Long run	Final resting place of expenditure and taxes after all adjustments (for example, migration, macroeconomic effects)	Changes of goods and services after all adjustments	Subjective evaluation of long-run monetary and real effects

Source: Frey (1984).

- Are the basic numbers produced by an independent statistical agency (such as Statistics Canada) that no one suspects of political manipulation? If not, are the possible biases discussed?
- Are explicit data sources including discussion of how the data are calculated presented and are alternative data sources when relevant discussed? For example, how is information on consumption by relevant unit arrived at: using data on sales by retailers in the region, with possible errors due to e-sales from outside the region being missed and sales to outsiders recorded as in region sales; or using data from household expenditures surveys?
- Is an explicit methodology clearly laid out to take into account the relevant final incidence of taxes? For example, how do the calculations correct for differences between point of collection and point of consumption for import duties?
- Is there an explicit discussion of the incidence of public expenditures? For example, how does one account for the services of a head

office nature provided in the capital city that are used implicitly by all regions. One perspective could be that all services are equally capable of decentralization and that creating a capital cluster is a source of benefits to one region. Another perspective is that there are synergies from such a cluster and that greater benefits accrue to all regions from this cluster.

- Is there an explicit correction for the surplus or deficit position of the central government? Figure 3.1 at one point showed federal spending in Ontario greater than federal revenues; what it does not show is that this was financed by the largest peacetime federal deficit in history. There are two possible corrections for this, on either the revenue or expenditure side. One needs to be done. And how is this linked to the interest payment on the public debt?
- Are important off-balance-sheet flows if not estimated, at least listed and their possible importance and direction discussed?
- What is the importance of three shares in the public finances of the country: the share of the federal government in overall public spending; the share of taxes whose incidence is uncertain (that is, that may be collected in one region but paid by residents of another) in federal government revenues; and the share of national 'public goods' (defense, foreign aid, etc.).

On this last point, we present evidence in Table 3.3 that shows that for Canada, these shares differed substantially between 1961 and 2001 so estimates for 1961 would be significantly more affected by the hypotheses on incidence than those of 2001.

3 THE INTERPRETATION OF FISCAL BALANCES

In this second part of the chapter, we examine how to interpret fiscal balances. We thus examine what determines them in general, present an empirical examination for Canada of the role of some of the factors deemed important and then discuss the role of other balances in the discussion.

3.1 The Determinants of Fiscal Balances: Some Factors

Given a set of institutional arrangements to which we come back later, the following real factors will explain in part the fiscal balance:

Geography Some parts of a country will be the gateway for exports or imports for all or some of it; they are located in a protected coastal area

Table 3.3 Share of main expenses and revenue sources in total, Canada, federal government, and its importance in all governments, 1961 and 2001

	Federal outlay in total government outlay (%)	Personal income tax in total federal revenues (%)	Corporate income tax in total federal revenues (%)	Sales, excise taxes and duties in total federal revenues (% custom duties)	National defense in total federal expenditures (%)	Transfers to individuals in total federal expenditures (%)	Transfers to other governments in total federal expenditures (%)
1961	62.1	31.7	20.1	34.1(8.3)	21.8	21.5	8.6
2001	40.6	46.3	14.1	21.6(1.8)	6.1	23.3	16.2

Source: Vaillancourt and Bird (2005), Table 6.

or on a mountain pass. If they are the gateway for imports, one would be tempted to assign to them the revenues collected on all imports. Even with that corrected for, the economic activity may still be higher than in other parts of the country. One issue will be natural or policy driven gateway. For example, is ice-breaking paid for by the federal government on the St Lawrence river in Canada providing a policy-driven benefit to Montreal rather than letting Halifax and St John benefit from their natural 12-month ice-free status or is it a measure to prevent flooding in the spring when ice breaks up?[8]

History To illustrate the impact of history, one can look at: the cupo/foral[9] arrangement between central government and the Basque and Navarre provinces (four in total) of Spain, the result of an historical agreement recognized anew by the latest Spanish constitution with the three Basque provinces regrouped in one autonomous community; the Union arrangements between Zanzibar and Tanganyika that led to the creation of Tanzania in 1964 which left Zanzibar with its own legislature and with wide taxation powers de facto; the retention of public lands by Texas when it joined the USA,[10] the only state outside the original 13 not to have federal ownership of public lands. These are three examples of historical decisions that still affect today, the fiscal balances within three countries. There are numerous such decisions that raise the question of what should be seen as a given and what should be seen as amenable to change.

Demographic determinants: aging Here the interaction with institutions becomes particularly important. If a country has two regions, one with a harsh climate but well-paying employment (Canada–Alberta) and a second with a pleasant climate suitable for retirement (Canada–British Columbia), then will one observe fiscal flows between the two regions as a result? This will depend on the institutional arrangements for retirement. If retirement and old age associated health issues are solely funded by private savings through capitalization of future benefits, then there will be no flows. But if retirement/health is funded on a pay-as-you-go basis, then one will see workers in the first region financing the retirement of the pensioners of the second region, creating a fiscal flow from region one to two. If the public sector offers a capitalized retirement scheme as is the case in Canada, then one may observe flows when using all government financial data. But are they really fiscal flows?

Demographic: mobility Assume again two regions inhabited by two language groups, the minority in region *A* (Canada–Québec) and the

majority in region B (Canada–ROC), with region *B* being more attractive economically. However, minority members chose not to move to region B for fear of assimilation, accepting lower wages and more frequent/longer unemployment spells as a price of this choice. If unemployment insurance is provided by regional governments, this will not create fiscal flows but if it is centrally provided with no risk premiums to finance it, as in Canada, this will create fiscal flows. A subsidiary question is: are the fiscal flows worth it? If *B* is similar to its neighbouring country *U* (United States), but $C = A + B$ differs from *U* as a result of the presence of the minority, then is it worth it for *B* residents to subsidize *A* residents in exchange for a distinct identity from *U*?

Political It is often observed that the place of origin of a political leader may benefit from this accident of birth. Perhaps the most obvious example is the rise of Yamoussoukro from birthplace of the first president of Ivory Coast to official capital of the country. But more generally, political arrangements may explain fiscal flows. For example, in Canada, some provinces have a much larger representation in parliament (House of Commons) than their population warrants; the province of Prince Edward Island has four out of 308 members or 1.3 per cent and 0.45 per cent of Canada's population in 2008. Or in Tanzania, Zanzibar has at least[11] 55 (50 directly elected out of 231 directly elected seats and five elected by the Zanzibar House of Representatives) out of 295 or 19 per cent of the seats in the national parliament while its population is only 3 per cent of the population of Tanzania. This may matter; for the United States, work by O'Laughlin (2007) shows that the number of senators per capita increases net fiscal transfers per capita (models 9.1 and 9.2, p. 31–2). In addition, she shows that various measures of political alignment (president/Senate–House of Representatives–state senate–state house of representatives) have an impact on net fiscal transfers.

3.2 The Determinants of Fiscal Transfers: Evidence from Canada

We indicated in section 2.1 some factors that could explain fiscal balances. In an appendix to this chapter, we report results obtained with Marie-Eve Jutras examining how various factors explain fiscal flows in Canada. We do not test for geographical or historical variables but address demographic, economic, political and institutional factors. We find that most variables have the expected impact and that two important variables (unemployment rate and share of population 65+) are linked to specific spending arrangements of the Canadian federation.

3.3 The Other Balances

Once an overall fiscal balance has been calculated, one needs to interpret it. To do this it must be put in context. The first context is provided by other balances pertaining to fiscal flows. One should account for:

The composition of fiscal flows
This is of relevance mainly on the spending side. Two positive fiscal balances at a given point in time, one resulting from transfer payments to unemployed, ill-educated, laid-off workers and the other to highly educated scientists undergoing R&D work do not have the same long-term consequences for a region. Similarly, funds flowing for investment purposes are more likely to help a region in the longer term than transfer payments to retired individuals. Hence difference in composition may explain in part difference in levels.

Fiscal flows and the stock of public capital
Current transfers may appear highly unfair but they may reflect past fixed investments by the central government in various regions. Thus a stock balance of public capital, provided or funded by the central government may be important in understanding current fiscal balances.

Fiscal flows and off budget balances
In some cases, public policy may result in flows outside the budget. Let us look at the case of industrial milk in Canada. The Canadian Dairy Commission (CDC), a federal body, sets production quotas by province and the support price for butter and skim milk powder which is used to determine the price paid by processors to producers (farmers). Established in 1966, the CDC paid a subsidy to producers funded by the federal government. The 1995 federal budget announced its phasing out over a five-year period but over the same period prices paid to producers were increased to fully compensate this reduction. In effect, a direct income transfer (the subsidy) was shifted from general tax revenues distributed through the budget and thus captured in the fiscal flows to a mandated consumer-financed (through higher regulated prices or a product specific excise) inter-regional transfer no longer reflected in fiscal flows (Vaillancourt and Bird, 2007).

Fiscal flows and mandated expenditures
Another issue is that of mandated expenditures when central government regulations require spending by specific economic agents. For example, requiring polluters to reduce pollution say to conform to Kyoto requirements; the issue is then not only where the polluting activity takes place

but also who will pay for the reduction in pollution. Is it production factors located in the region where the polluting activity takes place or is it consumers of the product (final demand) linked to pollution who may be located elsewhere? If polluters were subsidized by the central government to attain these goals, one would observe different fiscal flows than if they must either spend to meet quantitative output caps or buy offsets on a carbon market.

More broadly, one must look at economic balances since one possible explanation for fiscal transfers from one region to another is that these transfers are a payment or compensation for a given status. Thus metropolitan areas may make fiscal transfers to their hinterland but this is in exchange for the hinterland accepting to play its role of (1) market for the goods and services produced in the metropolis and (2) a source of natural resources and/or labour for the industries of the metropolis.

Trade flows

Internal trade flows are one explanation often given for the acquiescence by Ontario to the creation of equalization in Canada in 1957 or to the expansion of unemployment insurance in 1972. One would need to measure the value of such arrangements by, for example, estimating the rent extracted by the metropolis from the hinterland in a closed economy setting. But changes in these metropolis/hinterland relationships may make the fiscal flows less affordable or appropriate; witness the change in trade patterns of Canadian provinces after the introduction of the North American Trade Agreement (CUFTA/NAFTA) in 1989, presented in Table 3.4. Ontario now implicitly argues that, faced with competition with American states whose taxpayers do not contribute to a federal equalizations scheme, its taxpayers should no longer have to contribute as much as they do now to equalization.[12]

Human capital flows

Finally, an interesting issue is the transfers imbedded in human capital flows between regions. Breguet (2007) calculated for 1996–2001 the value for Canada of inter-provincial human capital flows using an incomes approach. Table 3.5 summarizes his results. In this context, positive federal fiscal flows to Newfoundland may be seen as payment for human capital exported from there.

4 FISCAL BALANCES AND FISCAL FEDERALISM

In this part of the chapter, we link fiscal balances and vertical, horizontal and intergenerational imbalances.

Table 3.4 Share of international and inter-provincial exports in provincial GDP, Canadian provinces, 1992 and 2003

Provinces	Inter-national X/GDP, 1992	Inter-provincial X/GDP, 1992	Inter-national X/GDP, 2003 (%)	Inter-provincial X/GDP, 2003 (%)
Canada	27.17	19.16	35.84	20.27
Newfoundland	18.50	10.29	36.99	23.92
Prince Edward Island	14.07	29.90	26.83	24.28
Nova Scotia	16.81	19.15	23.71	22.10
New Brunswick	25.55	26.30	43.88	29.26
Québec	20.56	19.38	31.53	19.89
Ontario	30.75	19.03	41.60	18.77
Manitoba	19.32	25.16	27.48	30.04
Saskatchewan	28.31	22.64	35.37	28.08
Alberta	26.65	23.26	36.52	23.68
British Columbia	23.86	12.90	26.69	15.34

Source: Calculations by the author using data from Statistics Canada, CANSIM II matrices, 386-0001) for export data and 384–0013 for GDP.

Table 3.5 Human capital flows between Canadian provinces, 1996–2001

Province	1996–2001 net flow (billion $)	Net flow as percentage of 2001 stock
Newfoundland	−13.8	−13.3
PEI	−0.9	−3.2
Nova Scotia	−2.2	−1.1
New Brunswick	−5.2	−3.4
Québec	−19.6	−1.1
Ontario	+25.1	+0.8
Manitoba	−6.2	−2.3
Saskatchewan	−11.7	−5.2
Alberta	54.5	+6.2
British Columbia	−9.7	−1.0

Source: Breguet (2007), Tables 5 and 6.

4.1 Vertical Imbalance

Some degree of fiscal imbalance seems inherent in countries with more than one level of government. As a rule, central governments tend to collect more taxes than needed, while state and local governments are often responsible for more expenditures than they can finance from sources of revenue directly under their control. The resulting difference between expenditures and own source revenues at different levels of government is called 'vertical fiscal imbalance'. It creates fiscal flows that may or may not benefit one region or another. The importance of these flows will depend, given public expenditures, both on the differences in mean income and in the distribution of income within regions and on the nature of the tax system used. Two regions with the same mean income but with different distributions would see their residents pay the same federal income tax per capita under a flat tax system but most likely a different one under a progressive system. Thus national preferences for interpersonal redistribution through the tax system will create different fiscal flows, everything else equal. Different fiscal flows will also emerge depending on the interaction between the composition of income and the tax preferences associated with these various types of income. If the rate structure of the national VAT differs between wine and beer, then in the Czech Republic, residents of Moravia will face a different burden than those of Bohemia or Silesia and thus everything else equal different fiscal flows. Finally, the importance of tax evasion may vary between regions; Sicily may have a lower reported income because of this than Umbria. As a consequence, fiscal flows to Sicily may be higher.

Overall, the larger the vertical imbalance, the more likely that important fiscal flows will emerge.

4.2 Horizontal Imbalance

In most countries, some jurisdictions are richer than others within each sub-national level of government. The resulting difference in the resources available to governments at the same level is called 'horizontal fiscal imbalance'. The more important the attempts at correcting such imbalances, the greater fiscal flows will be since resources will have to be shifted between regional entities. Note that such imbalances can be corrected using transfers to sub-national governments, the classical way but could also be corrected by federal payments to individuals that increase their taxable income or spending thus increasing the revenues of subnational governments, by federal spending on the provision of some goods and services such as roads or by reduced national taxation in some regions.

4.3 Intergenerational Imbalance

One aspect not often raised is that over time the winners and losers in terms of fiscal flows may change. Thus one region may have benefited from over-spending when the federal government was incurring deficits but may not fully reimburse the relevant debt due to changes in the inter-regional economic activity, caused by for example resource boom (positive shock) or a collapse of a market (negative shock).

5 CONCLUSION

Three issues were addressed in section 2. We indicated why fiscal balances should be measured for meaningful economic regions, why this should be done by competing providers of information and how the evaluation of these results can be carried out using various methodological criteria. We would like to come back here on the importance of not giving to a single body the right to produce fiscal flow estimates; this would stifle creativity both in terms of producing estimates but most importantly in terms of analysing such estimates.

Three issues were also addressed in section 3. We put forward a list of determinants of fiscal balances, we showed that some of them explained fiscal balances in Canada and we discussed other balances that may matter in a federation. We would like to emphasize the importance when discussing public policies of looking at all relevant issues; in the case of fiscal balances, the partial equilibrium approach of looking only at fiscal flows is unlikely to be useful. All balances should be looked at.

In section 4, we discussed the importance of vertical imbalance, horizontal imbalance and intergenerational imbalance. The last point is not usually raised in this context but in our opinion should be.

More generally, as we (Vaillancourt and Bird 2005, 2007) noted in the past, one must be careful in interpreting the results. In particular, the policy recommendation often drawn from fiscal flow analysis that the revealed 'imbalance' should be corrected, for instance by allowing the generating regions to keep more of what they produce in terms in revenue, is often unfounded.

The best indicators must be accompanied by analysis. Good numbers may not only permit meaningful assessment of certain aspects of performance, but may also suggest new and promising lines of inquiry. Unfortunately, even good numbers may be misunderstood and misinterpreted, and bad numbers may all too easily pass for good among those who do not fully understand what the numbers can and do measure, and, equally important,

what they cannot show. Notwithstanding the inherent limitations of any conceivable set of regional fiscal indicators, it is thus still worth trying to improve those we have. They may, if done well, be helpful in understanding how a country or a sub-national government is doing relative to others in roughly similar circumstances. This matters even if the reliability of the numbers may vary over time (hopefully improving over time) since the inter-regional incidence question is becoming more important over time as a result of both the increasing openness of economies, federal or not and changes in the demand for natural resources. With respect to the first point, in many countries such as Canada or Australia, the present regional political equilibrium implicitly rests on a pact between 'have' and 'have-not' regions, with the former gaining from union with the latter by serving their markets while the latter benefit by obtaining through various implicit and explicit transfers some of the tax revenues thus gained by the haves. Such pacts become less viable in a more open setting. The have regions see their capacity to serve the have-not markets decline as international imports become cheaper and more available. They may also become less interested in those markets as international exports become more important to their economy. The opening up of economies promoted by the WTO and regional or bilateral trade pacts may thus tend to reduce at least one possible economic motivation for inter-regional transfers. Of course, to the extent freer trade increases the economic opportunities of poorer regions and countries, there may be a more than offsetting gain. On the second point, natural resources in demand at a point in time may not be those in demand ten or 20 years ago; thus winners and losers change over time. This can be more (Australia) or less (Canada) well accommodated by the system of inter-governmental finance. If historically poorer regions are now winners while richer regions are not losing absolutely but relatively to the poorer regions, this is probably less stressful for a given country than if there is an absolute drop in the income of richer regions.

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NOTES

1. http://www.hrsdc.gc.ca/en/ei/region/economic_region_information.shtml.
2. http://www.desequilibrefiscal.gouv.qc.ca/index_ang.htm.

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7. http://www.ars-moriendi.be/LAMBERMONT_FR.HTM.
8. http://www.gov.ns.ca/news/details.asp?id=19981214002.
9. For more information see: http://uc3m.academia.edu/documents/0020/8568_CupoAndCommmSystems_RFS.pdf.
10. http://www.glo.state.tx.us/archives/history/statehood.html.
11. At least since some of the seats reserved for women are probably also held by Zanzibaris. See http://en.wikipedia.org/wiki/Politics_of_Tanzania.
12. www.fairness.ca.
13. This appendix draws on 'Mesure et déterminants des flux financiers fédéraux vers les provinces canadiennes, 1966–2004' an MSc essay by the first author written under the supervision of the second.

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APPENDIX: THE DETERMINANTS OF FISCAL FLOWS IN CANADA, 1966–2004[13]

Marie-Eve Jutras and François Vaillancourt

This appendix examines the impact of some of the variables discussed above in determining the fiscal flows between the federal government and the ten provinces of Canada. We exclude the three territories since the relevant institutional arrangements are substantially different from that pertaining to provinces. The analysis is for the 1966–2004 period, with the starting point dictated by the availability of data on unemployment.

We report results for fiscal flows first corrected for the federal surplus/deficit by increasing/decreasing proportionally their taxes (Table 3A.1).

Our results show that:

- An increase in the demand for spending by the two major federal transfer programmes to individuals, old age pensions and employment insurance, increases the federal fiscal flows to a province;
- An increase in the political power of a province in the federal parliament as measured by its share of seats increases the fiscal flows it receives;

Table 3A.1 Determinants of per capita deficit corrected fiscal flows, ten Canadian provinces, 1966–2004

Variables	Random effects levels	Fixed effects levels
Personal income per capita	−0.027*	−0.033
Corporate profits per capita	−0.083	−0.093*
Unemployment rate	154.75	143.7
Percentage of population 65+	520.28	571.42
Percentage of Canadian population	−546.42	−499.73
Percentage seats in the House of Commons	513.83	466.59
Constant	−4960.36	−533.39
R^2 (overall)	0.6942	0.6714

Note: All coefficients are significant at the 5 per cent level except when marked *. They are then significant at the 90 per cent level.

Source: *Mesure et déterminants des flux financiers fédéraux vers les provinces canadiennes, 1966–2004* tables 4 and 5, http://hdl.handle.net/1866/2700.

- An increase in the population share of a province reduces its per capita fiscal flows. This may reflect the presence of minimum amounts by provinces in some federal transfer programmes;
- An increase in personal income per capita, a proxy for the bases for income and goods and services taxes, and in corporate profits, the base for corporate income taxation reduces fiscal flows as they allow for higher federal revenues from that province.

Comment I

Núria Bosch

The theory of public finance, and, within it, the theory of the territorial incidence of public sector action, is the methodological basis for estimating fiscal balances. The analysis of the territorial incidence of revenues is older than that of the expenditures, and its theoretical basis is widely accepted by academics. The objective is to calculate the economic incidence of taxation, measured by the decrease that real income suffers due to taxation, distinguishing economic incidence from legal or formal incidence which are implicit in the tax payment. Therefore, economic incidence tries to determine who bears the tax burden. Once space is introduced into the economic incidence analysis, revenues are allocated to the territory where the people who bear the tax burden live.

Likewise, it would be interesting to emphasize Norregaard (1997) and Short's (1984) contributions which, contrary to the previous approach to the territorial allocation of revenues, estimate revenues generated within a region by allocating tax revenues according to the tax base of each region. As Norregaard admits, it is a legitimate strategy to assign tax revenues as if a region collected the revenues of supra-national fiscal legislation in its own territory. This criterion fits better with fiscal decentralization or fiscal federalism scenarios, in which sub-central governments have some fiscal sovereignty.

Nevertheless, the analysis of the distribution of the benefits arising from public expenditure has been proven to be, both theoretically and practically, more complicated than tax incidence analysis. The economic analysis of the incidence of public sector expenditure raises two main conceptual concerns.

The first one consists of determining the beneficiary range, which is related to the degree of non-excludability of the consumption of public goods and services and their territorial coverage. This problem brings us back to the study of the degree of divisibility of public goods and services, to their characteristics regarding the existence of congestion costs and interjurisdictional externalities, and to the existence of specific consumer groups who enjoy a privileged situation as consumers.

The second problem lies in determining the economic benefits that public goods and services bring to their beneficiaries. Economic analysis raises this question within the field of utility or welfare. However, we must do so within the income field, without the existence of any mechanical correspondence between both magnitudes. The mechanisms by which welfare improvements are translated into income increases have not been widely studied and, in any case, they are not an easy subject to deal with. In addition, welfare and income are two variables which cannot go in the same direction. Public expenditure which allows the improvement of environmental services, street lighting, or the general coexistence environment, unquestionably affects people's welfare. However, it does not directly affect their income.

On the other hand, and contrary to what has been previously said, all public expenditure itself carries some flow of financial resources, which have specific beneficiaries in the form of personnel, suppliers, and so on. These beneficiaries do not need to be the beneficiaries of the provision of public goods and services, but they establish a contractual economic relationship with the public sector. Such a relationship has some compensation. Still, the income flow is channelled through these agents, thus, it is right to ask oneself to which extent the economic analysis of the distribution of public expenditures does not need to be approached from this side.

This double nature of public expenditure (both as a compensation and as a service), implies that its territorial incidence can be approached from the standpoint of the impact or benefit that expenditures have on individuals according to their place of residence, regardless of the location where the service is produced. This is known as the 'benefit approach'. Another perspective consists of focusing on the geographical location of expenditures, regardless of the geographical situation of its beneficiaries. This is the so-called 'flow approach'. This means that we have decided to give a 'real' meaning to the flow approach instead of a 'cash flow' meaning, which would lead us to allocate public expenditures to the region where the public sector makes the payment. In the case of personnel remuneration, both versions of the flow approach coincide. However, the results can be very different in other cases. For example, purchases of goods and services are allocated to the region where they are used instead of the region where they have been acquired.

Mushkin (1956 and 1957) was the first one to establish (within the public finance field) a clear distinction between the above-mentioned approaches to allocating public expenditure. Later, Catsambas (1978) identifies four different approaches to allocating public expenditure: (1) accounting or payment approach; (2) flow approach; (3) benefit approach; and (4) general equilibrium impact approach. According to Catsambas, the first

approach makes little economic sense, and the fourth one is impossible to compute. Thus, only the second and third options are useful in practice. Moreover, Short (1978, 1981 and 1984) establishes that the territorial incidence of the expenditure can be analysed within the context of the second and third approaches.

Consequently, allocation of revenues and expenditures can be approached from two perspectives.[1] The first one is the 'benefit approach'. According to this approach, expenditures are allocated to the place where the beneficiary lives, regardless of the location where the service is produced or the investment is made. In order to do that, it is necessary to establish some hypothesis about the beneficiary range and quantify the benefits generated by goods and services. On the other hand, revenues are allocated to the territory where the people bearing the tax burden live (economic incidence), independently of who is the individual or firm which is legally obliged to pay and the location where it resides (legal incidence).

The second approach is the one called 'flow approach'. In this case, expenditures are allocated to the region where they are materialised, that is, where personnel, use of goods and services, transfer receipt and investment execution are located. More concretely, transactions of goods and services are allocated to the territory where expenditure takes place and distribution operations are allocated to the territory where they are executed. With regards to income, following Norregaard's contribution, tax revenues (either income, wealth or consumption) are assigned to the territory where the economic capacity which is taxed is located, and non-tax revenues are allocated to the place where payment is made. Revenue allocation according to this methodological criterion is not widely used. Most of the studies use the tax incidence criterion. For example, Ruggeri (this volume) only considers two ways of allocating taxes regionally: either according to the place where they are collected (he declares that this has no sense) or according to the place where the tax burden is located. In my opinion, using Norregaard's approach instead of the tax burden incidence approach is, in the end, more homogeneous and symmetric if we use the flow approach to allocate expenditures.

Both ways of allocating revenues and expenditures can sometimes coincide, but at others they can be very different. On the revenues side, both approaches can be, in the end, very close to each other, depending on the statistical indicators used in the allocation. However, allocation differs between approaches, for example, in the case of corporate tax. If we use the benefit approach, as we consider that the tax burden is transferred, an alternative consists of allocating it according to the place where shareholders, consumers and workers reside. Nevertheless, using the flow approach,

it is allocated to the territory where the benefit is generated, and this can be approximated by the gross operating surplus.

On the expenditures side, territorial allocation following one approach or the other can have very different results. For example, in the case of the expenditures made by the central services of different ministries and public bodies, using the flow approach they are allocated to the territory where workers of these agencies live (mostly concentrated in a region); whereas the use of the benefit approach implies that they should be allocated where recipients of that service live (they can be located all over the country). However, in other situations the territorial allocation of expenditures can coincide. This happens in the case of pensions and scholarships where the beneficiary is the same as the recipient of the payment.

WHICH IS THE BEST METHODOLOGY TO USE IN ORDER TO CALCULATE FISCAL BALANCES?

After what has been exposed in the previous section we can ask ourselves the following question: which is the best methodology to use in order to calculate fiscal balances? Both approaches previously analysed are valid and both are based on solid grounds, but each one brings us to different outcomes and the interpretation of them must be made in a different way too.

Computing fiscal balances can pursue two main objectives: (1) measuring redistributive or welfare effects of fiscal flows with the aim of analysing income redistribution policies, or (2) measuring the economic impact that fiscal flows have on a specific territory, this approach being the appropriate one for measuring public sector impact on the production and consumption of a community.

Depending on which is the goal to be achieved by the estimate of the fiscal balances it is better to use one methodology or the other. If the aim is to measure the effects of central public sector activities on the welfare of people living in a territory, the best approach is the benefit one. Measurement of these effects is made in terms of 'equivalent' change in the disposable income of individuals. On the revenues side, the standpoint is the decrease in purchasing capacity due to the existing tax burden. When analysing expenditures, the standpoint is the increase in purchasing capacity due to the receipt of transfers in cash and to savings coming from the free consumption of public services. The resulting balance from the fiscal balance tries to measure the redistributive effects of central public sector actions in each territory, after taking into account its residents participation in the burdens and benefits of the financial activity.

However, the flow approach is the most appropriate one if the objective is to measure the economic impact that central public sector actions have on a specific territory, determining how their macroeconomic magnitudes vary in terms of production and consumption, and the public revenues and payments located in each territory. From the revenues perspective, the standpoint is the monetary flow derived from taxation of localized wealth, income generated and consumption made in each region. With regards to expenditures, the standpoint is the monetary flow motivated by public investment and consumption, and the transfers in-kind and in-cash made in the territory. The resulting balance attempts to measure the effects caused by the set of public sector revenues and expenditures on the economic activity of each territory, regardless of the place of residence of those bearing the burden and those receiving the benefits.

NOTE

1. Both approaches were used by the 'Grupo de trabajo sobre metodología de cálculo de las balanzas fiscales' ['Task force chosen to work on the methodology for computing fiscal balances'] CEMBF (2006), created by the Ministry of Economy and Finance of the Spanish central government for establishing a methodology to calculate Spain's fiscal balances.

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Comment II

Antoni Zabalza

In their respective chapters, Ruggeri and Vaillancourt offer us a real tour de force on the subject of regional fiscal balances. There is complementarity between the two chapters and many insightful ideas. In this comment I concentrate on only one of the aspects they consider: the treatment of national surpluses and deficits in the measurement of regional fiscal balances.

The need for an adjustment of regional fiscal balances when the national budget shows a surplus or a deficit is recognized by both authors. Vaillancourt points out that there are two possible corrections, on either the revenue or expenditure side, but gives no indication of preference between the two. Ruggeri, on the other hand, proposes only one procedure, depending on whether there is a surplus or a deficit in the national budget. In particular, if one thinks that a surplus is caused by unplanned excess revenue, then the recommendation would be to correct the revenue side; whereas if the cause of a deficit is deliberate excess expenditure, the correction should be on the expenditure side. To leave the question open, as Vaillancourt does, may be unsatisfactory. But Ruggeri's proposal also has difficulties. It is based on a degree of knowledge about the causes of national budget imbalances that we do not usually have; and it considers particular causes of surpluses and deficits which do not exhaust all the existing possibilities: a surplus may be deliberate if the federal government tries to reduce debt, and a deficit may be unplanned if there is an unforeseen cyclical downturn.

In this Comment I suggest another approach to the problem, based on the assumption that national budget imbalances are mostly cyclical phenomena. It is an approximation which, as is the case with Ruggeri's, yields only one procedure. Arguably, it is also a better approximation, in the sense that it is based on a more general assumption: we may have reasonable doubts as to whether surpluses and deficits are the result of unintended or deliberate policies, whereas we know that, one way or another, cyclical effects are always in operation.

STRUCTURAL AND CYCLICAL COMPONENTS

From regional fiscal balances we want to learn the structural redistributive impact of national government fiscal policy. The problem is that observed data give us information not only about inter-regional redistribution but also about the effect of the cycle on regional fiscal flows. The purpose of this Comment is to suggest a simple and practical method to disentangle these two effects.

Define the fiscal balance of region *i* as:

$$B_i = R_i - E_i, \tag{C2.1}$$

where R_i and E_i are respectively national government revenue and expenditure in region *i*. Rearranging equation C2.1 we obtain:

$$B_i = \left(\frac{R_i}{R} - \frac{E_i}{E}\right)R + \frac{E_i}{E}(R - E), \tag{C2.2}$$

where terms without subscripts refer to nationwide magnitudes. The first term measures the structural redistributive impact of fiscal policy and the second the effect of the cycle.[1] The cyclical term can also be written as $(E_i/E)B$, where:

$$B = R - E \tag{C2.3}$$

is the national budget balance. If $B > 0$, the national government runs a surplus; if $B < 0$, it runs a deficit. The cyclical term in C2.2 adds volatility to the observed regional fiscal balance, affects its magnitude and may even change its sign. If we want to isolate the redistributive effect we must adjust the observed data for the cycle.

Ideally, we would want to identify the structural national budget balance, which may well be different from zero, and use this structural measure instead of the observed balance B. The purpose of this note is less ambitious and also less econometrically demanding. In particular, we assume that the whole of B is due to the cycle: the national government defines its fiscal policy on the basis of a balanced budget and any deviation from this balanced budget is a consequence of the cycle. In this, we follow the tradition of the literature in the sense that the adjustment refers to the whole of B, and not to a part of it. Both Ruggeri and Vaillancourt take this stance in their chapters.

CURRENT PRACTICES

Current practices use either E or R to make whatever adjustment is needed so that the national balance B is equal to zero. It is instructive to spell out the formal model that lies behind these methods.

Let the adjusted structural measures of revenue and expenditure be R^* and E^*. Then, if the adjustment is done through E, we have:

$$R^* = R, \tag{C2.4}$$

$$E^* = E + B, \tag{C2.5}$$

and $R^* = E^* = R$. On the other hand, if the adjustment is done through R, we have:

$$R^* = R - B, \tag{C2.6}$$

$$E^* = E, \tag{C2.7}$$

and $R^* = E^* = E$.

Expressions C2.4 to C2.7 refer to national magnitudes, which we assume are regionally distributed according to the observed revenue and expenditure distributions.

$$R_i^* = \frac{R_i}{R} R^*, \tag{C2.8}$$

$$E_i^* = \frac{E_i}{E} E^*. \tag{C2.9}$$

The adjusted fiscal balance of region i that we want to measure is:

$$B_i^* = R_i^* - E_i^*. \tag{C2.10}$$

If the adjustment is done via E, substitute C2.3, C2.4, C2.5, C2.8 and C2.9 into C2.10, and the adjusted fiscal balance is:

$$B_i^* = \left(\frac{R_i}{R} - \frac{E_i}{E}\right) R. \tag{C2.11}$$

If it is done via R, substitute C2.3, C2.6, C2.7, C2.8 and C2.9 into C2.10, to find:

$$B_i^* = \left(\frac{R_i}{R} - \frac{E_i}{E}\right) E. \tag{C2.12}$$

Clearly, given that in general $R \neq E$, C2.11 and C2.12 give different results: we have two alternatives and no compelling criteria to choose one over the other.[2] Vaillancourt recognizes this and simply leaves the question open. Ruggeri, on the other hand, suggests the use of C2.11 when $B < 0$ and of C2.12 when $B > 0$. We would like to argue that neither of these two approaches pays sufficient attention to what must be the main reason why national imbalances arise; namely, cyclical deviations from trend output. We thus propose a new method that tries to cover this void. In a sense, this new method brings to the fore an issue which is also raised by Vaillancourt in his chapter when he shows his concern about the cycle and asks whether the time period to which the regional flows refer should be only one year or a full economic cycle.

CYCLICALLY ADJUSTED FISCAL BALANCES

The difference between this new method (which for concreteness we call 'cyclical adjustment') and the ones discussed above ('adjustment via revenues' and 'adjustment via expenditures') is very simple. While these methods use either only R or only E to adjust observed data, the cyclical method uses both R and E simultaneously, and in a proportion that is related to the different cyclical nature of these flows.

The gap to be eliminated is B. The cyclical adjustment uses R to close ρB of this gap, where $0 \leq \rho \leq 1$, and E to close the rest of the gap, $(1 - \rho)B$. That is,

$$R^* = R - \rho B, \qquad \text{(C2.13)}$$

$$E^* = E + (1 - \rho)B, \qquad \text{(C2.14)}$$

and $R^* = E^* = \rho E + (1 - \rho)R$.

Then, substituting C2.3, C2.8, C2.9, C2.13 and C2.14 into C2.10 we find that the measure of the structural fiscal balance that the cyclical adjustment generated is:

$$B_i^* = \left(\frac{R_i}{R} - \frac{E_i}{E}\right)[\rho E + (1 - \rho)R]. \qquad \text{(C2.15)}$$

The proposed method rests on reasonably solid economic basis, yields a single result and provides a general framework of which the two existing adjustments are particular cases. If $\rho = 0$ (all the adjustment is done through E) C2.15 reduces to C2.11. If $\rho = 1$ (all the adjustment is done through R) C2.15 reduces to C2.12.

To estimate ρ we take expression C2.13, and recalling that $R^* = E^*$, we obtain:

$$\rho = \frac{R - R^*}{(R - R^*) + (E^* - E)}. \tag{C2.16}$$

The parameter ρ is the relative weight that the cyclical effect on revenue has over the total cyclical effect on both revenue and expenditure. To estimate C2.16 in terms of observable data we need to model the behaviour of revenues and expenditures over the cycle. The most parsimonious specification that we can adopt here is that revenue varies in direct proportion to income deviations from trend:[3]

$$R = R^*\left(\frac{Y}{Y^*}\right), \tag{C2.17}$$

where Y and Y^* are observed and trend nominal income respectively, and that a fraction β of expenditure varies in inverse proportion to income deviations from trend:[4]

$$E = \beta E^*\left(\frac{Y^*}{Y}\right) + (1 - \beta)E^*. \tag{C2.18}$$

Substituting C2.17 and C2.18 into C2.16 we obtain:

$$\rho = \frac{R}{R + \beta\gamma E},$$

where $\gamma = 1/(1 - \beta\mu)$ and μ is a measure of the income gap, $\mu = (Y - Y^*)/Y$. Both β and μ are small fractions; therefore their product is a second order of magnitude that can be neglected. This makes γ nearly equal to 1 and thus, approximately,[5]

$$\rho = \frac{R}{R + \beta E}. \tag{C2.19}$$

According to expression C2.19, the estimator of the parameter ρ is the relative weight that cyclically affected revenue represents over the sum of cyclically affected revenue and cyclically affected expenditure. Under our assumptions, the whole of revenue and a β fraction of expenditure are affected by the cycle.

RELATIVE FISCAL BALANCES

Equation C2.15 gives the adjusted fiscal balance in absolute terms. To express it in relative terms, the relevant income measure cannot be

observed income. Since revenue and expenditure have both been defined at their structural level, income too has to be defined at its structural level. This argument bears some similarity to the one Ruggeri makes concerning the relevant measure of performance to which the fiscal balance has to be related. His interest is to achieve consistency with the procedure used to allocate revenues and expenditures between regions; ours is to achieve consistency with the procedure used to adjust observed data for the cycle.

In C2.15, structural revenue (and expenditure) is:

$$R^*(=E^*) = \rho E + (1 - \rho)R.$$

Therefore, assuming that the income gap is uniform across regions and given the proportionality between income and revenue, the region i structural level of income that we want to use to define the fiscal balance in relative terms is:[6]

$$Y_i^* = Y_i\left(\frac{R^*}{R}\right). \tag{C2.20}$$

Thus, using C2.20, the relative form of the fiscal balance that retrieves the structural redistributive impact of regional fiscal flows is:[7]

$$\frac{B_i^*}{Y_i^*} = \left(\frac{R_i}{R} - \frac{E_i}{E}\right)\frac{R}{Y_i}. \tag{C2.21}$$

NUMERICAL ILLUSTRATION

The purpose of this numerical illustration is to evaluate the behaviour of the three adjustment methods presented above in the context of a simple economy of which we know both the structural fiscal balances generated in each region/state by the national government fiscal policy, and the observed data on national government revenues and expenditures over the cycle. Table C2.1 presents this economy in three cyclical positions: Panel A, in the trend position; Panel B, in a recession; and Panel C, in an expansion. Outside cyclical movements, we assume a stationary economy.

The economy is composed of five states: measured by their population (a total of 100 inhabitants), one of them, S3, is average size (20 inhabitants); two of them, S1 and S5, are small (five inhabitants each); and the remaining two, S2 and S4, are large (35 inhabitants each). State income is given in the first column and the states are ordered from rich to poor in terms of income per capita. The national government obtains its revenue from a 28 per cent proportional income tax and expenditures are territorially distributed according to population.

Table C2.1 Structural and observed fiscal balances over the cycle

A. Structural fiscal balances at trend ($B^* = 0$)

States	Y_i^*	R_i^*	E_i^*	B_i^*	(B_i^*/Y_i^*)
S1	6 000	1 680	1 400	280	4.67
S2	40 000	11 200	9 800	1 400	3.50
S3	20 000	5 600	5 600	0	0.00
S4	30 000	8 400	9 800	–1 400	–4.67
S5	4 000	1 120	1 400	–280	–7.00
Total	100 000	28 000	28 000	0	0.00

B. Observed fiscal balances at recession ($B < 0$)

States	Y_i	R_i	E_i	B_i	(B_i/Y_i)
S1	5 400	1 512	1 431	81	1.50
S2	36 000	10 080	10 018	62	0.17
S3	18 000	5 040	5 724	–684	–3.80
S4	27 000	7 560	10 018	–2 458	–9.10
S5	3 600	1 008	1 431	–423	–11.75
Total	90 000	25 200	28 622	–3 422	–3.80

C. Observed fiscal balances at expansion ($B > 0$)

States	Y_i	R_i	E_i	B_i	(B_i/Y_i)
S1	6 600	1 848	1 375	473	7.17
S2	44 000	12 320	9 622	2 698	6.13
S3	22 000	6 160	5 498	662	3.01
S4	33 000	9 240	9 622	–382	–1.16
S5	4 400	1 232	1 375	–143	–3.24
Total	110 000	30 800	27 491	3 309	3.01

Note: Y: GDP; R: Revenue; E: Expenditure; $B = R - E$: Fiscal balance. All figures are in monetary units, except those of the last column, which are percentages.

At the trend position (Panel A), total revenue equals total expenditure and, therefore, the national government fiscal balance is zero. This is compatible with the existence of a zero fiscal balance for the average state (S3), two positive fiscal balances for the rich states (S1 and S2) and two negative fiscal balances for the poor states (S4 and S5). These are the structural fiscal balances that, on the basis of the observed data described in Panels B and C, we will want to estimate using the three methods of adjustment.

Panel B presents the same economy in a position of recession. With respect to the trend position, we define the recession as a situation in which population and national fiscal policy are the same, and in which income goes down from 100 000 monetary units – mu) mu to 90 000 mu. Total revenue, using expression 17, goes down from 28 000 to 25 200 mu, and total expenditure, using expression 18, goes up from 28 000 to 28 622 mu. These effects are uniform for all states and their result is to reduce the size of all state balances. The national government fiscal balance goes down to −3422 mu (a deficit of 3.8 per cent of GDP).

Panel C presents the data for the same economy in a position of expansion, in which income goes up to 110 000 mu. All effects are calculated as above and the result is now an increase in all state balances and the generation of a national government surplus of 3309 mu (3.01 per cent of GDP).

Table C2.2 presents, for the two cyclical positions considered, the state fiscal balances adjusted according to the three methods described above. Panel A gives the estimates obtained by means of the adjustment via expenditures; Panel B, those of the adjustment via revenues; and panel C, the results obtained with the cyclical adjustment proposed here.

Panel A shows that adjusting fiscal balances *via expenditures* overvalues, in absolute values, the structural fiscal balances when the economy is growing over trend (expansion), and undervalues them when the economy is growing under trend (recession). Also, the differences between the estimates at the two cyclical positions are very large, with standard deviations which, ignoring the average state, go from 28 to 140. When the adjustment is done *via revenues*, as Panel B shows, the estimates improve substantially. In absolute terms, this method overvalues the structural balances in a recession and undervalues them in an expansion. Both the absolute ranges and the standard deviations of the estimates at the two cyclical positions are much smaller than in the previous case. Finally, Panel C shows that the *cyclical adjustment* of observed fiscal balances gives a very accurate approximation of the structural balances, both when the economy is receding and when it is expanding, and that the two dispersion measures are extremely small.[8]

Given the assumed cyclical behaviour of the economy and the definition of the cyclical adjustment proposed here, it is not surprising that the third method should be the best. Of more substantive interest, however, are the results concerning the two other methods and the clear advantage that, over the cycle, the adjustment via revenues has over the adjustment via expenditures.

Table C2.2 Adjusted fiscal balances (monetary units)

A. Via expenditures[a]

State	Cyclical position			Dispersion measures	
	Recession	Trend	Expansion	Abs. range	SD[d]
S1	252	280	308	65.00	28.00
S2	1260	1400	1540	280.00	140.00
S3	0	0	0	0.00	0.00
S4	−1260	−1400	−1540	280.00	140.00
S5	−252	−280	−308	56.00	28.00
Total	0	0	0	0.00	0.00

B. Via revenues[b]

State	Cyclical position			Dispersion measures	
	Recession	Trend	Expansion	Abs. range	SD
S1	286	280	275	11.31	5.67
S2	1431	1400	1375	56.57	28.33
S3	0	0	0	0.00	0.00
S4	−1431	−1400	−1375	56.57	28.33
S5	−286	−280	−275	11.31	5.67
Total	0	0	0	0.00	0.00

C. Cyclical adjustment[c]

State	Cyclical position			Dispersion measures	
	Recession	Trend	Expansion	Abs. range	SD
S1	280	280	280	0.03	0.06
S2	1399	1400	1400	0.17	0.29
S3	0	0	0	0.00	0.00
S4	−1399	–1400	−1400	0.17	0.29
S5	−280	−280	−280	0.03	0.06
Total	0	0	0	0.00	0.00

Notes:
a. Expenditures adjusted so that total expenditure equals total revenue.
b. Revenues adjusted so that total revenue equals total expenditure.
c. Formula 15. ρ (formula 19) at recession: 0.8149; ρ at expansion: 0.8485; β: 0.2.
d. Standard deviation.

CONCLUDING REMARKS

This note has presented a method of adjustment of regional fiscal balances that seems particularly advantageous with respect to current practices. In fact, the ordering of methods that comes out of this exercise – which from best to worst is: 'cyclical adjustment'; 'adjustment via revenues'; and 'adjustment via expenditures' – is a very robust result that will apply wherever the (absolute) cyclical elasticity of revenues is significantly greater than the cyclical elasticity of expenditures, which clearly is a regular feature of all developed economies.[9]

Naturally, as is the case with current practices, the method proposed here is an approximation. It will work well if revenue is approximately proportional to income and if national government budget policy is approximately balanced. Departures from these references will weaken the usefulness of the approach. In particular, if national government imbalances are due to deliberate budget policy, then the approach suggested here will not necessarily capture the particular reasons that have led the national government to run a deficit or a surplus. But then it is difficult to know whether such deliberate policy has in fact existed and what its nature and effectiveness have been, whereas we know that, to one extent or another, cyclical effects are always in operation.

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NOTES

1. Equation C2.1 can also be expressed as

$$B_i = [(R_i/R) - (E_i/E)]E + (R_i/R)(R - E).$$

The argument in the text follows the same with this equivalent form of equation C2.2.

2. Expressions C2.11 and C2.12 can also be arrived at by subtracting from C2.1 the region's share of the national balance. If the share is relative expenditure, the result is C2.11; if it is relative revenue, the result is C2.12.
3. The proportionality between revenue and output may not be a bad approximation if we take into account that R is the revenue obtained from *all* taxes.
4. β is the proportion that expenditure programmes affected by the cycle (unemployment insurance, for instance) represent over total expenditures.
5. Suppose (to follow the numerical illustration below) that the values of β and μ are 0.2

and ±0.1 respectively. Then, the approximation error of 19 would be +0.28 per cent and −0.40 per cent, depending on whether the output gap is positive or negative.

6. The assumption that the income gap is the same for all regions implies that $Y/Y^* = Y_i/Y^*_i, \forall i$. Given this, 20 follows directly from 17.
7. The same argument applies to the two existing methods to adjust fiscal balances. Be the adjustment done exclusively via expenditures or exclusively via revenues, the appropriate *relative* form of the fiscal balance is given by expression 21.
8. Although not explicitly given in the two tables, and consistent with note 7, if relative fiscal balances are calculated using expression 21, then the correct relative structural balances are identified for the three methods considered in this note. This, of course, is due to the proportionality assumed in this simple economy between income and revenue.
9. This will always be the case if the proportion of expenditures affected by the cycle is less than the corresponding proportion of revenues. That is, in the context of the present model, if $\beta < 1$. In the particular economy defined here, the elasticity of revenue with respect to income is 1 over the whole cycle, whereas the elasticity of expenditure with respect to income, which is given by the expression

$$\varepsilon_{EY} = -\{\beta/[\beta + (1 - \beta)(Y/Y^*)]\},$$

is −0.22 at the position of recession and −0.18 at that of expansion.

4. Constitutional reforms, fiscal decentralization and regional fiscal flows in Italy

Maria Flavia Ambrosanio, Massimo Bordignon and Floriana Cerniglia

1 INTRODUCTION

In the Italian case, the issue of measuring regional redistribution, or fiscal flows across regions, has not only a scientific interest. In the last 15 years, the country has been involved in a complex, confused and unfinished process of fiscal decentralization. A constitutional reform, approved in 2001 and which should have consolidated the new financial and political relationships between governments, is still waiting to be applied. The sharp difference in the level of economic development across areas of the country, with the consequent high level of territorial redistribution, has been both one of the main causes of the decentralization process, and the main obstacle for its conclusion. The worsening conditions of the economy, which has seen the rate of growth halving in the 2000s with respect to the 1990s, and the consequent financial difficulties of the public sector, have contributed to exacerbate the distributional conflict between territories. Regional parties, playing the role of advocates for the respective territories, have seen increasing political support, although they still collect only a minority of electoral support. In this context, data on fiscal flows are continuously produced and thrown into the political arena by various actors, political parties, interest groups and media alike, with little scientific underpinnings and often with limited adherence to reality. The confusion in the debate is facilitated by the poor quality of official data concerning regional expenditure and revenue, possibly a result of the national tradition of strong centralization of the public sector. Only recently some progress has been made, but we are still far from the transparency in regional fiscal data which would be required for a functioning fiscal federal system.

In this chapter, we present a careful attempt to estimate regional

fiscal flows, by considering different data sources and combining them coherently. Given the difficulties of building up a consistent data set, we consider only one year (2005) and only focus on current expenditure, disregarding capital expenditure. For methodological reasons which are better detailed in the rest of the chapter, we apply a benefit principle to the regional allocation of public expenditure, but we avoid considering tax shifting phenomena across regions. We also disregard interest payments on public debt from our computations.

Our results confirm the presence of strong financial flows from the rich regions of the North to the poor regions of the South. Through the public budget, a representative resident of the richest region, Lombardia, transfers about 30 per cent of the total taxes and contributions she/he pays to the other regions, while a representative resident of the poorest region, Calabria, receives 55 per cent in excess of what she/he pays. Per capita public expenditure for fundamental services (health, education) is approximately uniform across the territory, but there is a larger variance in the other local functions, where local tax revenue plays a much larger role. On the whole, total expenditure per capita turns out to be higher in the Northern regions. However, per capita tax revenue is much lower in the South of the country. This is almost entirely due to regional differences in income levels, as the tax system turns out to be approximately proportional to GDP. We also confirm the condition of absolute advantage of the Italian 'special' regions, which enjoy a more favourable financing system than 'ordinary' ones. We also attempt to isolate the different forces that shape the process. Social protection imbalance (mostly, in Italy, pensions for retired workers), for instance, plays an important role in determining the regional distribution of resources, in some cases working in the opposite direction of the fundamental North–South division line. We finally compare our results with previous attempts which have been made in Italy to estimate fiscal flows. It is comforting to note, considering the difference in methodology and data, that our results turn out to be broadly consistent with the existing literature.

The rest of the chapter is organized as follows. Section 2 describes the decentralization process in Italy from the beginning of the 1990s to date, also introducing the reader to the mysteries of the new Italian Constitution. Section 3 offers more substance to this discussion, by presenting a few data on past and expected future (constitutionally driven) decentralization. Sections 4 and 5 present our estimations of regional fiscal flows. We begin in section 4 by describing our data set, its limitation, and the methodology we follow. We then discuss separately our regionalization of public expenditure and revenues, commenting upon our findings. In section 5 we finally compute our fiscal flows and disentangle them into their main

components. Section 6 compares our findings with the previous literature. Concluding remarks are offered in section 7.

2 THE ITALIAN PATH TOWARD FISCAL FEDERALISM

The 1990s in Italy were a period of radical change in the financial relationships between levels of government. The process can be summarized by just two numbers. In 1992, when the reform process got under way (in the wake of a severe financial crisis and on the road towards Maastricht) only 15 per cent of sub-national governments' revenue came from their own taxes; the rest came from central government's transfers, most of which were earmarked to particular items of expenditure. By 2000, own taxes of local governments accounted for almost 45 per cent of sub-national total revenue, and almost all earmarked grants were transformed into block grants, with no strings attached to the money. What is more, in 2001 the country changed its Constitution, in the direction of more decentralization, and in 2006 it attempted to change it again (but failed), when a national referendum rejected a constitutional amendment introducing even more decentralization. The story has not come to an end, however. Following the national elections of April 2008, a new centre-right coalition took power, and inside this coalition, the Northern League, a separatist party of the North of Italy, almost doubled its share of votes. In this party political agenda, fiscal federalism ranks first, and under its pressure, in October 2008 the new government approved a new framework law[1] aimed to further implement the 2001 Constitution, by reinforcing the fiscal autonomy of local governments and by revising the inter-regional redistribution mechanism.

2.1 Some Basic Facts about Levels of Government in Italy

In Italy there are three levels of sub-national governments, namely 20 regions (regioni), 107 provinces (provincia) and 8101 municipalities (comuni), with no legal hierarchical links between the different levels of sub-national government. Regions are divided in two groups, 15 'ordinary' and 5 'special', the two islands and three small regions at the Northern border, one of which (Trentino Alto Adige) is in turn divided in two autonomous provinces (Provincia di Trento and Provincia di Bolzano). Special regions enjoy a particular status, more autonomy, and a different (and often more generous) financing system than ordinary regions. Special regions were introduced in the aftermath of World War II in response to a

threat of secession and as a result of international treaties aimed at defending linguistic minorities living in these regions. Italian regions differ to a large extent in terms of size, population, and economic development.

Table 4.1 presents some selected regional indicators for the year 2005. As we discuss below, the differences stressed in the table are useful to understand the Italian evolution towards fiscal federalism and to interpret our results in terms of regional fiscal flows.

2.2 The Decentralization Process of the 1990s

The Italian constitution of 1948 foresaw the creation of ordinary regions, which were set up only 20 years later when financing was granted by a number of earmarked transfers and tax shares. However, over the last three decades, Italy has gradually implemented a process of fiscal decentralization and reformed fiscal relations among levels of government. Table 4.2 summarizes the main institutional changes underpinning this path toward fiscal federalism.

The Italian Constitution of 1948 foresaw the creation of ordinary regions. However, in contrast to special regions, which were introduced immediately after the war, ordinary regions were set up some 20 years later, in 1970, when for the first time, regional elections took place. During the 1970s and 1980s, following the 1948 Constitution, most functions related to health care were attributed to the ordinary statute regions, together with agriculture, industry and local transportation. Financing was granted by a number of earmarked transfers and tax shares. Municipalities traditionally enjoyed more tax autonomy than regions. However, in 1973–4, a massive tax reform strongly centralized revenues, so that taxing power was taken away from municipalities and substituted by a system of grants from the national government. The system proved to be unstable, however. Sub-national government's spending systematically and significantly exceeded their own revenues; the deficit was covered ex post by the central government, and endemic problems of soft budget constraint emerged in the Italian intergovernmental system (see Bordignon, 2000; Bordignon and Turati, 2009) Following the turmoil at the beginning of the 1990s, a number of reforms were implemented with the aim of hardening the local budget constraints and improving accountability and responsibility of local governments. These reforms affected both the expenditure and in particular, the financing side – through the assignment of new local taxes to regions and municipalities (see Table 4.2).

Reforms, however, did not only occur on the local budget side. In an attempt to further improve the accountability of local governments, electoral reforms were introduced both at the municipal (1993) and at regional

Table 4.1 Socio-economic indicators by region (2005)

	Population	Area (km^2)	Population by age		GDP per capita (000 euro)	Incidence of poverty	Rate of employment 14–65
			0–14	>65			
Piemonte	4 330 172	25 399	12.4	22.4	26.8	7.1	64.0
Valle d'Aosta	122 868	3 263	13.2	20.2	31.8	6.8	66.3
Lombardia	9 393 092	23 861	13.6	19.4	31.6	3.7	65.5
Trentino Alto Adige	974 613	13 607	16.1	17.7	30.4	5.1	67.1
Veneto	4 699 950	18 391	13.9	19.2	28.5	4.5	64.6
Friuli Venezia Giulia	1 204 718	7 855	12.0	22.6	27.0	7.2	63.1
Liguria	1 592 309	5 421	11.1	26.5	24.9	5.2	61.1
Emilia Romagna	4 151 369	22 124	12.5	22.7	29.9	2.5	68.4
Toscana	3 598 269	22 997	12.1	23.2	26.7	4.6	63.8
Umbria	858 938	8 456	12.5	23.3	22.9	7.3	61.6
Marche	1 518 780	9 694	13.1	22.6	24.5	5.4	63.5
Lazio	5 269 972	17 207	13.9	19.1	29.3	6.8	58.4
Abruzzo	1 299 272	10 798	13.4	21.3	20.1	11.8	57.2
Molise	321 953	4 438	13.4	22.0	17.8	21.5	51.1
Campania	5 788 986	13 595	17.5	15.3	15.8	27.0	44.1
Puglia	4 068 167	19 362	15.7	17.3	15.9	19.4	44.4
Basilicata	596 546	9 992	14.5	19.9	16.9	24.5	49.3
Calabria	2 009 268	15 080	15.3	18.3	15.8	23.3	44.6
Sicilia	5 013 081	25 708	16.2	18.0	16.1	30.8	44.0
Sardegna	1 650 052	24 090	12.9	17.6	19.1	15.9	51.4
Italy	**58 462 375**		**14.1**	**19.7**	**24.4**	**11.1**	**57.5**

Table 4.2 Main steps to fiscal decentralization

1948	• Constitution foresees the creation of regions; special powers are granted to five special statute regions.
1972–7	• 'Ordinary statute' regions are set up. The tax reform of the early 1970s heavily centralizes revenue against the significant decentralization of expenditure.
1978	• Health expenditure is decentralized to regions.
1992	• Health contributions and automobile taxes are attributed to regions. • Attribution of ICI (a local tax on property) to municipalities.
1993	• Electoral reform: the mayor and the president of provinces are elected directly by citizens.
1995	• Specific state transfers are abolished and replaced by a share of the excise on gasoline. • A new equalization fund is set up.
1997	• A new tax on productive activities (IRAP) is introduced and assigned to regions and its yield more than replaces the abolished compulsory contributions to the national services.
1998	• A surcharge on the personal income tax (IRPEF), by 0.5 percentage points, is introduced (offsetting an equal reduction in the national IRPEF) for regions and municipalities.
1997–8	• Bassanini Laws: more administrative powers are attributed to local governments
1999	• A reform having constitutional status granted the regions' freedom to decide their own form of government and regional statutes.
2000	• Legislative decree 56 replaces central transfers with tax revenue sharing (the most significant share is based on a time-varying formula for VAT to be assigned to regions).

level (1999), roughly moving the local electoral rules from the traditional pure proportional-parliamentary system to a presidential-majoritarian one (direct election of mayors and presidents of regions). This strengthened the political importance and the powers of mayors of big cities and of regional presidents, who were elected for the first time under the new system in the spring of 2000. These new political leaders started to call for more reforms and more devolution of powers, especially in the north, where the Northern League gained a majority. Under this new political

scenario, the national parliament began a discussion to introduce amendments on the articles of the 1948 Constitution relating to the distribution of powers and resources between levels of government. In spring 2001, the parliament approved a constitutional reform which modified a number of articles (from 114 to 133) concerning the powers of sub-national governments and their financial relationships with the central government. The reform was approved by popular referendum in October 2001.

2.3 The 2001 Constitutional Reform

A detailed discussion of the overall implications of the new Constitution would go far beyond our aims here (see Giarda, 2004). However, key elements are the attribution of new legislative powers and competences to regions in a large subset of functions. Furthermore, the new Constitution also allows for 'asymmetric federalism' and makes the plea that as far as possible, power of executions should be transferred to municipalities and provinces.

But the key innovation of the new Constitution is article 119, that describes the new fiscal relations among the different levels of government. First, it establishes that the regions ought to be financed totally with revenue of their own and tax shares, allowing them to introduce new taxes, and ruling out transfers by the central government as standard practice of financing. Second, it introduces an inter-regional redistribution fund whose sole purpose is to reduce the differences in the fiscal capacity of different regions (in the form of unconditional grants), with no reference to difference in regional needs or current regional expenditure.

This article has proved to be too revolutionary to be implemented so far. Several attempts and also several amendments to the Constitution which were proposed during the 2000s failed or were rejected by referendum. In spite of the new Constitution, regions and other local governments are still financed as they had been in the 1990s. This contradiction between the Constitution and ordinary legislation creates a situation of continuous uncertainty for private economic agents, and has generated an ongoing conflict between the regions and the central government (the constitutional conflict before the Italian Constitutional Court increased by 500 per cent after the reform).

While it is clear that this situation cannot go on indefinitely, it is also clear why it has proved so difficult so far to implement the new Constitution. First, there is a distributional conflict between areas of the country. As we document below, the distance between the rich regions of the North and the poor regions of the South is simply too large to allow for a literal implementation of the new financing systems. Second, the

deteriorating economic situation of the 2000s and the need for the more productive North to regain the ability to compete at the international level has made this conflict even more acute, invigorating separatist movements in the North. Third, the ongoing difficulties of public finance (with a debt/GDP ratio that is still above 100 per cent) have made the central government, in spite of the Constitution, unwilling to give up resources and functions to the periphery, fearing that this may result in a loss of control and a financial crisis.

2.4 The Current Situation and Future Developments

In the meantime, with the formation of the new government, the legislative process for implementing the new Constitution has started again. As already mentioned, a 'moderate' project to implement article 119 of the Constitution has been finally presented by the central government in October 2008 and once approved by Parliament (expected, Spring 2009), it is going to be implemented in the following two years by government decrees. The project is moderate in the sense of allowing for more regional redistribution than a simple reading of article 199 would suggest, as the proposal recognizes that the redistribution system must guarantee the 'full financing of the essential levels of fundamental services' (such as health and education) in all the national territory, disregarding article 119 on this respect. But the meaning of this proposition in terms of regional redistribution has been (on purpose?) left unclear, and we will have to see if this project (and the government coalition which proposed it) survives when it will be made precise in the future implementation phase.

3 THE DATA: REVENUES AND EXPENDITURES BY LEVELS OF GOVERNMENT

3.1 Some Data on Decentralization in the 1990s

But what exactly did happen in the 1990s in terms of devolution of functions and resources? And what would the new Constitution imply in terms of further devolution to local levels of government? This section briefly answers these queries.

First, we look at expenditure. Table 4.3 presents a decomposition of total public expenditure (including interest payments) by levels of governments and by function in two selected years, 1990 (at the beginning of the decentralization process) and 2006 (the last year available).

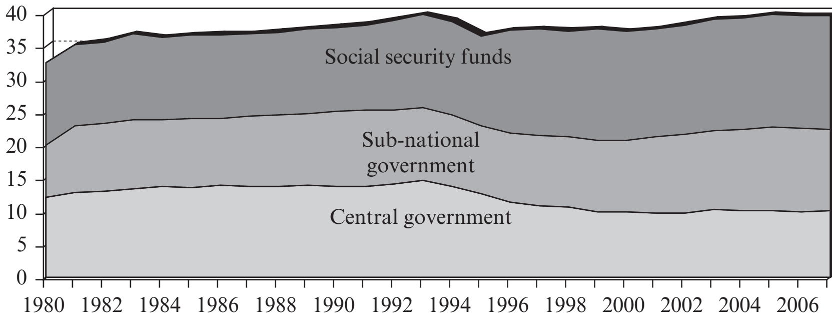
Table 4.3 speaks for itself. In the given time interval, there has been a sharp

Table 4.3 Public expenditure by levels of government and by functions (% of the total expenditure of the general government) in 1990 and 2006

Expenditure by function, 1990	Central government (%)	Sub-national governments (%)	Social security funds (%)
General public services	86.75	13.25	0.00
Defence	100.00	0.00	0.00
Public order and safety	88.12	11.88	0.00
Economic affairs	61.15	38.85	0.00
Environment protection	13.30	86.70	0.00
Housing and community amenities	17.37	70.45	12.18
Health	1.95	97.66	0.38
Recreation, culture and religion	29.56	70.44	0.00
Education	77.19	22.81	0.00
Social protection	16.92	3.78	79.30
Total	48.85	26.76	24.39
Expenditure by function, 2006	Central government (%)	Sub-national governments (%)	Social security funds (%)
General public services	73.7	26.3	0.0
Defence	100.0	0.0	0.0
Public order and safety	87.2	12.8	0.0
Economic affairs	61.8	38.2	0.0
Environment protection	15.3	84.7	0.0
Housing and community amenities	9.4	90.8	−0.2
Health	1.4	98.5	0.1
Recreation, culture and religion	35.0	65.0	0.0
Education	72.7	27.3	0.0
Social protection	1.9	3.6	94.4
Total	35.1	30.8	34.1

Notes: Spesa, della Amministrazioni Pubbliche funzione 1990–2006, 7 February 2008. Expenditures include also expenditure for interests on debt and it is included in general public service carried out by central government. Sub-national governments here include regions, provinces, municipalities plus other small local public entities endowed with their own budget (public universities, chambers of commerce, etc.).

Source: ISTAT.

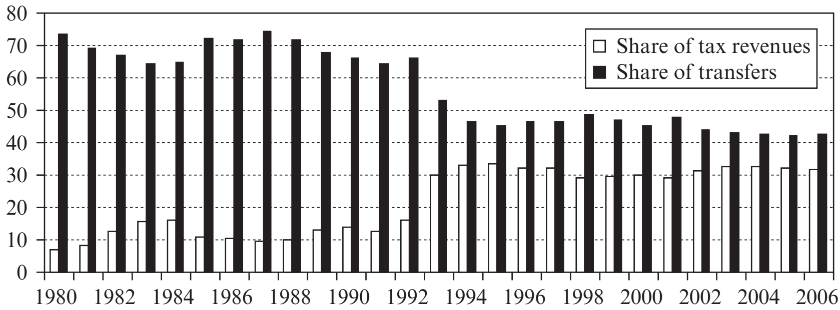


Source: ISTAT, conti ed aggregate economici delle Amministrazioni Pubbliche, various years.

Figure 4.1 Current public expenditure by levels of government (in percentage of GDP, years: 1980–2007, net of transfers and interest on public debt)

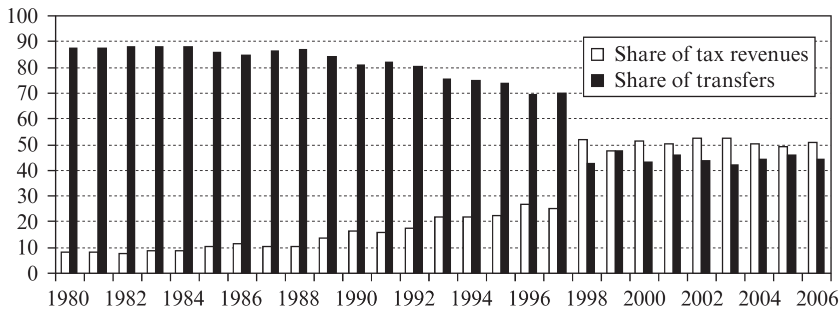
reduction in the amount of expenditure attributed to the central government, a moderate increase in the share of expenditure intermediated by local governments, and a sharp increase in the share dedicated to social protection (from 24 to 34 per cent). But looking more carefully at the single functions, we see that there is little evidence of decentralization on the expenditure side.[2] The sharp reduction in central government share was largely due to the fall of nominal interest rates granted by the admittance to the EMU (interest payments fell by almost seven points of GDP in the period), while the increase in social protection is the result of a rapidly ageing population (20 per cent of Italian population is now more than 65 years of age) and of a very generous pension system. In terms of functions, the distribution of expenditure between the central and local level of government appears remarkably stable in the period and all the increase in general government expenditure can be attributed to raising social protection outlays (see also Figure 4.1).

As anticipated, the evidence for decentralization is instead much more robust on the financing side. The evolution of the share of tax revenue on total revenue of sub-national governments, shows a sharp increase of local governments' 'fiscal autonomy' during the period 1980–2006. This ratio increased from just about 7 per cent in 1980 to over 45 per cent in 2006. Considering the two main levels of local governments (regions and municipalities), we see that this implied a sharp reduction in grant financing and a corresponding sharp increase in tax financing (see Figures 4.2 and 4.3). Regions in particular, moved from being financed by tax revenue for only about 15 per cent in 1990 to over 50 per cent of their budget. Of course,



Source: Conti ed aggregate economici delle Amministrazioni Pubbliche, various years.

Figure 4.2 Fiscal autonomy of municipalities



Source: ISTAT, conti ed aggregate economici delle Amministrazioni Pubbliche, various years.

Figure 4.3 Fiscal autonomy of regions

these numbers have to be taken with care as they merge own taxes (where local governments can at least vary the rates) with local shares of central taxes (where there is no autonomy). But the main jumps in the graphs do coincide with the introduction of two main own taxes for local governments; the property tax for municipalities (called ICI and introduced in 1993) and a tax on value added raised at the firms level (called IRAP and introduced in 1998) for regions.

3.2 Implementing the New Constitution

A related question is how much more decentralization is implicit in the 2001 Constitution, since, as we argued above, most of it is still waiting to

be implemented. There are a few estimations, a sample of which is offered in the tables. ISAE (a Treasury institution for economic research) for instance, estimated that a full implementation of the constitution in the same year would have meant devolving to regions about €70 billion (5 per cent of GDP), a figure similar to the one estimated by other studies (Bordignon and Cerniglia 2004; ISAE, 2005). Notice that according to these estimations, education is the main function to be devolved to regions (expenditure on education is nowadays only 27.3 per cent of total expenditure for sub-national governments, see Table 4.3),[3] plus some other functions related to social protection and to the management of the territory. the 5 per cent of GDP is quite a large figure, but it should be noticed that it is not entirely out of step in an international context (after the devolution, Italy would become slightly more decentralized than, say, Spain).

But the catch is in the inter-regional distribution of this expenditure. As Table 4.4 makes clear, by presenting the same data on a per capita basis, this central expenditure to be devolved to regions is unevenly distributed on the territory.

In the Southern regions, it is, on a per capita basis, 50 per cent higher than in the Northern ones. This is not surprising, as the functions to be devolved are strongly labor-intensive, and it is well known that there are relatively more public employees in the South than in the North. In turn, this distribution of public employment reflects both efficiency considerations and pure waste. The result is however a serious obstacle to the implementation of the Constitution.

As Table 4.4 shows, for instance, if all this devolved expenditure were

Table 4.4 Implementing the new constitution: devolution of new resources across areas of the country

Regions	New expenditure after devolution		
	Million euro	Euro per capita	Percentage of regional GDP
Centre–North	37 991	1 087	4.2
South	20 478	1 461	9.4
Total ordinary regions	58 469	1 194	5.2
Total special regions	10 584	1 185	6.3
All regions	69 053	1 193	5.3
Centre–North	39 584	1 063	4.1
South	29 469	1 426	9.1

Source: ISAE, 2005.

to be financed entirely out of local resources, the rich Northern regions would only need a devolution of tax resources equal to about 4 per cent of their GDP, while a figure almost three times higher (around 10 per cent of regional GDP) would be needed in the poorer Southern regions. And indeed, it is easy to show that some of the poorest regions of the South would be unable to finance their total expenditure (current plus devolved) even with a full devolution of all national and local taxes raised in their territory.

4 TOWARDS THE COMPUTATION OF NET FISCAL FLOWS IN ITALY

4.1 Methodology Problems and Lack of Reliable Data

One serious problem with discussing regional distribution of public funds in Italy is the poor quality of available data. This does not mean that attempts have not already been made to compute 'fiscal flows' across Italian regions; on the contrary, as we illustrate in section 5, these computations abound, are continuously discussed in the local or national press, and therefore certainly inform the public debate. But the quality of these exercises is poor, and they are mostly produced in order to be cast into the political arena, rather than as serious attempts to understand causes and effects of inter-regional redistribution. A few academic exercises have also been produced in the past but, affected as they are by lack of data, they too can only be considered as very rough approximations of the existing situation. We comment on them in section 5.

Notice that there may be (or may have been) some very good reasons behind this poor quality of local data. Traditionally, Italy has always been a very centralized country, and therefore the need was never felt to compute precise numbers on local taxes and expenditure, as well as on the localization of central public expenditure, which is largely determined by personal (for example, across individuals) rather than territorial (for example, across level of governments) redistribution. Possibly, this lack of transparency might also have been functional to support on political grounds the huge amount of inter-regional redistribution which is carried on by the public sector (see Bordignon and Minelli, 2001). It is only in the more recent years that the main statistical Italian bodies,[4] pressed by the on-going decentralization process, have started producing data on the regionalization of (some items of) public expenditure and revenues.

A very promising start in this direction is represented by the CPT (Conti Pubblici *Territoriali)* database, a project supported by the Department

of Development Politics (originally, a Treasury department), which has attempted to provide information (for the 20 Italian regions) about revenues and expenditure levied in each region by each level of government (central government, regional government and other local governments). In addition, expenditure for any level of government is presented according to both a functional and an economic classification, and budgetary data are consolidated, by eliminating intergovernmental financial flows (such as transfers among different levels of government). One limitation is that CPT data are cash flow data and cover only the period from 1996 up to 2006. But in spite of these limitations, it is clear that if the CPT data set were entirely reliable, the task of producing analysis on inter-regional redistribution in Italy would have been enormously facilitated. Unfortunately, our close scrutiny of the CPT data and a detailed comparison with data deriving from other sources has shown the existence of severe pitfalls, so severe that they did not allow us to use the CPT directly in the exercises which follow.

The main source of distortion seems to derive from the fact that CPT use the accounts of the regions themselves in determining the revenue and expenditure classification. Regional accounts are notoriously unreliable, because of the regions' habit, permitted by an excessively vague accounting legislature, to classify the different items of expenditure and revenue in different ways.[5] Besides, CPT researchers seem to have had considerable problems in decentralizing, for some particular year, tax revenue and expenditure, excessively expanding compensatory labels – such as *poste correttive e compensative di entrate o spese* – to the effect of making comparisons across time periods difficult even inside the same CPT data set. Finally, the estimated levels of total (general government) public expenditures and revenues in the CPT conflict with other sources of data (for example, the amount of total revenues is larger than its results from general government accounting), probably because tax revenues have been computed gross and not net of tax refunds.

Faced with these difficulties, our own choice has been to try to build a more reliable picture of the Italian situation by making reference to several data sources (mainly, ISTAT and budgetary data from the Treasury) at the same time, merging them up accordingly, and using CPT data only when it was not possible to do otherwise. The exercise involves a certain amount of educated guess work and discretionary choice, but it is probably the best that can be done in Italy given the present quality of data. We will provide a detailed description of the steps we took when presenting our own results in the sections to follow. One unfortunate consequence of this state of affairs is that as the process of building up a reliable data set at regional level is slow and painful, we were able to produce data for one

year only, 2005, the most recent year where a complete set of data is available. This does not allow us to make comparisons across time periods, as would have been desirable in principle. In future work, we plan to extend our computations to another year at least.

4.2 Net Fiscal Flows

As is well known, there is no universally accepted way to compute fiscal flows (see for instance Ruggeri, 2008). The choice depends on what one wishes to measure (for example, the localization of expenditure or its benefits to population), the public sector aggregate one chooses to consider (state or general government or some broader notions including for instance, service production by publicly-owned private firms that is, firms that have the legal status of a private corporation, but which are partly or totally owned by the public sector), the time period, and so on. In our case, we decided to compute net fiscal flows as the difference between what the residents of a region pay and what they get from the *general* government (central + local + social security), making reference to a benefit notion for public expenditure[6] (see below). Concerning data, we only consider *current* revenues and *current* expenditures. So, among revenues, we include direct and indirect taxes, social security contributions and revenues from sales of some public services; we do not include transfers from the European Union and capital revenues. On the expenditure side, we do not include capital payments and transfers to the European Union; we also do not include interest payments on public debt. There are a number of justifications for our choices.

First, we decided not to consider transfers from the EU (mostly for agriculture and capital investments) because they are not resources coming from internal sources, and therefore they do not involve a flow of funds from the residents of a region to the residents of another. As we do not consider transfers from the EU, we also do not consider outlays to the EU. Second, capital expenditure (approximately 9 per cent of total expenditure) has been excluded because it presents a large component of cyclicality (and so it may distort the results relative to the particular year we consider), it is affected by special events (for example, natural calamities) and it is in part financed by funds from the European Union, especially in the Southern regions. We comment below on the likely effect of re-introducing capital expenditure in our computations (see also the discussion in section 5).

Third, we also decided to eliminate interest payments on public debt from the analysis (a large component of current public expenditure in Italy, about 10 per cent of general government expenditure, because of the large

size of public debt) for a number of reasons. First, because it is unclear the localization of these payments (half of the holders of the Italian public debt are not Italian residents), although the CPT use banks' regional deposits to approximate the regional distribution of the remaining half (concluding that most of this expenditure is located in the richer North). But, mostly, because interest payments raise a rather subtle dynamic issue which is difficult to address convincingly. Current interest payments are in fact the results of the funding of some past expenditure; and in an analysis of the distributional effects of the public sector on the territory, one would also wish to consider which regions benefited from this original expenditure. But this is extremely difficult, at least in the Italian context. Should we consider the primary deficits of the Southern regions which was responsible for the initial accumulation of the debt in the 1970s? Or should we rather consider the self accumulation of debt in the 1980s – triggered by high and positive real interest rates – which certainly benefited more the Northern regions where most Italian public debt holders were located? As it is impossible to answer these questions convincingly, we prefer to simplify the matter by eliminating interest payments altogether.

As for the localization of expenditure, we use a *benefit approach*. That is, in considering items of public expenditure whose benefits clearly go beyond the residents of one region, we ignore the localization of this expenditure and simply assume that the money is spent proportionally to the population in each region. This means in particular redistributing across the territory the administrative expenditure for general public services (mostly concentrated in Lazio, where Rome, the capital, is located), defence (mostly concentrated in the smaller regions at the borders and in the two main islands), and public order and safety (which also presents a larger concentration in the Southern regions, where organized crime is still rampant). For items of public expenditure that instead have a clear localization of benefits, such as education, health, local services, transfers to the private sector, etc., we use the localization of expenditure as a measure of the benefits accruing to local residents.

Finally, we isolate social protection (mostly, public pensions payments), whose regional localization of both payers and percipients is known, from the other sources of public expenditure, because both the origin and the functioning of this source of expenditure is different from the others. By and large, in the Italian context, this is a form of 'forced saving', where the current working population pays a large amount of its gross income (about 34 per cent for dependent workers) to current pensioners in exchange of a 'promise' to receive this money back once this population reaches old age. As the current Italian pension system is actuarially unfair (pensions are above the capitalized contributions paid), the age composition

and the working career of the population across regions is different, and the deficit of the social security system is financed by tax revenue, the social protection system involves in fact a huge amount of redistribution, both across regions and across generations. Notice also that social protection systems also finance 'social pensions' (minimum outlays for people who did not work or did not accumulate enough contributions to finance a full pension) and 'disability pensions' (pensions for people with handicaps), although their amount is much smaller than the pensions for retired workers. Finally note that because of the peculiar characteristics of the Italian welfare system, there are very little transfers in favour of the younger generation (no minimum social wage for example, and unemployed benefits cover only a small part of the population), and most of the other items of social expenditure (for example, social housing, nurseries, school refectories, etc.) are a direct responsibility of local governments, and are therefore directly computed in the local expenditure.

A final limitation of the Italian data is that we do not have specific information about tax expenditures (reduction in tax payments for households or firms in specific conditions) which are mandated by the central government. Again, they tend to be mostly concentrated in the South and so they also affect the computation of the fiscal flows.

Finally note that since we eliminate interest payments and capital expenditure from our computations, we end up with a slight surplus in the current (net of interest) public budget, in coherence with the results of general government accounting (while the overall deficit of the general government in Italy in 2005 was €60 billion or 4.2 per cent of GDP). In our computations, total current revenues exceeded total current public expenditure by €43 billion and to simplify the exposition, when computing fiscal flows, we eliminate this surplus (subtracting it on a per capita basis from total revenue), by just assuming that it goes to finance the expenditure we do not consider in our computations. As a result, the net fiscal flows match exactly the excess of expenditure over tax payments in any specific regions.

4.3 Regional Distribution of Expenditures

We start our analysis by decomposing total current public expenditure (central and local expenditure) – net of interests on public debt – in a few main functions, as follows:

1. National public goods (central government spending for defence, public order and safety, and general public services);
2. Social services (health, education);

3. Social protection;
4. All other functions (local pure public goods, economic affairs, environmental protection, housing and community amenities, recreation, culture and religion).

Each of these expenditures has then been regionalized on the basis of different sources of data and according to different methods. The expenditures for national pure public goods (according to the data provided by ISTAT, the National Statistics Institute) have been attributed to the different regions on a per capita basis, whereas the expenditure for local pure public goods is what results from regional, provincial and municipal balance sheets (according to CPT data). As far as health and education expenditure is concerned, we use data from the Ministry of Health and the Ministry of Education, which provide a regional distribution of expenditure. For social protection, we use another database (Central Government Regional Expenditure, *Spesa Statale Regionalizzata*), which provides social protection spending in each region. Finally, for the remaining functions, we use CPT data, meticulously corrected to account for some particular item, such as *poste correttive e compensative delle entrate* and *oneri non ripartibili*.[7]

The average composition of public expenditure shows that social protection represents the main component, about 47 per cent of total expenditure, followed by health and education, which absorb 25 per cent, whereas national public goods and all other functions together amount to 28 per cent of the total. Table 4.5 shows the regional distribution of public expenditure (total spending per capita in ascending order).

As we said, the (current) expenditure for national pure public goods has been attributed to each region on a per capita basis and it amounts to €1160; the expenditure for health and education amounts on average to €2400 per capita and ranges between €2199 in Puglia and 2991 in Trentino Alto Adige; social protection, €4432 on average, varies between €3062 per capita in Campania and €6239 in Liguria; finally, the expenditure for all other functions amounts on average to €1496 per capita, with a minimum of €1201 in Puglia and a maximum of €4587 in Valle d'Aosta. As for the total per capita expenditure, the minimum level is in Puglia (€8033) and the maximum in Valle d'Aosta (€14 083). Most of the regions in the South of Italy receive an amount of public spending under average; on the contrary, in four special statute regions (Sardegna, Friuli Venezia Giulia, Trentino Alto Adige and Valle d'Aosta), which are benefited by an overly generous financing system, public expenditure is well above the average.

More precisely, the regional distribution of expenditure for health and education is more uniform than social protection and other functions, as shown by the low coefficient of variation (0.09). These are items largely

Table 4.5 Regional distribution of public expenditures (per capita, euros, 2005)

Regions	National public goods	Health and education	Social protection	Other functions*	Total expenditure
Puglia	1 160	2 199	3 474	1 201	8 033
Campania	1 160	2 447	3 062	1 415	8 084
Calabria	1 160	2 298	3 386	1 503	8 347
Basilicata	1 160	2 342	3 436	1 551	8 489
Sicilia	1 160	2 434	3 354	1 694	8 641
Veneto	1 160	2 256	4 209	1 167	8 791
Abruzzo	1 160	2 511	4 100	1 375	9 146
Molise	1 160	2 683	3 729	1 664	9 235
Lombardia	1 160	2 229	4 819	1 236	9 444
Italy	**1 160**	**2 400**	**4 432**	**1 496**	**9 488**
Marche	1 160	2 316	4 595	1 432	9 502
Sardegna	1 160	2 399	3 944	2 123	9 626
Piemonte	1 160	2 303	5 239	1 524	10 226
Emilia Romagna	1 160	2 407	5 307	1 382	10 256
Toscana	1 160	2 447	5 143	1 526	10 276
Umbria	1 160	2 488	5 164	1 791	10 602
Lazio	1 160	2 797	5 113	1 727	10 796
Friuli Venezia Giulia	1 160	2 457	5 518	1 930	11 065
Liguria	1 160	2 490	6 239	1 703	11 592
Trentino Alto Adige	1 160	2 991	4 775	2 877	11 803
Valle d'Aosta	1 160	2 888	5 449	4 587	14 083
Mean	1 160	2 362	4 331	1 722	9 502
Standard deviation	0	216	904	754	1 495
Coefficient of variation	0	0.09	0.21	0.44	0.16

Note: * It include local pure public goods, economic affairs, environmental protection, housing and community amenities, recreation, culture and religion.

mandated by the central government (as discussed above, education is mostly a national function, while on health care, regions have a higher autonomy) so they are provided uniformly on the national territory, depending on the characteristics of the population. Besides, the higher expenditure for health in some regions (the Northern regions) is partially

compensated by the higher expenditure for education in the other regions (the Southern regions, where there are more young people (Table 4.5).

Much more variability is observed for social protection expenditure (the coefficient of variation is equal to 0.21). This is due to the different structure of population by age and by working conditions. Liguria is the region with the highest per capita social protection expenditure and it is also the region with the highest rate of ageing; all the Southern regions show a social protection expenditure below average and this fact reflects both the lower rate of employment and the higher incidence of irregular labour in these regions (recall Table 4.1). A much more relevant variability concerns the other functions (coefficient of variation equal to 0.44), where regional and local governments have more autonomy and which are more affected by the availability of local resources. Notice however that this large variability is mostly due to the special regions, which are clearly outliers in term of expenditure; ordinary regions present a much lower variability.

4.4 Regional Distribution of Revenues

We considered all central government taxes, local taxes, social contributions and revenues from sales of some public services. As far as central government taxes are concerned, we regionalized personal income tax, corporation income tax, value added tax, interest dividend and capital gains taxes, oil and gas taxes, cigarette taxes and other excises, registration mortgage and cadastral taxes.[8] We based our analysis on data from the Ministry of Finance and ISTAT. As for local taxes, we considered IRAP (a regional tax on productive activities), ICI (a municipal property tax), regional and municipal income tax surcharges and other minor local taxes. For IRAP, ICI and regional and municipal income tax surcharges, we used a database provided by the Ministry of Finance, that already regionalizes tax revenues; for all other local taxes and revenues, we directly collected data from regional, provincial and municipal balance sheets (provided by ISTAT). Finally, for social contributions, we used the CPT database, which however seems reliable on these grounds.

Table 4.6 shows the regional distributions of total current revenues, net of per capita current surplus (see next section).

The per capita average is €9488 and varies between the €5531 in Calabria and about €13 000 in Lombardia and Valle d'Aosta. Between the richest and poorest region, the difference in per capita revenue is therefore about 250 per cent. More generally, all Southern regions exhibit per capita revenues below average and all the Centre–North ones per capita revenues above average, a fact which fits well with the regional income distribution of Table 4.1. The picture does not change much if we use different

Table 4.6 Regional distribution of public revenues (per capita, euros)

Regions	Total current revenues, net of current surplus	Tax revenue per capita euro	Social contributions per capita euro
Calabria	5531	4299	1738
Campania	5773	4488	1816
Puglia	5977	4734	1815
Sicilia	5979	4840	1675
Basilicata	6175	4645	2081
Molise	6725	5001	2215
Sardegna	7264	5547	2228
Abruzzo	7753	5870	2405
Umbria	8817	6581	2732
Marche	9356	6800	3046
Italy	**9488**	**6952**	**3036**
Liguria	10206	7889	2805
Toscana	10436	7626	3270
Veneto	10627	7635	3503
Piemonte	10695	7795	3391
Friuli-Venezia Giulia	11278	8181	3573
Lazio	11534	8237	3792
Emilia-Romagna	12006	8666	3813
Trentino Alto Adige	12191	8954	3600
Lombardia	13097	9255	4320
Valle d'Aosta	13194	10274	3358
Mean	9231	6866	2859
Standard deviation	2633	1832	814
Coefficient of variation	0.29	0.27	0.28

components of total revenues, such as tax revenues or social contributions. Notice that tax revenues are on average 60 per cent higher than social contributions.

Table 4.7, that computes regional tax revenues as a percentage of regional GDP, suggests that the national tax system as a whole is approximately proportional to GDP; the effective tax rate is almost constant across regions, and it is only slightly higher in the richest (Lombardia, 24 per cent) with respect to the poorest region (Calabria, 22.4 per cent). Special regions seem to tax their taxpayers slightly more that ordinary

Table 4.7 Tax revenue as percentage of GDP

Regions	Tax revenue as percentage of GDP	Central tax revenue as percentage of GDP	Local tax revenue as percentage of GDP
Piemonte	29.1	23.7	5.3
Valle d'Aosta	32.3	22.5	9.8
Lombardia	29.3	24.0	5.3
Trentino Alto Adige	29.4	22.2	7.3
Veneto	26.8	21.8	5.0
Friuli-Venezia Giulia	30.3	24.0	6.3
Liguria	31.7	25.6	6.0
Emilia-Romagna	29.0	23.7	5.2
Toscana	28.6	23.3	5.3
Umbria	28.8	23.4	5.3
Marche	27.8	22.2	5.6
Lazio	28.1	22.7	5.3
Abruzzo	29.2	23.5	5.7
Molise	28.2	22.9	5.3
Campania	28.3	23.1	5.3
Puglia	29.7	24.3	5.4
Basilicata	27.6	22.4	5.1
Calabria	27.3	22.4	4.8
Sicilia	30.0	23.0	7.0
Sardegna	29.1	23.3	5.8
Italy	**28.5**	**23.3**	**5.1**

regions, but this figure should be taken with care. The special financing system of these regions may also to some extent affect the distribution of national tax revenue, which in theory is computed on the basis of uniform criteria across regions. We observe a slightly higher variation in local taxation (where regions and other local governments have some amount of discretion), but again, once we take special regions out of the picture, we see that the difference is limited, ranging from 4.8 per cent to GDP in Calabria to 6 per cent in Liguria (that had to raise local taxation in order to finance a particularly high health expenditure). The next table (Table 4.8) suggests that this must be due to consumption taxes and other taxes working regressively, as the main Italian tax, the personal income tax, is strongly progressive, with the average tax rate (on a tax base which is approximately 60 per cent of Italian GDP) being almost six points higher in Lombardia (19.8 per cent) than in Calabria (14.2 per cent).

Table 4.8 IRPEF tax base, revenue and average tax rate, 2005

	Irpef tax base	Net revenue	Average tax rate
Piemonte	59 968 558	11 014 760	18.4
Valle d'Aosta	1 818 425	336 119	18.5
Lombardia	142 408 577	28 242 389	19.8
Liguria	22 271 907	4 096 825	18.4
Trentino Alto Adige	14 114 829	2 598 838	18.4
Veneto	62 582 951	11 145 864	17.8
Friuli Venezia Giulia	17 029 576	3 042 264	17.9
Emilia Romagna	62 108 918	11 462 334	18.5
Toscana	47 795 874	8 521 879	17.8
Umbria	10 310 904	1 719 189	16.7
Marche	18 278 587	2 973 907	16.3
Lazio	71 501 115	14 128 779	19.8
Abruzzo	13 412 747	2 103 184	15.7
Molise	2 951 253	437 091	14.8
Campania	44 870 944	7 006 346	15.6
Puglia	34 084 323	5 050 696	14.8
Basilicata	5 032 102	711 172	14.1
Calabria	15 261 555	2 160 907	14.2
Sicilia	40 204 464	6 183 627	15.4
Sardegna	15 594 221	2 476 210	15.9
Italy	**701 601 828**	**125 412 377**	**17.9**

5 NET FISCAL FLOWS: OUR COMPUTATION

As anticipated above, in our computations, total current revenues exceed the items of general government current expenditures we consider in this work. This is unsurprisingly, and indeed the figure we obtain is entirely consistent with the current surplus net of interest which is exhibited by the general government consolidated accounting. But as our purpose here is to capture the distributive effect of the public sector across regional territories, we prefer to eliminate this surplus on a per capita basis, subtracting it from tax revenue, so as to have a zero net fiscal flow on average. Subtracting total current revenues (net of current surplus) from total regional expenditure, we finally get the net fiscal flows presented in Table 4.9.

Not surprisingly, since as shown above, current expenditure is much more

Table 4.9 Net fiscal flows (per capita, euros)

Regions	Net fiscal flows
Calabria	−2817
Sicilia	−2661
Molise	−2510
Sardegna	−2361
Basilicata	−2313
Campania	−2311
Puglia	−2056
Umbria	−1785
Abruzzo	−1394
Liguria	−1386
Valle d'Aosta	−890
Marche	−146
Italy	**0**
Toscana	160
Friuli-Venezia Giulia	212
Trentino Alto Adige	388
Piemonte	469
Lazio	737
Emilia-Romagna	1751
Veneto	1836
Lombardia	3653

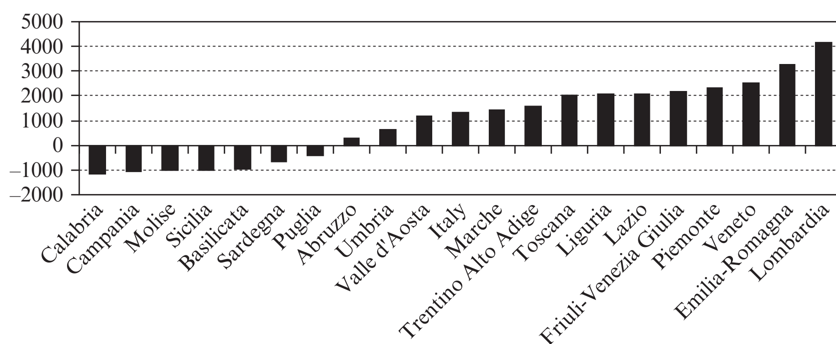
uniformly distributed than total revenue, all Southern regions turn out to be net recipients, while Northern regions are net payers. To exemplify: through the public budget, each resident of Lombardia transfers about €3600 of the taxes and contributions she/he pays (or around 30 per cent of the total taxes and contributions she/he pays) to the other regions. On the contrary, each resident of Calabria receives through the public budget €2800 from the other regions, or about 55 per cent more resources than the total taxes and contributions she/he pays. To a lesser extent, this is also true for any resident of the North versus any resident in the South. The only exceptions are Liguria (a smaller region with a disproportional share of elderly population, see Table 4.1) and Valle d'Aosta (a very small special region with an extraordinary amount of current expenditure), two Northern regions that also appear to be net recipient of funds. Trentino and Friuli (two other small special rich regions of the North) turn out to be net payers, although it should be recalled that we are not considering here capital expenditure, which is well known to be particularly high in these two regions (and in the Southern regions). Probably, if we had considered capital expenditure as well, the general

picture would not have changed much, with the only difference that the distance between net payers and net recipients would have become even more pronounced and some regions (the two special regions mentioned above) would have moved from the net payers to the net recipients category. Our comparison with other studies which instead also consider capital expenditure confirms this intuition (see section 5). Notice that size also plays a role; possibly because of unexploited returns to scale in the provision of services, smaller regions are consistently higher spenders than larger regions.

An interesting question to raise is what causes this redistribution of resources across the territory, if this is due to a deliberate effort by the centre to equalize the provision of essential services (such as health or education) or as the result of the working of some 'automatic' mechanism, such as the social security system. To address this issue, we compute a measure of regional social protection 'imbalance' by subtracting social protection expenditure from social contributions by region. Notice that as the social protection system is in disequilibrium (current payments overcome current revenues and the difference is paid out of tax revenue), all regions now appear to be net receivers from the system. But of course this imbalance now depends largely on the features of the population, and in particular on the share of the elderly population of the total.

Thus, the region most benefited by the social security redistribution system turns out to be Liguria, the oldest Italian region, and many other Northern regions (Toscana, for example, another relatively old region) also appear among the regions that benefit most from the redistribution system implicit in the social security mechanism. However, age (for example, retirement pensions) is clearly not the only explanatory factor, as many Southern regions too, in spite of being relatively 'younger' than the others, also appear among the ones most benefited by the system. Clearly, income support mechanisms (for example, social pensions and minimum pensions) also play a role in leading the regional redistribution. As a final exercise, we then compute fiscal flows net of the social protection system, that is, subtracting contributions payments from total tax revenues and social security outlays from total expenditure, and computing the difference between the two residuals.

Results are shown in Figure 4.4. The Graph suggests that by eliminating social security the fiscal flows are somewhat diminished in size, and that the security system on average works against the fundamental redistribution flows from the North to the South of the country. Regions such as Calabria and Campania are now closer to the national average (with €1000 of 'excess' revenue) than in the computation considering all revenue and all expenditure. On the other hand, regions like Lombardia and Veneto, which in addition to being richer, are also relatively younger than the others, turn out to be more penalized in this case. Table 4.10, which



Source: Author's computation.

Figure 4.4 Net fiscal flows, net of social protection

Table 4.10 Composition of net fiscal flows

Regions	Net fiscal flows (total)	Social protection imbalance	Central	Local
Calabria	−2817	−1648	2059	−3228
Sicilia	−2662	−1679	2277	−3260
Molise	−2510	−1514	2682	−3679
Sardegna	−2361	−1716	3076	−3721
Basilicata	−2313	−1355	2370	−3328
Campania	−2311	−1245	2223	−3289
Puglia	−2056	−1659	2431	−2828
Umbria	−1785	−2432	4088	−3442
Abruzzo	−1394	−1695	3425	−3124
Liguria	−1386	−3434	5180	−3132
Valle d'Aosta	−890	−2090	6120	−4920
Marche	−146	−1548	4299	−2897
Italy	**0**	**−1475**	**4666**	**−3191**
Toscana	160	−1873	5061	−3028
Friuli-Venezia Giulia	212	−1945	5394	−3237
Trentino Alto Adige	388	−1175	5746	−4183
Piemonte	469	−1849	5225	−2908
Lazio	737	−1321	5693	−3635
Emilia-Romagna	1750	−1494	6068	−2824
Veneto	1836	−706	5128	−2586
Lombardia	3653	−499	6696	−2544

disentangles further fiscal flows in its three basic elements, social security, central and local, confirms this intuition.[9]

6 COMPARISON WITH PREVIOUS LITERATURE

We are certainly not the first to compute inter-regional fiscal flows in the Italian context. On the contrary, computations abound, although their average quality may be questioned. Among serious academic research, we list in Tables 4.11 and 4.12 the previous studies we were able to find. These studies differ in terms of the reference year, the data used, and the purpose of the exercise. For instance, Arachi et al. (2006) use CPT data, only excluding interest payments on public debt (and therefore considering capital expenditure as well), a mixed criterion for regionalizing public expenditure (benefit approach and cash flow approach), and instead of one year used the average for the years 1996–2002. They also get a surplus for Italy of €811 per capita, which they do not correct in their computations of fiscal flows. Brosio and Revelli (2003) in an older study, use a cash flow principle (expenditure is allocated on the basis of the location of the actual disbursement), also regionalize interest payments, and, lacking further information, use approximation methods to regionalize tax revenue, considering tax shifting hypotheses as well. They also do not correct for the overall deficit. Finally, an even older study carried out by the Fondazione Agnelli in 1998, uses the benefit principle, include interest payments as well but on a per capita basis at the national level, and consider tax shifting hypotheses in regionalizing tax revenue.

In spite of all these differences, the results do not end up being very different from ours, thus pointing out to some underlying robustness in the basic phenomena all these works intend to measure. A simple correlation analysis shows that the closest estimate to ours is that of Arachi et al. (2006), (correlation index, 0.93) possibly because it is the most recent work and uses (partly) the same data. The most different is the study by Brosio and Revelli (2003), with a correlation coefficient of 0.47, probably because they do not use a benefit principle but a cash flow one to regionalize public expenditure. In terms of a ranking of the different regions, from the most benefited to the more harmed by regional redistribution, results are also not too different from ours. In all studies, Lombardia, Veneto and Emilia Romagna turn out to be the highest net payers, while in three studies out of four, Calabria turns out to be the region most benefited by redistribution. Interestingly, while in our case two special regions of the north (Trentino and Friuli) turn out to be net payers, in all the other studies these regions are instead, net beneficiaries from inter-regional redistribution, and in the

Table 4.11 Net fiscal flows comparisons (1)

	Our net fiscal flows 2005	Arachi et al. (2006) (years: 1996–2002)	Brosio and Revelli (2005) (year: 1997)	Maggie and Piperno (1998) (year: 1995)
Piemonte	469	2083	950	1255
Valle d'Aosta	−890	−3301	−2568	−2633
Lombardia	3653	4735	1426	2788
Trentino Alto Adige	388	−614	−2648	−2288
Veneto	1836	2731	2070	1673
Friuli-Venezia Giulia	212	715	−1488	−154
Liguria	−1386	−232	23	−305
Emilia-Romagna	1751	3064	1252	1802
Toscana	160	1028	1124	694
Umbria	−1785	−772	54	−696
Marche	−146	518	799	249
Lazio	737	2219	−1467	226
Abruzzo	−1394	−763	95	−769
Molise	−2510	−2492	−407	−1996
Campania	−2311	−1911	−233	−1276
Puglia	−2056	−1688	−177	−1074
Basilicata	−2313	−2954	−1237	−2205
Calabria	−2817	−3487	−844	−2736
Sicilia	−2661	−2841	−1050	−1967
Sardegna	−2361	−2615	−1748	−2123
Italy	**0**	**811**	**197**	**193**
Correlation coefficient	1	0.93	0.47	0.85

work of Brosio and Revelli (2003), all special regions turn out to benefit more than Calabria. The most plausible explanation is that all these different studies also consider capital expenditure (which we instead exclude), which is well known to be particularly high in all special regions (and in the South), and in the case of Brosio and Revelli they also use a cash flow principle, so for instance, attributing defence expenditure where it is spent (mostly in the three special regions and in Sardegna) and administrative expenditure to Lazio (which in fact turns out to be a net beneficially from redistribution). On the whole, therefore, all these studies provide support to our basic computations and the main difference can be easily explained in terms of the methodology used.

Table 4.12 Net fiscal flows comparisons (2)

	Our net fiscal flows 2005	Lega Lombarda	Union Camere Veneto 2003	PD Lombardia 2008	Confarti-gianato 2006
Piemonte	469	n.a.	316	1372	18
Valle d'Aosta	−890	n.a.	−4767	−4363	−6094
Lombardia	3653	5380	3292	3971	2121
Trentino Alto Adige	388	n.a.	−2208	n.a.	n.a.
Veneto	1836	n.a.	2513	3267	2061
Friuli-Venezia Giulia	212	n.a.	−2615	−574	−2611
Liguria	−1386	n.a.	−2285	−530	−2307
Emilia-Romagna	1751	n.a.	2643	3625	2020
Toscana	160	n.a.	180	1351	−145
Umbria	−1785	n.a.	−2379	−598	−2323
Marche	−146	n.a.	120	1432	190
Lazio	737	n.a.	−1430	682	−1419
Abruzzo	−1394	n.a.	−1155	−872	−2356
Molise	−2510	n.a.	−2232	−2121	−3281
Campania	−2311	−133	−2013	−1137	−2121
Puglia	−2056	n.a.	−2204	−1404	−2267
Basilicata	−2313	−1232	−3060	−2322	−3583
Calabria	−2817	−570	−3473	−2607	−3881
Sicilia	−2661	n.a.	−2854	−2648	−3922
Sardegna	−2361	n.a.	−3186	−1415	−3160
Italy	**0**	**n.a.**	**−266**	**777**	**−715**

But, as we said above, academics are not the only ones to produce data on fiscal flows in Italy. Political parties and interest groups are also continuously producing numbers, which are thrown in the political debate to support specific positions and particular requests. For instance, Table 4.12 presents a selected sample of the numbers on fiscal flows which appeared in the media during the last electoral campaign. Obviously, in most cases, neither the data source nor the criteria behind these numbers were specified. A quick look at the data is enough to understand how poor the political debate has been. For instance, according to the Northern League, Lombardia has a net positive fiscal flow of €5380 per capita whereas Campania has −133 and Basilicata −1232. The other estimations also do not make much more sense. But as we have said already, an

excuse for these poor numbers lies in the lack of transparency on regional data in Italy. The political debate would certainly benefit by a improved quality of data and by official estimations, based on clear and transparent methodology, of regional fiscal flows.

7 CONCLUDING COMMENTS

Our basic conclusions can be summarized as follows. Fiscal flows in Italy are huge and are mostly driven by the large difference in economic development between the different areas of the country, and in particular between the rich North and the poor South, although social protection (for example, the public pension system) also plays an important and separate role in determining inter-regional redistribution. The public sector generally works in the direction of equalizing per capita (current) public expenditure across regions, at least for fundamental services, although this equalization is far from being complete (and it would certainly be much lower if we had also considered the quality of public services). However, the distance in economic development, and therefore in tax revenues among regions, is so large that even this partial equalization is enough to generate consistent fiscal flows across the national territory. With the deepening of the economic crisis and the need for more resources to be invested in the North, one may actually wonder if these financial flows are still sustainable by the country. Despite the new Constitution, these territorial differences are also so large as to put in jeopardy the continuation of the decentralization process. Clearly, fiscal federalism has some chances of success in Italy only if it works in the direction of reducing the distance between territorial areas, starting again that convergence process which stopped in the mid-1970s. One problem is that the Italian debate on fiscal federalism is rich in ideology and poor in facts. It would certainly benefit by an improved quality of regional data and by official estimations, based on clear and transparent methodology, of regional fiscal flows.

NOTES

1. 'Disegno di legge recante delega al governo in materia di federalismo fiscale in attuazione dell'articolo 119 della costituzione'.
2. Notice that expenditure by level of government is a very imprecise way to measure decentralization, as it does not say much on the level of autonomy of local governments in determining their own expenditure. For the reasons spelled out in the previous section, on these grounds, there was more decentralization on the expenditure side than the number in Table 4.3 suggests.

3. Education is indeed the main function to be devolved explicitly mentioned in the 2008 framework law on decentralization.
4. In particular, the Ragioneria Generale dello Stato (the main administrative staff of the Treasury), ISTAT, (the national institute of statistics) and more recently, the Bank of Italy.
5. For instance, a region might classify the regional tax sharing on VAT as a transfer or a tax revenue, and regional main expenditure, health care (mainly, transfers to the regional health units) is often hidden in different parts of the budget.
6. We did not, however, consider hypotheses of tax incidence *across regions* in determining the regional burden of taxation (issues of tax incidence *inside a region* are of course irrelevant in our context, because our exercise implicitly assumes the existence of a representative consumer in each region). We could have done some tentative computations, as Italian regions differ in both external trade and technological specialization, and for corporate taxation and VAT especially, issues of tax incidence are likely to be relevant. But upon reflection, we felt that our empirical knowledge of tax incidence is too shaky to allow us sensible corrections of data on this front, and therefore preferred to avoid the issue altogether.
7. '*Poste correttive e compensative delle entrate*' should be expenditure items to be compensated by corresponding revenue items (for example, tax rebates), but often it is unclear which kind of expenditures it is included under this label. '*Oneri non ripartibili*' should be expenditure items difficult to share out among the different functions, but sometimes they also include interest on public debt.
8. In regionalizing national taxes we basically follow the methodology already used in our sources. According to this methodology, a national tax is attributed to the region where the economic transaction which creates the tax burden takes place. Thus, for instance, residence of the taxpayer is used to regionalize the personal income tax, the location of production (already legally used to share IRAP revenue across regions) is used to regionalize the corporation income tax (IRPEG) as well, final consumption is used for VAT revenues, and so on. Gasoline tax, tobacco tax, games and other local taxes are attributed according to regional consumption of the same items. As already said, we ignore entirely tax incidence issues.
9. In Table 4.10, national net fiscal flows are computed as a difference between central government revenues and the expenditure for national pure public goods; local net fiscal flows are computed as differences between local government revenues and the expenditure which benefit in a different measure the residents in different regions (health, education and all other functions).

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5. Measurement and practice of fiscal flows: the case of Belgium

Paul Van Rompuy

1 INTRODUCTION

This chapter focuses on recent estimates of the federal and inter-regional fiscal flows in Belgium in the framework of the gradual process of devolution that, from 1980 on, transformed it into a federal state. The demand for devolution resulted as early as 1970 in a major constitutional change that distinguished three economic regions (Brussels Capital, Flanders and Wallonia) from two major cultural jurisdictions, that is, the Flemish and the French communities. The small German-speaking community, situated in the eastern part of the kingdom, gained some degree of autonomy in the 1980s. The complexity of the Belgian federal system shows up in the bilingual status of its capital where the two communities overlap.

The Belgian process of devolution has been inspired by the idea that the transfer of economic competences that shape important aspects of the supply side of the regional economies would enhance their efficiency and thus contribute to regional economic and social convergence. The cultural differences between the major communities that frequently paralysed decision making within the national government, fuelled the demand for their constitutional autonomy.

We first sketch the main institutional stages in the process of state reform. We then explain the particular inter-regional equalization mechanism and highlight the time pattern of the economic inter-regional disparities. Before discussing the recent estimates of the fiscal flows, we will examine the financing system of the regions and communities. The assumptions underlying the estimates and the methodological approach used, will precede the conclusions. More specifically, we will pay attention in the concluding remarks to the assumed positive link between inter-regional convergence and regional autonomy.

2 A BIRD'S-EYE VIEW OF THE PROCESS OF DEVOLUTION IN BELGIUM

2.1 The Preparatory Reforms

The roots of the transformation of the unitary kingdom of Belgium into a federation go back to the constitutional reform of December 1970. Three regions (Brussels Capital, Flanders and Wallonia), each competent for economic matters and considered as equals, were defined on a territorial basis. As for cultural, educational and person-related policies (that is, welfare and preventive health care), the French and Flemish communities were distinguished according to the dominant language used in the three regions. Hence, the two communities overlap in Brussels Capital because of its bilingual statute. Both communities are, for example, entitled to offer educational and cultural activities in the capital city. Its residents have the choice of using either or both according to their preferences.

Although this major constitutional change shaped the institutional features of a federation, it was only in 1980 that the regions were equipped with financial means and autonomous government bodies, whereas community matters were taken care of within the federal government. From 1981, the regions received federal grants according to a specific allocation mechanism, which is the arithmetic average of the regional population, their area and their share in the personal income tax. The initial grant (€970 million) resulted in the following allocation: 52.6 per cent for Flanders, 8 per cent for Brussels and 39.4 per cent for Wallonia. Because of the changing regional shares of the personal income tax and of the regional population, the initial distribution was adjusted annually. The total amount of the grant increased according to the rate of inflation.

The legal framework provided for some revenue sharing by the regions, limited to the so-called 'regional taxes': the real estate tax, the registration tax on the transfer of real estate, the annual tax on motor vehicles and some less important taxes such as the tax on gambling. The guiding principle for the sharing of these regional taxes is the localization of the revenue source. However, the revenue sharing proceeded only gradually, starting with a minimum percentage for each tax category. The total amount of the shared taxes was linked annually to the growth rate of the federal budget (excluding unemployment benefits). Regional tax autonomy was foreseen, with the exception of the tax on motor vehicles, on condition that the total revenue of each tax would be taken up by the tax sharing mechanism.

The constitutional reform of 1980 empowered the regions by means of *decrees*. They are equivalent to federal laws in policy areas such as: housing, 'industrial policy' (for example, the participation as shareholders in private

firms, the establishment of public firms and financial support to private firms within the limits of EU regulations), public infrastructure investment, the distribution of energy, urban planning and some aspects of environmental policy. It is interesting to note that the regions were also entitled to labour market intermediation and training of the unemployed, whereas the control of their availability for jobs and the system of unemployment benefits remained a federal matter within the social security system.

The two major communities received an unconditional grant (initially about €1.17 billion), based on a fixed distribution key: 55 per cent for the Flemish community and 45 per cent for the French community. The initial total budget increased annually with inflation. The fiscal autonomy of the two major communities was limited to the radio and television tax. The two communities shared the revenue of these taxes in the Brussels Region according to a fixed rule: 80 per cent for the French Community and 20 per cent for the Flemish Community. In 1983, the small German-speaking eastern region gained the constitutional status of a community and received a fixed amount of some €16 million, adjusted annually in the same way as the two major communities. As noted above, the communities did not have a representative government. A council, consisting of members of the federal parliament and belonging to the respective language groups executed their legislative power. It is clear from this short overview that the constitutional reform of 1980 initiated a transitory stage on the road to the construction of a federal state.

2.2 The Fundamental Reform of 1989

Many features of the 1980 reform led to widespread dissatisfaction. To mention the most important ones: the extremely limited fiscal autonomy of the regions and communities, the arbitrary allocation key for the federal grants which remained constant in real terms and the absence of the derivation principle with respect to the personal income tax. A fundamental overhaul of the federal system took place in January 1989, approved by special majorities in the federal parliament. The main characteristics of the 1989 reform bear on the financing mechanism of regions and communities, aiming at an extension of the fiscal autonomy of the first and empowering the latter with representative governments and financial autonomy.

However, the 1989 reform of the financing mechanism mirrors the overall precarious budgetary situation of the kingdom. Indeed, the 1988 deficit amounted to almost 8 per cent of GDP and the debt ratio to about 105 per cent of GDP. Two stages characterized the new financing system: the transitory stage covering the period 1989–99 and subsequently the definitive stage starting from 2000. During the transitory stage, the total

amount of the financial means transferred to the regions and communities remained constant in real terms, whereas the transfers to the regions were linked with GDP growth from 2000.

As for the regional taxes, defined by the 1980 reform and extended with the inheritance tax, surcharges or tax abatements were allowed for some of them (with exception of the tax on vehicles), as well as autonomous changes of the tax base, the tax rate and the exemptions. The derivation principle would gradually apply to the regional share in the personal income tax revenue. From 1994 on, the regions could, within limits defined at the federal level, impose surcharges or grant tax abatements.

The financial sources of the communities consisted of the radio and television tax, VAT and personal income tax. For obvious reasons no fiscal autonomy for VAT could be granted. As for personal income tax, no fiscal autonomy was granted to the communities for fear of tax shopping in the bilingual Brussels Region. The horizontal allocation for VAT reflected the need principle, which is the 1988 number of the youth population in elementary and secondary education in each language system (57.55 per cent for the Flemish community and 42.45 per cent for the French community). This horizontal key should be subject to a revision in 1999. The two communities shared the personal income tax as well as the radio and television tax perceived in Brussels Capital according to a fixed key: 20 per cent for the Flemish Community and 80 per cent for the French Community.

It is also interesting to indicate that the 1989 financing law provided for the constitution of an independent High Council of Finance that should coordinate the budgetary policies of all government layers within the framework of an advised global trajectory. It could eventually limit the borrowing power of a region or a community.

Finally, the Flemish Region and the Flemish Community decided to merge from a budgetary point of view (that is, pooling revenues and centralizing their budgets), in contrast to the French Community and the Walloon Region. This decision allowed the Flemish Community to eventually draw on the increasing revenues from the regional personal income tax. Unless we will mention it explicitly, the *Flemish Community* will indicate in subsequent discussion, the two merged jurisdictions.

2.2 Further Developments in State Reform

The foregoing review of the 1989 reform made it clear that the mere inflation linked financing of the communities during the transitory stage and their limited tax autonomy put heavy constraints on educational expenditure, about 80 per cent of which consists of salary costs. This constraint was particularly severe for the French Community, which in contrast to

the Flemish Community, could not benefit from positive spillovers from regional revenue.

The reform of July 2001 extended the list of the regional taxes with some registration taxes (for example, on mortgages and gifts), with the unique tax on the inscription of a motor vehicle and with the eventual future revenue of the so-called 'EU-sticker' on trucks. The radio and television tax, previously accorded to the communities, became an autonomous regional tax. The fiscal autonomy of the regions bearing on the rates of the personal income tax was defined between the limits + or –6.75 per cent on the regionally perceived tax revenue from 2004 on. However, the personal income tax progressivity remained a federal matter.

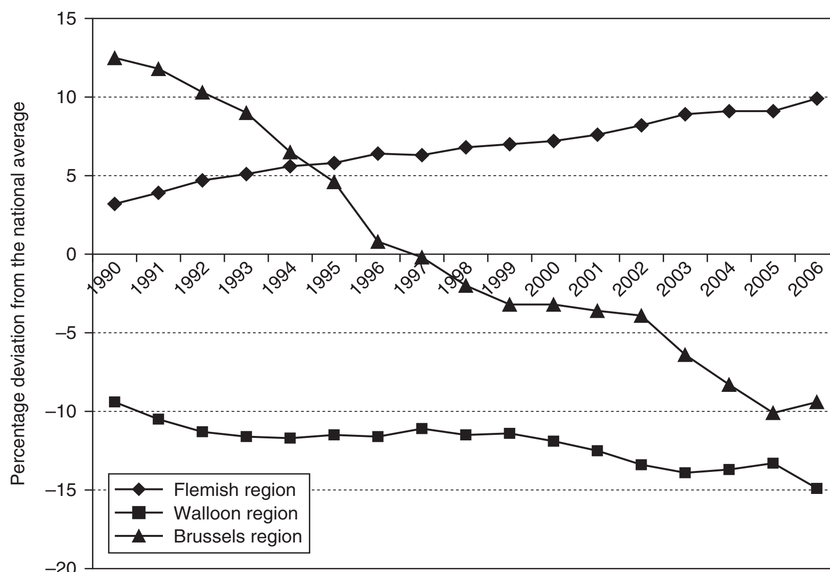
A second feature of the 2001 reform bears on the refinancing of the communities. Since they lost the radio and television tax as a revenue source, the federal government compensated them for it. The most important item in their refinancing was the principle of the linking of VAT revenue to 91 per cent of gross national income growth from 2012 on and an intermediate transfer of additional lump sum grants.

3 THE EQUALIZATION MECHANISM

Since from 1990 on, the shared personal income tax would become the dominant source of regional revenue, it became clear that some equalization mechanism should be provided for in order to correct for regional inequalities. The peculiar equalization mechanism, embedded in the 1989 reform, was based on a fixed amount of €11.6 per inhabitant, to be adjusted annually for inflation and multiplied by the percentage difference of the regional personal income tax per capita as compared to the national average.

However, the rich regions did not contribute to the equalization payment, as it is the practice in other federations; the federal government withheld it from the personal income tax transferred annually to the regions. Accidentally, the equalization payment received in 1990 by Wallonia, corresponded to some extent to its financial loss incurred by the application of the new financing scheme. Figure 5.1 illustrates the diverging fiscal capacities for the period 1990–2006, as measured by the percentage difference of the regionally perceived personal income tax per capita with the national average.

It is interesting to note that Brussels Capital not only lost its initial leading position, but also became from 1997 onwards, a net receiving region at an increasing rate. The net outflow of high incomes and the substantial inflow of immigrants with modest incomes largely explain this phenomenon. In contrast to Flanders, Wallonia was during the whole



Source: Ministry of Finance.

Figure 5.1 The fiscal capacity index of the three regions

period 1990–2006 a receiving region of the equalization mechanism. The total of the equalization payments amounted in 2006 to about €1.08 billion, out of which Wallonia received 84.5 per cent.

Over the years the Belgian equalization mechanism received a lot of criticism. First, the starting amount per head per percentage point deviation from the national average of personal income tax revenue appears arbitrarily chosen. Second, no threshold exists below which the mechanism would not apply. Such a threshold, say of 5 percentage points, would create incentives for the lagging regions to improve their situation. As noted by Cattoir and Verdonck (2002), this peculiar equalization system contains a poverty trap. Lagging regions may indeed receive in total more of the personal income tax per capita, the more their fiscal capacity deviates in a negative sense from the national average.

4 AN ECONOMIC SNAPSHOT OF THE REGIONS

The underlying causes of the fiscal flows implied by this equalization mechanism, as well as of other important inter-regional flows through the

federal social security, relate to the lack of regional economic convergence during the past decades. This phenomenon refers particularly to the striking divergence in terms of growth rates and per capita levels of regional GDP between Flanders and Wallonia. The economic situation of Brussels Capital is comparable to other city-states in federations, characterized by a relatively high concentration of the public and private services sector and a substantial daily flow of commuters. It represents only 9.6 per cent of the Belgian population but contributes 19.2 per cent to national GDP, implying a high ratio of GDP per capita in comparison to the two neighbouring regions (2004 data). A daily inflow of about 300 000 commuters, corresponding to 30 per cent of the Brussels residents, compensates for its modest labour force.

The lack of long and consistent time series of regional GDP in the European System of National Accounts motivated academic researchers and the Federal Planning Bureau to construct regional data covering the period 1959–2005, as coherent as possible, with the national accounts produced by the Belgian Institute of Statistics for the period 1959–94. During the period 1959–74, which covers the golden sixties and precedes the first oil shock, regional data on domestic product at factor costs (Meunier et al., 2007) already reveal striking differences of average annual real growth rates, that is, 5.7 per cent for Flanders, 4.1 per cent for Brussels Capital and 3.9 per cent for Wallonia. Average annual real growth of gross regional product (GRP) (Bassillière et al., 2008) declined in all regions during the period 1981–2005, but accentuated the divergence observed in the preceding years. Real GRP increased during that period at an average annual rate of 2.3 per cent in Flanders in comparison with 1.5 per cent in Wallonia and 1.3 per cent in Brussels Capital. Although regional growth differences between Flanders and Wallonia diminished somewhat during the period 1981–2005, Wallonia's regional product per capita represented only 77.3 per cent of the EU-15 average in 2004, in contrast to Flanders (106.4 per cent) and Brussels Capital (213.2 per cent).

The sluggish growth of Wallonia also shows up in a relatively high average unemployment rate of 11.2 per cent in comparison to Flanders (5 per cent) and the EU-15 average of 8.2 per cent, according to Eurostat data for the years 1999–2006. In contrast to its favourable relative position in terms of regional product per head, the average unemployment rate of Brussels Capital (15.3 per cent) exceeded during the same period those of the two other regions. The poor matching of the available skills with the regional demand for labour, which holds in particular for the young newcomers in the labour market, as well as the low degree of inter-regional labour mobility, explain largely the high unemployment rates of Brussels Capital and Wallonia.

The persistent social and economic divergence between the two major regions underlies the vertical and inter-regional fiscal flows, which we will discuss. Differences between the primary household income (that is before taxes and social benefits) and their disposable income are substantially reduced through the highly progressive income tax and the extensive federal social security system. In addition, the inter-regional equalization mechanism narrows regional income differentials.

5 THE VERTICAL TRANSFERS TO REGIONS AND COMMUNITIES

The historical pattern of the transfers from the federal government to the regions and communities reflects the gradual transformation of a unitary state into a federation.

Since from 1989 on, the communities became autonomous jurisdictions and the regions shared from then on the personal income tax with the federal government, the part of the total federal revenue transferred to the sub-federal governments increased dramatically. They received 32.3 per cent of the total federal revenue in 1989 as compared with the 1.3 per cent transferred to the regions in 1988. The share of the regions in the total federal transfer amounted in the first year of the new financing system to 12.3 per cent. The communities received the largest share (that is, 20 per cent), which reflects the dominant weight of the salary costs in their total expenditure, in addition to the research subsidies to the educational sector, including universities. As for the regions, the link of the shared personal income tax revenue with nominal GDP growth (from 2000 on) resulted in their gradually increasing share in the vertical fiscal flow, that is, from 15.9 per cent in 2000 to 17.3 per cent in 2006.

Because of the 1989 reform, the shared personal income tax became the most important fiscal revenue source of the regions. Its share in their total fiscal revenue amounted to 82.5 per cent in 1989; the residual represented the revenue of the regional taxes mentioned above. Following the 2001 reform, the number of regional taxes increased simultaneously with the 100 per cent revenue transfer of the initial 1980 list. They constituted 43.8 per cent of the total fiscal revenue of the regions in 2006. The specific federal VAT grant has been, since 1989, the dominant revenue source of the communities. It represented in that year 82.5 per cent of their total fiscal revenue. A constant horizontal distribution key applied during the transitory period 1989–99: that is, 57.55 per cent for the Flemish Community and 42.45 per cent for the French Community. In the following years, the effective number of students up to 18 years old and registered annually in

Table 5.1 The structure of 2006 government revenue (as percentage of GDP)

Federal government	17.6
Social security	13.8
Regions and Communities	14.1
a. regional taxes	4.4
b. shared taxes	9.7
Local governments	3.4
Total	48.9

Source: National Bank of Belgium (2008), Annual Report 2007, p. 128.

the two Communities replaced the previously fixed key. A federal transfer of the personal income tax according to the derivation principle complemented the earmarked VAT grant. In contrast to the regions, this shared personal income tax was not subject to any fiscal autonomy. Because of the gradual link with GDP growth, its share in the total fiscal income of the communities increased from 15.6 per cent in 1989 to 33.4 per cent in 2006. Table 5.1 contains the 2006 allocation of total revenue to the different layers of government, expressed as a percentage of GDP (National Bank of Belgium, 2008).

Since the regions and communities, considered as one fiscal entity, realized budget equilibrium in 2006, it can be seen from Table 5.1 that the regional taxes (representing 4.4 per cent of GDP) covered only 31.2 per cent of their total expenditure (equal to 14.1 per cent of GDP). Consequently, their revenue gap amounted to 68.8 per cent, this was closed by shared taxes, among which only the personal income tax transferred to the regions offers some perspectives of fiscal autonomy. Indeed, since the 2001 reform, the regions are entitled to levy an additional 6.75 per cent on the perceived regional personal income tax revenue or to grant identical tax abatements, constrained to certain conditions. Up to now, no regional government has used this tax autonomy, but for a small flat rebate decided by the Flemish government. Assuming that the regions used this margin of tax autonomy totally, the revenue gap would decrease by 8.5 percentage points and amount to 60.3 per cent. It is clear that the fiscal autonomy of the Belgian regions and communities ranks low compared to other federations (Algoed et al., 2007). This finding is due first, to the substantial share of the communities in the total vertical transfers

and second to their lack of any fiscal autonomy. In addition, the fear of a tax induced migration of households and firms and for the subsequent inter-regional fiscal competition, certainly inspired the actual limited fiscal autonomy of the regions.

6 ESTIMATES OF FISCAL FLOWS AND THEIR UNDERLYING METHODOLOGY

6.1 Early and Recent Estimates of the Fiscal Flows

The MacDougall Report to the Commission of the European Communities (MacDougall, 1977) inspired early estimates of fiscal flows in Belgium (Van Rompuy and Verheirstraeten, 1979; Van Rompuy and Van Cayseele, 1981) that covered the period 1970–78. They referred to the still unitary kingdom and pointed to Flanders as a major surplus region, favouring in particular the deficit Walloon region. The reliability of these estimates was rather poor, for example, regional data on public health expenditure and on regional private consumption were lacking. Furthermore, part of public investment was financed off-budget during the period covered. Not surprisingly, these estimates gave rise to criticism and to abuse by some political parties in Flanders, which aimed at regional autonomy or even at separatism. New estimates for the years 1975–85, using a refined and transparent methodology (Van Rompuy and Bilsen, 1988) as well as regional data according to the 1979 European System of Accounts, pointed to Flanders and Brussels Capital as surplus regions and confirmed the deficit status of Wallonia.

The major changes in the constitutional setting, implied by the 1989 and 2001 reforms, led to the interesting question about the impact of the increased fiscal and financial autonomy of the sub-federal jurisdictions on the inter-regional fiscal flows. If this increased autonomy was to encourage efficient policies at the sub-federal level, one would expect increased regional convergence. Hence, the relative size of the fiscal flows should gradually decrease.

In order to test this hypothesis, new estimates of the fiscal flows for the period 1990–2003, were commissioned by the Flemish government to its finance administration (ABAFIM) and evaluated in a critical way by an independent commission of experts, installed in 2005. This commission, composed of three Flemish and three French-speaking economists, chaired by Mr Van de Voorde, a former head of the administration of the Ministry of Finance, formulated their conclusions in a report on the methodology used, published in February 2007 (Van de Voorde, 2007).

Table 5.2 Horizontal fiscal flows as a percentage of GRP

	Flanders	Brussels Capital	Wallonia
1990	4.2	−3.6	−6.5
1991	4.2	−3.8	−6.6
1992	4.2	−4.2	−6.5
1993	4.4	−3.8	−6.8
1994	4.3	−3.5	−7.2
1995	4.3	−3.6	−7.2
1996	4.4	−3.5	−7.2
1997	4.3	−3.1	−7.7
1998	4.2	−2.7	−7.6
1999	4.0	−2.6	−7.4
2000	4.0	−2.5	−7.5
2001	4.2	−2.5	−8.2
2002	4.3	−2.6	−8.5
2003	4.4	−2.7	−8.4

Source: ABAFIM, 2004.

The estimates of the fiscal flows in Table 5.2 refer to the ABAFIM-study (ABAFIM, 2004), expressed as a percentage of GRP.

This study aimed at estimating net fiscal flows between the three regions. A net fiscal flow is the difference between the region's contribution to the revenue of the central government (that is, the federal government and the social security system) and its expenditure to the benefit of the region. Equalization payments are included in the federal expenditure considered. The residence of the taxpayers and of the beneficiaries of central government's goods and services and of social security benefits is in principle the guiding regional allocation mechanism. However, lack of reliable data on some items limited a consistent application of the benefit or welfare approach. Section 6.2 comments on these shortcomings.

An important implication of the residence criterion bears on the correction of the wage bill of Brussels Capital for the substantial daily net inflow of commuters from Flanders and Wallonia. The region of residence of the commuters received an additional wage income resulting from the multiplication of the yearly number of commuters by the average industry wage earned in Brussels Capital. Therefore, the wage bill of Brussels Capital was reduced by the total of the corrections in favour of the two other regions. This way of dealing with commuters' wage has important implications for the allocation of related items, such as employees' contributions to social security.

The residence criterion also applied to the regional distribution of the salaries of civil servants, including military personnel and of the related social contributions. The underlying and highly questionable assumption of this distribution key treats these salary costs on the same footing as a social benefit in favour of the region of residence, since it neglects the social productivity of the civil servants.

A further important limitation of the scope of this study bears on the exclusion of interest payments on the federal debt, which peaked to 10.8 per cent of GDP in 1993. The federal fiscal balance was negative during the whole period considered. Small global surpluses only showed up in 2000–01, due to the positive contribution of regions and communities and of local governments. The exclusion of interest payments on the federal debt in this study and hence, the focus on primary expenditure in the estimation of net fiscal balances, is due to the absence of an objective allocation key for the outstanding federal debt. Regional fiscal capacities, as well as the regional share in total central government's expenditure, are candidates for the allocation of debt and interest payments. They do however not point to the regional contribution to the debt accumulation process in the past. Alternatively, one could imagine a regional allocation of the federal debt according to one of the criteria mentioned above at a distant point in time when the federal debt to GDP ratio was modest. The accumulation of regional deficits and surpluses from then on would result in a plausible regional distribution key for today's federal debt. However, this approach is not without a degree of arbitrariness, due to the chosen distribution key in the starting year. Finally, in an income approach to the allocation of the interest payments, the regional distribution of the ownership of government bonds by residents and national institutional investors offers a relevant allocation key. However, lack of public data on the regionalized ownership of financial assets is a major obstacle to this approach.

Because of the exclusion of interest payments on the federal debt, the (negative) fiscal balances of the central government were neutralized by equalizing in each year its total revenue to its total primary expenditure, maintaining the relative share of each revenue source constant. Consequently, the central government's primary balance equals zero for each year. Hence, the estimated net regional fiscal flows also add to zero in nominal terms for any year of the period covered.

Finally, for items such as public purchases of goods and services, net federal capital investment and VAT revenue, GRP served as a rough proxy for their regional distribution.

Value added of the corporate sector allocated the corporate income tax revenue to the regions. In sum, the study examined here applied a mix of

the welfare and the cash flow approach, according to the availability of regional public data.

The positive fiscal flow of Flanders in terms of its GRP are relatively stable over time, whereas the deficit position of Wallonia gradually deteriorated during the period considered. The deficit position of Brussels Capital ameliorated from the mid-1990s on, reflecting a catching up of real growth, which conflicts with the almost simultaneous decline in terms of fiscal capacity, as shown in Figure 5.1. This apparent paradox is due to the unfavourable change of the personal income tax base, that is, the net outflow of high-income residents and the inflow of low-income migrant households.

It is interesting to decompose the inter-regional flows into their three major components: the flows originating in federal revenue and primary expenditure, the flows through the social security system and the flows embedded in the financing of the regions and communities, including the equalization payments. The average contribution of these three components to the transfer from Flanders to the two deficit regions, which represents over the period 2000–03 about €6.11 billion per year, originates for 21.1 per cent in federal fiscal flows through federal taxes and primary expenditure. The flows through the social security system account for 58.1 per cent and the financing system of the regions and communities for the residual 20.8 per cent. The federally organized interpersonal solidarity, embedded in the social security system, clearly dominates the inter-regional fiscal flows. Moreover, a detailed decomposition of the inter-regional flows through the social security system reveals that the main driving force behind the resulting regional fiscal imbalances originates in the revenue side of the system, more specifically in the contributions by employers and employees. The divergent regional growth of employment and gross salaries clearly underlies this phenomenon.

Not surprisingly, the contribution of the equalization payment to the inter-regional fiscal flows relates positively to the size of the deficit position of the net receiving regions. By way of illustration, the 2003 total equalization payment amounted to about €849 million, out of which Wallonia received 88.1 per cent and Brussels Capital 11.9 per cent. Although the equalization payments appear at first glance modest, their impact *at the margin* on the total per capita fiscal revenue of the receiving regions, inclusive of specific federal grants (for example, for employment policies), is significant. This is made clear by comparing the 2006 per capita revenue of the regions exclusive of the equalization payment, with their total per capita revenue inclusive of this payment (Algoed et al., 2007 and own calculations). Expressed as a percentage of the national average, the relative position of Flanders deteriorates from 103 per cent to 96 per cent, whereas Wallonia improves its position from 88.5 per cent to 99.5 per cent. Finally, Brussels Capital moves from

120.1 per cent to 122.7 per cent. These figures suggest that the equalization mechanism overcompensates the income handicap of the deficit regions, in particular Wallonia. The need for an overhaul of the equalization mechanism, in order to accentuate the incentives of the deficit regions to stimulate growth and employment, shows up in this illustrative example.

6.2 Some Critical Remarks on Methodology

Ideally, one would like the estimation method of the inter-regional fiscal flows to follow a consistent economic approach, focusing on their impact on the individual welfare of the residents of the jurisdictions under review. Unfortunately, the lack of regional data on, for example, externalities, derived from federally supplied public goods and services, on tax shifting, etc. as well as the unavailability of detailed public statistics on the decomposition of the corporate sector value, prevent such an approach. By way of compromise, the fiscal flow estimates in Table 5.2 resulted in many cases from a cash flow approach, relying on rough distribution keys such as GRP.

As national and regional accounts have been refined and as more regional statistics became available, the margin of uncertainty that overshadows fiscal flow studies certainly has narrowed. Nevertheless, severe conceptual issues arise in efforts to reconcile the cash flow approach with a welfare-oriented analysis (Ruggeri and Yu, 2003). In the sequel, some critical points on the methodology applied in the ABAFIM study and discussed by the evaluation committee, will be briefly commented on.

As indicated above, the inter-regional fiscal flows through the Belgian social security system accounted in the recent past for about 58 per cent of the positive flow from Flanders to the two other regions. In view of the dominant weight of this federal public sector in the inter-regional fiscal flows, it is worthwhile to point to some weaknesses in the ABAFIM approach. First, about two-thirds of the revenue of the Belgian social security system originates in employers' and employee contributions. Second, federal subsidies, earmarked VAT and excise tax revenue complement the private sector contributions. The study under review chose the wage bill in industry, allocated regionally according to the location of the insured residents, as the relevant distribution key for the total of the employee contributions. The exclusion of the wage bill of the services sector constitutes a severe shortcoming of this approach, particularly for Brussels Capital, because of its high concentration of the tertiary sector. Furthermore, the value added of the food and beverage industries served as a distribution key for the earmarked excise taxes, whereas regional value added of the food and beverage industry allocated the earmarked VAT, financing social security, to the regions. However, since VAT and excise taxes originate for

about two-thirds in private consumption, regional household surveys on consumption expenditure would offer a superior and relevant distribution key. As for the expenditure side of the social security system, published data are available for public pensions, unemployment benefits and family allowances. Data on public health expenditure referred only to some years of the period covered.

The regional assignment of the corporate income tax raised another problem in the study under review, using total regional value added of the corporate sector as a distribution key. This tax is perceived according to the location of the administrative headquarters of the firm, which in many cases such as Brussels Capital, differs from the location of production. Because of the unavailability of detailed regional accounts for the corporate sector, specifying, for example, the share of capital income as a proxy for the tax base, the evaluating commission concluded that the corporate income tax is actually not fit for regionalization.

Another point of discussion relates to the regional allocation of the salary costs of the federal civil servants, which the ABAFIM study based on their residence. This approach assumes that the regional wage bill of the public servants, adds to the welfare of their region of residence without an equivalent economic contribution of the latter. However, one could argue that the regional supply of civil servants to the federal government implies an opportunity cost for the region concerned, that is, their alternative productivity in the private sector. From this point of view, the flow of salaries to a region constitutes only a transfer to the extent that the salary cost of the civil servants exceeds their alternative wage. Therefore, the evaluating committee advised the exclusion of the salary costs of the civil servants from the analysis.

A final criticism concerns federal subsidies to firms, which the ABAFIM study assigned to the regions according to the regional value added of the corporate sector. Public or privatized firms, such as the national railways and the post office, benefit most from the federal subsidies in order to cover the production costs of legally or contractually defined universal services. Since the private demand for these services may differ regionally, household and firm surveys on the use of these universal services would ideally provide regional distribution criteria that are preferable to the approach used in this study.

7 CONCLUDING REMARKS

Since the major constitutional reform of 1989 and its extension of 2001 shaped the Belgian federation and particularly, transferred important

economic policy instruments to the regions, one would expect a gradual economic inter-regional convergence since then in view of the efficiency argument that inspires fiscal federalism. In the same line of thought, the devolution of educational policies to the communities ought to improve the quality of human capital and to stimulate innovations and R&D.

As far as levels of GRP per capita and unemployment rates are concerned, the data rather suggest divergence between the two major regions during the past 18 years. Unfortunately, the small number of constitutional regions in the Belgian federation hinders the application of statistically significant convergence tests at that level, as has been done by Padovano (2007) for the US and Italy.

The IMF and the OECD pointed frequently in their country surveys to the low degree of inter-regional mobility of labour as one of the major handicaps of the Belgian economy on the road to regional convergence. Recent cooperation agreements between the regional employment services aim at stimulating the mobility of the unemployed in Brussels and in Wallonia in the direction of Flanders, which risks a continuing labour shortage in the next decades.

In view of the pre-financing of the future ageing costs, a substantial increase of the Belgian employment rate, as low as 62 per cent in 2005, is crucial. Moreover, regional employment rates differ substantially between Flanders (65.7 per cent), Wallonia (57.5 per cent) and Brussels Capital (54.7 per cent). Federal policy measures aiming, for example, at increasing the effective age of retirement, ought to be supported by an adequate incentive structure for the regions that boosts regional active labour market policies, adapted to the specific needs of each.

The recent estimates of the inter-regional fiscal flows presented in this chapter and the apparent lack of regional convergence fuel the demand for a further regionalization of labour market policies and an extension of the fiscal autonomy of the regions, particularly from the Flemish side. However, since the inter-regional flows through the social security system play such a dominant role, a fundamental discussion on the desirable and sustainable degree of solidarity between citizens and regions appears unavoidable in the political debates on the future of the Belgian federation.

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6. Inter-regional fiscal flows: Canada

Giuseppe C. Ruggeri

1 INTRODUCTION

The fiscal activity of the federal government in Canada is quite pervasive. It affects the income of individuals and families across the country and the capacity of provincial and municipal governments to finance their spending responsibilities. Because Canadian provinces differ with respect to size, population, resource endowments, and economic performance, the combination of federal direct spending and intergovernmental transfers generates income redistribution from the richer to the less affluent provinces.

Measuring the net federal fiscal flows to the provinces has been the subject of periodic studies. An early study by Banks (1977) calculated the provincial distribution of federal expenditures for fiscal years from 1972–3 to 1974–5 and concluded that only the four Atlantic Provinces plus Manitoba and Saskatchewan received above-average federal per capita expenditures. Glynn (1979) estimated net federal fiscal balances for fiscal year 1974–5 through a three-step approach. First, he allocated federal revenues among provinces, then he allocated expenditures in proportion to revenues, and finally, he subtracted these counterfactual federal expenditures from the actual expenditures to identify gainers and contributors. Glynn found that the smaller provinces were the net gainers. McCracken (1993) estimated full federal fiscal balances for the period from 1961 to 1991. A comparison among different years is complicated by the different budget positions of the federal government, which moved from small surpluses in the earlier years to deficits of increasing amounts in the later years. For example, in 1991, all provinces except Alberta and British Columbia were net gainers because of the large federal deficit. Mansell and Schlencker (1995) estimated federal fiscal balances from 1961 to 1992 by including the implicit subsidies to oil-consuming provinces through the regulation of energy prices by the federal government during the oil crisis. They found that during the 1961–92 period, the largest gainer was Quebec with a gain of $164 billion in constant 1994 dollars. The largest contributor was Alberta with a contribution of $139

billion, half of it from the implicit subsidy to oil-consuming provinces (mostly Ontario).

Whalley and Trela (1986) applied a computable general equilibrium model to evaluate the inter-regional implications of selected fiscal and non-fiscal federal actions. Their equivalent of federal fiscal balances was the measurement of the economic effects of withdrawing from the federation. For non-fiscal actions, the authors found that the strongest effect was generated by regulated energy prices. In terms of fiscal flows, Whalley and Trela estimated that the biggest gainer from being in the federal system was Quebec, with a net gain of $6.4 billion in 1981, followed by the four Atlantic Provinces with a combined gain of $5.2 billion.

The above studies focused on the relative size of federal fiscal balances among provinces. A direct measure of inter-regional redistribution was derived by Bayoumi and Masson (1995) by regressing provincial per capita income including federal taxes and transfers relative to the national average against relative per capita income before federal taxes and transfers. The authors concluded that from 1955 to 1988 the federal fiscal system in Canada reduced the initial differences in relative income among provinces by 39 per cent. Ruggeri and Yu (2003) estimated the degree of inter-regional redistribution by using the relative share index described in Ruggeri (this volume). Their results indicate that in 1996 the federal fiscal system reduced inter-provincial income differentials by 48 per cent. Ruggeri (2004a) calculated the degree of inter-regional redistribution in Canada for 1992 and 1997 to determine how it was affected by federal policies during a period of fiscal restraint. Using indices of inter-regional redistribution based on comparisons of Gini coefficients, the author estimated that federal fiscal activity reduced inter-regional income disparities by 44 per cent in 1992 and 42 per cent in 1997.

This chapter updates the analysis contained in Ruggeri (2004a) by estimating the degree of inter-regional redistribution for 1998 and 2004. The initial year is the beginning of the period of federal budget surpluses. The end year is the last year for which detailed and comparable data are available.

2 ELEMENTS OF CANADIAN FEDERALISM

Fiscal federalism in Canada has been shaped by the exercise of flexibility in balancing, within the boundaries set by the Constitution, the centripetal and centrifugal forces generated by external forces and internal economic and political developments (Ruggeri 2004b). At the birth of the nation, governments had limited involvement in the provision of services

to people, and the main role of government was to protect the country, its citizens and their property from external and internal threats, and to provide support for commerce. Given this limited role of government, one can view the original Canadian Constitution (British North America Act 1867) as establishing a centralized federation. The federal government was given exclusive jurisdiction over national defense, criminal law, and trade and commerce. It also received all residual powers that were not specifically assigned to the provinces, having the authority to legislate, in general, for the 'peace, order, and good government of Canada'.

The responsibilities of provinces were limited to 'all matters of a strictly local or private nature in the province'. Over time, these 'local' areas of responsibilities – which included, education, health care, and social services – have become the main source of expansion of government spending, and their financing has been the force behind the reshaping of fiscal federalism in Canada since the 1950s.

The original taxing powers were allocated in accordance with the assigned spending responsibilities. Given the limited provincial spending responsibilities, the provincial taxing powers were limited to direct taxation – an unimportant and generally disliked revenue source in 1867 – and 'shop, saloon, tavern, auctioneer and other licenses'. The federal government was given exclusive jurisdiction over the main revenue source (custom duties), and the power to raise money 'by any mode or system of taxation'.

The evolution of fiscal federalism in Canada has been shaped fundamentally by three major forces – the Great Depression, two world wars, and a decade of prosperity in the 1960s – and the consistent preference by provincial governments, with the notable and persistent exception of Quebec, for cash transfers as a solution to vertical fiscal imbalances.

Canada was born a fiscally unbalanced federation as the only major revenue source was assigned to the federal government. The provinces lacked the fiscal resources to finance even their limited spending activities. While Quebec wanted a share of custom duties, the other provinces asked for cash grants. This broad preference for cash transfers, which reduces the political cost of financing provincial expenditures by provincial governments, is still a dominant element of intergovernmental fiscal relations. These federal transfers were intended to be temporary because the prevailing ideology at the federal level was that of independent fiscal systems. This ideology was emphasized by the statement of Sir Wilfrid Laurier that 'the principle by which one government collects the revenues and the other spends them is wholly false'. This principle of disentanglement was reaffirmed 42 years later by the Right Honourable Mackenzie King who stated that 'everyone who has given any attention to public finances will agree that

it is a thoroughly vicious system to have one body raise taxes and another body expend the money so secured' (both quotes from Moore et al., 1966).

The Great Depression exposed the fiscal imbalance in the federation as the provinces found themselves laden with a burden of unemployment that their fiscal system could not bear. This experience led to changes in fiscal federalism through a shift of constitutional responsibilities for unemployment insurance and old age pensions from the provincial governments to the federal government.

World War I provided the opportunity for the federal government to enter the income tax field, which had conventionally been reserved for the provinces but rarely used. The financial requirements of World War II ushered special federal–provincial arrangements (Tax Rental Agreement), which gave the federal government exclusive power to collect the major taxes in exchange for transferring a portion of the revenue to the provinces. These two initiatives led to the federal dominance of the income tax field, a situation that still holds today and which has given the federal government the spending power to reshape Canadian federalism in the post-war period.

The foundations for the existing structure of fiscal federalism were built in the late 1950s and the 1960s, when economic prosperity allowed a major expansion of the role of government. The vehicle for addressing horizontal fiscal imbalances, Equalization, was introduced in 1957. Since the expanding role of government primarily involved areas under provincial jurisdiction (especially post-secondary education and universal publicly-funded health care), it would have created unsustainable vertical fiscal imbalances. These imbalances were addressed through a strategy that rested on two fundamental principles: (1) joint financing of national programmes (programmes that are constitutionally a provincial responsibility but are jointly financed because they provide benefits associated with rights of citizenship), and (2) equal sharing in financing these programmes through federal grants.

Significant changes occurred in the five-year span from 1977 to 1982. In 1977 there was a major change in the federal approach to the financing of health care and post-secondary education. Called Established Programme Financing, the federal cash transfers for these programmes were replaced by a combination of tax point transfers and equal per capita transfers. In 1982, the Equalization formula was modified by expanding the revenue sources to be equalized and by changing the standard to which they would be equalized. Finally, in 1995 federal financing of post-secondary education, health care, and social services was combined into a single unconditional block grant called the Canada Health and Social Transfer (CHST). Since then, intergovernmental fiscal relations have been dominated by public squabbles over federal funding and tinkering with existing formulas.

Table 6.1 Revenues by order of government in Canada fiscal year 2006–07 ($ million)

	Federal	Other gov't	Fed. share (%)
Personal income tax	117162	70502	62.43
Corporate income and capital tax	37920	23445	61.79
General sales tax	33212	35326	48.46
Taxes on alcohol beverages and tobacco	3943	9053	30.34
Fuel taxes	5240	8012	39.54
Gaming profits	n/a	6476	n/a
Custom duties	3606	n/a	100.00
Real property taxes	n/a	47911	n/a
Payroll taxes	n/a	9658	n/a
Motor vehicle licenses and fees	n/a	3394	n/a
Health insurance revenue	n/a	3327	n/a
Contributions to social insurance	17068	12115	58.49
Natural resources taxes and revenues	675	1493	31.13
Misc. taxes and fees	1458	12009	10.83
Sales of goods and services	6507	41804	13.47
Royalties	924	15632	5.58
Other investment income	6200	21529	22.36
Own source revenues	**233915**	**321686**	**42.10**
Intergovernment transfers	776	56028	
Total revenues	**234691**	**377714**	**38.32**

Source: Statistics Canada (2007a, b).

The fiscal dimensions of federal and provincial-local governments in fiscal year 2006–07 are shown in Tables 6.1 and 6.2, the former focusing on the revenue side and the latter on the spending side.

Inspection of Table 6.1 leads to the following observations.

1. There is joint apportionment of the major revenue sources, specifically, personal income taxes, corporate income taxes, and general sales taxes;
2. The federal government plays the dominant role in income taxation, receiving over 60 per cent of the revenues; and

Table 6.2 Spending by order of government in Canada; fiscal year 2006–07, ($ million)

	Federal	Other gov't	Fed. share (%)
General government services	8350	11606	41.84
Protection of persons and property	24841	20460	54.84
Health care	4509	102341	4.22
Education	3803	83923	4.34
Social services	81034	56334	58.99
Other programme spending	25884	68463	27.43
Interest on the debt	19591	26516	42.49
Total direct expenditures	**168012**	**369643**	**31.25**
Net intergovernmental transfers*	55252	0	n/a

Note: * Not included in direct government expenditures.

Source: Statistics Canada (2007a, b).

3. The federal government has a less diversified revenue mix than the other governments combined, due in part to tradition and in part to the limitations of its role in direct spending. For example, real property taxes have historically been the major revenue source for local governments, on-shore natural resources are owned by the provinces, and health care and education are constitutionally the responsibility of provinces. Provincial/territorial/local governments combined occupy all revenue sources except custom duties, which are assigned exclusively to the federal government by the Constitution, and indirect consumption taxes.

Provincial/territorial/local governments combined spent on direct programme delivery 2.2 times the amount of federal spending. The federal government provided net grants equal to 14.9 per cent of these expenditures (Table 6.3). These grants claimed 23.6 per cent of federal revenues. Provincial/territorial/local governments are directly involved in the delivery and financing of what are generally called 'people's programmes', particularly health and education. These two items alone accounted for over half of their direct programme spending. If we add social services, this share rises to over 70 per cent. They also have major spending responsibilities in the areas of transportation and communications, regional development, housing, labour, and environmental protection. Table 6.3

Table 6.3 Federal transfers to other governments, fiscal year 2006–07

	($000)	Share of total (%)
A. Unconditional transfers to the territories and to the less prosperous provinces		
Equalization	11 535	
Territorial formula financing	2 106	
Subtotal	13 641	24.7
B. Unconditional transfers to provinces and territories		
Canada health transfer*	21 340	
Canada social transfer	8 500	
Subtotal	29 840	54.0
C. Subtotal unconditional transfers	43 481	78.7
D. Conditional transfers to provincial, territorial and local governments	11 771	21.3
E. Total transfers	55 252	100.0

Note: * Includes special transfers to reduce wait times.

Source: Department of Finance (2008).

shows that nearly 80 per cent of federal transfers are unconditional. Of these intergovernmental transfers, less than one third are directed at horizontal fiscal imbalances and more than half are aimed at vertical fiscal imbalances.

3 FEDERAL FISCAL CHANGES: 1998 TO 2005

During the decade prior to 1998, the federal government, in its strategy to eliminate the budget deficit and halt the growth of the public debt, put in place a fiscal structure capable of generating surpluses of increasing amounts over time. The effectiveness of this strategy became evident in the late 1990s when the federal government started to record budget surpluses. The federal government then shifted its fiscal thinking from fighting deficits to allocating surpluses. During the past decade, federal budget surpluses have financed debt repayment, tax reductions, higher transfers

to provinces and territories, greater direct federal involvement in municipal financing, and higher direct programme spending in selected areas.

The debt reduction policy combined with sustained economic growth resulted in a major improvement in the debt position of the federal government. The debt-to-GDP ratio, which was close to 60 per cent at the beginning of the budget surplus period in 1997–8, fell to less than 30 per cent in 2006–07. The interest on the federal debt fell by 34 per cent. In 1997–8 it claimed nearly 27 cents out of each dollar of federal budgetary revenues. By 2006–07, this claim had fallen to 14.4 cents.

The budget surplus provided the federal government the fiscal power to reduce the burden of taxation. Since 1997–8 the federal government has implemented substantial rate reductions for personal income taxes, corporate income taxes and the Goods and Services Tax (Canada's Value-Added Tax). As a result of this tax-cutting policy, the ratio of federal tax revenues to GDP fell from 14.6 per cent in 1997–8 to 13.7 per cent in 2006–07.

A portion of the surplus was used to undo some of the cuts in intergovernmental transfers introduced during the period of fiscal restraint. There was little change to the general unconditional transfers (Equalization and Territorial Formula Financing), but a major reform of these programmes was introduced in fiscal year 2007–08. The major increase in federal transfers was for the financing of the three national programmes (health care, post-secondary education, and social services). These increases were directed at redressing the vertical imbalances that had been created by federal fiscal restraint policies. Federal cash transfers for these programmes increased from $12.4 billion in 1997–8 to $28.6 billion in 2006–07.

All these elements of federal fiscal policy during the decade from 1997 to 2007 have different impacts on federal fiscal balances by province. Changes in those balances, in turn, may affect the degree of inter-regional redistribution, as will be shown in the remainder of this chapter.

4 FEDERAL FISCAL BALANCES: METHODOLOGY

The methodology for calculating the federal fiscal balances was discussed in detail in Chapter 2 of this volume. This section discusses the applications of that analysis to the Canadian situation. The general approach used in my calculations is the economic gain approach, which is a compromise between the cash-flow and the benefit approaches. It focuses on the income received by individuals and governments in a region from the federal government plus the generation of factor income from direct federal spending on one side and on the collective contribution made by the residents of a region to the federal coffers on the other side. Statistics Canada publishes

annual data on the provincial distribution of federal revenues and expenditures in a publication called *Provincial Economic Accounts* (PEA). This publication serves as the basis for my calculation of federal fiscal balances, with adjustments when deemed necessary as explained in this section. Before discussing the provincial allocation of specific federal revenues and expenditures, a few general comments are necessary.

First, the relevant data are for calendar years and are calculated on an accrual basis, which conforms to the National Income Accounts and provides a consistent comparison with the income concept used to measure inter-regional redistribution. Second, federal fiscal balances are calculated for 1998 and 2004. The ending year is the last year for which comparable data are available, while the beginning year is the first year of federal budget surpluses. Comparing the results for the two years will provide some information on how much federal fiscal abundance affected the degree of inter-regional redistribution. Third, the calculations are confined to provincial and associated local governments. The Territories are excluded from my calculations because they have a different legal and fiscal relationship than the provinces. Fourth, I included a non-budgetary item, namely, the Canada Pension Plan account, a public pension fund financed by compulsory contributions of equal amount by employers and employees. A similar plan in Quebec is treated as a provincial programme and is excluded from my calculations. Finally, federal fiscal relationships with the rest of the world are excluded because they do not affect the economic conditions and living standards of the residents of the various provinces.

4.1 Revenues

In the case where the person paying the tax is also the person bearing the burden of that tax, the three approaches yield the same result. In those cases, the PEA allocation may be used directly. This allocation was used for personal income taxes, the Goods and Services Tax, the Air Transportation Tax, and Employee Contributions to Public Pension Plans, Employment Insurance, and the Canada Pension Plan (CPP). I made a small adjustment for personal income taxes. Under Canada's approach to the integration of personal and corporate income taxes, individual taxpayers include a 'grossed-up' amount of dividends in their income – cash dividends plus an approximation of the corporate tax paid – but receive a tax credit equal to this approximate value of the corporate tax paid. This 'dividend tax credit' is deducted from personal income tax revenues in both the *Taxation Statistics* published by the Canada Revenue Agency and the PEA. In theory, this tax credit offsets corporate tax payments. To maintain conceptual consistency, I deducted the dividend tax

credit from the corporate tax assigned to owners of capital and added it to personal income tax revenues.

For all other federal revenues there is the potential for tax shifting, therefore, their allocation was based on the methodology for tax incidence. Distributing the burden of the corporate income tax on the basis of the residence of the taxpaying unit (as is done in the PEA) is inconsistent with tax incidence analysis. I followed several steps in allocating this revenue among provinces. First, I assumed that 25 per cent of this revenue is shifted forward to Canadian consumers to account for the market power of corporations operating in the non-tradable sector and in the energy sector, and 75 per cent is borne by the owners of capital. Second, I divided the latter component between residents and non-residents in proportion to their share of dividends received as recorded in Statistics Canada's *National Income and Expenditure Accounts.* Third, I allocated the domestic component according to the provincial distribution of cash dividends and realized capital gains (from *Taxation Statistics* by the Canada Revenue Agency). Finally, I deducted the dividend tax credit.

Employers pay contributions to social insurance in the case of government pensions, employment insurance, and the Canada Pension Plan (CPP). These contributions are a form of benefit-related payroll taxes, where the combination of employer and employee contributions is directly related to the expected benefit. In tax incidence studies, employer payroll taxes are often shifted back entirely to employees. The case for such shifting is stronger in the case of these benefit-related payroll contributions. For this revenue source I used the PEA allocation, which combines both employer and employee contributions on the basis of the place of employment.

Federal indirect taxes, take the form of custom duties, excise duties, excise taxes, and miscellaneous taxes. Together they account for only 6.4 per cent of federal tax revenues. Custom duties are imposed on a variety of products. In the PEA, the provincial allocation is based on the port of entry and the associated revenue collection centres by province. We cannot assume that the tax collections in each province are directly related to the consumption of the imported goods upon which the tax is imposed. A more meaningful allocation is one based on the provincial distribution of total consumer spending, which is the approach used in my calculations. Excise duties are levied on alcoholic beverages and tobacco products. Using the same logic, I allocated them according to the provincial share of expenditures on these items. Similarly, excise taxes are imposed on gasoline and other motor fuels, and I allocated them on the basis of a province's share of fuel consumption. For the rest of indirect taxes and miscellaneous taxes and fees, which account for less than half of indirect tax revenues, I used the provincial distribution of consumer spending as a rough approximation.

Investment income represents 3 per cent of federal budgetary revenues. It is composed mostly of remittances from government enterprises and interest. Royalties account for only 13 per cent of this revenue source and originate entirely from the Territories. Trying to develop a provincial distribution of these revenue sources that would be consistent with the economic gain approach and be accurate at the same time may be an impossible task. Therefore, I opted for the PEA distribution, which provides separate allocations for the major components, which in my view are a good approximation of the economic gain approach.

4.2 Expenditures

Federal spending comprises four major categories: (1) purchases of goods and services, (2) transfer payments, (3) intergovernmental transfers, and (4) interest on the public debt. Purchases include wages and salaries, other current expenditures, and investment. Transfer payments include transfers to persons and transfers to business.

The allocation of intergovernmental transfers does not raise any issues because the jurisdiction receiving the transfers is clearly identified. While the benefits of these federal transfers to one province over time spill over to other provinces, the immediate impact is on the receiving province. The direct beneficiaries are also readily identifiable by their residence in the case of transfers to persons. In my view, transfers to business are equivalent to negative corporate taxes; therefore, I allocated them in the same manner as corporate income taxes.

The PEA allocates capital spending on the basis of where it is located and wages and salaries according to the place of employment. This allocation is consistent with the economic gain approach; therefore, in my calculations for these two items I used the PEA allocation. For the non-wage component, the PEA allocates federal spending on the basis of where the goods and services are consumed. According to the economic gain approach, the allocation should be based on the place of production. Ideally, one would need detailed information on where the goods and services purchased by the federal government were produced. In the absence of such detailed information, I allocated these expenditures in accordance with the provincial distribution of private sector factor income.

The interest on the public debt is neither a purchase of goods and services nor a transfer payment. Conceptually, it should be excluded from the calculations of federal fiscal balances. However, the revenue that is needed to finance it is already included in the revenues to be allocated. As discussed in Chapter 2 of this volume, two alternative options for the treatment of this item may be used: (1) inclusion of the interest payments

and the tax revenues needed to finance them, or (2) exclusion of interest payments and corresponding adjustments to the revenue side. The second option provides an opportunity to neutralize this potential effect, and is the option used in my calculations in the manner explained below.

First, the payment of interest to non-residents does not increase the income of residents, as the income tax paid by non-residents does not impose a burden on residents. Second, allocating the interest paid to residents on an equal per capita basis automatically incorporates an element of inter-regional redistribution because equal per capita spending is redistributional by definition. The alternative used in my calculations 'neutralizes' the distributional effects of the interest on the debt through the following steps. First, I excluded the entire interest on the debt from the spending side. Second, I started with the PEA allocation. Third, I allocated the non-resident component on an equal per capita basis as is done in the PEA, and then I subtracted it from the total allocation. Finally, the difference between the allocated total and the allocated non-resident component was subtracted from the revenue side. This procedure has two main effects. First the burden of the payment to non-residents is allocated to residents by province in proportion to their shares of total federal revenues. Second, the potential redistributional effect of the domestic component has been neutralized by deducting in each province the same amount from the revenue and the spending side.

Federal surplus

In Canada, the allocated revenues exceeded the allocated expenditures in both 1998 and 2004. This surplus can be treated as unplanned excess revenue which must be netted out from the calculations of inter-regional redistribution. It is revenue that generates a burden on the residents of all provinces but provides no benefits in return. I made the necessary adjustment by reducing federal revenues in each province according to a province's share of income and consumption taxes, the revenue upon which the federal government would have greatest policy flexibility. These amounts were then deducted in the calculation of the income measure used in estimating the indices of inter-regional redistribution.

5 FEDERAL FISCAL BALANCES: 1998 AND 2004

Details of my calculations are found in an extended paper which is available electronically on request. Here I present a summary of the results. Table 6.4 shows per capita revenues and expenditures allocated by province when both the interest on the federal debt and the federal surplus are neutralized. The revenue and expenditure figures for Quebec are relatively

Table 6.4 Federal revenues and expenditures by province, 1998 and 2004

	Balanced expenditures				Balanced revenues			
	1998		2004		1998		2004	
	$ million	$**	$ million	$**	$ million	$**	$ million	$**
NF	4480	8297	4421	8546	1587	2939	2315	4475
PE	1043	7683	1256	9113	457	3367	635	4605
NS	6387	6853	7593	8095	3498	3753	4636	4932
NB	5030	6701	6029	8017	2599	3462	3439	4573
PQ*	27890	3823	33565	4446	21551	2954	28034	3714
ON	47408	4171	67041	5398	59941	5273	78994	6360
MB	6771	5953	8679	7414	4441	3904	5618	4799
SK	5363	5271	7227	7264	3728	3664	4764	4788
AB	11475	3958	17464	5444	16017	5524	23550	7341
BC	16457	4132	22898	5447	18486	4641	24189	5754

Notes:
* Excludes CPP revenues and expenditures because Quebec has its own pension plan.
** Per capita.

Source: Statistics Canada (2007d).

low because they do not contain the CPP since Quebec has its own contributory public pension system. This omission has little effect on federal balances because the reductions in federal revenues and expenditures in Quebec largely cancel out.

From Table 6.4 one can calculate that in 1998 the bulk of the allocated revenue was from Ontario (45.3 per cent), with Quebec, British Columbia and Alberta contributing, respectively, 16.3 per cent, 14.0 per cent, and 12.1 per cent. These four provinces accounted for 88 per cent of the allocated revenues. The shares of allocated revenues changed moderately from 1998 to 2004. The revenue share fell by 0.5 percentage points in Ontario, 0.4 percentage points in Quebec, and 0.2 percentage points in British Columbia, while it increased by 1.3 percentage points in Alberta.

There are also major differences in per capita allocated revenues. In 1998, the range of these values ($2585) was 88 per cent of the lowest per capita value. In 2004 (excluding Quebec), the range increased to $2865, but represented only 64 per cent of the lowest value.

The same four provinces that contributed most to federal revenues received the lion's share of federal expenditures, receiving a share of 78 per cent in 1998 and 80 per cent in 2004. From 1998 to 2004, the share of Quebec fell by 2.0 percentage points, while the shares of Ontario, Alberta

Table 6.5 Real balanced federal fiscal balances by province (1998 dollars)

Province	1998		2004	
	$ million	Per capita $	$ million	Per capita $
NL	2893	5358	1836	3550
PE	586	4316	542	3931
NS	2889	3100	2579	2749
NB	2431	3239	2258	3003
PQ	6339	869	4823	639
ON	−12534	−1103	−10424	−839
MB	2330	2049	2669	2280
SK	1635	1607	2148	2159
AB	−4453	−1567	−5307	−1654
BC	−2028	−509	−1225	−268

Source: Author's calculations based on data in Statistics Canada CANSIM Tables 385–001 and 385–002.

and British Columbia increased by 2.2, 1.2, and 0.6 percentage points, respectively.

There is great variation in per capita federal expenditures, even when Quebec is excluded. The range of per capita expenditures in 1998 ($4340) is greater than per capita expenditures in Alberta. The degree of interprovincial variation declined in 2004 as the range ($3715) was only 69 per cent of the lowest per capita value.

Table 6.5 shows the federal fiscal balances for 1998 and 2004 (in 1998 dollars), which include the neutralizing of the interest on the federal debt and of the federal surplus on allocated revenues and expenditures. In 1998 a total of $19 billion was transferred through the intermediation of the federal fiscal system from Ontario, Alberta and British Columbia to the remaining seven provinces. Of this contribution, 65.9 per cent was made by Ontario, 23.4 per cent by Alberta, and 10.7 per cent by British Columbia. Among the benefiting provinces, Quebec received 33.2 per cent, the four Atlantic provinces received a combined 46.0 per cent, and the combination of Manitoba and Saskatchewan received 20.8 per cent.

The average per capita contribution by Ontario, Alberta and British Columbia amounted to $1047 and ranged from a high of $1567 in Alberta to a low of $509 in British Columbia. The average per capita gain for the other provinces was $1618, and its value ranged from a high of $3731 for the average of the four Atlantic Provinces to a low of $869 in Quebec. This pattern of per capita contributions and gains suggests that the population

size of the various provinces and their respective economic structures has provided the Canadian federation with conditions favourable to inter-regional redistribution. Since the contributing provinces account for over 60 per cent of the population and for an even larger percentage of Gross Domestic Product, relatively small levels of per capita contributions are capable of delivering large per capita gains in the smaller and less prosperous provinces. On a per capita basis, inter-regional redistribution in Canada is not onerous for the residents of the contributing provinces.

Substantial changes in federal balances occurred between 1998 and 2004. First, the total amount of the transfer of resources in constant dollars from the contributing provinces fell by nearly 12 per cent, dropping from $19.1 billion to $16.9 billion. Second, the distribution of contributions and gains also changed. The contributions by Ontario and British Columbia decreased by similar degrees, 3.8 and 3.9 percentage points, respectively, while the contribution of Alberta rose by 7.7 percentage points. Among the gaining provinces, Quebec and the Atlantic Provinces experienced declines, of 4.6 and 3.2 percentage points, respectively, while Manitoba and Saskatchewan combined saw their gain rise by 7.8 percentage points. The combined reduction in the contributions by Ontario and British Columbia matched the combined decline in the gains by Quebec and the Atlantic provinces, while the increase in the contribution by Alberta matched the increase in the gain by the two prairie provinces.

The changes in total contributions and gains by provinces are reflected in the changes in per capita values. The combined per capita contribution by Ontario, Alberta and British Columbia fell by 19 per cent because a decline in their total contribution was associated with a higher share of their population. The average gain by the receiving provinces fell by 13.3 per cent to $1404. Substantial declines in per capita gains in Quebec and the Atlantic provinces were partly offset by increases in Manitoba and Saskatchewan.

6 FEDERAL FISCAL BALANCES AND REDISTRIBUTION: 1998 AND 2004

To estimate the redistributional effect of federal fiscal balances, we must relate them to a measure of regional economic disparities that is consistent with the approach used to calculate those balances. Since I used the economic gain approach, the appropriate measure of economic disparities is based on income. Details of this income concept for 2004 are shown in Table 6.6. For redistributional analysis, two measures of this concept are used: one shows actual values and the other a selected counterfactual. The first includes the actual federal balances and is called base income. The

Table 6.6 2004 base and neutral-fisc income by province ($ million)

	NF	PE	NS	NB	PQ	ON	MB	SK	AB	BC	Total
Wages, salaries and supplementary labour income net of federal wages and salaries	7278	1928	14234	11597	135374	266586	19610	15586	80274	78237	630704
Accured net farm income	1	26	13	14	670	315	256	859	830	122	3160
Net income of non-farm unincorporated business, plus rent	1059	331	2150	1450	15579	33806	2615	2113	9380	12196	80679
Interest and misc. investment income	854	142	1205	1205	14826	17912	2453	3030	15198	9753	66578
Retained earnings in Canada	390	223	2876	1131	21016	35962	1989	2291	16282	14147	96306
Add: dividends distributed in Canada	83	48	613	241	4483	7671	424	489	3473	3018	20543
Less: dividends tax credit	11	6	82	32	597	1.022	56	65	463	402	2737
Sub-total	9655	2691	21009	15606	191351	361230	27290	24303	124974	117070	895179

Other pensions or superannuation net of federal component	532	117	1 024	856	9 332	16 597	1 185	951	2 535	4 708	37 839
RRSP income	108	32	249	156	1 425	3 451	245	220	974	1 181	8 041
Cash capital gains	121	71	443	224	4 458	10 006	653	694	4 104	4 435	25 208
Corporate income taxes shifted backward	47	27	271	115	2 177	4 111	243	272	1 792	1 698	10 753
CPP employer contributions	246	74	460	396	28	7 476	628	473	1 995	2 364	14 137
EI employer contributions	142	42	268	220	2 382	4 020	348	259	1 041	1 244	9 966
Sub total	1 196	264	2 714	1 966	19 801	45 661	3 302	2 868	12 440	15 631	105 943
Deduct: allocated surplus	119	33	238	177	1 442	4 064	289	245	1 212	1 244	9 063
Neutral-fisc income	**10 732**	**3 022**	**23 484**	**17 395**	**209 710**	**402 827**	**30 303**	**26 926**	**136 202**	**131 456**	**992 059**
Balanced federal balances	2 106	621	2 957	2 590	5 531	−11 953	3 061	2 464	−6 086	−1 290	0
Base income	**12 838**	**3 644**	**26 442**	**19 985**	**215 241**	**390 874**	**33 365**	**29 390**	**130 116**	**130 166**	**992 059**
Base income per capita	**24 816**	**26 430**	**28 191**	**26 574**	**28 513**	**31 471**	**28 503**	**29 540**	**40 558**	**30 964**	**31 107**
Neutral-fisc income per capita	**20 746**	**21 922**	**25 038**	**23 130**	**27 780**	**32 433**	**25 888**	**27 064**	**42 455**	**31 271**	**31 107**

Source: Author's calculations based on data in Statistics Canada (2007d), 'Provincial economic accounts.'

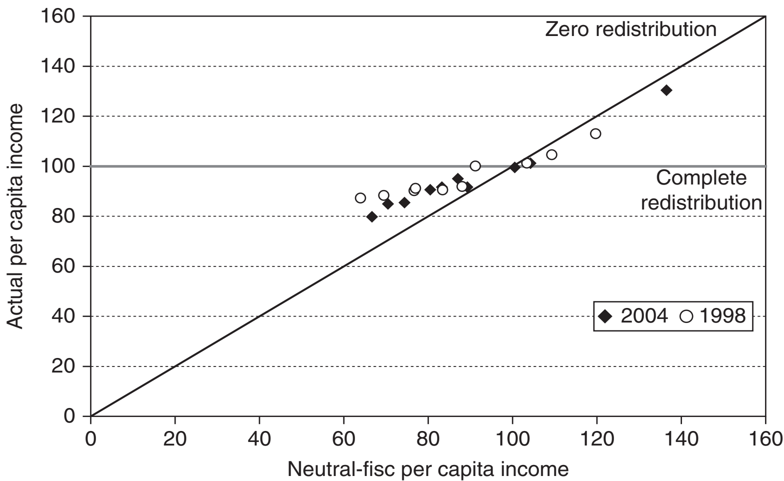
counterfactual is calculated on the assumption that federal revenues and expenditures are allocated in proportion to a province's share of private income (income before the adjustment for the federal fiscal balances) and is called neutral-fisc income.

A graphic presentation of the relationship between these two income measures expressed in per capita values, which represents a set of local redistributional indices, is shown in Figure 6.1, where the provinces are listed in ascending order of per capita neutral-fisc income on the horizontal axis while the vertical axis measures the corresponding values of per capita base income. In Figure 6.1, circles refer to 1998 and diamonds to 2004. In this figure, the 45 degree line indicates no regional redistribution as a province's ratio of its per capita base income to the national average is equal to its ratio of per capita neutral-fisc income to the national average. The horizontal line represents complete redistribution as the ratio of per capita base income to the national average is the same for all provinces. The flatter the pattern of the per capita base income values, the greater is the degree of inter-regional redistribution. The pattern of circles and diamonds is between the line of complete redistribution and the line of no redistribution, indicating a certain degree of inter-regional redistribution. Also, the diamonds (2004) follow a steeper path than the circles (1998), suggesting a lower degree of inter-regional redistribution in 2004.

Figure 6.1 shows that the reduction in inter-regional redistribution between 1998 and 2004 occurred for both contributing and gaining provinces. For the latter group in general, federal fiscal balances provided a smaller offset to the lower per capita neutral-fisc income in 2004 (diamonds) than in 1998 (circles). For the former group, the main change was the convergence of per capita neutral-fiscal income in the most populated contributing province (Ontario) and the divergence in the least populated of the contributing provinces (Alberta). Moreover, the increase in per capita income relative to the national average in Alberta was not associated with a corresponding increase in its redistibutional impact as the deviation from the line of no redistribution is similar in 1998 and 2004.

These results indicate that the degree in inter-regional redistribution is not independent of the relative economic conditions among contributing provinces. Specifically, a decline in the relative economic position of Ontario, a province relying mostly on the manufacturing and service sectors, and an increase in Alberta, a province with a large natural resource sector, will lead to a reduction in the fiscal resources available for redistribution because the federal government has no avenues for gaining a portion of the royalties on natural resources.

My estimates of the degree of inter-regional redistribution in Canada for 1998 and 2004 using global indices based on comparisons of Gini



Source: Author's calculations based on data in Table 6.6 for 2004 and similar data (not shown) for 1998.

Figure 6.1 Relationship between provincial relative per capita base and neutral-base income; 1998–2004

coefficients are shown in Table 6.7. The results lead to the following observations. First, when we compare provinces with respect to average income, the degree of income disparities is a fraction of the degree of income inequality among individuals, which is associated with Gini coefficients in excess of 0.3. With respect to income inequality, differences among individuals within a province are more significant than differences of average incomes among provinces. Second, there was a small increase in the degree of interprovincial disparities of neutral-fisc income as the estimated Gini coefficient in 2004 was 7 per cent higher than in 1998. However, the redistributional effect of the federal fiscal system was weaker in 2004. The estimated Gini coefficient for base income in 2004 was 33 per cent higher than in 1998, resulting in a decline in the proportional change in inter-regional redistribution from 46 per cent to 33 per cent.

The results shown in Table 6.7 also indicate that we must be careful when comparing degrees of inter-regional redistribution for different years for a given country or for a given year among various countries. The difference in the estimated Gini coefficients provides information on the absolute level of the change in redistribution, but does not tell us which proportion of regional income disparities was reduced by the federal fiscal system. The proportional change in the estimated Gini coefficients

Table 6.7 Estimated Gini coefficients for 1998 and 2004

	Neutral base income (G_n)	Actual base income (G_b)	($G_n - G_b$)	($G_n - G_b$)/G_n (%)
1998	0.072	0.039	0.033	46
2004	0.077	0.052	0.025	33

Source: Author's calculations based on date in Table 6.6 for 2004 and similar data (not shown) for 1998.

addresses the latter issue, but its magnitude is affected by the degree of regional disparities in neutral-fisc income. If these disparities are quite moderate, as is the case in Canada, even relatively small changes in the level of redistribution may be translated into large proportional changes in inter-regional redistribution.

7 CONCLUSION

This chapter provides estimates of the degree of inter-regional redistribution in Canada for 1998 and 2004. It used the economic gain approach to measure federal fiscal balances, which compares the economic gain by a province from federal spending and the collective contribution by its residents to the federal coffers. The results lead to the following observations:

1. The degree of regional economic disparities, measured by Gini coefficients for a selected income indicator, was small in both 1998 and 2004, and represented a fraction of the degree of income inequality among individuals;
2. Inter-provincial income disparities increased moderately from 1998 to 2004;
3. Federal fiscal balances reduced the estimated economic disparities by a substantial degree; and
4. The degree of inter-regional redistribution was considerably lower in 2004 than it was in 1998. In 2004, federal fiscal balances offset one-third of the inter-provincial income disparities compared to roughly 50 per cent for 1998.

Comparing the degree of inter-regional redistribution in Canada between 1998 and 2004 indicates that the recent period of fiscal abundance, when the federal government recorded budget surpluses, was associated with a

declining degree of inter-regional redistribution. Whether the comparison between 1998 and 2004 has identified a trend or is simply the outcome of a particular selection of years is an issue that requires further investigation.

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Comment III

François Vaillancourt*

These comments are organized along the lines of the issues raised in our chapter in this volume. We first use a set of three comparative tables to present the key methodological choices of the three chapters and we discuss them in turn. We then turn to more general issues:

THE METHODOLOGICAL CHOICES

We address six methodological choices regrouped in three tables: Table C3.1 covers general methodology, and temporal geographic coverage, Table C3.2 expenditures allocation and revenues allocation, and Table C3.3 treatment of debt and interest and treatment of current surplus or deficit.

General Methodology, Temporal and Geographic Coverage

There are three possible methodological choices: the cash flow approach, the fiscal incidence approach and the economics gains approach.

In Vaillancourt (this volume) we argue that the proper approach is the fiscal incidence approach. Why? Because the purpose of these exercises is to examine if residents in a region are receiving a reasonable amount of publicly provided goods and services given what they pay in the central budget. The economic gain approach implicitly assumes that there are no national public goods. Hence the value of the services of the national parliament accrues only to the region where it is located (the capital). This is incorrect.

Only the Canadian study excludes parts of the country. This makes sense in that these territories are very different from the provinces and heavily dependent on federal expenditures. But it is preferable to include the whole country, including special regions as in the case of Italy.

Table C3.1 General methodology, temporal and geographic coverage

Country	Belgium	Canada	Italy
General methodology	*Mix of the welfare and the cash flow approach*	Economic gain approach *a compromise between the cash-flow and the benefit approaches*	Fiscal incidence approach per capita for public goods (defense, police) and per region for more private goods like health or education
Temporal and geographic coverage	1990–2003: three regions	1998 and 2004: 10 provinces – the 3 territories are excluded	2005: 20 regions

Expenditures and Revenues

The exclusion of capital expenditures from the Italian work, which account for about 9 per cent of public spending is based on the lack of representativity of a given year due to cyclical movements, natural disasters and so on. It would have been be preferable to include them perhaps using a three-year average expressed in 2005 euros. Perhaps more intriguing is that the fiscal balance is calculated for general government and not only for the central government plus social security. Hence local expenditures and revenues are included in the calculation which is unusual. In the case of Belgium, the salary costs of federal public servants, their residence was used as an inter-regional distribution key, assuming that this federal flow contributes to the welfare of the resident region. This again raises the question of the provision of public goods by the central government.

The use of the cash flow basis in assigning tax revenues for Italy assumes no shifting between regions; it would be interesting to present evidence by tax by region either per capita or as a share of GDP to allow the reader to see how plausible this is.

Debt, Interest Payment and Current Surplus or Deficit

All three studies exclude the payment of interest and all use a balanced budget approach in calculating the fiscal flows. This is fine.

Table C3.2 Allocation of expenditures and revenues

Countries	Belgium	Canada	Italy
Expenditures	All included Regional distribution of salaries used	All included interesting treatment of transfers to businesses as negative corporate income taxes	Current only; capital excluded but *General* Government (central + local + social security), used
Revenues	GRP used for some taxes as opposed to collections	Various incidence hypothesis used for corporate income tax and some sales and excise taxes	Cash flow basis is used; no incidence hypothesis are used and thus no shifting of say VAT from collection to consumption

Table C3.3 Treatment of debt and interest and of current surplus or deficit

Countries	Belgium	Canada	Italy
Treatment of debt and interest	Excluded	Excluded with revenues corrected	Excluded
Treatment of current surplus or deficit	Neutralized but how?	Neutralized using the *province's share of income and consumption taxes*	The exclusion of 20 per cent of spending creates an artificial surplus; it is reduced to zero by reducing revenues on a equal per capita basis

GENERAL COMMENTS

The following points seems worth noting:

First all three authors provide a discussion of how intergovernmental relations evolved in their country starting respectively in 1867 – Canada, 1948 – Italy and 1970 – Belgium. The choices of the dates reflect key moments in each country; the creation of Canada as a federal state, post-

war Italy and the birth of Belgium as a federal state. They all then focus on a key sub-period, 1989+ for Belgium, 1998+ for Canada and 2001+ for Italy. These discussions are informative and useful.

Second, the chapter on Belgium provides a good discussion of the weaknesses of the methodology used, which are mainly explained by missing data, while the Italian chapter discusses at length the difficulties with the data sources (CPT, ISTAT, Treasury). The Canadian chapter does not address this in detail but this is due to the abundance and quality of the Statistics Canada data available.

Third, each chapter makes a unique contribution that authors of future studies on this topic may want to consider in their work.

The chapter on Belgium presents a discussion of the relative weights of three kinds of flows in explaining the fiscal flows. It shows that 60 per cent of these flows result from social security arrangements (linked mainly to employment and wage differences), 20 per cent from transfers to regional and community governments and 20 per cent from federal taxes and primary expenditures. This can be useful for policy makers should there be a willingness to change outcomes. The chapter on Canada makes an interesting use of statistical measures (Gini) to examine the contribution of net fiscal balances to changes in disparities between regions. The chapter on Italy raises the issue of the treatment of funds between Italy and the European Union; both inflows and outflows must be addressed. This is an issue of relevance to any country receiving international public inflows and thus applicable to work that could be carried out in developing countries. The Italian work explicitly removes these flows. This is not addressed in the work for Belgium.

CONCLUSION

Each of the chapters in this part of this volume contribute to a better understanding of fiscal flows in their countries and more generally to the difficulties attached to measuring fiscal flows for any country. The authors of the European chapters are to be commended for doing the best they could with the data they had. Of course, methodological refinements along those raised by Ruggeri (this volume) and broadening of the scope of the discussion as proposed by Vaillancourt (this volume) are desirable but this will come as the statistical apparatus of newly decentralized/federalized countries catches up to their status. After all, while Canada has been a federal country since 1867 and the precursor of Statistics Canada, the Dominion Bureau of Statistics, was created in 1918, the production of provincial GDP awaited 1961, almost 100 years after the birth of Canada.

7. Inter-regional fiscal flows: methodologies, results and their determinant factors for Spain

Marta Espasa and Núria Bosch

1 INTRODUCTION

In Spain there is a great tradition of studies on fiscal flows; in fact, about 40 studies can be accounted during the last 50 years (Barberán, 2006). However, it was in Catalonia where they had their origin, Trias Fargas (1960), and where these sort of studies have had a greater proliferation because this is a territory which has historically presented an important fiscal deficit. Moreover, this fact was linked to a strong national identity in this autonomous community (language, institutions and own history) which causes the reduction of such deficit to be a permanent topic within the claims of the main Catalan political parties and it also raises debate among Catalan society, which brought this topic into the central government's political agenda. Each time a study on fiscal flows is presented, debate and controversy are guaranteed at political, media and civil society levels.

In this context, and requested by the Catalan nationalist parties, in 2004 the Spanish Parliament approved a draft in order that the central government could elaborate a methodology for computing fiscal flows which would allow the determination of the annual financial flows between the autonomous communities and the central administration. An expert commission, appointed by the government, was in charge of elaborating such methodology which was presented to the Senate in September 2006 *Informe del Instituto de Estudios Fiscales* [Report from the Institute of Fiscal Studies]. Lately, following this methodology, the central government computed the fiscal flows between all the autonomous communities and the central administration (MEH, 2008).

On the other hand, in recent years the autonomous government of Catalonia has also undertaken official estimations of the fiscal flow between Catalonia and the central administration (Generalitat de Catalunya, 2005,

2008). These studies have been performed by a group of experts appointed by the Generalitat.

Besides this introduction the chapter has two further sections. The second one describes the methodological features of the estimations of fiscal flows performed in Spain. The third, and last one, presents and analyses the main outcomes.

2 FEATURES OF PREVIOUS STUDIES

2.1 Methodological Approximations Used

In Spain the most commonly used approach to compute fiscal balances has traditionally been the benefit approach. That is, allocating revenues to the territory where the people bearing the tax burden live, and allocating expenditures to the territory where the beneficiaries of these expenditures live, independently of the place where the public service is produced and the investment is made. In this case, it is necessary to establish some hypothesis about the beneficiaries' range and the quantification of the benefits generated by the goods and services provided.

However, we find that previously, in Castells et al. (2000) and Lopez Casasnovas and Martinez (2000), the authors also used the flow approach, therefore they allocate expenditures to the territory where they originated, that is, where personnel, use of goods and services, transfer receipt and investment execution are located. Revenues, however, were allocated according to the tax incidence criterion, the same one than lies behind the benefit approach.

The report of the Instituto de Estudios Fiscales (2006) recommends, in the case of the flow approach, allocating revenues to the territory where the economic capacity which is taxed is located, because they consider that this criterion is more symmetric with respect to the way that this flow approach allocates expenditures.

The recent studies performed by the MEH (2008) and the Generalitat de Catalunya (2008) compute fiscal balances following both the benefit and the flow approach. In this last case, they allocate revenues to the territory where the economic capacity which is taxes is located is generated and they allocate expenditures where they are materialised.

2.2 Institutional Framework

The studies on fiscal balances that have already been performed in Spain analyse the fiscal flows of the central administration, which includes the

state, the autonomous organisms and the public bodies within the central administration and the social security administration. However, recent studies undertaken by the MEH (2008) and the Generalitat de Catalunya (2008) also include public firms which make investments on behalf of the state.

With regards to public firms, it must be said that, traditionally, they were not included in fiscal balance studies because both the function and financing of public firms are considered to be more typical of the private sector than the public one (basically they are focused on producing goods and services oriented to the market and their resources mainly come from the sale of their goods and services). However, there are certain public firms that have been created by the state to channel its investments. Therefore, some investments which were traditionally executed by the central administration, are now executed by public firms. This implies that both the characteristics and interventions of public firms respond more to public criteria than to market criteria; thus, the European accounting methodology, SEC-95, considers them as entities which are part of what needs to be understood as public administration.

Moreover, the report conducted by the Instituto de Estudios Fiscales (2006) considers it necessary to include those public firms which undertake large investment programmes, and they also suggest including those public firms which contribute to increase meaningfully, the stock of public capital.

2.3 Data and Statistical Sources

The information resources that have been used to compute the Spanish fiscal balances are the budget settlements of the state, autonomous organisms, public bodies and social security. The most recent studies (Castells et al., 2000, Barberán and Uriel, 2007, MEH, 2008, and Generalitat de Catalunya, 2008) have been provided with data from the SICOP (Accounting and Budgetary Information System) which is arranged by the General State Comptroller (IGAE). This system gives information about the different expenditure programmes by territories. The differentiation of the information by regions helps to allocate expenditures following the flow approach.

2.4 Revenues and Expenses Accounted

The studies on fiscal balances performed in Spain usually take into account the revenues and expenses which can be considered as typical of public administrations. On the revenue side, all the concepts which have a high coercive component and that are undertaken with no direct compensation

from the public administration, are taken into account; and on the expenditure side, those expenditures whose goal is to produce services which are not intended for selling nor redistributing income, are considered. Thus, all those activities that the public sector performs jointly with the private sector or those ones which have a clear financial basis have been excluded. Therefore the following transactions have been omitted from this study:

- *Financial revenues and expenses*, that is, all those operations originated by the variation of financial assets and liabilities, in which the financial position (either debtors or creditors) of the public agents considered is modified. They are, in general, operations that have an obvious compensation element and in which the central public sector acts within the financial markets in the same way than private sector agents would. Moreover, there is another reason why these operations should not be considered: in reality they are nothing else but the closure of non-financial nature operations which are financed through the budget, thus their inclusion would lead, in the long run, to a double-counting (as a real operation and as a financial compensation).
- *Property income*,[1] because they are revenues which the public sector obtains as a compensation for the ownership of certain assets, either financial or real (bank deposits, shares or other securities, buildings, land, etc.). These revenues are the return of the investment activities made by the public administration, that is, they are due to the ownership of assets which generate returns (generally within market conditions) and do not mean a burden for those ones who are paying for them.
- *Revenues for alienation of real investments*, for the same reason as property income revenues.
- *Transactions with the European Union (EU)*. As a general criterion, we must exclude all the revenues coming from the EU and the expenditures conferred to this entity if we want to obtain a fiscal balance of the central public sector net of Community flows.
- *Current and capital transfers arising from consolidation adjustments* which are conferred to the different public organisms considered, in order to avoid double-counting on the different concepts of revenues and expenses.

3 RESULTS

In July 2008 the upshots of two studies on fiscal flows were presented in Spain. On the one hand, the Catalan fiscal flows with the central

administration, estimated by the Generalitat de Catalunya (2008) and, on the other hand, the study issued by the MEH (2008) which estimated the fiscal flows of the central public sector for each of the 17 autonomous communities (plus two autonomous cities[2]) in 2005. In both studies, the fiscal balances are calculated following two methodological approaches: the flow and the benefit approach. The outcomes of these studies are analysed below. More concretely, the studies examine the results from the allocation of the central administration's revenues and expenses, as well as the fiscal balances and their determinants.

3.1 Revenues

On the revenues side, the outcomes arisen from the use of the flow approach and the benefit approach are, in general, quite similar, given that the statistical indicators used in the allocation are very alike (Table 7.1). Nevertheless, in some regions these results may differ significantly. This is the case, for example, of the Balearic and Canary Islands, where applying one approach or the other translates into great differences. This fact is due to their productive structure (they are focused on tourism), which generates an important volume of taxable facts linked to the consumption and income taxes borne by the residents of those regions. The same happens in Madrid, although in this case, the reason for such differences is the effect associated with being the Spanish capital. Some other regions in which applying the flow approach means a higher resource contribution than that of the benefit approach are Catalonia, Valencia and Murcia.

According to the flow approach, the communities with higher allocation of revenues are Madrid (19.3 per cent), Catalonia (19.1 per cent), Andalusia (13.9 per cent) and Valencia (10.1 per cent). Those figures show that these four regions bring 62 per cent of revenues to the central administration. This percentage is reduced to 58 per cent when revenues are allocated following the benefit approach. In this case, Catalonia is the community with the greatest allocation coefficient (17.9 per cent). Logically, these outcomes depend on the size of each community (population, GDP, etc.). This is why in order to make comparisons between them, they must be weighted according to these magnitudes.

In per capita terms, the flow approach points that the revenues per head contributed by the different communities range from €7977 (Madrid) to €3766 (Extremadura). Considering the index with respect to the mean (mean = 100) (see Table 7.1), the largest per capita contributors are Madrid (with a 142.5 index; that is, each citizen from Madrid brings to the central public administration, revenues that are 42.5 per cent above the Spanish average), the Balearic Islands (123.2), Catalonia (120.6),

Table 7.1 Regional allocation of the central administration's revenues in Spain, 2005

	Flow approach*			Benefit approach**			Differences (flow and benefit approaches)	
	Percentage of total	PC revenues indexed to Spain 100	Percentage of GDP	Percentage of total	PC revenues indexed to Spain 100	Percentage of GDP	PC revenues indexed to Spain 100	Percentage of GDP
Results from the study issued by the Ministry of Economy								
Andalusia	13.9	78.2	26.81	13.7	76.7	26.31	1.5	0.50
Aragon	3.2	109.5	27.56	3.0	105.5	26.55	4.0	1.01
Asturias	2.4	96.5	29.50	2.3	95.8	29.30	0.6	0.20
Balearic Islands	2.8	123.2	29.86	2.2	99.1	24.01	24.1	5.85
Canary Islands	3.8	84.5	24.88	3.1	70.1	20.63	14.4	4.25
Cantabria	1.3	99.0	27.06	1.3	98.5	26.93	0.5	0.13
Castile-Leon	5.1	89.4	25.41	5.2	91.5	26.01	−2.1	−0.60
Castile-La Mancha	3.6	83.5	28.12	3.2	74.2	24.99	9.3	3.13
Catalonia	19.1	120.6	27.23	17.9	113.1	25.54	7.5	1.70
Valencia	10.1	95.3	27.69	9.4	89.2	25.94	6.0	1.75
Extremadura	1.7	67.3	26.61	1.7	68.2	26.98	−0.9	−0.37
Galicia	5.3	84.3	27.61	5.2	82.6	27.04	1.7	0.57
Madrid	19.3	142.5	29.33	17.2	127.1	26.16	15.4	3.17

Table 7.1 (continued)

	Flow approach*			Benefit approach**			Differences (flow and benefit approaches)	
	Percentage of total	PC revenues indexed to Spain 100	Percentage of GDP	Percentage of total	PC revenues indexed to Spain 100	Percentage of GDP	PC revenues indexed to Spain 100	Percentage of GDP
Murcia	2.6	86.4	27.17	2.3	77.3	24.29	9.1	2.87
Navarre	1.1	83.8	17.86	1.1	79.9	17.03	3.9	0.83
Basque Country	4.0	81.3	17.14	3.8	79.0	16.65	2.3	0.49
La Rioja	0.7	109.1	27.35	0.7	103.1	25.84	6.0	1.51
Ceuta and Melilla	0.3	84.1	25.07	0.3	93.1	27.77	−9.0	−2.69
Total	**100.0**	**100.0**	**26.75**	**100.0**	**100.0**	**26.75**	**0.0**	**0.00**
Results from the study issued by the Generalitat of Catalonia								
Catalonia	19.6		27.73	19.4		27.3		0.42

Notes:
* FA-1 version: corporate tax allocation: 33.3 per cent employees, 33.3 per cent GVA and 33.3 per cent investment.
** BA-1 version: corporate tax allocation: 70 per cent shareholders, 30 per cent consumers.

Source: Author's calculations from Ministerio de Economía y Hacienda (2008) and Generalitat de Catalunya (2008).

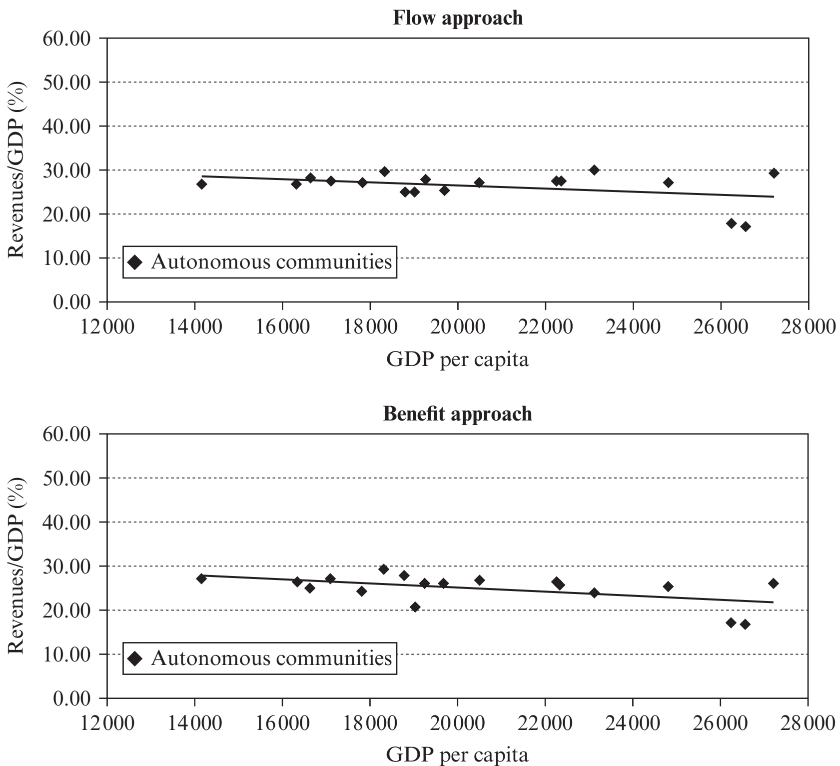
Aragon (109.5) and La Rioja (109.1). The communities that contribute the least are Extremadura (67.3), Andalusia (78.2), the Basque Country (81.3) and Navarre (83.8). Generally speaking, it is observed a positive correlation between per capita contributions and the fiscal capacity of the autonomous communities. Hence, those communities with an above-average GDP per capita bring as well above-average revenues per capita, and those communities with a below-average GDP per capita contribute less than the average. This rule has only two exceptions: Navarre and the Basque Country, which are the regions in the top regional ranking on economic activity (second and third position), but have a contribution which is much lower than the average. This is due to the specific features of the financing system of their autonomic governments. These governments have full competence in all the tax revenues,[3] thus, they legislate, manage and collect all the taxes and they give a grant to the central government for the services that this government renders in its territories. This system follows a logic which is totally opposite of that of the other autonomous communities.

This situation remains fairly stable if the analysis is performed at benefit approach grounds.

Finally, it is also helpful to examine the upshots of the territorial allocation of revenues related to regional GDP, that is, the fiscal burden. In principle, if GDP was truly a good indicator of fiscal capacity, one should expect fairly similar percentages amongst the different autonomous communities, with slightly higher values in the richest communities (caused by a 'progressivity effect'). The analysis of such an indicator (both according to the flow and the benefit approach), reveals that in general terms there exists a high degree of proportionality in the central administration's financing system, because most of the observations are between 25 per cent and 30 per cent of GDP, independently of their per capita GDP level. Once more, Navarre and the Basque Country are noticeable as they have the lowest fiscal burden amongst all the communities. Therefore, it is quite evident that the central administration's fiscal burden is mainly distributed according to GDP rather than population; this result can be perfectly reasonable (Figure 7.1).

3.2 Expenditures

In some communities, the results of the territorial allocation of the central administration expenses in line with the flow and benefit approach are quite different as the goals pursued are distinct. In this context, we need to bear in mind that those expenses presenting a higher divergence from one approach to the other are those ones derived from the provision of



Source: Author's calculations based on Ministerio de Economía y Hacienda (2008).

Figure 7.1 Relationship between percentage revenues/GDP and GDP per capita

state-wide pure public goods. This explains why the greatest differences emerge in those territories which contribute with a greater proportion of direct expenditure linked to the provision of this sort of goods and services (for example, defence, justice, administrative services, etc.). In territories such as Ceuta and Melilla these differences on the results are considerable because important military bases are located in their tiny territory. The same happens in Madrid but in this case the differences emerge because of it being the Spanish capital.

Following the flow approach, those communities receiving a higher volume of expenditures are Madrid (16.4 per cent of the total), Andalusia (17.1 per cent) and Catalonia (13.6 per cent). The use of the benefit approach translates, logically, into slightly different outcomes. In this

situation the community with higher expenses coming from the central administration is Andalusia (16.7 per cent), followed by Catalonia (14.0 per cent) and Madrid (11.8 per cent). These regions are more populated, thus, the results are hardly significant if we do not weight them with some sort of variable which allows comparisons.

In per capita terms, the flow approach points that the central administration expenditures range from €10 562 (Ceuta and Melilla) to €3614 (Balearic Islands). By looking at figures expressed as an index with respect to the mean (see Table 7.2), one can realise that those autonomous communities receiving from the central administration a higher amount per head are Ceuta and Melilla (198.3), Asturias (150.8), Cantabria (123.4), Aragon (122.8) and Madrid (121.4). On the other hand, the regions with the lowest indices are the Balearic Islands (67.9) and Valencia (77.3), with a per capita expenditure that is 20 per cent below the Spanish average. Navarra (72.4) and the Basque Country (78.8) are also significantly below the average. The values which are far from 100 indicate that the central administration expenditure is not distributed proportional to population. The standard deviation obtained, which is relatively large (31.8), confirms this notion.

According to the benefit approach, the autonomous communities showing extreme values are Asturias (€7397 per head) and the Balearic Islands (€3820). In terms of index with respect to the mean (see Table 7.2), Asturias (138.9) is the community receiving the highest expenditure per capita followed by Ceuta and Melilla (119.4), Extremadura (113.6) Castile-Leon (112.3) and Galicia (109.9) with an expenditure level which is 10 per cent above the average. On the other hand, those regions with a below the average expenditure per capita are the Balearic Islands (71.7), Navarre (74.1), the Basque Country (80.1), Valencia (82.2) and Murcia (84.8). In this context, the distribution of the central public administration expenditures is closer to the population criterion (except for Asturias with a much above average index and the Balearic Islands with a much below average index), which translates into a lower standard deviation per capita (17.5) than the one obtained with the flow approach. These findings arise because this methodology allocates state-wide public goods according to the population and it also assumes some positive externalities which are spread across the whole population.

Given the ranking of the autonomous communities, some negative correlation is observed between the regional distribution of expenditures and the regional GDP per capita. That is, those regions with higher per capita GDP are the ones getting a lower volume of expenditures per head. However, this rule has some exceptions. On the flow approach side, Madrid stands out due to the effects associated with being the Spanish

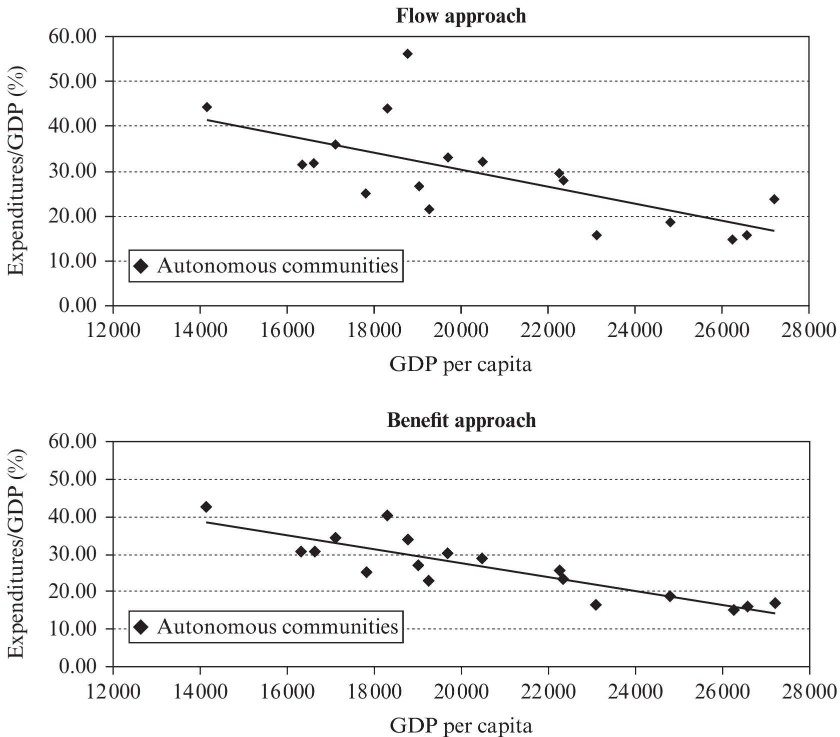
Table 7.2 Regional allocation of the central administration's expenditures in Spain, 2005

	Flow approach*			Benefit approach**			Differences (flow and benefit approaches)	
	Percentage of total	PC expenditures indexed to Spain 100	Percentage of GDP	Percentage of total	PC expenditures indexed to Spain 100	Percentage of GDP	PC expenditures indexed to Spain 100	Percentage of GDP
Andalusia	17.1	96.1	31.34	16.7	93.9	30.60	2.3	0.74
Aragon	3.5	122.8	29.39	3.1	106.3	25.45	16.4	3.94
Asturias	3.7	150.8	43.83	3.4	138.9	40.38	11.9	3.45
Balearic Islands	1.5	67.9	15.64	1.6	71.7	16.53	−3.9	−0.89
Canary Islands	4.2	94.6	26.48	4.3	96.4	26.98	−1.8	−0.50
Cantabria	1.6	123.4	32.09	1.4	111.8	29.05	11.7	3.04
Castile-Leon	7.0	122.0	32.99	6.4	112.3	30.36	9.7	2.63
Castile-La Mancha	4.3	98.9	31.66	4.1	96.0	30.74	2.9	0.92
Catalonia	13.6	86.3	18.53	14.0	88.4	18.98	−2.1	−0.46
Valencia	8.2	77.3	21.37	8.7	82.2	22.72	−4.9	−1.35
Extremadura	2.9	118.0	44.40	2.8	113.6	42.72	4.5	1.68
Galicia	7.2	115.0	35.81	6.9	109.9	34.23	5.1	1.58
Madrid	16.4	121.4	23.76	11.8	87.0	17.02	34.4	6.73

Murcia	2.5	83.8	25.04	2.6	84.8	25.35	−1.0	−0.31
Navarre	1.0	72.4	14.68	1.0	74.1	15.03	−1.7	−0.34
Basque Country	3.8	78.8	15.78	3.9	80.1	16.06	−1.4	−0.27
La Rioja	0.8	117.5	28.00	0.7	98.7	23.51	18.8	4.49
Ceuta and Melilla	0.6	198.3	56.24	0.4	119.4	33.86	78.9	22.38
Total	**100.0**	**100.0**	**25.44**	**100.0**	**100.0**	**25.44**	**0.0**	**0.00**
Results from the study issued by the Generalitat of Catalonia								
Catalonia	13.4		17.89	14.9		19.89		−2.00

Notes:
* FA-1 Version: Allocation of the interest on debt regarding the territorial distribution of savings.
** BA-1 Version: Allocation of the interest on debt by population.

Source: Author's calculations from Ministerio de Economía y Hacienda (2008) and Generalitat de Catalunya (2008).



Source: Author's calculations based on Ministerio de Economía y Hacienda (2008).

Figure 7.2 Relationship between percentage expenditure/GDP and GDP per capita

capital. Neither La Rioja nor Aragon follow this rule. Nevertheless, those regions with lower per capita GDP are the ones getting a higher volume of per capita expenditures (except for Murcia, Castile-La Mancha, Andalusia, Canarias and Valencia which, despite having an economic level below the Spanish mean, have a below-average expenditure, both computed according to the flow and benefit approach).

The analysis of the distribution of community expenses as a percentage of regional GDP confirms that these expenditures are allocated with some degree of progressivity as the poorest regions are the ones with a higher expenses/GDP ratio (Figure 7.2). More precisely, according to the flow approach the regions with the highest ratio (expenses/GDP) are Ceuta and Melilla (56.2 per cent), Extremadura (44.4 per cent), Asturias (43.8 per cent) and Galicia (35.8 per cent). However, in the richest regions this ratio

is much lower: Navarra (14.7 per cent), Balearic Islands (15.6 per cent), Basque Country (15.8 per cent), and Catalonia (18.5 per cent). The exception to this rule, following the flow approach, is Madrid where central government expenditures represent 23.8 per cent of its GDP.

The results obtained through the benefit approach confirm this pattern although now the correlation becomes more exact as proved by the decrease in the standard deviation of the expenditures/GDP variable (from 11.0 with the flow approach to 8.2 with the benefit approach).

Compared to revenues, the degree of dispersion of the expenditures as a percentage of GDP is much larger (steeper slope), which means that although revenues are distributed in a proportional-to-GDP way, expenditures do so in a progressive way.

With regards to both revenues and expenditures, the outcomes obtained from the study issued by the Generalitat do not greatly differ from the ones presented by the Spanish MEH.

3.3 Regional Fiscal Flows

The fiscal balance of the central administration in each of the autonomous communities is obtained from the difference between the revenues contributed and expenditures received. The achieved results show that, with regards to the flow approach, seven autonomous communities have a negative fiscal balance, that is, they make a net contribution of resources to the other regions through the central administration's budget. These regions are Catalonia, Madrid, Valencia, the Balearic Islands, Murcia and Navarre. The remaining 12 communities have a positive fiscal balance. These outcomes reveal the existence of a negative relationship between the sign of their fiscal balance and their wealth level, so poor regions have a positive fiscal balance while the rich ones have a negative balance. However, four exceptions to this rule exist. This is the case of Murcia and Valencia, communities with a below-average GDP per capita and a negative fiscal balance, and La Rioja and Aragon which have an above-average GDP per capita and a fiscal surplus.

The results obtained through the benefit approach methodology are slightly different than the ones analysed under the flow approach, correcting in some cases the discrepancies which arise in the flow approach. Thus, Aragon and La Rioja turn to having a fiscal deficit while Murcia turns to having a fiscal surplus. This implies a more accurate distributive pattern (Table 7.3).

Besides the sign of the fiscal balance, another important issue is the magnitude of such balance. Figure 7.3 shows the relationship between the 'per cent fiscal balance/GDP' variable and the GDP per capita of each

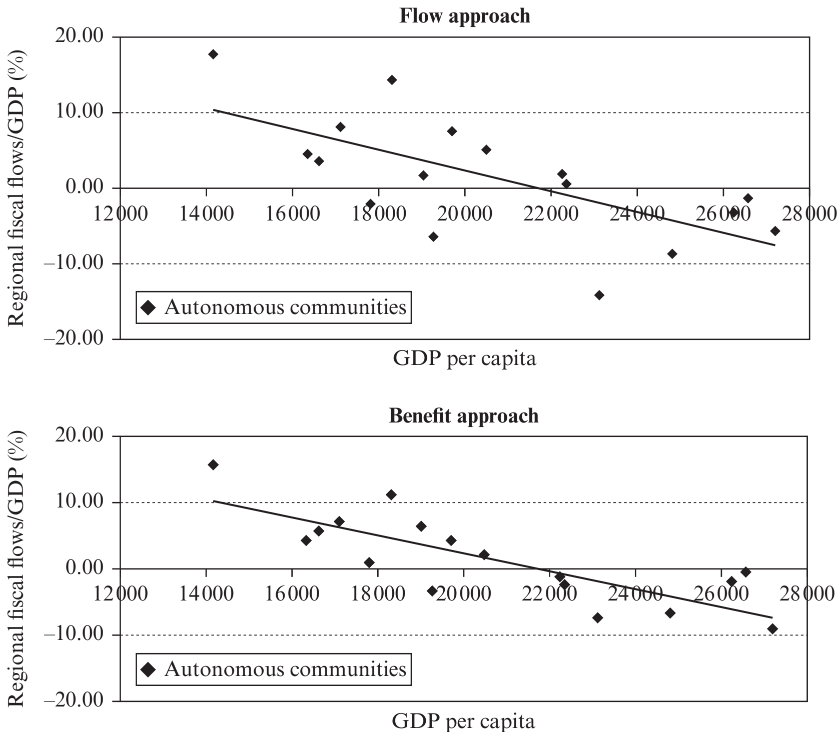
Table 7.3 Results for regional fiscal flows in Spain, 2005

	Flow approach*			Benefit approach*			Differences (Flow and Benefit Approaches)		
	Thousands of euros	Percentage of GDP	Per capita	Thousands of euros	Percentage of GDP	Per capita	Thousands of euros	Percentage of GDP	Per capita
Results from the study issued by the Ministry of Economy									
Andalusia	5 728 915	4.54	741	5 420 799	4.29	701	308 116	0.24	40
Aragon	509 700	1.83	407	−305 127	−1.10	−244	814 827	2.93	651
Asturias	2 780 110	14.34	2 626	2 149 644	11.08	2 030	630 466	3.25	595
Balearic Islands	−3 190 965	−14.21	−3 284	−1 678 186	−7.47	−1 727	−1 512 779	−6.74	−1 557
Canary Islands	589 936	1.61	306	2 335 230	6.36	1 209	−1 745 294	−4.75	−904
Cantabria	570 889	5.03	1 030	240 905	2.12	435	329 984	2.91	595
Castile-Leon	3 691 660	7.58	1 493	2 115 861	4.34	856	1 575 799	3.24	637
Castile-La Mancha	1 102 534	3.54	588	1 793 952	5.76	957	−691 418	−2.22	−369
Catalonia	−14 807 646	−8.70	−2 158	−11 143 821	−6.55	−1 624	−3 663 825	−2.15	−534
Valencia	−5 575 351	−6.32	−1 217	−2 838 300	−3.22	−620	−2 737 051	−3.10	−598
Extremadura	2 694 782	17.79	2 518	2 383 654	15.74	2 228	311 128	2.05	291
Galicia	3 806 715	8.20	1 402	3 338 634	7.19	1 230	468 081	1.01	172
Madrid	−8 911 520	−5.57	−1 516	−14 613 690	−9.14	−2 485	5 702 170	3.57	970

Murcia	−499 173	−2.13	−379	247 217	1.05	188	−746 390	−3.18	−566
Navarre	−488 438	−3.18	−836	−308 220	−2.01	−527	−180 218	−1.17	−308
Basque Country	−758 409	−1.35	−360	−332 136	−0.59	−158	−426 273	−0.76	−202
La Rioja	43 774	0.66	147	−154 459	−2.32	−519	198 233	2.98	666
Ceuta and Melilla	808 488	31.17	5 853	158 100	6.09	1 145	650 388	25.07	4 708
Abroad	0			−714 057			714 057		
Total	**−11 903 999**	**−1.31**	**−274**	**−11 904 000**	**−1.31**	**−274**	**1**	**0.00**	**0**
Results from the study issued by the Generalitat of Catalonia									
Catalonia	−16 735 000	−9.84	−2 439	−12 629 000	−7.42	−1 841		−2.41	−599

Note: * FA-1 and BA-1 versions.

Source: Author's calculations from Ministerio de Economía y Hacienda (2008) and Generalitat de Catalunya (2008).



Note: Ceuta and Melilla are excluded.

Source: Author's calculations based on Ministerio de Economía y Hacienda (2008).

Figure 7.3 Relationship between percentage regional fiscal flows/GDP and GDP per capita

community.[4] As can be seen from this figure, important distortions appear, especially with the application of the flow approach. First of all, there are poor communities with a fiscal surplus that is much above the redistributive pattern set by the straight tendency line. This happens in Extremadura, Asturias and, to a lower extent, in Castile-Leon. In the opposite side appear Valencia, the Balearic Islands and Catalonia; these are communities that should have a lower deficit than the one they present. However, the Basque Country and Navarre show a lower fiscal deficit than the one that would correspond if the average redistributive pattern is applied.

The outcomes obtained through the benefit approach soften these effects, but in most of the cases they persist although with lower intensity.

3.4 Determinants of the Fiscal Balances

In order to analyse which factors determine the sign and magnitude of the fiscal balances we need to refer to the study performed by Barberán and Uriel (2007) as the MEH does not provide the aggregate data on revenues and expenses. However, the determinants of the balance have a structural nature through time, which does not reduce the importance of this analysis.

Before performing the above mentioned analysis we need to establish some methodological precision. First, the data used are estimated following the benefit approach, they correspond to the average of the 2001–05 period and do not include the contributive social security.

In order to calculate the determinants of the fiscal balances the following methodology has been used. First of all, the central administration expenditure for each autonomous community has been disaggregated into its 11 roles: general administration, autonomous and local financing, defence, public order and safety, goods with an economic nature (which includes infrastructure), environment, housing and territorial planning, health, culture and entertainment services, education and social protection.

Second, the fiscal balance is computed for each role and for each community. In order to do that, the estimated expenditure is assigned to community *i* as the difference between the expenses of the community and the share of this community to the total state expense according to the percentage of revenues that such community contributes to the overall revenues of the central administration.

$$FB_{i,m} = E_{i,m} - E_{t,m}\,(T_i/T_t),$$

Where *FB* is the fiscal balance, *E* is the expense, *T* are the borne revenues, *i* represents each community, *m* is the expenditure role analysed, and *t* is the state total.

In this way we obtain the fiscal balance breakdown into different roles for each autonomous community. The outcome is disaggregatedly presented for those communities with higher fiscal deficit and those ones with higher surplus (Table 7.4).

As shown above, the role that determines the greatest share of the deficit of those communities with higher fiscal deficit is the local and regional funding. This expenditure explains 87 per cent of the fiscal deficit of the Balearic Islands, and between 35 per cent and 40 per cent for the remaining communities (the average is 50 per cent). The causes lay on the low level of transfers that these communities receive through the sufficiency

Table 7.4 *Determinants of the fiscal balances, average 2001–05*

	Regions with higher fiscal deficit					Regions with higher fiscal surplus							
	Balearic Islands (%)	Catalonia (%)	Madrid (%)	Valencia (%)	Average (%)	Andalusia (%)	Asturias (%)	Canary Islands (%)	C.-Leon (%)	C.-Mancha (%)	Extremadura (%)	Galicia (%)	Average (%)
General administration	2	15	26	5	12	12	24	14	12	10	8	7	12
Local and autonomic financing	87	35	39	38	50	62	16	53	44	54	58	65	50
Defence	0	4	5	0	2	5	0	5	1	4	3	3	3
Public order and safety	−7	9	4	−1	1	2	3	4	6	6	4	1	4
Economic goods (infrastructure)	9	8	10	21	12	0	40	8	17	7	5	4	11
Environment	−2	0	1	1	0	0	0	0	0	0	0	3	0
Housing and territorial planning	−1	0	0	0	0	0	1	1	0	0	0	0	0
Health	−9	7	5	11	4	3	7	4	8	8	6	4	6
Culture and entertainment services	0	1	1	1	1	1	0	1	0	1	1	1	1
Education	3	1	2	4	2	2	−1	2	1	0	1	0	1
Social protection	16	19	8	20	16	14	10	9	11	10	13	13	12
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Author's calculations, from Barberán and Uriel (2007).

fund.[5] Some other expenditure roles are social protection (with a 16 per cent average), and general administration and economic goods (with a 12 per cent average).

For those communities with higher fiscal surplus with the central administration the expenditures on local and regional funding are again the main determinant of the fiscal surplus. This expenditure ranges from 16 per cent (Asturias) to 65 per cent (Galicia), with a total average of 50 per cent. The other main determinants of the fiscal surplus are: general administration (12 per cent on average), social protection (12 per cent on average) and economic goods (11 per cent on average). We can highlight Asturias as its fiscal surplus is 40 per cent explained by expenditure on economic goods. This is due to the important transfers that it gets for restructuring and reindustrialisation of naval and iron and steel industries.

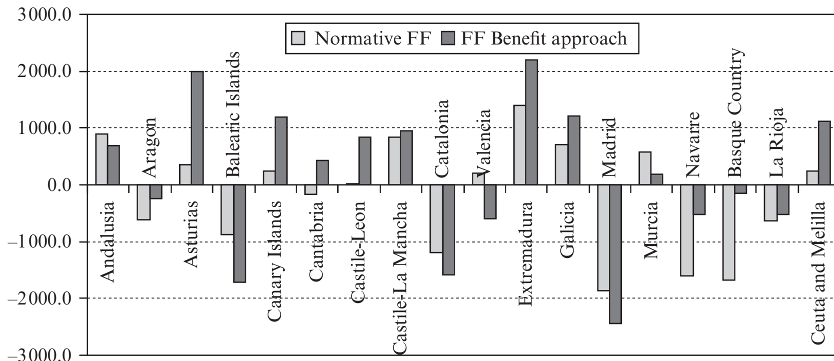
3.5 Are the Resulting Fiscal Balances Excessive?

The outcomes from the central public administration fiscal balances in the different territories need to be analysed cautiously as they are the results from choosing certain methodologies and they are often obtained through incomplete statistical sources. Then, it is a mistake relying on a certain figure or estimation as the margin of error is considerable and, even if it was not, its meaning is only relative given the methodological and statistical problems previously mentioned.

Hence, we can state, for example, that a fiscal flow is negative, however, a different issue is whether this balance 'should' be positive or negative and if we accept that it 'should' be negative, is its magnitude what it truly 'should' be or is it too large or to small? These two questions – the sign of the fiscal flow and the relative magnitude that 'should' be – belong to the normative analysis. In this sense, the matter that needs to be examined is which criterion can be used to evaluate whether certain fiscal flow is excessive or not.

The answer to this question is not unequivocal but there are different interpretations. One of the most common assumptions due to its simplicity and clarity is considering that a region has to pay its taxes according to its level of wealth (measured by GDP) and it has to get public expenditure proportional to its expenditure needs (usually measured considering the population) (Ruggeri and Yu, 2003).

In Table 7.4 you can find the results of the fiscal balances obtained through the benefit approach compared to those obtained through applying the normative criteria mentioned above. In order to undertake this analysis we use the balances computed by the MEH (2008) following the benefit approach. This approach is chosen because it is considered to be



Source: Author's calculations based on Ministerio de Economía y Hacienda (2008).

Figure 7.4 Normative and fiscal flows, 2005 (euros per head)

the most suitable as it performs a redistributive analysis as previously explained.

Comparing the normative criteria with the resulting one from applying the benefit approach shows that some communities (either the ones showing surplus or the ones with deficit) are moving considerably further away from this normative criterion.

Specifically, the comparison of the normative balance shows that there are two communities (Andalusia and Murcia) which have an excessively low surplus, while the remaining eight regions have surpluses which are too great. This shows that either they had borne fewer revenues than they should or they benefit from a volume of expenditures which is larger than the one according to their population.

The study of the fiscal balances of those communities with fiscal deficit points that there are four regions (La Rioja, Basque Country, Aragon and Navarre) with a deficit towards the central administration which is lower than the one they should have according to the normative criterion. The Basque Country and Navarre communities are the ones presenting a greater divergence between the real fiscal balance and the normative one. This is mainly due to their peculiar financing system. In contrast, Madrid, the Balearic Islands, Catalonia and Valencia have a fiscal deficit which is larger than the one they should have if revenues were territorially distributed according to GDP and expenditures were assigned according to population. The Valencian case stands out because it has a fiscal deficit but the normative criterion established says that it should present fiscal surplus.

An issue that may arise from this analysis is whether the central administration's actions are excessively redistributive. Empirical evidence proves that the redistributive capacity of the Spanish central administration at territorial levels during the 1991–6 period is 33 per cent. That is, fiscal flows derived from the central government's activity reduced by 33 per cent the existing inter-regional differences in initial income level per head. This result for Spain is lined up with other countries' experience. Some of them have a federal structure, like Canada (where the redistributive capacity of the federal government is around 39 per cent – Bayoumi and Masson, 1995) and Australia (where this capacity is 28 per cent – Bosch et al., 2003) while some others are centralists, like France and the United Kingdom (Melitz and Zummer, 1998) (countries where the central government has a redistributive power of 38 per cent and 26 per cent respectively).

Hence, in an overall sense, the Spanish central administration's budget is not excessively redistributive. Moreover, considerable differences in the redistributive degree of each region are certainly apparent.

NOTES

1. It must be said that Barberán and Uriel (2007) take into account these revenues.
2. Ceuta and Melilla, two Spanish cities located in the African continent.
3. In the Basque Country we find that the provincial governments (*diputaciones forales)* are the highest level within local government.
4. Ceuta and Melilla have been excluded because they present both extreme values and different features compared to the other autonomous communities.
5. This is a fund for vertical and horizontal equalisation which causes an excess of solidarity towards the poorest regions (Bosch and Duran (2005)).

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Comment IV

Guillem López-Casasnovas

In order to understand the question at hand (that is, the financial relations between the central administration of the Spanish state and the autonomous community of Catalonia), we first need to ask ourselves a series of key questions that have an answer in the politico-constitutional arena. Specifically, we need to clarify the nature of the tax and spending powers of the two fiscal jurisdictions before an economic analysis can be carried out in order to promote and give coherency to the fiscal imbalance studies.

The first unresolved question, which the current constitution fails to provide a clear answer to, refers to the entitling rights entitling the allocation of revenues on a territorial basis. In other words, to whom do taxes paid by the Catalans belong? Solely the state (taken to mean central government)? Also partially, to the Catalan institutions, which on a sub-central scale represent those same citizens?

The second question concerns whether a territory is something more than the sum of individuals of which it is composed. In this sense, beyond 'individual fiscal balances' (or tax–benefits residua), can we speak of territorial fiscal balances?

Third, is there a 'cluster' of demand for inter-geographical transparency in fiscal relations, based on the territorial identification of a community of individuals, or do they exist as several clusters at the same time? Are Catalan citizens actually only Spanish citizens that happen to live in a Catalan municipality? Do they belong to a hierarchical cluster (local jurisdiction) with enough of a level of internal homogeneity, or is the state global 'grouping' (central jurisdiction) more homogeneous than the local one?

In our view there is enough political evidence that Catalonia (the representation in Parliament of more than four-fifths of the citizens) has called historically in the past, and it calls at present, for transparency in the fiscal relations with the central Spanish administration, given the belief that taxes paid by Catalan citizens belong at least partly to the representative Catalan administration. In a similar way, sociological surveys on the political 'sense of belonging' are clear in that respect. Indeed Catalan citizens

feel first of all, Catalan and only then do they feel themselves to be citizens of Spain too, to a lesser extent.

How all this fits in the Spanish constitutional, economic and financial setting is another matter. With regard to the initial question, we believe that there is no clear answer; which is to say that the Spanish 1978 constitution, as it is currently understood, permits an interpretation of multijurisdictional entitlement of rights to tax. Taking advantage of this ambiguity, and based on the theory of fiscal decentralisation we will take as given the recognition of more than one fiscal relationship between the citizens and their representative administration, either in a central or local jurisdiction: Citizens pay taxes, but they do so in more than one jurisdiction, central and regional, that has a parliament, its own functions and its own tax revenues, being those allocated either directly or indirectly via a common taxation body. Regional revenues are not a matter of pure transfer of central funds; resources are allocated *ab initio*, by a constitutional agreement, and regional revenues are not open to negotiation or released on a discretional basis by the central state.

CATALUNYA AND SPAIN'S FISCAL RELATIONSHIP

From the former premises, we have first attempted to relegate the controversy surrounding fiscal balances to a set of logical principles that ought to shape the regional redistribution activities of the state. From these principles one can obtain an idea of the nature of the inter-regional solidarity funds implemented by the Spanish state. It also allows us to hold the debate on regional imbalances without exclusively assessing its fairness on the calculation of the actual figures, but on the underlying principles.

With this in mind, in *Anàlisi dels fluxos redistributius territorials a l'Estat Espanyol* [An Analysis of Regional Redistributive Flows in the Spanish State] (López and Pons, 2005) we identified 13 principles to be followed, using data offered by the Fundación de las Cajas de Ahorros Confederadas [The Foundation of Confederated Savings Banks, FUNCAS] to all autonomous communities for the 1995–2003 period.

Here is a summary of the principles:

Principle 1

In keeping with the goal of redistributive transfers it appears logical to limit the funds to concrete areas of spending, linked to those factors that

generate the consequences they are meant to correct, alongside a selective application (not linked to unconditional global financing).

Principle 2

It appears reasonable that in the differential between the primary income generated by autonomous communities and the final available income (this difference being an approximation of the general contribution to the collective consumption), all autonomous communities need to contribute in a prearranged minimum per capita amount.

Principle 3

As a result of changes in taxes and grants as part of the fiscal levelling process, it should not be possible to generate a change in the rank of the real disposable per capita income of an autonomous community that is a net supplier of funds. In such a situation a protection clause should come into effect to correct the transfer.

Principle 4

Redistribution needs to concentrate on bringing the level of spending capacity of the different autonomous communities closer to their fiscal effort rather than independently levelling while disregarding their financial capacity.

Principle 5

The redistribution funds need to be established and allocated in a conditional spending procedure. The continuity of benefits of fiscal surpluses needs to be linked to the evaluation of their effectiveness.

Principle 6

A clause which allows for the revision of the deficit balance of an autonomous community should be used, if its income per capita falls behind in with respect to some predetermined benchmark (for example, the European regional average growth).

Principle 7

No autonomous community should keep a positive fiscal balance if its primary income is, from the outset, above the Spanish average.

Principle 8

The relative variation in the income of any autonomous community should be reflected in the opposing direction in changes of its fiscal balance.

Principle 9

The continuity of a positive fiscal balance needs to be accompanied by an improvement in the indicators of the internal personal distribution of the income of which the region is a beneficiary.

Principle 10

Under normal circumstances no regional fiscal balance should surpass the difference in the relative participation in terms of income and its relative participation in terms of the population (as upper and lower limits).

Principle 11

It makes sense to estimate the financial requirements of an autonomous community more closely linked to the difference between those observed and those predicted levels of expenditure from a needs determination formula, rather than simply by a comparison of their own levels with average state levels.

Principle 12

Since redistributive funds have a role in balancing the fiscal needs and capacities of different regions, both aspects should be reflected in their fiscal balances.

Principle 13

Being the individual solidarity embedded in the progressivity of the income tax schedule, differences between the regional share of GDP and the participation of the region in total collected income tax revenue should mark the limit to the redistribution process.

In Lopez and Pons (2005) we calculate the amount of transfers for each autonomous community following those principles and we compare them with the existing arrangements in Spain. It is worth noting that at present, the redistribution system implemented by the Spanish state administration only respects one (number 6) of the principles previously mentioned.

THE CATALAN FISCAL IMBALANCE AS A REFLECTION OF THE ABSENCE OF NORMATIVE REDISTRIBUTIVE CRITERIA

Since not everyone answers the questions stated in the first section of this comment in a similar manner, there has not been agreement on the need and convenience of calculating fiscal balances in Spain. They do this in the belief that not all the autonomous communities agree with the regional entitling rights to revenues raised from taxes but the central administration allocates revenues to regions according to Spanish parliamentary bills and not through any fiscal bilateral agreement. Moreover, for some of these authors, fiscal balances are not more than the aggregation of individual fiscal residua on a territorial basis, following the tax–benefit incidence principle, without any revenue allocation right that should prevail on the top of it – end of story. This position, none the less, disregards the institutional nature of the autonomous regions by considering them, for the stated purpose, no more than just a 'veil' that groups individuals.

However, this view or any other opposing one has to come from the parliamentary representation of the citizens and not from academic researchers. In this sense, regions have their own democratic legitimacy claim in one or another sense. In the Catalan case, the claim for full transparency of the fiscal relationship between the Spanish central administration and the Generalitat of Catalonia has a history of almost 100 years, the basic purpose being to know jurisdictional fiscal imbalances; that is, to identify what public resources are recovered from the Catalan taxpayers' contributions. Which is to say, what spending capacity the Generalitat of Catalonia has, and how much might it have, if it could have direct access to the fiscal bases of the Catalan citizens under a common tax bill.

The demand for calculating the Catalan fiscal balance has been made recently by a very large majority of the Catalan parliament and even accepted in the Spanish second chamber or Senado. Therefore, I do not believe an academic researcher should ignore such clear political commitment, despite individual political prejudices.

TWO METHODS FOR TWO GOALS

From this view, the study of fiscal jurisdictional relations allow for two different methods according to the political mandate they serve. There are no methodological disputes, but rather there are different aims and objectives, which are behind the precise manner in which fiscal balances are calculated. Broadly speaking these are: (1) the method that looks at the redistributive

effect of the fiscal relations on a personal equity basis, and (2) the method that focuses on the impact of the state action on the regions as a whole.

Again, each of the two methods has to do with the answer to the question we put forward before: 'to whom does the money paid by citizens in any particular region belong?' In this sense, for central government to accept the existence of fiscal balances, we require the recognition that citizens who, as it has been said, are always the ones who pay the taxes, not only do it for the central state, but for the autonomous communities as well. As a consequence, recognising fiscal balances means recognising from the beginning, that more than just one fiscal jurisdiction exists. Central and regional jurisdictions, each of them on an autonomous way, can take their own decisions in terms of financing and disposable resources.

Within the above mentioned methods, that we will identify from now on as the method based on the tax–benefit incidence principle (TBI) and the one based on the monetary flow impact (MFI), some variants do exist, particularly in the TBI approach, given the hypotheses they need to work. This fact, that is, that there may be a multiplicity of parameters for TBI calculations – has been seen as the main difficulty in publishing official estimates and has even called into question the legitimacy of the results of various estimates. This is a fallacy since MFI and not TBI – although legitimate – has been the basis of the parliamentary support in order to see the Catalan fiscal balances published. Indeed, with a sufficient academic consensus it has been finally possible to consider that both methodological approaches are viable for the calculation of fiscal balances, keeping in mind that both methods, as previously commented, respond to different objectives.

METHODS AND EMPIRICAL APPROACHES

The charge/expenditure of the TBI focus has a long academic tradition as it is linked to a study of the personal redistribution effect of the public budget, which is usual in a centralised public finance theory and does not require a multi-jurisdictional context common to fiscal federalism. The widening of the tax/benefit focus to beyond the individual realm is certainly possible, both in a functional and/or a territorial level, but it is based on a different premise to the MFI approach: a sole jurisdiction and a sole fiscal relationship between the administration (the central one) and its citizens. Under this framework, essentially the territory in which individuals are found is the result of a statistical artefact and it does not have any relevant role at all.

On the other hand, from a monetary focus (MFI), the basic estimation of flows between two fiscal jurisdictions is carried out in terms of resources that add and detract the fiscal action of the central jurisdiction over the

peripheral, either directly or induced in spending and finance, both in the autonomous regions and locally. The hypothesis of internalisation of flows between these last two areas of financing and expenditure is common in this approximation, except for those budgetary items relating to transfers. The regional aggregate, the macroeconomic impact on the combined activity and collective well-being of the group prevails in the analysis, above the simple sum of individual balances of the contributors and beneficiaries that form part of it.

The monetary focus is similar in its methodology to that which is applied by Eurostat to European fiscal flows: tax revenues are attributed to territories in which the units that contribute to economic activity are situated; spending impacts, where resources are used as consumed or invested. Aside from this, if compensations or levelling out transfers are needed, they result in a retrospective adjustment based on a constitutional bilateral accord.

As a result, the monetary focus, between two fiscal jurisdictions, concerns the calculation of the balance as the difference between (1) the actual volume of resources, understood to be those within the decision-making capacity on spending in the territory and (2) its fiscal revenues coming out from the general tax bill, 'as if' that jurisdiction would have full fiscal capacity on its own fiscal basis. This attempts to account for the differential benefits that available resources allow for the community, directly creating employment or affecting contributions, intermediary consumption and so on, and/or indirectly by transfers of the decision-making capacity over these resources to the autonomous institutions that represent their citizens. The revenue raising capacity is calculated in a similar way to the equalization in levelling (approaching) differences in per capita financing fiscal capacities of the various jurisdictions in fiscal federalism formulas, or in the *foral* agreements (for the Basque Countries in Spain) by the so-called 'points of connection'. In brief, it seeks to evaluate how much spending capacity is 'recovered' from the centrally collected taxes on the region, with respect to its own fiscal capacities.

The result of the monetary focus perspective of the fiscal balance should show in this way the difference between the potential resources arising from the autonomous communities' own fiscal capacities and the spending effectively available to this jurisdiction, in its capability to affect the regional macroeconomic situation and ultimately in this sense the welfare of the citizens.

On the contrary, the TBI, under the principles of personal incidence of the ultimate charge/benefit supported by the taxpayer, grounds the analysis on the welfare impacts resulting from the fiscal residua and the excess burden derived from public central budgets. It aims therefore to build a more sophisticated exercise, although when it is applied to a different setting

– as it is in the fiscal federalism one – it lacks empirical robustness. This is due to the fact that distribution and not average weights should matter in TBI. Indeed, in its concrete applications, the hypotheses TBI needs to use in the territorial context makes for a less reliable estimation. In fact, the concept of average (regional) taxpayer in the TBI approach needs to be accompanied by its distribution ('who benefits at expense of whom'). Welfare incidence is more than fiscal residua: the excess burden of taxes (the hidden cost of public funds) and subsidies need to be taken into account. Usually this proves to be impossible on a regional basis. Moreover, a general equilibrium is required for a full tax–benefit incidence exercise. This is never done. In addition, a set of assumptions on the way markets work needs to be hypothesized. The criticism that currently some authors make of the calculation of fiscal balances is centred on the sensitivity of the result of balances to the hypotheses required by the TBI methodology. Thereafter, the disparity that some authors observe in the results of fiscal balances is precisely due to the absence of confidence of the parameters that are commonly employed, either because of lack of empirical data or because they assume implausible values, such as identical parameters to those stated by some other researchers in different countries, in different time periods, type of economy and operation of market mechanisms. As the Public Finance Theory reminds us, to uncover the ultimate effect of a tax-benefit (or a rebate tax expenditure, usually ignored in TBI), the basis of the calculations may diverge, requiring an empirical knowledge of the particular situation in which the budgetary effects operate: from a partial equilibrium point of view in a single sector, or a global one; under differential or a balanced budget effects; given a timescale (short/medium term, or the complete life cycle), and according to the degree of openness of the economy in which the analysis is conducted. This adds to the details on the cycle the economy is, the employment market characteristics, stock exchange levelling conditions, etc.; under which market conditions the economy operates (competitive markets, oligopolies, monopsonic power and so on), with what union pressure (for example, for the hypothesis of a backward incidence or not), with what technological restrictions of factorial substitution they act (which is to say, the elasticity in consumption and substitution factors, à la 'Harberger', that is, general equilibrium incidence), and so on.

There are indeed uncertainties in the application of full TBI approaches to the federal fiscal balances. I would argue that the reasons for this are the following:

1. The lack of empirical data in many aspects,
2. The utilization of 'surrogated' theories not based on economic analysis, but rather on the momentary availability of data,

3. Not being thorough in their empirical approximations (sometimes not even configuring the official data),
4. By taking results from other studies mainly dealing with other countries' experiences and therefore, 'importing' specific conditions (types of taxes and benefits) and distinct idiosyncrasies (of responses to incentives) that may not correspond with the actual exercise,
5. From a completely different time and place situations (a particular state in USA, in the 1960s, with taxes with a different configuration to ours, etc.).

To summarise, we can say first, that the charge/benefit alternative perspective does not require the existence of a territorial jurisdiction with its own tax department, since it focuses on a more personal distributive focus. Second, TBI has greater academic aims but it is more empirically demanding. Plenty of biases and uncertainties may come out in following this approach when applied to fiscal federal balances (based on average 'territorial' profiles rather than individual fiscal welfare residua). On the other hand, MFI, from a monetary perspective is academically less ambitious but much more simple to apply (how much revenue a jurisdiction might have 'as if' it would have direct access, under a common tax bill, to its own fiscal capacities, and how many resources it has as a result of the central transfers). It serves a different objective than TBI (macroeconomic impact of territorial flows and only indirectly individuals' welfare from the public action) and therefore the estimated results differ in the way in which TBI and MFI should be interpreted.

In brief, at least for the political parliamentary Catalan claim for full transparency of fiscal balances, the *inter-jurisdiction* (central-subcentral) MFI methodology is undoubtedly more adequate. TBI may be in addition applied thereafter *intra-jurisdiction*. Moreover, inter-jurisdictional 'average individual' applications of TBI, as a surrogate of tax-payers' welfare residua on a territorial basis, do not match federal fiscal imbalances that are today on the political agenda. In this sense, to use the difficulties of the TBI approach to deny the estimation of MFI imbalances is in our view, wrong.

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Comment V

Ramon Barberán

In Spain there is a strong tradition of researching on the calculation of federal fiscal balances (see Barberán, 2006). Moreover, the results of this research have a strong impact on the public. Both phenomena – tradition and impact – are explained by the current social debate on the inter-regional redistributive effects of the fiscal activity of the central government. This debate stems from the dissatisfaction felt by some regional governments and political parties with regard to the fiscal relationship between their region and central government.

Consequently, the results of this type of research go beyond university level and are often used as an argument to support proposals for the reform of the regional government financing system or the regional distribution of central government investment.

However, in my view, the relevance and reliability of such research is clearly exaggerated. The comparison between the results obtained from the large body of research conducted to date in Spain shows large discrepancies. These discrepancies are mainly caused by adopting different approaches and by applying different criteria in the allocation of central revenues and expenditures, even within the framework of the same approach. As stated in Barberán (2001), minor variations in the allocation criteria can cause major alterations in the federal fiscal balances.

The most recent applied researches carried out in Spain (Uriel and Barberán, 2007; MEH, 2008; GTABFC, 2008) use two approaches: (1) the burden–benefit approach or benefit flow approach and (2) the cash-flow approach or monetary flow approach. The methodology of both approaches was recently agreed on in a working group formed at the behest of central government, the conclusions of which are reflected in CEMBF (2006), where the respective meanings of fiscal balances calculated according to each approach were established.

It would seem, therefore, that the problem of divergent results, and their often wrong interpretation, has finally been resolved in Spain. However, this is far from the case: the results obtained still vary greatly, in spite of being based on a common methodology. For example, the correlation coefficient between the net fiscal flows estimated by Uriel and Barberán

(2007) and by MEH (2008) applying the burden–benefit approach is only 0.81, yielding highly significant differences in the net fiscal flows of some regions.

Regarding the interpretation of regional fiscal flows, figures best suited to defending own interests continue to be used in public debate, regardless of the calculation methodology used to obtain them. This is not a trivial matter as, for example, Catalonia's fiscal deficit in 2005 was 33 per cent higher with the monetary flow approach than the burden–benefit approach, according to GTABFC (2008).

Furthermore, the use of indices to evaluate inter-regional redistribution generated by central government fiscal activity has not been widely accepted, leading to conclusions being drawn directly from the net fiscal flows. However, net fiscal flows are not informative as a direct measurement of redistribution. First, because they are drastically altered by certain variants in the calculation methodology (such as the selection of revenue and expenditure to be allocated) and by changes in the central government's financial situation (deficit or surplus). Second, because the evaluation of redistribution requires each region's fiscal flows to be included in those of the regions as a whole, when analysing their relative position. And last, because a standard reference needs to be introduced to allow for a comparison to be made between the actual relative position achieved to be compared with the expected position for each region.

My concern in this respect is that the disparity between the results or the lack of rigour in obtaining and analysing them, thereby making it difficult to achieve an accurate interpretation, further aggravates the regional debate. It also prevents an agreement being reached on a fairer solution to the regional distribution of the burdens and benefits of central government fiscal activity. Because of this, I have always advocated the appropriateness of combining efforts to advance the convergence of calculation methodologies and to clarify the meaning of federal fiscal balances. This symposium, with the participation of experts from various countries, is a firm step towards achieving this goal. The works of Ruggeri (2008) and Vaillancourt (2008) in particular, provide very interesting information and suggestions regarding these issues.

THE METHODOLOGY OF CALCULATING FEDERAL FISCAL BALANCES

Ruggeri (2008) proposes three approaches to the measurement of federal fiscal flows: (1) the cash-flow approach, (2) the benefit approach and (3) the economic gain approach. I will now analyse the similarities and

differences between these approaches and those currently applied in Spain, while also reflecting on their meaning and utility.

The Benefit or Burden–Benefit Approach

Ruggeri's benefit approach and CEMBF's burden–benefit approach are equivalent in their essential components. Both lie within the framework of the theory of fiscal incidence. Federal revenues are allocated to the region where the individual who ultimately bears the burden is resident, regardless of who it is or where the person to pay resides. Federal expenditures are allocated to the region where the individuals who receive the public services or transfer benefits reside, regardless of the region in which the services are produced or such transfers are paid. Therefore, the unit of analysis is the territorially located individual who, as a result of federal fiscal activity, bears the burdens and enjoys the benefits. And each region's federal fiscal balance is obtained by aggregating the fiscal flows that affect its residents.

For the regional allocation of revenues, these must be classified according to whether or not they result in a burden transfer and whether the person who bears the burden does so as a consumer or an income beneficiary. Revenues not subject to a burden transfer can be allocated regionally using direct information (usually provided by federal tax collection statistics). Whereas revenues subject to transfer must be calculated from representative indicators of the variable that lead to the transfer (consumption – general or specific – or income from production factors).

For regional allocation of expenditures, this is classified according to whether the expenditures give rise to separable benefits (private goods) or inseparable benefits (public goods). Expenditures that give rise to separable benefits are distributed among the regions based on direct information (usually provided by the federal public accounting system) about the region for which the spending was earmarked. Expenditures that give rise to inseparable benefits are distributed based on the representative indicators of the group of beneficiaries, usually the population.

With regard to the meaning of fiscal balance calculated using this approach, it can be said that it shows the impact that federal fiscal activity has on the welfare of the people living in each region, measured in terms of 'equivalent' change in their level of disposable income. This change is the result of a reduction in purchasing power caused by the tax burden borne, together with increased purchasing power brought about by savings made through the free consumption of public services and through the receipt of cash transfers. That is why this approach is the ideal starting point for

evaluating the inter-regional redistribution effects of the federal government's fiscal activity.

The Cash-flow and the Monetary Flow Approaches

The cash-flow approach presents significant differences depending on whether the Ruggeri (2008) or CEMBF (2006) version is taken into account, especially regarding the treatment of income, as spending receives the same treatment in both. The foundation of this approach, as considered by Ruggeri (2008), is basically for administrative or accounting purposes: revenues are allocated to the region where they are collected and expenditures are allocated to the region where spending is made. On the contrary, CEMBF (2006) tries to give its approach (which we will call the monetary flow approach) an economic foundation, as it seeks to evaluate the effect of the federal government's fiscal activity on the economic activity of each region. For these purposes, revenue is allocated to the region where the wealth, income and consumption taxed by the central government is located, while expenditures are allocated to the region where it is made (the region in which investment, consumption and federal government transfers are carried out). In both approaches, the unit of analysis is no longer based on the individual residing in the region but rather on the territory in which the federal government carries out its economic activity.

In the CEMBF (2006) approach, to enable the allocation of revenues it is important to identify where the taxable object is located (wealth, income or consumption), regardless of the location of whoever bears the burden and, also, regardless of who is legally obliged to pay and where they reside. The problem is that in many cases (consumption tax, for example) there is no direct information about the revenue distribution based on the location of the tax object. Neither is there direct information about its distribution based on where the person bearing the burden resides. The solution to this problem lies in one of the differences between the monetary flow approach and the burden–benefit approach: in the former, revenues are allocated based on economic indicators corresponding to the territory of each region (domestic consumption, for example), whereas in the latter revenues are allocated based on indicators corresponding to the residents in each region (regional consumption, for example).

On the expenditure side, this approach seeks to identify the region in which the expenditure is made. Therefore, expenditure on goods and services is allocated to the place where such goods and services are consumed and investment expenditure where the capital is physically located, and transfer payments where the direct beneficiaries are located.

The Economic Gain and the Domestic Income Approaches

In the absence of an economic foundation in the cash-flow approach in Ruggeri (2008), he himself suggests excluding the calculation of net regional fiscal flows – a proposal I fully agree with – and to replace it with the economic gain approach.

Using this new approach, Ruggeri aims to measure the economic impact in terms of income generated or deducted by the federal government's fiscal activity in each region. To that end, it proposes that revenues be assigned to the region where the people who ultimately bear its burden reside, as in the benefit approach, and that expenditures be assigned to the region where actual contributions are made to income generation. This region may not be the same as where the spending is made (as is the case with the non-wage component of federal purchases).

The intended aim of introducing this approach is the same as the one CEMBF (2006) hoped to achieve with the monetary flow approach. And in my view, Ruggeri (2008) is right, at least as far as the allocation of expenditure is concerned. Since, in fact, the impact on economic activity or income affects the region in which the goods are produced and not the region in which they are consumed or used (which applies to both general and capital expenditure).

However, with regard to revenue allocation, I believe that the CEMBF (2006) monetary flow approach is more consistent with the aim of measuring income deducted from a region by the federal government, as it corresponds to the territory in which the economic event contributes to the federal coffers: localised wealth, income generated and the consumption made in that territory. However, its course of action fails to comply with the methodological premise established by Ruggeri (2008), according to which 'the analysis should be confined to a country's residents only'. To comply with this premise, the economic gain approach would have to be applied as established by Ruggeri.

Considering all the factors involved, I believe that the best approach for measuring economic impact in a region, brought about by income being generated or deducted as a result of the federal government's fiscal activity, is based on a combination of the economic gain approach for expenditure allocation and the monetary flow approach for revenue allocation. This combination gives rise to the emergence of a new approach that, in line with its objective, could be called the 'domestic income approach'.

This new approach, as with the cash-flow and the monetary flow approaches, does not measure the contribution of a region's residents to financing federal spending, nor the benefits that they receive from this spending. Therefore, it should not be used as a replacement for the benefit

or burden–benefit approach in the analysis of inter-regional redistribution nor, consequently, in the design of federal policies related to inter-regional redistribution.

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PART II

Beyond the data: why some regions get more money

8. Federalism and inter-regional redistribution

Jonathan Rodden

1 INTRODUCTION

Classic theories of federalism envision a community of sovereigns that come together and delegate limited powers to a central government in order to achieve collective goods like common defense, free trade, or a common currency (Riker 1964). In order to solve collective action problems, the federated units often find it necessary to delegate some powers of taxation to the center. For 19th century federations, the centralization of tariffs as part of a drive to create a common internal market was often a driving impetus for the formation of the union. Centralized taxation then opens the door to fiscal redistribution between federated units. Spurred on by World War I and the Great Depression, central governments during the 20th century gained access to forms of direct taxation and tools for inter-provincial redistribution that could not have been imagined by the founders of early confederations.

In fact, over the course of the 20th century, some federations have developed a political rhetoric, in some cases enshrined in the constitution, whereby residents of the poorest localities are entitled to the same public services at the same cost as residents of the wealthiest localities. Accordingly, they have developed progressive forms of taxation, direct central government expenditure programs, and intergovernmental grants that transfer resources from taxpayers in wealthy provinces to those in poor provinces.

On the one hand, this is not surprising. A workhorse model of political economy suggests that with full-franchise democracy and a right-skewed income distribution, the poor should be able to extract transfers from the rich (Romer 1975; Meltzer and Richard 1981; Boix 2003). Indeed, the expansion of suffrage in early 20th century Europe seems to have been a precursor to the development of the modern welfare state (Lindert 2004). To the extent that the rich and poor are geographically clustered, democracies should be characterized by redistribution from wealthy to

poor jurisdictions. This might take the form of inter-personal transfers such as unemployment insurance or income support, but it might also take the form of subsidies for public goods like education or infrastructure in poor neighborhoods with limited tax base. To the extent that these goods are provided by local or provincial governments, this implies intergovernmental transfers that are negatively correlated with income.

But on the other hand, such inter-regional redistribution should be surprising in formal federations, which are thought to provide mechanisms to prevent both inter-personal and inter-regional redistribution. First, the rich can cluster in certain regions in order to avoid being taxed by the poor (Boix 2003), a clustering which may occur naturally from agglomeration economies in industrialized societies (Krugman 1991). However, this might merely encourage the poor to push for centralized taxation (Bolton and Roland 1997). While a low-income coalition might form easily in a unitary system where the autonomy of local governments was snuffed out in the 19th century, one of the defining features of federalism is that changes from the status quo rely on majorities (or super-majorities) of regional representatives rather than individuals or representatives of small districts. Thus in federations that started with zero direct central taxation in the 19th century, the institutions of federalism would seem to provide representatives of wealthy regions the opportunity to stave off the erection of a centralized tax-transfers system, or to limit the progressiveness of inter-regional transfers. Diaz-Cayeros (2006) argues that this logic explains why wealthy states in Mexico have been able to avoid the erection of progressive redistribution at moments of tax centralization. Moreover, a large literature portrays federalism as an impediment to the construction of the post-war welfare state in OECD countries (see Castles et al. 2005 for an overview).

Which of these intuitions is correct? This chapter argues that the answer lies in the architecture of federal institutions, and these institutions are in large part a product of the environments in which the most important federal bargains were struck. In all modern federations, taxes collected by the central government are distributed to provinces through intergovernmental grants, but in some countries these grants are highly progressive while in others they are not. This chapter first lays out the relevant empirical patterns in eight federations and the European Union, and then introduces some new arguments about the institutions and historical legacies that might explain the divergence.

While some attention has been given to the relationship between federalism and the generosity of inter-personal transfers, less is known about federalism and inter-regional redistribution. Above all, I demonstrate that in the latter part of the 20th century, some federations – namely the United

States, Argentina, Brazil, India, and the European Union – pursued very little progressive inter-regional redistribution, while others – like Australia, Canada, Germany, and Spain – pursued a great deal. These stylized facts are in accordance with other studies.

Next, I seek explanations for this cross-country variation by building on positive theories of institutions. Recognizing the pitfalls of broad macro-historical comparisons with small numbers of observations, I point out two aspects of institutional design that hold promise. First, the separation of executive and legislative powers in presidential systems creates incentives to de-emphasize national programmatic appeals by political parties, and generates a style of coalition-building that is characterized by regional pork-barrel politics that makes progressive transfers an unlikely outcome. In contrast, the concentration of agenda power in the hands of the government under parliamentary democracy encourages programmatic national appeals that can empower a national low-income coalition.

Second, I examine the potential impact of regional representation in the legislature. In federations that trace their origins to constitutional compacts among sovereigns, units with greater bargaining power at the moment of confederation – those perceiving greater risks associated with unification – were able to extract over-representation in at least the upper chamber of the legislature, and sometimes the lower as well. These states were often in the agricultural periphery, and have in many cases only lost population over time. This institutional legacy can undermine the formation of a cohesive low-income coalition in the legislature by creating the opportunity for high-income provinces to coalesce with over-represented poor provinces, leaving the larger poor provinces out and keeping the overall size of transfers down relative to a legislature with one-person-one-vote apportionment.

I also discuss a simpler logic through which regional upper chambers might limit redistribution, regardless of apportionment. If redistribution is ultimately the response of democratic institutions to a right-skewed income distribution, by generating large winner-take-all districts, senates in some federations may muffle demands for redistribution by compressing the politically relevant income distribution – that of the provincial medians – so that its distribution is much more symmetric than that of individuals or district medians.

Finally, I argue that contemporary patterns of inter-regional redistribution are difficult to understand without examining the initial constitutional bargain. After all, if inter-regional transfers are simply ways for the poor to exploit the rich, one must ask why the union was Pareto-optimal for the rich in the first place. In federations with origins in the 18th or 19th centuries, a key conflict was between the industrializing core, which desired a

unified high tariff in order to protect its nascent manufacturing efforts, and an agricultural periphery that desired free trade and low tariffs. Both had something to gain from confederation, but the risks were greater for the periphery. Thus representatives of agriculture demanded not only greater representation in the central legislature, but also compensatory transfers. In some federations, modern systems of inter-regional redistribution and the accompanying political rhetoric of equal service provision had roots in an earlier struggle to forge a national common market.

In sum, this chapter suggests that Argentina, Brazil, and the United States have avoided the highly progressive inter-regional redistribution schemes that characterize other federations, not to mention unitary systems, largely because they retain institutional features from an earlier era of bargains and battles over the basic federal contract. The same is true of the European Union, where the basic contract is still under negotiation. In other federations that lack these features, a low-income coalition has been able to lock in a system of redistributive transfers along with the growth of the modern welfare state.

The next section measures the progressiveness of inter-governmental transfers around the world. The third section offers institutional explanations for cross-country differences in the post-war period, the penultimate section examines the underlying federal bargains, and the final section concludes.

2 EMPIRICAL ANALYSIS OF INTER-REGIONAL REDISTRIBUTION

After publication of the MacDougall Report in 1977, interest in broad comparative empirical work on the subject of inter-regional fiscal flows died down until it was revived by the literature on optimal currency areas in the early 1990s. A key question in this literature concerned the extent to which the tax-transfers policies of the central government played a stabilizing function with respect to short-term asymmetric regional shocks (for example, Sala-i-Martín and Sachs 1992; Bayoumi and Masson 1995). This literature was not explicitly concerned with long-term inter-regional redistribution. More recently, a series of papers builds on the approach of Bayoumi and Masson (1995) and attempts to build comparable cross-country data on net fiscal flows in a variety of countries in order to measure long-term patterns of inter-regional redistribution (Espasa 2001; Barberán et al. 2000; Bosch et al. 2002).

Several chapters in this volume address the challenges and controversies associated with measuring net fiscal flows. Some of these challenges – for

example, how to count expenditures for military bases or branches of federal banks – make cross-country comparisons especially difficult. Largely because of accounting challenges and data availability, this chapter addresses a more specific form of inter-regional redistribution: that pursued through intergovernmental grants. This allows me to examine comparable data from several of the world's largest federations. While it is unfortunate to ignore inter-regional redistribution that takes place through direct federal expenditures and on the tax side, previous studies have revealed that across countries, the estimated redistributiveness of grants is highly correlated with that of overall fiscal flows, and in fact, cross-country differences in fiscal flows are driven primarily by differences in intergovernmental grants.

This chapter employs yearly inflation-adjusted data on total intergovernmental receipts that enter the budgets of state or provincial governments, along with inflation-adjusted data on provincial GDP per capita, in Argentina, Australia, Brazil, Canada, Germany, India, Spain, and the United States, as well as the European Union. Unlike most studies on fiscal flows, this chapter uses a relatively long time series for each country.[1]

Following the papers cited above, for each year in each country I calculate the income elasticity of grants as follows:

$$\ln\left(\frac{G_i}{G_m}\right) = a + \mu \ln\left(\frac{Y_i}{Y_m}\right) + e_i \tag{8.1}$$

where G is the real per capita grant, Y is provincial GDP per capita, and the subscript i refers to province i and m refers to the average of all provinces. The coefficient μ is analytically useful, but it might be very large and negative in a country where grants are progressive but substantively small (for example, the European Union), so it is also useful to measure the redistributive 'power' of grants as follows:

$$\ln\left(\frac{Y_i + G_i}{(Y + G)_m}\right) = a + \beta \ln\left(\frac{Y_i}{Y_m}\right) + e_i \tag{8.2}$$

where $1 - \beta$ captures the redistributive power of grants. Intuitively, if $\beta = 1$, a province's relative income before transfers is perfectly correlated with its relative income after transfers and, ignoring the regional impact of taxation, no redistribution has taken place through the system of intergovernmental grants. A β coefficient of .8 would indicate that 80 percent of the initial differences in relative per capita incomes remain after grants have been distributed.

Bosch et al. (2002) estimate these parameters with net fiscal flows. While their estimates of $1 - \beta$ are of course higher since they take full

consideration of taxes and direct central government expenditures, for the same years in the five countries that overlap with my data set on grants, their estimates of μ and $1 - \beta$ are correlated with mine at .91 and .95 respectively. Thus while the cross-country comparisons below ignore taxation and direct central expenditures, they likely reflect broader cross-country differences in inter-provincial redistribution.

Since the focus of this chapter is on redistribution rather than risk-sharing,[2] I estimate the income elasticity and redistributive power of grants using single-year snapshots in each country, and display the parameters averaged over all years, along with average upper and lower confidence intervals, in Figure 8.1.

Figure 8.1a reveals that grants are highly progressive in Canada, Germany, Spain, and to a slightly lesser extent the European Union and Australia. Note that the imprecision of the Spanish estimate is driven by outliers and changes over time. No matter which autonomous communities are included, the negative coefficient is becoming larger over time, and has been statistically significant since the late 1990s. Moreover, the coefficient is always significant (and larger) if outliers – in particular Extremadura, the Basque Country, and Catalonia – are dropped. Without Catalonia and the Basque Country, the coefficient is consistently in the range of the Canadian or German estimates. The Australian estimates are imprecise partially because of the small number of states and territories (8), but also because the Australian Capital Territory, the Northern Territory, and Western Australia are outliers with high income and large grants (more on this below).

In contrast, no matter how one tortures the data, intergovernmental grants in Argentina, Brazil, India, and the United States are simply not progressive. In Argentina the coefficient is actually positive and bordering on statistically significant, while in Brazil and India the coefficient is zero. In the United States, the coefficient is generally positive if one includes all states, but as we shall see below, Alaska and Wyoming are prominent outliers, and without them the coefficient is indistinguishable from zero. In Argentina, Brazil, and India, there are specific grants with some progressivity built into the formulae, and indeed, these grants are negatively correlated with provincial income, but these effects are overwhelmed when other, more discretionary grants are considered as well.

It is also useful to get a sense for the size of inter-governmental transfers along with comparative estimates of progressivity. Figure 8.1b displays the redistributive power of grants in each federation. In four of the federations with highly progressive grants – Australia, Germany, Spain, and especially Canada – the substantive impact of redistribution is impressive. In the European Union, on the other hand, the impact is negligible since

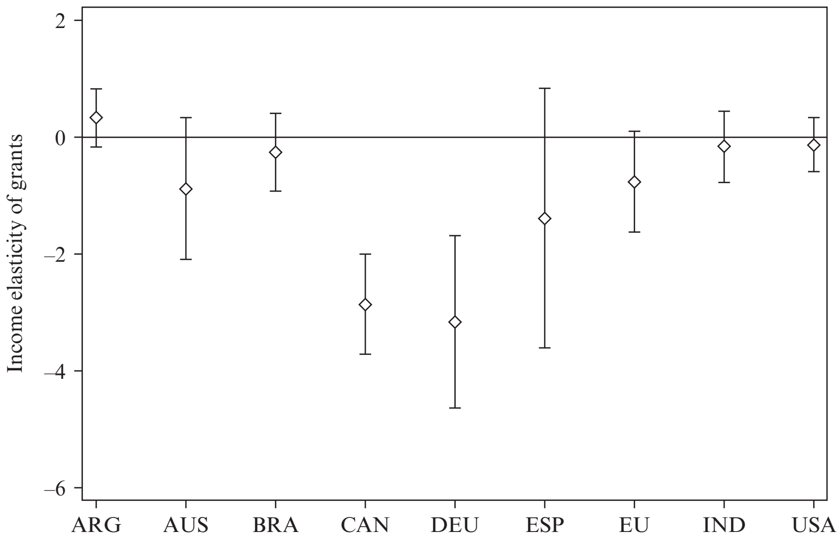
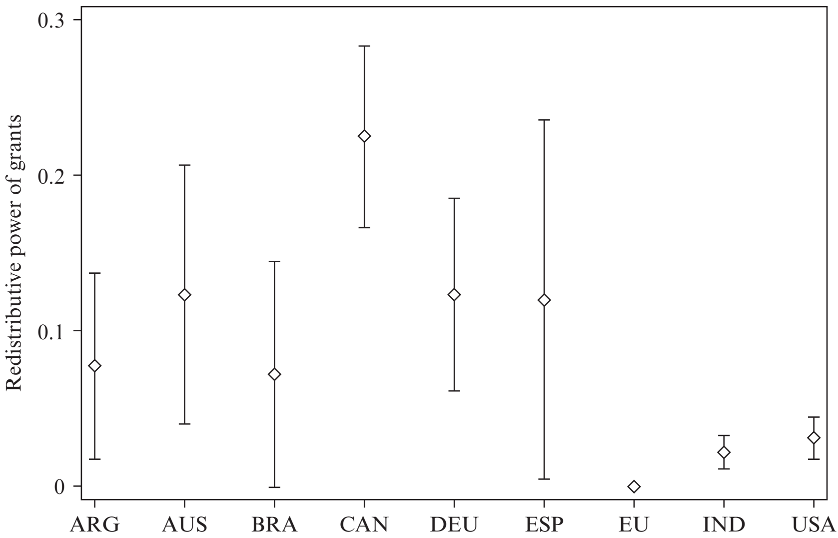


Figure 8.1a Income elasticity of grants in nine federations, 1990–2005



Source: See data appendix.

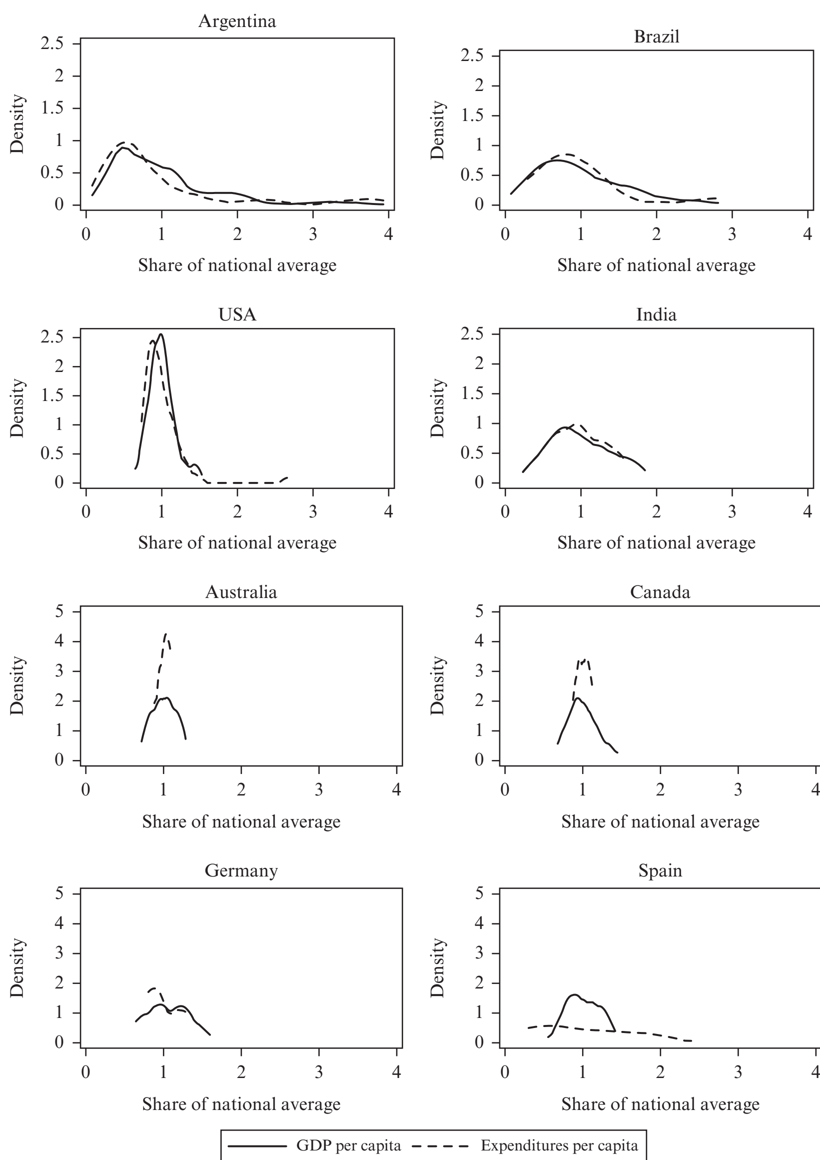
Figure 8.1b The redistributive power of grants in nine federations, 1990–2005

grants are so small relative to GDP. In the United States and India, where grants are not progressive in the first place, grants have little redistributive power. In Argentina and Brazil, redistributive power is somewhat larger, but as we shall see below, the redistribution favors small rather than poor provinces.

It is also useful to examine whether intergovernmental transfers to provincial governments have an equalizing impact on their expenditures. I have also assembled data on real per capita expenditures of the provinces in each federation, and Figure 8.2 displays kernel densities of both real GDP per capita and real expenditures per capita, expressed as shares of provincial averages, for the year 1997 (other years look very similar). In the United States and the three middle-income federations, the distribution of expenditures is virtually identical to that of provincial income. Inter-regional inequalities in tax base are directly reflected in inequalities in service provision, and across provinces, real expenditures per capita are positively correlated with income.

The second group of federations shows a strikingly different relationship. In Australia and Canada, the distribution of expenditures is much tighter around the national average and more symmetric than the inter-provincial income distribution.[3] In these two federations, income and expenditures are uncorrelated. In Germany, the bimodal distribution of GDP across *Länder* corresponds to the 'old' and 'new' (Eastern) *Länder*. However, the equalization system brings the distribution together, and in fact, the cluster of states with above-average expenditures per capita are the relatively poor states, and unlike most other federations, if one ignores the two Hanseatic city-states, there is actually a strong negative correlation between income and expenditures per capita. Spain may appear quite different at first glance, because in contrast to other federations, the expenditure distribution is wider than the income distribution. This is because, as in Germany, a high level of inter-provincial redistribution assures that many of the relatively poor autonomous communities end up with above-average expenditures, and the communities on the far left of the expenditure distribution are actually the wealthiest, like Madrid and the Balearic Islands. Spain is like Germany in that expenditures are negatively correlated with income, and the equalization system brings about a reversal of fortunes.

In sum, this section draws a distinction between two rather different forms of federalism. In India, Latin America, and the United States, along with the European Union, grants from central governments do little to redistribute resources from wealthy to poor provinces. On the other hand, grants are progressive and redistributive in the European and Commonwealth federations.



Source: See data appendix.

Figure 8.2 Distribution of real GDP per capita and provincial expenditures per capita across provinces, expressed as shares of national average

3 THE POLITICAL ECONOMY OF INTER-PROVINCIAL REDISTRIBUTION

What explains these striking cross-country differences? The political economy literature has surprisingly little to say. The tendency in the public economics literature has been to view grants as efficient responses by benevolent governments to potential inefficiencies associated with externalities and inter-jurisdictional inequity (see for example, Boadway and Flatters 1982). Yet all of the efficiency arguments made in favor of the Canadian equalization system should apply in the United States as well, where such a system has not emerged. More often, one encounters the rather informal argument that inter-provincial equality in service provision is a defining part of the Canadian (or Australian, or German) national identity, and citizens of wealthy provinces perceive that they have a moral responsibility to pay into a generous system of inter-regional transfers. This claim seems questionable at best, however, when one considers the disdain expressed toward inter-regional redistribution among wealthy taxpayers in Alberta, Catalonia, Baden-Württenberg, and New South Wales, and the efforts by representatives of such regions to alter the system. The rhetoric of national solidarity and equal service provision rings too hollow to provide a satisfying explanation, and in any case, this begs more interesting questions about the political origins of such rhetoric.

The tenor of complaints from provinces like Baden-Württemberg and Catalonia suggest that the fiscal system exploits the citizens of rich regions. Yet the dominant political economy literature largely rules out the possibility of exploitation in a federation. In Bolton and Roland (1997) and Alesina and Spolaore (2003), democratic federations are essentially voluntary, and provinces can unilaterally vote at any time for full independence, or at least a decentralized tax regime that minimizes inter-provincial redistribution (see also Buchanan and Faith 1987). For the democratic federations examined here, this 'voluntary federation' approach captures the dynamics of 18th and 19th century federal bargains, when in Argentina, Brazil, Australia, Canada, the United States, and in the German *Zollverein*, the center possessed very limited capacity to tax in practice, secession threats were commonplace, and in some cases, constituent units presided over powerful militias. Yet over time, the central government gained access to new forms of direct taxation and gained a monopoly over military force, and the constitutions generally do not grant unilateral secession rights or vetoes over tax policy to individual provinces. Exploited regions in most modern federations are essentially stuck unless they are able to threaten a military insurgency or pursue other options not specified in the constitution.

Figure 8.2 above demonstrates that the inter-provincial income distribution is universally right-skewed in democratic federations, and if wealthy regions cannot credibly threaten to secede, the median voter logic would seem to imply that inter-regional redistribution is unavoidable. Yet Figure 8.2 also reveals that the federations with the most dramatically skewed inter-provincial income distributions are those that engage in the smallest amount of inter-provincial redistribution.

The political economy literature does not provide any obvious explanations for these patterns. The most relevant work is Beramendi (2007, 2008) and Beramendi and Diaz-Cayeros (2006). As in Bolton and Roland (1997), these papers derive preferences of actors from their place in the inter-regional and inter-personal income distribution, but rely on alternatives to simple majority rule for determining the level of centralization. For instance, they examine the possibility that poor, unequal regions like the US South and Brazilian Northeast are captured by the wealthy, who are then over-represented in malapportioned upper chambers, and the possibility that incentives of regional politicians are shaped by party systems that can be viewed as exogenous.

These papers are primarily about the relative centralization of the tax-transfer system, however, and have less to say about the progressivity of inter-provincial transfers. If anything, these papers predict that inter-governmental transfers in the Latin American federations should be highly progressive, which is inconsistent with the data presented above. While highlighting some similar aspects of institutions and party systems, the remainder of this chapter lays out some related but distinct arguments, building on a different theoretical literature that highlights legislative bargaining. The most important departure is that this chapter views progressive inter-governmental transfers as a complement rather than a substitute for progressive inter-personal tax-transfer systems.

As the franchise expanded in the 20th century in industrialized democracies, political entrepreneurs on the left attempted to mobilize a low-income coalition with programmatic appeals in favor of redistribution. While the literature focuses primarily on inter-personal transfers, this redistribution also took the form of progressive subsidies for public services in low-income areas. Inter-governmental grants were especially important tools for the low-income coalition in federations where the central government lacked either the constitutional prerogative or administrative apparatus to implement redistributive programs directly. Grants that are indexed to a jurisdiction's average income or tax base can be a blunt tool for redistribution, since they might bolster the expenditures on the poor in poor jurisdictions (for example, Nova Scotia) to a greater extent than those on the poor in wealthy but unequal jurisdictions (for example, Ontario). However,

subsidies to the poor in poor regions have a powerful benefit for the poor in wealthy regions if they reduce incentives for inter-regional mobility that would put pressure on wages and welfare benefits in the wealthy region. In a federation with decentralized expenditures and mobile capital and labor, it is self-defeating for a low-income coalition to push for new expenditure programs that will be enjoyed only in regions with a high tax base.

In short, I begin with the straightforward proposition that progressive inter-governmental transfers have been the favored policy of a national low-income coalition in federations in the 20th century. Some institutional features of democracies – namely presidentialism and a territory-based upper chamber – undermine the creation of such a coalition. Some of these institutions, in turn, are legacies of an earlier era when the basic federal bargain was being negotiated.

Presidential and Parliamentary Democracy

In a parliamentary system, the executive is formed directly from the legislature. All members of the majority party or coalition forming the government have valuable agenda powers over taxation and redistribution, and in the event of disagreement, they can be induced to act cohesively because of the threat of a no-confidence vote, which would threaten their agenda powers (Diermeier and Feddersen 1998). In a presidential democracy, the executive is elected separately from the legislature, and has no such tool with which to induce legislative cohesion.

In practice, legislative cohesion is greater in parliamentary than presidential systems. Moreover, since agenda control is so valuable, party discipline and a uniform party platform across districts arise endogenously in a parliamentary system, and the success of individual candidates is driven primarily by voters' assessments of the platform and performance of the candidate's party. In many industrialized parliamentary democracies, political parties form around a class or income cleavage, and voting behavior is correlated with income, both at the individual level and at the district level. Thus the party or parties of the left form a cohesive cross-district coalition representing poor voters. To the extent that income is right-skewed across individuals and electoral districts, parliamentary systems generate incentives for progressive taxation and redistribution. As the low-income coalition cohered over the course of the 20th century in parliamentary federations like Canada and Australia, the constitutional and administrative strength of the provinces and states created barriers to the erection of direct national programs. Instead, these programs were funded through transfers that were distributed according to income and other indicators of need. In parliamentary federations of more recent

vintage – Germany and Spain – highly redistributive transfer systems have also been championed by a national low-income coalition represented by the parties of the left.

Presidentialism favors a rather different politics of redistribution. Representatives of various electoral districts do not face incentives to form cohesive coalitions in order to form and maintain a government with agenda control. Accordingly, incentives for party discipline are weak, and party platforms need not be coordinated across candidates, who face incentives to claim credit for providing private goods to their districts rather than national collective goods. Perhaps the most common way of modeling such a legislature is based on Baron and Ferejohn (1989), where the representative of one district is randomly selected as the agenda setter for a spending project, and she attempts to build the minimum winning coalition that preserves the greatest surplus for her district. A key feature of these models is that districts compete to get into the winning coalition, bidding down the price that must be paid by the agenda setting district. Districts with the lowest default payoffs, and those representing the smallest districts, are most likely to be part of the winning coalition.

Random assignment of agenda-setting powers may not be an appropriate assumption, especially in countries where the president is the agenda-setter in the budget process. Nevertheless, absent a no-confidence procedure, the president – even a leftist with a redistributive platform – must buy votes from individual legislators – perhaps even co-partisans – who do not internalize the political benefits of policies with dispersed beneficiaries. Trying to preserve enough surplus to fund favored national policies, the president assembles the cheapest possible winning coalition in the legislature, causing legislators to compete against one another for membership as in the Baron–Ferejohn model.

This type of legislative bargaining model seems to provide some insights into coalition-building in Argentina, Brazil, and the United States, where committee leaders and presidents clearly use discretionary spending projects and intergovernmental grants to achieve winning legislative coalitions. The dictates of legislative bargaining might help explain the weak correlation between provincial income and grants in these federations. Ignoring for a moment, asymmetries in district size, even when the poorest districts are agenda-setters, they must offer a sufficiently attractive share of the pie to middle-income jurisdictions with higher default payoffs (and a higher share of the tax burden) to join the coalition. When middle-income jurisdictions have proposal power, the poor jurisdictions, with their lower default payoffs, will be attractive partners, but it will be possible to include them at very low cost.

Moreover, Baron and Ferejohn (1989) demonstrate how an open

amendment rule can reduce the advantages of the agenda setter and bring about an equal division of the pie among the majority coalition, or under some conditions, generate a 'universalistic' outcome in which every district receives an equal share. Baron (1991) points out that for bills that have high potential for pork-barrel inefficiencies, the legislature has an incentive to designate an open rule, and this is often the practice in the United States.

Regional Representation and Legislative Bargaining

Even with a presidential system, no party discipline, and an open rule with the style of legislative bargaining outlined above, one might still expect to find a negative correlation between district income and grants per capita. When building coalitions, poor districts will seek out other poor districts due to their low default payoffs, and if the distribution of income across districts is very right skewed, a poor district will be the agenda setter most of the time. But this can easily be undone by another powerful determinate of a representative's default payoff: district size. Small districts are more likely to be recruited into winning legislative coalitions because their votes are cheaper.

A large body of empirical research in several federations demonstrates that other things equal, over-represented states receive disproportionate expenditures and intergovernmental grants per capita (for a literature review, see Rodden 2002). Over-representation of small jurisdictions is especially pronounced in the upper chambers of federations. Among the federations under analysis here, the most malapportioned are Argentina, Brazil, and the European Union. In Argentina and Brazil, small states are over-represented not only in the senates, but in the lower chambers as well, and both chambers are very powerful. In the United States and Australia, the upper chamber is powerful and highly malapportioned due to equal representation of states, while the lower chamber is much closer to population-based apportionment. The German Bundesrat over-represents small states as well, though less dramatically than the United States, and its assent is required somewhat less frequently than the other federations listed above. The Canadian, Indian, and Spanish systems do not feature powerful upper chambers, and malapportionment in the lower chamber is modest compared with the other federations.

In cross-section regressions that control for GDP per capita (not shown to save space), there is a strong, statistically significant negative relationship between population and intergovernmental grants per capita in the countries with legislatures that over-represent small states (Argentina, Brazil, the EU, Germany, Australia, and the United States). In fact, the

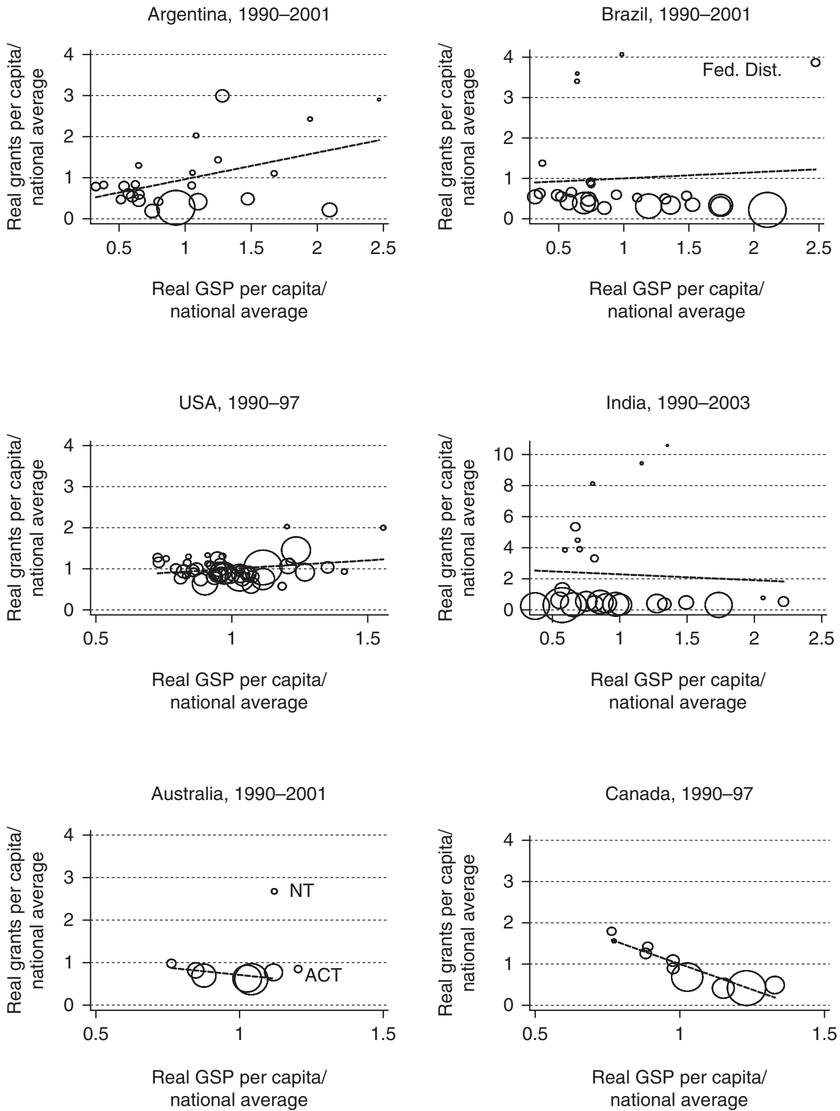
negative coefficient is largest in the countries with the highest degree of malapportionment. There is no evidence of small-state bias in the three federations without strong territorial representation (Canada, India, and Spain). This suggests that the frequently observed relationship between size and intergovernmental grants is indeed a reflection of legislative bargaining rather than the higher per capita costs of providing public goods in small jurisdictions (Alesina and Spolaore 2003).

Using provincial averages from the 1990s, Figure 8.3 displays income per capita on the horizontal axis and grants per capita on the vertical axis, each expressed as shares of the national average. The size of the bubble in each graph corresponds to the log of the province's population. Each graph also includes a fitted regression line. Note that in the federations with strong institutions of regional representation, the smallest bubbles are generally above the fitted line, and at most levels of income, the smaller provinces receive more grants than larger provinces at similar income levels.

But to what extend does the over-representation of small provinces undermine the correlation between income and grants? If size is perfectly correlated with income, malapportionment should only improve the bargaining position of the poor. However, if the correlation is weak, or even negative (as in Germany), there can be a class of small provinces that is more attractive than poor provinces as coalition members. In the extreme case, one can envision a coalition of wealthy provinces and small provinces that use their agenda control opportunities to exclude the large, poor provinces. Instead of forming a coalition with poor provinces to tax the wealthy and redistribute to themselves, middle- or low-income small provinces can offer the wealthy provinces a lower tax than would have been offered by a purely low-income coalition, and keep for themselves the lion's share of the expenditures.

Indeed, something like this might be occurring in the presidential federations. Note that for Argentina in Figure 8.3, without the smallest provinces, one can envision a slight negative correlation between income and grants, but a group of small provinces – one that covers the entire income spectrum – has apparently been extremely attractive as coalition partners. With Argentina's extreme form of province-based representation, one can easily envision a winning coalition that is composed of provinces with above-average income and a handful of small, poor provinces. In Brazil, the smallest states in the Northeast have clearly been attractive coalition partners. These are poor states, but again, one can envision a winning Senate coalition combining wealthy and small states, and keeping more dramatic redistribution at bay.

In the United States, moderate small-state bias is the only discernable relationship. Ever since the formation of the New Deal coalition



Note: GSP is gross state product.

Source: See data appendix.

Figure 8.3 Real GDP per capita and real grants per capita, expressed as share of national average

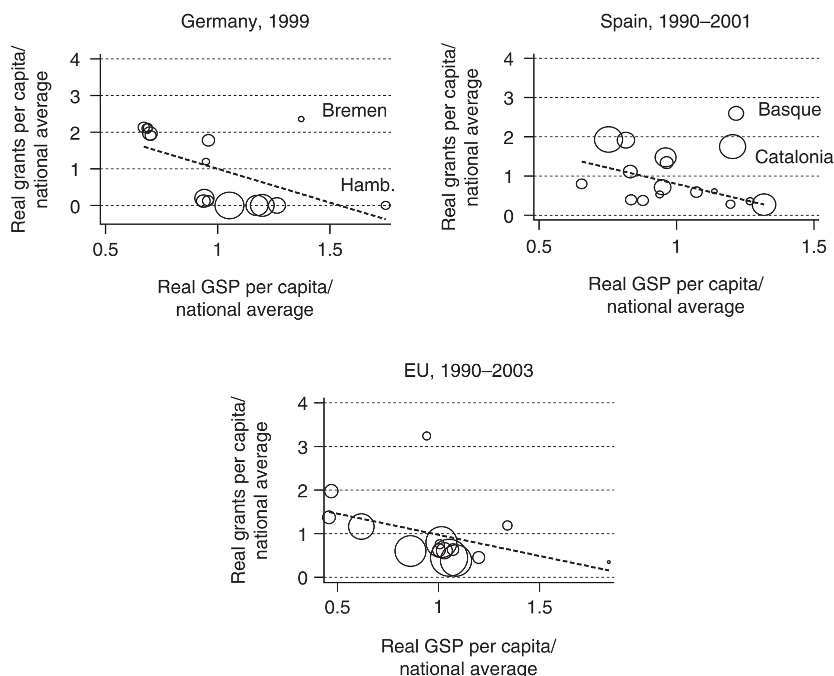


Figure 8.3 (*continued*)

in the 1930s, it has appeared that small, sparsely populated states have been important targets of vote-buying efforts by political entrepreneurs attempting to introduce progressive reforms (Wright 1974; Anderson and Tollison 1991). Thus instead of targeting the poorest regions with relief expenditures, as with Canadian programs originating in the Great Depression, the distribution of grants in the United States reflect the logic of legislative coalition-building, especially in the Senate.

In the European Union, total transfers from Brussels are progressive. Over-represented states have traditionally been favored in the distribution of transfers, which does introduce some outliers that weaken the relationship between income and grants, but the effect has not been large enough to undermine the relationship altogether.

If one considers the wealthy Hanseatic city-states in Germany, as well as the two territories in Australia, it would appear that over-representation in the upper chamber does indeed favor small states in these federations, and this weakens the correlation between income and grants to some extent. In Germany this weakens the relationship only slightly because of a pair of outliers among 16 states. But in Australia, the inclusion of the two

territories, both of which are over-represented in the Senate, causes the relationship to lose significance. Relatively wealthy and over-represented Western Australia is also an outlier among the states that pushes in the same direction.

Since they are parliamentary federations with strong, disciplined parties, one might not expect evidence of this type of legislative bargaining in Australia and Germany. Parties do play an important role in both the Bundesrat and the Australian Senate, yet the chief executive cannot threaten to impose a vote of no confidence, creating greater scope for bargaining over the distribution of funds between representatives of states, even within the governing party or coalition, than in the lower chamber (see Pitlik et al. 2005). In this environment, small states may be well-positioned to extract disproportionate benefits in spite of disciplined political parties.[4]

In Australia, 'small' and 'poor' were descriptors that could be used interchangeably for the recipient states in the intergovernmental system from the early era of confederation in the 19th century until recently (Tasmania, Western Australia, and South Australia). Thus for most of Australian history, if anything, malapportionment may have only enhanced progressive redistribution. More recently, however, natural resource booms have lifted the Northern Territory and Western Australia well above the national average, yet they have maintained a favorable position in the distribution of transfers, perhaps in part because of favorable political representation.

Canada and Spain are examples of parliamentary federations with strong party discipline, upper chambers that have little or no veto authority in the distribution of resources, and relatively little malapportionment in the lower chamber. Thus small states have no special bargaining power that would undermine the low-income coalition in favor of equalization. In Canada, Figure 8.3 shows that the negative correlation between GDP per capita and grants is very tight, and controlling for income, small provinces are not favored. In Spain, if anything there is a bias in favor of large states. The negative correlation between income and grants is weakened by Catalonia and the Basque Country. Moreover, the Spanish case may also reveal that legislative bargaining also plays a role even in parliamentary systems with strong parties, especially under minority government. Regional parties from these two autonomous communities have frequently been pivotal partners propping up minority governments, putting them in a position to extract extra resources (see Solé Ollé, this volume). This weakens but does not destroy the negative relationship between income and grants.

While over-representation of small states may appear to be important in India in Figure 8.3, this reflects grants to the 'special category' states

on India's Northeast border. It is true that these states are slightly over-represented, and perhaps some part of their special status is a product of legislative bargaining, but it seems more likely that these transfers reflect other features of these states. If these states are dropped, there is no relationship between size and transfers in India, and with its parliamentary institutions, weak upper chamber, and relatively minor malapportionment, in this respect it resembles Canada and Spain.

In sum, it appears that when small jurisdictions are over-represented, particularly when the chief executive cannot use the threat of a no-confidence vote to promote legislative cohesion, they are attractive coalition partners for anyone hoping to achieve a change from the status quo, which allows them to extract larger shares of intergovernmental grants than other jurisdictions at similar income levels. Under some conditions, this can generate legislative coalitions that undermine the correlation between income and expenditures that one might otherwise expect when the distribution of income across districts is right-skewed.

Regional Representation and the Relevant Income Distribution

Legislative representation based on regions rather than individuals might also undermine progressive redistribution through another mechanism, even if the regional jurisdictions are similar in population. In Meltzer and Richard (1981) and more recent work in the same tradition, redistribution emerges in democracies because the decisive median voter is poor relative to the mean, and thus benefits from a progressive tax-transfers scheme. In the empirical literature (see Milanovic 2000), this is captured with Gini coefficients or median/mean ratios of individuals.

Yet this approach assumes away the existence of winner-take-all districts. Implicitly, it assumes something like Dutch proportional representation, where there is perfect proportionality between national votes and seats for each party, and the parties have incentives to concern themselves only with the national distribution of voter preferences. If electoral competition takes place in winner-take-all districts, however, the parties must be concerned not with the national median voter, but rather, the median voter in the median district (Hinich and Ordeshook 1974). Accordingly, the relevant income distribution in such systems is not that of individuals, but rather, that of district medians.

This is a potentially important distinction. Even if the distribution of individual income demonstrates a severe right skew within each district (and hence nationally), the distribution of district medians will be considerably less skewed. Let us make the realistic assumption that individuals are clustered into neighborhoods with relatively homogeneous incomes.

If electoral districts are sufficiently small – say the size of a US census block – the distribution of district medians will resemble the distribution of individuals. As districts get larger, they become more heterogeneous, and the average wealthy neighborhood is increasingly likely to be swallowed up into a district with an internal right skew to the distribution of individual income. And as districts get larger, the right tail of the distribution of district medians is drawn dramatically toward the middle, and the shape becomes more symmetric. In the extreme case – a federation with a small number of very large regional districts – the distribution of district medians is not skewed at all.

For example, in US census micro data the median/mean income ratio for all individuals is .74. But if the relevant income distribution is that of the medians of US Congressional districts, one obtains a much more even distribution shorn of a long right tail, and the median/mean ratio is .95. However, if one considers the US Senate, the relevant distribution is that of state medians, where the distribution is almost symmetric, and the median/mean ratio is .98. In both Australia and Canada, the median/mean ratio for individuals is around .85, while that for the medians of parliamentary electoral districts is around .96, and that for state/provincial medians is .97.

In a system with a single powerful legislative chamber and proportional representation, as in much of continental Europe, the right-skewed inter-personal income distribution is politically relevant, and the democratic process provides little hindrance to the formation of a low-income coalition that will implement redistribution. However, when the legislature is based on winner-take-all districts, legislative representatives have incentives to represent individuals with the median income in the legislative district, and collective choice in the legislatures is based on a less skewed distribution. The median legislator will prefer a lower level of redistribution than would the median voter under proportional representation. With an upper chamber based on equal representation of winner-take-all states or provinces, as in Argentina, Brazil, and the United States, the relevant income distribution is even less skewed, and the median representative prefers little redistribution. By condensing the relevant income distribution and relying on collective choice among regional representatives rather than individuals, strong regional upper chambers can muffle demands for both inter-personal and inter-regional redistribution.

4 ENDOGENOUS FEDERAL BARGAINS

One might think of federalism as a continuum where at one extreme, unanimity of provincial representatives is required for changes from the status

quo, as in the EU Council of Ministers or the 18th century American Articles of Confederation. At the other extreme, changes from the status quo require a simple majority of individuals rather than provincial representatives.

The previous section argued that when countries entered the 20th century with limited central government tax powers, the former type of federation was able to resist attempts to form a cohesive low-income coalition that endeavors to centralize taxation and equalize service provision throughout the territory. This argument has a similar flavor to Persson and Tabellini (1996), who establish conditions under which unemployment insurance would be greater if chosen through majority rule than if chosen through inter-regional bargaining, since the latter undermines the formation of a national coalition of 'high-risk' individuals (see also Beramendi 2008).

In other words, by maintaining institutional features like strong regional upper chambers and super-majority requirements, some federations share characteristics of the voluntary federalism envisioned by Bolton and Roland (1997) or Alesina and Spolaore (2003), while others share features of unitary systems. But what accounts for these institutional differences? Perhaps institutions and inter-regional transfers are both reflections of some deeper set of bargains or trade-offs. It may be naïve to view inter-regional redistribution as exploitation of the rich provinces by the poor if the rich could, at some cost, secede from the union. Perhaps the transfers are in fact voluntary, and reflect the interests of the rich, who are getting something important in return.

This perspective yields important insights, especially if we expand the scope of analysis back to the initial bargains that gave rise to modern federations (Wibbels 2005). The centralization of tax power has been one of the thorniest issues in these bargains (see Diaz-Cayeros 2006). Prior to World War I, the fights were primarily about tariffs, customs, and excise duties, and more recently, they have been about income taxation. In the federations of North and South America as well as Australia and the German *Zollverein*, one of the key reasons for confederation was to eliminate duties and other costly impediment to inter-state trade by centralizing the tariff and customs duties. But centralization of the tariff in an era of proto-industrialization meant that the potential costs and benefits of confederation varied across regions in predictable ways. Those with the most to gain were industrialists in the burgeoning economic core, who desired a high tariff to protect nascent domestic manufacturing against foreign competition. The agricultural interests of the periphery invariably favored free trade and low tariffs, and if it implied locking themselves into a union with an economic core that had incentives to exploit them, they had the most to fear from confederation. Thus contrary to contemporary

autonomy movements in relatively wealthy and industrialized jurisdictions like Flanders, Lombardy, or Catalonia, prior to World War I the greatest skeptics of confederation were the farming and mining interests in the rural periphery.

The historical legacy of these battles has shaped contemporary patterns of inter-regional redistribution in two interrelated ways. First, in some federations the representatives of the sparsely populated pastoral regions bargained for institutions, described above, that assured they would have a veto over proposed changes from the status quo. Second, in some cases their fears were assuaged directly through fiscal transfers, and these transfers became the seed from which formal equalization payments grew several decades later.

In the debates about confederation in Australia, the peripheral states of South Australia, Tasmania, and Western Australia were resistant to the idea of confederation out of concerns that with population-based representation, the wealthy and populous states, especially New South Wales, would be able to drive tariff policies that forced them to buy expensive domestic manufactured goods, and deprive them of their most important sources of tax revenue. They refused to agree to confederation without equal representation of the states in a territorial upper chamber. A history of exploitation and domination by São Paulo/Minas Gerais and Buenos Aires eventually led political entrepreneurs to strike stable constitutional deals that over-represented the periphery in Brazil and Argentina as well. Realizing the potential usefulness of small rural states as coalition partners, Peron in the 1950s and the Brazilian military regime of the 1960s, utilized a similar strategy of adding politically friendly, sparsely populated states (Diaz-Cayeros 2006). In the United States, while the conflict over slavery gets most of the attention, there was also an important conflict between Hamiltonian centralizers favoring a powerful central government and high tariffs designed to protect the emergent economic core, and those like Jefferson who preferred a weak, fragmented central government that provided agricultural interests with a veto over tariff and other tax policies.

These battles created a long historical legacy. In each of these countries, when demands for further centralization of taxation and redistribution grew in the era of global war and depression, changes from the status quo required something well beyond a national majority of low-income individuals. As revealed by the data presented earlier, coalition-building favored small jurisdictions, often at the expense of the poor. Only in Australia did the over-representation of the small coincide with that of the poor in a way that facilitated progressive inter-regional redistribution. It is an historical irony that the fragmented federal institutions grudgingly

granted by the enthusiastic centralizers of the commercial elite in the core may have eventually protected their grandchildren from demands for redistribution.[5]

An interesting contrast to these federations is Canada, where one of the most pressing constitutional questions has always been whether confederation can be interpreted as a compact at all. The project was driven by British loyalists and representatives of London, and 'without the coaching, prodding, and fixing of imperial officials, Confederation would probably not have occurred' (Russell 1993: 20). While some delegates from Canada West (Ontario) advocated for a stronger, elected upper chamber, most delegates favored an appointed upper chamber on the British model, although with some over-representation for the Maritimes, and given the recent experience with civil war, there were no advocates for any of the fragmenting institutional features of US federalism.

Early battles over the centralization of taxation may have generated not only institutions, but in some cases the transfers themselves. In Canada and Australia, the first decades of Confederation were characterized by frequent secession threats from the skeptics of confederation in the periphery. The most credible of these threats were from natural resource exporting provinces with their own ports or trade routes that would allow them to 'go it alone' or join with an alternative economic core. Western Australia, Nova Scotia, and eventually Western Canada are the clearest examples, and each flirted with secession throughout the early 20th century, using the resulting bargaining power to extract ad hoc transfers from the federal government. Anger and alienation in the provinces of the periphery was fueled by tax centralization that stripped them of their most productive taxes, and tariffs that forced them to buy expensive domestic products. In both countries, from the moment of confederation on, transfers were designed quite explicitly in Australia (Hancock and Smith 2001), and implicitly in Canada (Stevenson 2004), to compensate the periphery for the burdens of a union that aimed to create an industrialized society where agglomeration economies generate a 'concentration of population and power, both political and economic, in the eastern centers' (Commonwealth Grants Commission 1935: 41). In Australia, the Grants Commission made its first report advocating equalization at a time when Western Australia was petitioning the UK Parliament for the right to secede.

In both countries, a system of ad hoc, negotiated compensation for burdens of industrialization morphed into a formal system of equalization in the 1930s and 1940s, when the cause was taken up by a low-income coalition. The 'burdens of confederation' were quite difficult to measure, and this rhetoric was replaced with one emphasizing both the efficiency

and justice of equal service provision. Thereafter, the call for equal service provision across the federation was a central part of the platform of the parties of the left. Even though parties of the right experimented with platforms that would have rolled back or eliminated equalization, the transfers were already a long-standing status quo, and the political risks of alienating voters in recipient jurisdictions was too high. With the exception of those states in the periphery that became wealthy from oil and other natural resources, these peripheral states developed long-term dependence upon the central government, and secession threats are now a thing of the distant past.

While the circumstances under which federal bargains were struck more than a century ago seem to provide useful insights in older federations, what about countries like Germany or Spain that experienced long interregnums of centralized authoritarianism, with a contemporary federal bargain that occurred after World War II in an era of tax centralization?

In the negotiations leading up to the German Basic Law and the system of fiscal equalization in the aftermath of World War II, the representatives of the relatively wealthy states desired a decentralized system of taxation and fought for a strictly origin-based system of transfers in areas where central taxation was viewed as necessary. By examining the bargaining among states in occupied Germany prior to the negotiation of the Basic Law, one gets a glimpse of what a voluntary bargain would have looked like. It could not possibly have been redistributive. Initially, the wealthy states even resisted efforts to arrange relatively small subsidies for states that were overwhelmed by war refugees (Renzsch 1991).

Yet ultimately the Basic Law was negotiated not by unanimity rule among Länder, but among national party leaders. The wealthy states were not in a position to threaten secession, and with the allies impatient for a deal, the Christian Democracy Union (CDU) – with its preference for a more decentralized and less redistributive system – was not in a position to hold up the negotiations. Given its powerful position in the constitutional assembly, the Social Democratic Party of Germany (SPD) was able to bargain for a constitution that represented the interests of a low income coalition from the beginning, and it was able to enshrine a system of transfers meant to achieve 'equivalent living conditions' directly in the constitution.

In Spain as well, it seems likely that a voluntary union among representatives of regional governments in the late 1970s would have generated a much less redistributive system than the one that emerged. Such governments had not yet been constituted, and even though the tax-transfers system was broadly unsatisfactory for representatives of Catalonia and the proposed institutions provided few protections, the default payoff was

very unattractive given the risk of a return to authoritarianism (Colomer 1998).[6]

5 CONCLUSION

Exploitation of the rich by the poor is impossible in a voluntary pact among sovereigns where the rich can secede. But fiscal redistribution from rich to poor regions can happen even in a voluntary union. Market integration can generate 'peripheralization,' whereby agglomeration and urbanization economies push economic activity toward the core, and in order to achieve a common market, the burgeoning core must compensate the periphery for these risks. This helps explain early precursors to equalization transfers in Canada and Australia, and the European Structural Funds today.

Once a common market has been established, wars and depressions have paved the way for further tax centralization, and secession threats have lost their bite, intergovernmental transfers can become an important tool for political entrepreneurs who wish to mobilize the poor. In this context, an institutional legacy of bargains and battles among sovereigns places limits on the possibility of inter-regional redistribution by shaping the requirements for changes from the status quo. Institutions of federal fragmentation that once protected the small and peripheral can now be of use for the rich as well.

Some decentralized countries that have many of the trappings of federalism do not retain any of the institutional baggage from a bygone era of federation-formation, or never had any in the first place. The prime examples in this chapter are Canada and Spain, but one finds a comparable dynamic in Italy, Belgium, and the UK. In these countries, changes from the status quo require simple national majorities of individuals or small districts, and with a right-skewed income distribution, the wealthy are at the mercy of the poor just as in a unitary democracy. Bilateral and multilateral 'negotiations' over taxes and transfers are conducted between the center and provinces with great sound and fury, but in the end, the center reserves the right to act unilaterally, and frequently does so.

In such countries, it is quite natural that wealthy taxpayers in wealthy regions wish to move in the direction of US federalism, where taxes are highly decentralized and the central government's expenditures are not very progressive. Yet when the low-income coalition is entrenched and a high level of redistribution is already the status quo, their options are limited. Moderates support regional parties that attempt to disrupt the low-income coalition and bargain for concessions in the legislature, while

extremists seek secession. This dynamic captures the fault lines of an important political conflict in Europe and beyond. It remains to be seen whether the genie of inter-regional redistribution, once set free, can be squeezed back into the bottle.

NOTES

1. Data sources and inflation adjustment procedures are detailed in the appendix.
2. Some of the controversy in the empirical literature is about the conflation of insurance and redistribution effects (for example, Von Hagen 1992). The goal here is to focus exclusively on redistribution by avoiding time-series analysis.
3. Note that the territories are not included in Figure 8.2. The inclusion of the Northern Territory and Australian Capital Territory would generate a more right-skewed distribution of both expenditures and income.
4. To a large extent, the distribution of grants in Australia is driven by the Grants Commission. Nevertheless, the recommendations of the Commission must be approved by the legislature, and some grants are still subject to direct influence by the legislature (Worthington and Dollery 1998).
5. Wibbels (2005) makes a more general version of this argument, hypothesizing that fragmented federal institutions with limited scope for redistribution came about as a result of conflict between owners of different factors of production.
6. Perhaps the most striking outlier in this chapter is India. The constitutional bargain did not include presidentialism or strong protections for states, and as in Germany, the constitution calls for efforts at inter-regional redistribution. Yet intergovernmental grants do little to combat inter-regional inequalities. One possible explanation is the fact that India was governed until recently by a hegemonic party that used discretionary transfers to allied state governments as a way to cement its dominance, and more recently, by fragile coalitions of regional parties. In this context, no political party has been able to build a national low-income coalition.

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DATA APPENDIX

Argentina: Fiscal data and gross provincial product are from the Ministry of Economy, Subsecretary of Regional Programming, adjusted for inflation using the CPI developed by Sanguinetti and Tommasi (1997). Provincial population data are from the National Institute of Statistics and Census.

Australia: Fiscal data are from Australian Bureau of Statistics, Government Finance Statistics State government series, adjusted for inflation using the CPI of the largest city in the state (produced by ABS). Gross state product and population data are from ABS state accounts. All data were obtained directly from the ABS.

Brazil: Fiscal data were obtained directly from the Ministry of Finance: Minestério da Fazenda, Secretaria do Tesouro Nactional, Coordinação-Geral das Relações e Análise Financeira de Estados e Municipios. Inflation adjustment was conducted using the INPC deflator prepared by IBGE, Diretoria de Pesquisas, Departamento de Indices de Preços. Population and gross state product are from IBGE, Diretoria de Pesquisas, Departamento de Contas Nacionais, Contas Regionais do Brasil, microdados.

Canada: All data are from Statistics Canada, CANSIM series, deflated using provincial-level CPI.

Germany: Fiscal data are from the Statistisches Bundesamt, accessed from http://www.statistik-bund.de (no longer in service, replaced by www.destatis.de). *Land*-level GDP, population, and Land-specific deflators were provided directly by the Baden-Württemberg Ministry of Finance.

India: Population and inflation-adjusted fiscal data were kindly provided by Shahrokh Fardoust at the World Bank. Inflation-adjusted gross state domestic product data were obtained from the Reserve Bank of India.

Spain: Data were provided by Pablo Beramendi and Erik Wibbels.

USA: Fiscal and population data were obtained directly from the Census Department. Fiscal data were adjusted for inflation with the national CPI produced by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). CPI and gross state product were obtained from the BEA web page: www.bea.gov.

Comment VI

Carles Boix

'Federalism and inter-regional redistribution' stands out as an important, original contribution to the political economy of federalism. In that chapter Jonathan Rodden makes two important contributions – one empirical, the other theoretical – to the study of the political economy of federalism. In the first place, he offers comparable data on the extent of inter-regional fiscal flows in nine federations by looking at the size of intergovernmental grants and their impact over the per capita income of regional units. The European Union, India and the United States engage in little inter-territorial redistribution. Argentina and Brazil have some redistribution – but hardly of a progressive nature. Finally, Australia, Germany, Spain and Canada show a notable level of redistribution.

In the second place, he sketches a new theory of the political and economic mechanisms that explain variation in inter-regional redistribution across federations. As Rodden rightly notes, current explanations are inadequate. Pure economic theories of fiscal federalism cannot explain most of the cross-national variance in fiscal flows. Culture-based explanations (emphasizing differences in national commitments to solidarity) do not match the historical dynamics of the cases. Finally, straightforward redistributive stories à la Meltzer–Richards predict the opposite of what the chapter finds out: unequal federations actually redistribute less than equal ones.

Jonathan Rodden's political-economic theory of federal bargains unfolds as follows. In all federations there is a potential coalition of low-income units interested in imposing redistributive policies. However, that potential redistributive coalition only forms and achieves its goals under a particular institutional configuration: a parliamentarian system, which facilitates the construction of cohesive national parties (thus paving the way for higher levels of redistribution); the proportional representation of electoral districts (as opposed to malapportioned upper houses); and large electoral districts (since small electoral districts generate a more compressed distribution of district income medians at the national level and hence lower the demands for redistribution). In turns, all those institutions are the outcome of a particular bargain among the members of the federation, driven by

some calculations of rich and poor regions about their ideal level of redistribution. Rich regions tend to block redistribution unless there are (mainly trade-related) gains to be made from the federation that require buying out poor regions through compensatory mechanisms – those compensatory commitments are then built into the federal constitution.

To put it shortly, Rodden's chapter reminds us that we will only understand the nature and performance of federal systems if we see them as an interlocking structure of economic interests and outcomes and of political and institutional devices. This naturally forces us to dwell on the problem of 'endogenous federal bargains', that is, the causes which determine and sustain federal agreements. In the rest of this comment, I probe Rodden's argument by sketching a simple model that integrates his insights on the formation (and maintenance) of federations and the current literature on endogenous federalism and political integration. The model rounds off Rodden's insights while alerting us to the need of at least adding three additional factors to make sense of the dynamics of redistribution across federations: the security needs of regions, the endogenization of the choice of trade integration to domestic conditions, and the need to distinguish between the creation of federations *ex nihilo* and the renegotiation of existing unions.

ENDOGENOUS FEDERAL BARGAINS

To start with, assume a territory with several regions that are initially independent but that at some point entertain the possibility of establishing some kind of economic and political union.[1] The initial territorial compact to establish a union necessarily includes two things: first, an agreement over which assets regions pool together; second, setting up a joint political authority to execute the agreement. The latter also implies establishing a common procedure to decide over daily policy.

Because the institutions of the union are the only mechanism to execute the initial contract, the extent of asset-sharing and the strength of central institutions (to be defined shortly) covary in general terms: the more extensive the agreement is (the more assets are put in common), the stronger common (or central) institutions of the union tend to be. 'Minimal' agreements in which regions hardly share anything come with common institutions of a 'confederate' kind where every region keeps its right to veto every decision. As regions decide to pool more assets together and then transfer their administration to a central institution, the latter becomes stronger vis-à-vis each individual region, that is, the power of a single region over common decisions declines. Broadly speaking, the loosest (weakest) type of union is

governed by a principle of unanimity. Complete integration happens when the union sets policy by simple majority rule (of individual voters).

The extent of political (and fiscal) integration (and the level of inter-regional redistribution) will be driven by two broad forces: the risks of exploitation of any given region by the majority of its partners in the union; and the potential gains unions bring to their potential members.

The risk of exploitation increases with the degree of income heterogeneity among regions. More specifically, and following standard models of optimal taxation, wealthy regions (those with an income above the general median income) will have to pay some transfers to the poor regions (those with incomes below the federal median income). Moreover, the more divergent the standards of living across regions, the larger those transfers from wealthy to low-income regions will be (Meltzer and Richards 1981).[2] Hence, based on pure fiscal calculations, wealthy regions should oppose political integration – totally or by establishing institutions that give them the power to veto any deviations over the initial agreement). Rodden's findings in section 3 fall in line with these theoretical expectations: first, inter-territorial distribution is strongest in those federations where decision-making procedures are closest to the principle of proportional representation of territories; second, the most unequal federations have the weakest central institutions.

The gains that unions may bring to their potential members are of three kinds. First, they bring insurance gains: risk-averse regions may benefit (even if they are rich on average) from establishing a strong union that smoothes some inherent income volatility or some negative shocks. Second, political unions can accrue important security, peace-related gains. Unions suppress (in principle) the security dilemma that lingers over its regions before integration. They also reduce the threat of military conquest by neighbors. Those gains are conditional on the world environment. In a Hobbesian world, where countries are manifestly aggressive (due to the nature of their institutions or to their type of political economy), political unions are a must. In a Kantian world, formed by peace-loving republics, they are dispensable. Finally, strict economic gains: a larger market for each region's producers, reduced transaction costs from a common currency and so on.

THE NEED FOR A MORE COMPLEX THEORY OF TRADE INTERESTS

In the existing literature on economic integration, those latter (economic) gains are taken to be a direct function of the world level of market

integration: the incentives to integrate decline as the world becomes more open or globalized (Alesina and Spolaore 2003). However, as Rodden hints at in his historical evidence, the impact of economic integration is a more complex one. The gains from establishing a union are never uniform across regions: they vary with the level of development and the factor endowment of each region. Let me develop more explicitly Rodden's intuitions. I do so by looking first at rich regions. Then I examine the case of poor regions.[3]

In a 'mercantilist' world, that is, one in which there are barriers between the union and other countries, the position of wealthy regions will vary as follows. Abundant-factor regions (that is, regions where the decisive voter is the owner of an abundant factor) benefit from more integration because the latter creates a larger market and therefore higher returns to that factor. However, that process of integration may increase inter-regional inequality and therefore raise taxes on those wealthy regions. Depending on which of the two effects prevails, those regions will favor or oppose a deeper political union. By contrast, wealthy but scarce-factor regions will be against any integration: they see their returns decline and they must also pay some transfers toward poor regions.[4]

If the world as a whole is an open one, the factor-abundant region has no interest in the federation, provided it is also a factor-abundant region in the world context since it now has access to what it wants, that is, large markets. But if its decisive voter owns a scarce factor, the region will support the federation conditional on closing the latter to the world. (This seems to be the kind of case Rodden has in mind when he refers to the American federation in the nineteenth century, with a nascent domestic industrial sector willing to 'compensate' agriculture in exchange from protection against foreign industries. I would like to add the European Union and its agricultural policy here.) The bargain to create a protectionist federation requires some kind of compensatory deal – a transfer from the scarce-factor region to the abundant-factor region. Given the income losses that come from closing markets (at least in standard trade models), such a deal is only possible if the latter is richer or technologically more advanced than the latter: this allows the former to make some direct payments or to make some technological transfers to the poorer one. (In other words, the subsidization of French farmers would have been impossible without the existence of BMW and the like.)

Consider now the case of poor regions, that is, those with per capita income below the federation's median. We know that they fiscally benefit from higher, stronger forms of integration. Yet, here again, trade issues complicate the picture. In the context of a mercantilist world, an abundant-factor (but income-poor) region will push for a strong federative

bargain. A scarce-factor one will only do so if fiscal flows compensate its lost returns. (The possibility of compensating richer regions in exchange for a protectionist deal seems far-fetched.) In an open world, an abundant-factor region continues to support a federal agreement because it stands to gain from tax inflows. A scarce-factor region will only support it if those fiscal flows exceed any economic losses through trade.

RENEGOTIATING UNIONS

To fully understand the dynamics behind the maintenance and evolution of federal bargains (and the extent to which they are more or less redistributive), it is important to distinguish between the creation and the renegotiation of unions – for two reasons. First, the point of departure (the status quo point to which failed negotiations revert) is different in each case. At the moment of the creation of unions all its future components are independent – they have the power to veto any agreement that they expect will be harmful to their interests. By contrast, in an existing union the renegotiation is conducted through common procedures: short of exercising an exit option, all territories have to convince a majority of the members of the federation to change the current bargain. Second, in pre-existing unions there are already central institutions that have both a particular interest and the capacity to sustain that union: this imposes an additional cost in the renegotiation of any territorial deals.

The renegotiation of political (federal) contracts takes place under two broad circumstances: democratization and exogenous economic shocks. It happens in those pre-existing political unions that move from authoritarian regimes – in which only a minority of the members had a voice in the choice of institutions – to democratic regimes. Ideally, a shift to democracy implies that the regions in the unit may have the right to decide in a voluntary fashion the type of institutional arrangement that should govern them. Unhampered by dictatorial institutions, they should strike the deal that suits them better. But the existence of central institutions makes this hard to achieve in practice. By way of example, take the case of a democratic transition in a country located in a Kantian, free-trade continent: according to the theory just outlined, we should expect wealthy regions to secede at the time of democratization of the country to which they belong(ed) with a high probability. Yet this assumes away the deadweight of the political status quo: at the moment of democratization, there are already in place key political forces and institutions (the central government, the military) that can threaten a seceding unit with a reversal to the authoritarian deal if it does not tone down its demands and insists

on separation. Hence, unless those central institutions implode at the time of the transition (as in Russia or Yugoslavia in the early 1990s), radical renegotiations leading to the 'preferred' contract space (the one based on pure economic and peace considerations) will not happen. To put it in more general terms, whenever there are gradual transitions to democracy, the new institutional bargain will fall mid-way between the authoritarian status quo and the political outcome that would have taken place if all the regions had come to the negotiating table for the first time. In turn, that means that the resulting 'federation' will continue to experience considerable instability in the medium turn – as the old institutions lose their grip on the country (for instance, the army's relevance fades away), those regions that were unsatisfied with the transition deal will insist again on changing the rules of the game. This explains a great deal of the political instability of Spain in the last decade or so.

EXTERNAL SHOCKS AND THE STABILITY OF POLITICAL UNIONS

Renegotiations also happen when the exogenous conditions that shaped the initial deal (inequality within the union, global market integration, military threats, income volatility) shift.[5] In that instance, political unions may tend to change – but they will do in a biased or asymmetrical way.

Start with a case in which there is a shock which makes wealthy regions experience some additional benefit from belonging to a political union: for example, a rising power threatens its neighbors or inequality within the union declines. Had those conditions occurred in the absence of a federal pact, the wealthy regions would have accepted a much stronger or deeper federal system than the current one. At this point, however, and provided they had structured the initial institutions adequately (to protect their position), they will have all the incentives to block any demands from the poorer regions to remake the institutional deal. Since leaving the status quo makes the poorer regions worse off, the latter cannot credibly threaten to exit the federation if no changes are implemented. Hence, in this example, there is a clear pro-status quo bias.

By contrast, in a scenario in which the incentives to maintain a strong state decline, wealthy regions will favor a more decentralized union. Poorer regions will not be in a position to block any changes since the wealthy can threaten with secession. Federations should become looser and the level of redistribution should decline as well.

These considerations have interesting empirical implications for Rodden's study and for future studies that look at the evolution of

redistribution over time. First, demands to rewrite the territorial contract will always come from those regions that can credibly threaten to exit – this is normally the case for wealthier territories. Second, the resulting level of political instability will be different depending on the current degree of integration: loose unions will be much more stable than highly centralized unions.

NOTES

1. I employ the term 'political union' rather than 'federation' because the former is a more encompassing one – ranging from Jacobin states to supra-national trade agreements or military alliances. By contrast, the term of federation is far narrower and does not strictly include some of the cases Rodden chooses, such as Spain.
2. In a more complex story, à la Bolton and Roland (1997), one could also consider regions with different internal income distributions and therefore with individuals that may have different preferences about the right type of union.
3. Throughout the discussion I assume a Heckscher–Ohlin trade model.
4. Naturally their returns may fall so much that they may even become net receivers of transfers.
5. Unions that have initial low levels of inequality will have to strive to maintain it over time – otherwise they risk jeopardizing their existence. To maintain low levels of inequality, the union's policies will have to be relatively intrusive, that is, they need to make sure that *conditional* growth rates are roughly equivalent across regions. Two things stand out from this: one, the looser a federation is, the more volatile growth rates will be (and, on average, the more innovation will happen); two, looser federations will be politically more stable (since they are not hurt by widening income distributions).

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9. Decentralization by politicians: creation of grants-financed local jurisdictions

Stuti Khemani

1 INTRODUCTION

There is by now an established literature on how political variables influence the distribution of intergovernmental grants across regions.[1] With growing political participation and contestation, regional governments in large and diverse countries have increased their political access in determining the distribution of national public resources. In India, for example, regional political parties in opposition to the national ruling party have been able to appeal to a statutory body for greater fiscal resources (Khemani, 2007). In Brazil, regional political leaders have bargained for greater fiscal devolution through successive laws negotiated in the country's legislative bodies (Mendes et al., 2008). This chapter examines a recent phenomenon of creation of more local jurisdictions within regions by both regional and national governments, where spending is financed almost entirely by grants. Grants-financed decentralization to local jurisdictions appears to be a new political instrument used by regional and national governments to influence the distribution of national fiscal resources.

Decentralization by politicians is unlikely to yield the gains described by traditional theory. The theory of the beneficial effects of having multiple local jurisdictions with local tax and expenditure responsibilities is predicated upon these jurisdictions arising naturally as communities with intra-community shared preferences and inter-community heterogeneity (Tiebout, 1956; Oates, 1972). Efficiency and accountability of local governments arise in these models because of inter-jurisdiction competition in attracting residents and winning their vote (Besley and Case, 1995; Weingast, 1995; Breton, 1996). Even in the absence of differences in preferences and mobility of households among jurisdictions, it has been theorized that decentralization may have beneficial effects by increasing efficiency of governments through access to better local information, and

by increasing accountability to citizens through greater participation and monitoring at local levels (Bardhan, 2002).

These theories have been invoked by the international policy community to support the move towards local fiscal and political decentralization in the last decades in countries that were previously centralized. However, there is also concern that some conditions that are needed for efficiency and accountability gains from decentralization might not be pervasive. The one that has received the most attention in the context of developing countries with entrenched social inequalities is the risk of 'capture' by local elite of locally controlled own and devolved resources (Bardhan and Mookherjee, 2000). The other is that decentralization might contribute to macroeconomic instability through the softening of budget constraints at local levels (Rodden, 2002).

This chapter examines how discrete decentralization by political decision-makers in erstwhile centralized countries can encounter another problem in realizing efficiency and accountability gains: the selection of jurisdiction boundaries, both physical and fiscal (what the jurisdictions are empowered to do), to serve electoral objectives by dividing the electorate into units that are easier to target in exchange for votes. Here, decentralization to local jurisdictions (such as villages, towns or districts) is analysed as a political response to increasing political participation among citizens, both in the form of new interest groups and in the form of swing voters who cannot be easily identified and targeted.

Such political selection of jurisdiction boundaries has specific implications for the characteristics of inter-governmental fiscal relations and local electoral politics. Under politically motivated decentralization, local governments would not have incentives to raise own revenues because their expenditures would be financed by national or regional grants; and grants would be distributed across jurisdictions to win their political support in national/regional elections. In the local jurisdictions thus created, spending would be clientelist, that is, resources would be allocated disproportionately to programs which target private benefits to political supporters, in exchange for their vote, at the expense of broad public goods. Because of clientelist politics, local elections would be highly contested and volatile, as every citizen would have incentives to attempt to win public office in order to gain access to resources of the state. These implications can be contrasted with those of Tiebout–Oates inspired theories of beneficial inter-jurisdictional competition, where jurisdictions differentiate themselves on the basis of tax rates, size and composition of public spending.

After offering the hypotheses of political selection of jurisdiction boundaries, this chapter presents available evidence on the characteristics of decentralization in several large countries that is consistent with these

hypotheses. First, in several decentralized countries in Africa, South and East Asia, more than 90 percent of local government expenditures are financed by grants from higher tiers. Whilst some urbanized jurisdictions in these countries do raise significant resources from own revenues, the vast majority of jurisdictions to whom spending has been decentralized do so almost entirely out of grants received from above. Second, studies in a range of countries as diverse as Albania, Brazil, India, Mexico, Peru, the Philippines, Sweden, and the United States, find evidence that higher tiers of governments target grants to local jurisdictions based on electoral characteristics. That is, local jurisdictions matter in serving the political objectives of higher tiers of government.

With regard to the last set of implications summarized above, on the nature of local government electoral politics, there is some available evidence from a range of countries, including Brazil, India, Pakistan, and the Philippines, on the salience of patronage, clientelism, vote-buying, and violence as dominant electoral strategies. However, I have yet to find studies analysing systematic data on vote shares of candidates in local elections to test whether these elections indeed exhibit substantial contestability and volatility.

The implications of this theory of decentralization by politicians can also be distinguished from those of local elite capture in that the capture of public resources for private benefits need not be restricted to the elite; even poor and traditionally disadvantaged voters may demand private goods from local politicians (such as jobs, subsidies, cash and in-kind transfers) instead of broad public goods (such as good performance in delivering health, education, infrastructure). Lower barriers to entry in local elections might allow candidates from poorer or non-elite households to win office, and subsequently target public benefits to themselves and their supporters, at the expense of public goods for all. Indeed, a country where concern with local elite capture has been most expressed in decentralization policy discussions, India, has instituted political reservations at the village level for members of historically disadvantaged social groups, the constitutionally scheduled castes and tribes. Evidence from India suggests that such political reservations leads to targeting of public benefits to members of the elected local leader's social group, but that it may come at the expense of broader public goods.

Another view of decentralization held by its advocates is that it arises from and/or leads to increasing demand from citizens for greater community participation in service delivery, and in resource allocation decisions by governments, which improves service quality. Indeed, institutions of decentralization in many countries include specific provisions for broad-based citizen participation in local resource-allocation decisions,

such as representation of people's organizations in local governments in the Philippines, budget discussions in village-wide meetings called *Gram Sabhas* in India, and citizen oversight of municipal spending by *Comites de Vigilancia* in Bolivia. This view has direct implications for local resource allocation processes and outcomes, which can be distinguished from the characteristics of clientelist politics that is predicted by the theory of politically motivated decentralization. Evidence on the functioning of these participatory bodies created as part of the decentralization process suggests that on average the degree of popular participation is low, despite some celebrated examples of specific jurisdictions where local political leaders encouraged citizen engagement.

There is other work exploring decentralization to local governments as a political strategy, focusing on incentives of national politicians to bypass regional governments that pose a political threat. Dickovick (2007) analyses decentralization to municipalities in Peru, Brazil and South Africa as a strategy adopted by national politicians to weaken intermediate levels of government. O'Neill (2003) argues that political parties devolve greater resources when support for them is more secure in local than in national elections, citing evidence from Bolivia, Colombia, Ecuador, Peru, and Venezuela. However, these works do not draw the same testable implications for the characteristics of local jurisdictions as are provided in this chapter. Finally, there are several descriptions in the literature of decentralization as a political tool to accommodate ethnic or regional conflict within countries, but most of these relate to the creation of larger province-type jurisdictions, with significant local autonomy, and not to the creation of fiscal authority at the level of villages or towns, the phenomenon addressed in this chapter (Panizza, 1999).

The theory offered in this chapter of the political selection of jurisdiction boundaries also has policy implications for international development assistance. Some technical assistance and lending programs focus on addressing vertical and horizontal fiscal 'imbalances', spring-boarding from the observation that new local governments are not devolved 'sufficient' grants to fulfill the expenditure responsibilities assigned to them. This chapter suggests that when jurisdiction boundaries are deliberately chosen to keep them grants-dependent for political targeting, focusing policy on increasing grants to existing jurisdictions for greater local spending can exacerbate clinetelist political incentives. It can fuel people's evaluation of local governments on the basis of funding and projects that can be garnered from above, at the expense of inter and intra-jurisdiction competition on the basis of competency to deliver broad public goods with scarce resources. Instead, the political analysis suggests strengthening other strategies that focus on identifying institutional and governance interventions

to undercut clientelist incentives and enable voters to mobilize to demand broad public services, or combining these systematically with programs of grants devolution.

The next section provides an analytical framework for the choice of decentralization of public spending to multiple small local jurisdictions, financed by grants, to serve electoral objectives. Section 3 examines some evidence on decentralization experiences in select countries and regions and argues that it is consistent with the proposed framework of politically motivated decentralization. Section 4 discusses the implications of the theory for international development assistance and explores the potential of local governance interventions to overcome local clientelist politics. Section 5 concludes.

2 ANALYTICAL FRAMEWORK

There are surprisingly few formal models of the political choice to decentralize powers and resources to lower level jurisdictions.[2] Available models of endogenous decentralization, to the best of my knowledge, are all consistent with the original insight of Oates (1972) that decentralization pressures arise from regional heterogeneity of preferences. Oberholzer-Gee and Strumpf (2002) model state legislative decision-making for decentralization to districts within a state, and obtain as an equilibrium greater likelihood of decentralization in those states where there is greater heterogeneity of preferences across districts (on the policy issue being considered for decentralization, in this case liquor licensing in the US). Cremer and Palfrey (1996), Lockwood (2004), and Redoano and Scharf (2004) examine the role of decision-making rules, national referenda versus legislative voting, majority and unanimity rules, in the selection of the degree of centralization, with preferences for decentralization distributed regionally.

This section will explore an alternate theory of decentralization by national or regional politicians to small local jurisdictions such as villages, towns, municipalities, or districts. We begin by characterizing a centralized political and fiscal system as one where national political power is maintained through spending programs that provide targeted benefits to organized interest groups in exchange for their political support. Indeed, a large theoretical literature on the political economy of fiscal policy assumes that every voter can be assigned to an organized interest group which receives group-specific public goods; these groups bargain to extract greater public resources for themselves through their representation in political parties (Persson and Tabellini, 2000, provide a review).

In a recent theoretical advance, Khemani and Wane (2008) explore the ramifications of introducing another class of voters who is 'swing', in that its members are not organized, cannot be provided targeted public goods, and do not owe allegiance to any particular political party. They show that one response of political parties in the presence of these swing voters is to give up contesting elections as single-party governments and instead come together as a coalition to be able to win elections by providing targeted benefits to each of their core interest groups. Single-party governments, on the other hand, would need to divert resources away from targeted benefits to universal public goods in order to reach the swing voters who cannot be identified and targeted.

This chapter extends the intuition in Khemani and Wane (2008) of political incentives to form coalitions to win elections through narrow targeting, when faced with increasing participation of swing voters who are difficult to target. Creating new local jurisdictions is another policy instrument available to political parties and politicians to divide the electorate into smaller groups so that the strength of swing voters is dispersed across jurisdictions, and a minimum winning coalition of jurisdictions can be forged. This minimum winning coalition would consist of those jurisdictions where organized interest groups are dominant and can be targeted by national and regional political parties or politicians.

The immediate question for this logic is why decentralization to new jurisdictions, instead of gerrymandering national or regional electoral districts? The assumption driving decentralization to locally elected governments as the political instrument of choice in this chapter's framework is poor information and high transaction costs at national and regional levels about the identity of new voters. The impetus for decentralization comes with increasing political participation, as new voters mobilize into new interest groups, or become swing voters who are difficult to target and whose vote is uncertain. In our framework, politicians or parties with national and regional stature have little information about how to target or mobilize new interest groups as political participation increases. They also have high transaction costs in appointing local agents to gather such information and implement such targeting. Instituting local elections enables the new interest groups to reveal themselves, and national and regional politicians and parties can then strategically ally themselves with the emergent leaders to build the minimum coalition needed for political control.

In order to achieve the revelation of a sufficient number of interest groups for efficient coalition size, and effectively win the support of a minimum coalition, the created local jurisdictions would need to satisfy certain conditions. First, the number of these jurisdictions should be large

enough, and average size of each jurisdiction should be small enough, so that it is costly for any one new interest group emerging in a jurisdiction to mount a challenge to the political parties at the center. The number of jurisdictions would also be increasing over time, or average size falling, if the increasing trend in political participation that instigated decentralization continues; as new organized groups or swing voters emerge, further sub-divisions of the electorate would be needed to build minimum winning coalitions at the center.

Second, the new jurisdictions should be dependent upon the national political authorities for fiscal resources, or spending programs, so that national politicians have instruments available to target benefits to jurisdictions in exchange for their political support. Small local jurisdictions would therefore not have incentives to raise revenues locally. Dependency on grants is needed also to punish jurisdictions that oppose national and regional political leaders. Third, and related to grants dependency, there would be significant variation in type and amount of grants to local jurisdictions correlated with variation in local political characteristics. Those that are part of the central or regional winning coalition would be likely to receive more discretionary grants; those that are in the opposition would be likely to receive more tied grants for the spending of which central and regional political agents can claim credit.

This theory of the origins of decentralization, and the resultant characteristics of local jurisdictions, has implications for the nature of local politics within the newly created jurisdictions. First, local politics would center on the distribution of targeted benefits to political supporters, and under-provide broad public goods for universal access. That is, local politics would also be clientelist, just as national politics. Second, contestability in local elections would increase because of lower barriers to entry offered by small jurisdiction size; any local citizen with the ability to make promises of targeted transfers to a critical coalition of voters could mobilize them to become the new local leader.

These implications can be contrasted with those of traditional decentralization theory based on policy preferences and yardstick competition, and with those of new generation theories of local elite capture. Preference and competition-based theories imply considerable devolution of own revenue-raising authority, less dependence on grants for local expenditures, and greater heterogeneity across local jurisdictions in local tax rates and composition of spending. Theories of elite capture imply lower electoral contestability at local levels, as capture stems from greater ability of pre-identified elite to organize to access political power. Barriers to entry into local politics are therefore higher in theories of elite capture.

Another class of theory, that decentralization to local jurisdictions leads

to or arises from greater participation by citizens in the delivery of broad public goods, directly implies that local service delivery would focus on broad public goods rather than narrowly targeted benefits. As government comes 'closer to the people' they have incentives to organize for collective action to improve broad public goods. This implication contrasts directly with the prediction of our theory of decentralization by politicians that local political competition would be clientelist, focusing on narrowly targeted private goods provision.

3 EVIDENCE ON CHARACTERISTICS OF LOCAL JURISDICTIONS

This section provides evidence from several countries around the world of characteristics of local jurisdictions that is consistent with the implications of a theory of politically motivated decentralization explored above. The purpose here is to show that the proposed theory has empirical or practical relevance, rather than to formally test predictions.[3]

Table 9.1 provides some data on characteristics of local jurisdictions in selected countries. These countries have been selected on the basis of available reports on the nature of decentralization to local jurisdictions. There is little systematic data available on fiscal characteristics of local

Table 9.1 Local government characteristics in selected countries

	Local jurisdictions	Share of local own-revenues in total revenues (%)
India	~500 districts, ~6000 blocks, >230 000 villages (rural local bodies)	3.7[a]
Indonesia	440 districts and cities	8.8[b]
Nigeria	>770 local government authorities	10[c]
Peru	~1700 district municipalities	27[d]
The Philippines	~1500 municipalities	14[e]

Sources:
a. Choudhuri (2006).
b. World Bank (2008).
c. Author's own calculations from data provided by Central Bank of Nigeria, 1999.
d. World Bank (2003), excluding the municipal area of the capital city Lima.
e. Author's own calculations for municipalities from data provided by the Bureau of Local Government Finances, 2001–05.

jurisdictions such as villages, municipalities, and districts. The main source of comparable cross-country data employed in the literature on sub-national finance is the Government Finance Statistics (GFS) database compiled by the International Monetary Fund (IMF); but although this provides reasonably reliable estimates of finances of states, regions, or provinces, it is widely acknowledged as not reliable for measuring finances of the lower level jurisdictions which are the focus of this chapter.

For this chapter, we were able to locate detailed reports on local government finances for several large countries spread across four major regions of the world. We find clear evidence from three large countries, India, Indonesia, and Nigeria, where responsibility for public service delivery is being increasingly decentralized to local governments, that such decentralized spending is financed by fiscal grants from higher tiers. The average share of own-source revenue in the total revenues managed by local jurisdictions in these three countries is less than or barely equal to 10 percent. This average in fact masks even higher dependence on grants by the majority of local jurisdictions in these countries. In Nigeria, for example, a detailed survey of local government finances in the rural state of Kogi finds that own revenues are only 1-2 percent of total revenues managed by rural local governments (Khemani, 2006a). In another country included in Table 9.1, the Philippines, although the average share of own-revenues is 14 percent, the share in the median municipality is 10 percent, and more than a quarter raise less than 5 percent of their total income from local sources.

Municipalities in Peru, the country with the highest share of own revenues among those included in Table 9.1, have been characterized by some analysts as having no discretion over local rate setting and tax collection, and effectively being fully financed by central grants (Ahmad and Garcia-Escribano, 2006).[4] Even this relatively high share of own revenues, at 27 percent, is comparable to the very lowest of such shares among Organisation for Economic Co-operation and Development (OECD) countries. Ambrosanio and Bordignon (2006) provide statistics on the share of grants in local government revenues in the 20 OECD countries, which shows that only three countries had a grants share greater than 55 percent – Ireland at 76 percent, and the Netherlands and UK at 70 percent. This OECD experience shows that even in the face of theoretical arguments in favor of grants-financed decentralization, in which taxes can be collected more efficiently at national levels and then distributed to sub-nationals as grants, grants-dependence is not in the realm of 80 or 90 percent of local revenues as in the countries listed in Table 9.1. Within the developing world, countries in the Latin American region appear to have a smaller share of municipal spending financed by grants, but even these

are higher than in most OECD countries. In Brazil and Mexico grants constitute 67 and 64 percent of municipal revenues (Burki et al., 1999).

Grants-dependence in these countries appears to go hand in hand with the small size of local jurisdictions (in terms of population and area), and re-drawing of jurisdiction boundaries or growth in number of jurisdictions over time. Although the average population size of local jurisdictions is higher in Latin America than in Europe, this average appears to be masking large disparities across jurisdictions. Burki et al. (1999) find that the vast majority of municipalities in the region have fewer than 15 000 residents. Burki et al. (1999) also report shrinking in jurisdiction size, with the number of *municipios* in Brazil increasing from 3000 to nearly 5000 in the 15 years following the return to democracy in the country. In Venezuela, they report the number of *municipios* increasing from 202 to 330 within a decade. In a presidential address in Nigeria in 2003, then President Obasanjo indicated that state governments in the country were in the process of creating more than 500 new local governments, a 65 percent increase over the existing 774 listed in the country's 1999 Constitution.[5]

In a review of international evidence on the distribution of grants across jurisdictions, Boex and Martinez-Vazquez (2005) find an inverse relation between jurisdiction size and per-capita grants, that is, smaller jurisdictions tend to receive larger grants per capita across a range of countries. This pattern is consistent with the theory of politically motivated decentralization offered here, and resonates with recent lessons from field experience. Examples have been provided in the Philippines of re-drawing of boundaries of municipalities and *barangays* (villages), or conversion of *barangays* into municipalities, to enable local political families to gain access to grants from higher tiers of government.[6] Burki et al. (1999) have also observed that demand for the creation of new jurisdictions is driven by the system of intergovernmental grants in many countries. Local requests for new jurisdictions typically have to be passed by the national or regional legislatures, and the theory of politically motivated decentralization is consistent with national and regional authorities granting these requests to facilitate the self-identification of new interest groups (as discussed in section 2).

Although in many of the countries discussed thus far, a large chunk of grants distribution across local jurisdictions is determined by criteria set out in national constitutions, or a legal decree governing decentralization, there is evidence of significant political manipulation in targeting grants on the basis of local electoral characteristics. Reviews of international evidence are provided in Boex and Martinez-Vazquez (2005) and Khemani (2006b). Another striking feature in several countries is the provision of specific spending programs to local jurisdictions by higher-tier politicians, separate from and outside the regular channels of intergovernmental

grants. India, the Philippines, and Kenya have recently launched programs that are generally termed 'constituency development funds' (CDFs) which allow individual national or state legislators to provide funds for local public infrastructure investment.

Most, if not all, of the literature on inter-governmental fiscal and political relations in the Philippines emphasizes the importance of congressional, gubernatorial, and even presidential pork-barrel projects for city and municipal politics. De Dios (2007) argues that the main pillar of local political contests in the Philippines is the generation of funds and projects from higher tier governments. In on-going field work in the Philippines, in every municipality visited, respondents describe the importance of political affiliation of local mayors to regional governors and national congressmen in attracting spending programs to their jurisdiction.

We also find evidence of family-based politics at the level of small municipalities and *barangays*. Detailed interviews with a range of respondents, from elected officials such as mayors, vice-mayors, and council-members, to technical staff of the local government unit (LGU), to representatives of non-governmental organizations (NGOs) and civil society, provides a clear picture in the study sample that local politics is explicitly treated as an area of 'family business'. There is no variation within the sample in the salience of family interests as the driving force of candidates for local public office. Families field candidates from their extended networks to run for a range of publicly-elected offices – not just the chief executive office of mayor, but also of vice-mayor, council-member, *barangay* captain, and even board members of various municipal and provincial sector boards. Local politicians cite the existence of large family networks as a political asset, enabling them to exert a more stable and continuous hold over public office, and conversely, the lack of such networks as a political liability.

The families that contest positions at local levels are humble in comparison to the 'wealthy and well-born' political dynasties that participate in national politics in the Philippines (Coronel et al., 2004). There are several examples from the field work of this study of families that have held lower-level positions in a municipal government for several years – as *barangay* captains, municipal council members, and vice-mayors – before winning the chief executive position of mayor. That is, families are willing to 'start small' and aim for higher political office within the municipality.

Several respondents, primarily civil society representatives but also some politicians, cite the importance of holding local public office in furthering the economic and business interests of families: by placing public projects to benefit family businesses, by accepting commissions on projects, by providing preferential access to contracts and employment in

the LGU to family members, by gaining rents from local illegal economies, and by accessing some discretionary parts of the LGU budget to finance personal household expenditures. Sidel (1999) cites detailed archival research – based on newspaper articles, election records, court documents, and other materials – with numerous examples of small-town mayors who used their office to expropriate rents from local public and economic resources, facilitated by the coercive powers of local police who came under their jurisdiction.

Sidel (1999) contrasts the case of Cavite province where local mayors have had notorious reputations as 'mafiosos' or gangster-style 'bosses', with impunity because of the protection offered by powerful higher-level politicians, with that of Cebu province where political dynasties have exercised stable control over local, district and provincial politics through patron–client networks and vote-buying. Under 'bossism', political competition between rival candidates is characterized on the basis of exercising violence and coercive power to expropriate rents through the state machinery. Under 'dynastic' rule, political competition is characterized as revolving around the ability to expand private wealth and property, and maintain political machines to gain electoral support.

One of the most important ways in which an equilibrium where local politicians extract substantial rents from office is sustained is through the technology of local elections in the Philippines. Elections are conducted using archaic technologies of hand-written ballots and manual counting which are particularly amenable to fraud and vote-buying. During the course of field work for this study, some politicians provided a detailed description of how vote-buying is a credible and enforceable exchange in the Philippines, with voters providing proof of their vote, in the form of a carbon copy of their hand-written ballot, in exchange for money. In these accounts, vote-buying markets are described as functioning quite efficiently, with different 'prices' of votes prevailing at different times near and on election-date.

Indeed, efficient vote-buying markets may be viewed as an improvement over previous accounts of local elections in the Philippines since the 1940s and through the 1990s, which suggest that violence and coercion were the preferred tools of contenders, with incumbent politicians particularly able to succeed in this strategy through their control of the local police (Sidel, 1999). As discussed in the previous section, in those parts of the country where 'bossism' prevails, violence and coercion are the implied means of winning elections. In the field work undertaken for this study there were no clear instances cited of the rampant use of violence or coercion to determine local electoral outcomes. On the other hand, in every jurisdiction visited, and from every kind of respondent, the importance of vote-buying in elections was emphasized.

In India, resources are transferred to local governments largely in the form of 'schemes' for poverty alleviation, and the primary decentralized local responsibility is that of identifying beneficiaries. Such decentralization has been viewed in the literature as good policy design, in the face of solid evidence of informational advantages of local governments in appropriately identifying the poor or those that have faced particularly negative economic shocks (Alderman, 2002). However, the arguments in this chapter imply that such schemes-based decentralization would be deliberately selected by national politicians to enable local political leaders to target pivotal voters, and would lead to clinetelist local politics.

Analysis of perverse political incentives at local levels in India has focused overwhelmingly on the risk of 'capture' of public resources by local elite for their own benefit, systematically excluding poor and disadvantaged people (Bardhan and Mookherjee, 2000; Baland and Platteau, 1999). The alternate hypothesis posited here is that even if such specified 'elite capture' is not salient, and poor and disadvantaged groups are politically mobilized, their incentives are to demand short-term private benefits from local governments charged with beneficiary selection for poverty alleviation schemes. Indeed, in reviewing received evidence on political participation in developing countries, and contributing new evidence from the state of West Bengal in India, Bardhan et al. (2007) conclude that there is little evidence of political marginalization or political exclusion of weaker socio-economic groups. That is, even if social and economic exclusions persist, under universal suffrage and competitive electoral conditions it would appear that the socially marginal cannot be prevented from becoming politically active.[7]

The existence of historical institutions of social inequality in India makes it a setting from which much evidence has been garnered on relative 'capture' by local governments. We review this evidence below to argue that it is equally consistent with political mobilization of disadvantaged groups to demand private goods targeted to members of their 'group', at the expense of broad public goods from which all group members would benefit.

Besley et al. (2004) focus on analysing distribution of access to poverty alleviation schemes, a BPL (Below Poverty Line) card, by village governments (*panchayats*) in India. They find that legally identified disadvantaged groups, households belonging to the scheduled castes and tribes (SC/STs), are more likely to receive a BPL card and/or targeted home improvement schemes (toilets, drinking water, electricity, repairs) when the elected position of head of the village government, the *Gram Pradhan*, is reserved for members of SC/ST groups.

They also find that a second institutional feature of decentralization

in India – the requirement of village-wide meetings, the *Gram Sabhas*, to deliberate upon allocations of public funds reaching local governments – enables targeting of public benefits to disadvantaged groups. Specifically, they find that if a village is the kind of village that holds a *Gram Sabha*, then disadvantaged households are more likely to participate in it than are advantaged households, and they are simultaneously more likely to receive BPL cards.

It is important to note that the impact of political reservations and *Gram Sabhas* is additional to overall targeting of BPL cards to disadvantaged households. That is, in general, in all villages a household that is SC/ST, or landless, or poor along other measurable dimensions, is more likely to receive a BPL card than upper caste or richer households, and they are even more likely to be thus targeted when a village has political reservations and holds *Gram Sabhas*.

Besley et al. (2004) interpret this as evidence of appropriate targeting of disadvantaged groups when political decentralization is accompanied by institutional mechanism (political reservations, *Gram Sabhas*) to combat entrenched inequalities. However, this evidence is equally consistent with the arguments in this chapter that schemes-based or grants-financed local governments would emphasize the delivery of targeted private benefits to citizens. Bardhan et al. (2007) contribute recent evidence from the state of West Bengal in India that voters cite short-term private benefits received from their local governments as most important for their voting decision and support of incumbents, as opposed to longer-term policy initiatives taken by incumbents to promote general public goods.

Foster and Rosenzweig (2001) also provide evidence consistent with Bardhan et al.'s argument that voters place greater emphasis in local elections in India on short-term gains from public spending. They focus on three categories of public goods which together account for 73 percent of the activities of village governments in their sample in India – roads, irrigation, and schools. They find that villages with democratically elected governments are more likely to provide more of all three public goods, but the largest effect is for irrigation, as calculated at the sample average, which is the service most likely to benefit the rural elite. However, in villages with a very high proportion of landless (much above the sample average) public investment shifts from irrigation to road construction (rather than education, which is unaffected by the proportion landless), which suggests that capture by elites can be ameliorated when the numerical strength of the poor increases, but in a manner that might not be the most efficient for extending benefits to the poor. Roads built by village governments primarily benefit the poor, but largely by raising their (short-term) wages, as local road construction and improvement initiatives in

India serve as employment programs for the landless poor. Education, which one expects to have the most profound effect on poverty over the medium and long-term, seems least affected by decentralization.

New evidence from India specifically on decentralization of education services further illustrates this point (Banerjee et al., 2007). A central plank of public policy for improving primary education services in India is the participation of Village Education Committees (VECs) which were created in the 1990s, consisting of the head of the elected village government, parents, and public school teachers. In a survey of 280 villages in India's most populous and educationally challenged state, Uttar Pradesh, in March 2005, at least ten years after the formal creation of this agency, Banerjee et al. (2007) find that parents do not know that a VEC exists, sometimes even when they are supposed to be members of it; VEC members are unaware of even key roles they are empowered to play in education services; public participation in improving education is negligible, and correspondingly, people's ranking of education on a list of village priorities is low. Large numbers of children in the villages have not acquired basic competency in reading, writing, and arithmetic. Yet, parents, teachers, and VEC members seem not to be fully aware of the scale of the problem, and seem not to have given much thought to the role of public agencies in improving outcomes. That is, school failures coexist with local apathy to improving it through local public action.

Between September and December 2005, an Indian NGO, Pratham, intervened in 195 of the 280 villages surveyed with different types of information and advocacy campaigns that communicated to village citizens the status of learning among their children, and the potential role that VECs and local governments could play in improving learning. The basic format of the interventions was to organize a village meeting on education, with the attendance of the head of the local village government and the head teacher of the village public school, the key members of the VEC, from whom the village community is urged to ask and receive basic information about local agencies in primary education. The issue raised most frequently in the village meetings, and about which people were most animated, was a government scholarship program intended to provide cash assistance to students from SC/ST groups. SC/ST parents complained that they were not getting these scholarships, whilst teachers complained that parents inappropriately enroll under-age children, that can't and don't attend school, just to lay claim to the scholarships. The second issue that attracted attention was a new government mid-day meal program. Actual learning levels attracted the least attention, and the facilitators had a difficult time steering the conversation away from scholarships and school meals to the broader issue of learning.

Follow-up surveys were undertaken in the same 280 villages in March 2006, 3-6 months after the information campaigns were implemented, and the most surprising fact emerging is that the campaigns did not lead to any substantial improvement in citizens' lack of knowledge of VECs. Less than 10 percent of citizens are aware of the VECs both before and after the interventions. We also find no effect on public school performance. This contrasts with a dramatic increase in private efforts to improve learning of lagging children in response to information provided – local youth volunteered to hold additional classes outside school, parents of illiterate children in particular chose to participate in these classes, and consequently the children made great strides towards literacy. However, we don't even have anecdotal evidence that these local volunteers were assisted in their efforts by local government structures – neither the village government head, nor the village public school teacher, nor any member of the VEC. Indeed, according to anecdotes provided by Pratham's facilitators in the field, the public school teacher and the *Pradhan* in some villages felt threatened by the volunteer activities and attention drawn to learning failures in public schools.

Varshney (2005) provides another argument for why disadvantaged groups, in particular, would focus largely on the identity of candidates competing in local elections rather than their performance in delivering services such as education, health, and infrastructure. In environments of poor law and order, historically entrenched social inequalities can lead to harassment of 'unempowered' households at the hands of local police and law enforcement authorities that typically come from the dominant social groups. In this context, local elections, especially with political reservations, come as a specific opportunity for the unempowered groups to elect 'one of their own' to public office, as an insurance against being victimized by the dominant elites. The proximity argument in favor of decentralization, that local elected representatives are 'closer' to citizens, is precisely what makes such identity issues particularly important in local elections.

Some evidence in favor of this identity-based argument can be found in research on incentives of individual politicians to exert effort on public service delivery to their constituencies. Keefer and Khemani (2008) examine a CDF in India (mentioned above) – the Member of Parliament Local Area Development Scheme – which entitles every member of the national parliament, elected from single-member constituencies, to substantial resources to spend on local public infrastructure in their districts. They find that entrenched incumbents from districts that are reserved for SC/STs, that is, SC/ST politicians who have been elected for several consecutive terms, spend 14 percentage points less of their entitlement than other politicians. In short, dominant incumbents from reserved districts

are not dominant because they exert great effort in providing public infrastructure to their constituencies. Their dominance likely comes from other kinds of identity-based services.

4 IMPLICATIONS FOR INTERNATIONAL DEVELOPMENT ASSISTANCE

Much of the reforms being pursued by donors in support of decentralization consist of providing greater revenues or transfers, and building capacity of local governments through training in technical issues such as public financial management. Our arguments suggest that these reforms on their own are unlikely to be successful. Greater funds devolved to local governments are more likely to go towards clientelist transfers rather than improvement of public goods. Capacity building can be a waste when local politicians have no incentives to develop technocratic skills for better service delivery.

One of the governance strategies being pursued in international development assistance to improve the impact of decentralization is termed community-driven development (CDD) in which communities are mobilized to identify their preferred projects and to participate in their implementation. The hypothesized governance impact of this strategy is greater social cohesion, and enhanced ability of citizens to demand and receive better public goods performance from their governments. Another is conditional cash transfers (CCT) where households are mandated to access public health and/or education services in order to receive cash transfers. The governance impact of this strategy is hypothesized to be an increase in citizen demand for public health and education services which in turn strengthens political incentives to improve the quality of these broad public goods. Although there are several evaluations planned, underway, or completed, on the impact of CDD and CCT programs on their directly targeted outcomes, such as project quality and beneficiary household-level welfare outcomes, none are designed sufficiently rigorously to assess their impact on governance or local political incentives (to the best of my knowledge).[8] This is a serious gap in the policy research literature that should be addressed.

Another governance intervention which has not been widely experimented with, that may be used in concert with CDD and CCT interventions or alone, is to promote yardstick competition on service delivery performance by regularly and systematically providing independent, credible, and objective information to citizens and public officials about relative performance across jurisdictions. Part of the problem of clientelist local

politics might be lack of independent data and expert analysis available to civil society to judge relative performance across local jurisdictions. New empirical methodologies can be used to fill this gap by measuring service delivery outcomes that are representative at the level of local jurisdictions in feasible and cost-effective ways. Once measured, the outcomes can be compiled as 'municipal report cards' and disseminated to promote yard-stick competition over performance improvements.

Brazil provides some examples of successful experiences with this type of governance intervention. Tendler (1997) describes how the politics of patronage in municipal governments in the state of Ceara in Brazil was tackled head-on through massive information campaigns by a state government that took office in 1987. The state government flooded radio airwaves with messages about how infant and child mortality could be drastically reduced through particular programs of municipal governments, thus bringing political pressure to bear upon the mayors to actually deliver basic health services. The state also created a new class of public health workers through a publicized recruitment effort that conveyed information to communities about the valuable role the workers could play in improving public health through community-wide effort. In only a few years coverage of measles and polio vaccination in Ceara tripled to 90 percent of the child population, and infant deaths fell from 102 to 65 per thousand births. The campaigns' success has been attributed to bringing a remarkable turnaround in the politics of the state – from clientelist and patronage-based to service-oriented (Tendler, 1997).

More recently, Brazil has been the source of another innovative experiment in reducing local political rent-seeking by generating and providing credible information to citizens. In May 2003 the national government of Brazil launched an anti-corruption program based on the random auditing of municipal government expenditures by an independent public agency, and then publicly releasing audit findings on the Internet and to media sources.[9] New evidence from more than 600 municipalities covered by the audit suggests that the disclosure of information significantly and substantially reduced the re-election rates of mayors who were found to be corrupt (Ferraz and Finan, 2008). Furthermore, this impact was significantly more pronounced in municipalities with greater access to radio stations.

5 CONCLUSION

This chapter has examined a new phenomenon in large countries of the creation of local jurisdictions below the regional level, at the behest of

both regional and national politicians, whose spending is financed almost entirely by intergovernmental grants. It proposes that such grants-financed decentralization by politicians is an instrument to influence the distribution of national public resources to favor organized interest groups, at the expense of broad public goods. It outlines a theoretical framework of decentralization as a political choice of national or regional leaders to address growing electoral participation by new voters, which leads to the formation of new interest groups or gives strength to the numbers of swing voters who cannot be easily targeted. This framework builds upon a recent theoretical contribution which has shown that one political response to increasing participation by swing voters is the formation of coalition governments as opposed to single-party rule, because the coalition can win elections more cheaply by providing targeted benefits to its core supporters. This chapter extends the logic to the creation of new local jurisdictions to enable new interest groups to identify themselves, and to disperse the strength of swing voters. Decentralization to new local jurisdictions enables national and regional politicians to target public benefits to pivotal voters in order to gain or remain in public office.

This theory has implications for the fiscal and political characteristics of local jurisdictions. The chapter provides examples from several large countries of the world of decentralization to small local jurisdictions, financed almost entirely by grants or spending programs received from higher tiers of government, as evidence of the empirical relevance of its theory. It also reviews evidence of the importance of clientelism in local politics, in these same countries where grants finance small local jurisdictions, which further supports the hypotheses implied by a theory of politically motivated decentralization.

NOTES

1. A review is provided by Khemani (2006b). Chapters 8 and 10 in this volume, from Jonathan Rodden and Sandra León Alfonso respectively, provide new contributions.
2. Most received models pertain to examining whether and how centralized allocation decisions are different from decentralized decisions under various political and economic conditions, with decentralized decision-making assumed in the models as decision-making over a single local public good (Seabright, 1996; Lockwood, 2002; Besley and Coate, 2003).
3. Future research may focus on developing the model, formally deriving its predictions, and then testing these rigorously with large sample data.
4. Some have argued that Peru should not be considered a decentralized country at all. Indeed, prior to 2002 spending by municipalities hardly accounted for a significant share of government spending. However, since 2002, the share of municipal spending has risen to 13 percent and is expected to increase further. For the purposes of this chapter, the issue of interest is that even as the country moves towards greater decentralization of spending, it chooses national grants to finance it.

5. Google search results on a national broadcast by President Olusegun Obasanjo in Abuja, Nigeria, on 18 June 2003, titled 'On the Issue of the Review of the Structure of Governance in Nigeria'.
6. Descriptions provided to the author during field visits to municipalities in the Philippines in October 2008. No documentation of such changes has been accessible to date.
7. The only groups with low participation identified by Bardhan et al. (2007) are immigrants, women, and those with low education, not low caste groups or low income/wealth groups.
8. Labonne and Chase (2008) make an attempt to assess impact of a CDD project on local governance in the Philippines, but do not have useful governance outcome variables. The variable on which they do find impact – number of village meetings organized by local officials, and household participation in these meetings – is a requirement for a village to access the CDD project, and hence automatically expected to be higher in CDD villages because of the nature of program implementation.
9. In Portuguese, this program is called *Programa de Fiscalizacão a partir de Sorteios Públicos*, details of which are available from the following website: www.presidencia.gov.br/cgu.

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10. The political rationale of regional financing in Spain

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1 INTRODUCTION

This chapter aims at uncovering the *political logic* behind the Spanish system of regional financing. More specifically, I attempt to account for the political rationale of two features of the Spanish system of regional financing: the allocation of intergovernmental transfers and the instability of regional financing. The basic argument is that in order to explain these features it is necessary to bring in two characteristics of the Spanish institutional structure: the changeable[1] and asymmetric[2] nature of the process of decentralization. This institutional context determines politicians' incentives in designing fiscal intergovernmental arrangements.[3]

The chapter encompasses two different analyses. In the first one I will explore how increasing decentralization impacts upon the distribution of intergovernmental transfers. My hypotheses state that allocation strategies will vary over time: whereas in a centralized context, national politicians will have incentives to allocate more resources towards swing regions, in a more decentralized setting their allocation strategies will favour affiliated regional governments. As decentralization increases, central government politicians are less capable of reaping the electoral rewards from distributing intergovernmental transfers. Instead, electoral benefits increasingly leak towards empowered regional leaders. In consequence, as decentralization unfolds, national politicians modify their allocation strategies of intergovernmental grants to continue maximizing their electoral benefits. I then show empirical evidence on the Spanish case.

Second, I will show that any central government attempt to commit to a design of intergovernmental transfers based on technical criteria is not credible. This commitment problem results in an unstable model of regional financing (subject to ongoing renegotiation). In addition, the unstable dynamic of regional financing agreements is also the result of the structure of incentives that stems from the particular design of fiscal and administrative decentralization. Spain's decentralized system is

characterized by asymmetries in fiscal responsibilities across regions, by high vertical fiscal imbalances and by an ongoing decentralization that has bestowed the system with an unfinished nature. This institutional setting has rushed national and subnational politicians into an ongoing renegotiation of fiscal intergovernmental arrangements. Therefore, instability of regional financing in Spain is a rational outcome: no matter how strongly central government commits to stable fiscal arrangements, instability is likely to last as long as the current structure of incentives remains.

2 THE POLITICAL ECONOMY OF INTERGOVERNMENTAL TRANSFERS

According to fiscal federalism theory (Musgrave 1959; Oates 1972, 1991) grant design should be aimed at compensating for vertical fiscal imbalances and externalities across jurisdictions and to offset horizontal fiscal disparities. However, in this chapter I adopt a positive approach grounded on the incentives politicians have to use transfers to further their own electoral prospects.[4]

Theoretical models on grant design revolve around two different approaches.[5] In the supply side approach, politicians at the centre incorporate the political characteristics of jurisdictions (such as political affiliation, over-representation in the legislature or their swing nature) into their calculations so that the allocation of transfers serves to further their own political goals. Subnational politicians' particular demands play no role in these calculations. On the contrary, in a demand-side approach, the allocation of intergovernmental transfers reflects the unequal bargaining power of subnational executives to pressurize central government for their demands.

The existing empirical evidence corroborates that central government politicians do manage to favour particular areas in the allocation of intergovernmental grants to subnational governments, even for categories of transfers that are governed by formulas. However, the literature has not dealt with explanations that account for a variation on the political explanatory factors of grant design. No theory assists us in predicting a modification of politicians' allocation strategies since so far models have assumed strategies are stable over time.

I aim to fill this gap in the literature by studying how changing levels of decentralization impinge upon grant design. My theoretical claim is that politicians' allocation strategies are contingent upon the degree of decentralization of the institutional context. I address this claim by creating a theoretical framework with two idealized institutional contexts that vary

with respect to the degree of powers and authority that have been granted to subnational governments. Politicians' main goal remains the same (winning elections) but the way they will use intergovernmental transfers to further their electoral goals varies across the two idealized institutional contexts.

2.1 A Theoretical Argument on the Impact of Decentralization in the Allocation of Intergovernmental Grants

In models of intergovernmental transfers, resources do not flow directly from central government to citizens (as they do in redistribution models) but there is an intermediary level of government – states or provinces – that receives transfers and spend them in public policies. Voters receive benefits from those public services that are financed through transfers from the centre and they are assumed to reward politicians in elections for these public expenditures. The key question here is: which level of government will they reward in a multilevel setting? Central government, which provides funds, or subnational governments that receive and spend them? This question is important because the extent to which electoral benefits are reaped by one level of government or another will determine the allocation of transfers by central government. Another factor that determines central government's allocation of transfers is subnational governments' power to influence the design of intergovernmental transfers.

My argument is that both factors are contingent upon the degree of decentralization. More specifically, the electoral benefits from expenditure transfers that are received at central level are negatively correlated with the degree of decentralization; that is, the higher the decentralization, the lower central government's ability to receive electoral rewards. On the contrary, the capacity of subnational jurisdictions to pressurize central government for more monies is positively correlated with decentralization.

Let me first examine the negative correlation between decentralization and central government's capacity to gather electoral rewards. Assume citizens will tend to reward the level of government they identify as responsible for the overall pattern of service and goods provision in their jurisdiction. In a centralized context[6] (where subnational institutions have low decision-making and expenditure powers), citizens regard central government as the main level of government responsible for both the financing and provision of goods and services. But as decentralization increases, that is, as subnational governments are endowed with a broader set of tax and expenditure responsibilities, subnational institutions become more salient as they establish themselves as a clearly separated and autonomous tier of government. This process strengthens subnational institutions and

gradually turns them into the closest level of government for the population. Citizens progressively learn to identify the local administration as the most responsible level of government for policy outcomes. In consequence, in highly decentralized institutional settings, electoral rewards for expenditure transfers will accrue to the subnational administration.

The second mechanism that accounts for a negative relationship between decentralization and the electoral benefits received at central level has to do with the impact of electoral externalities on state-wide parties' electoral competition. In a centralized context, electoral results at subnational elections are greatly influenced by the party's electoral results at the national elections (Rodden 2006). As decentralization increases, however, electoral externalities become weaker. This means that subnational leaders' electoral fate becomes gradually independent from that of their copartisans at the centre. When regional governments are endowed with a high level of authority and expenditure powers, subnational elections are increasingly held on local issues, which may foster the formation of differentiated constituencies for the local and regional counterparts of state-wide parties. If this is so, positive or negative electoral profile of one level of government will not automatically translate into a different level of government. The electoral benefits subnational politicians receive from expenditure transfers in a decentralized context do not necessarily involve a positive impact on central government. In consequence, as decentralization increases and electoral externalities become weaker, the ability of national politicians to retain the electoral benefits from expenditure transfers diminishes.

The positive relationship between decentralization and subnational governments' ability to reap electoral rewards is related to strategies of political competition. Competition means that both national and subnational copartisans claim electoral credit for public expenditures financed through intergovernmental transfers. As decentralization increases, the competition for electoral rewards between central government and subnational affiliated governments becomes more favourable to the latter. This is so because the potential costs for regional leaders of claiming electoral credit for public expenditures against their national counterparts diminish as decentralization increases. It is the opposite for national politicians: the potential costs for them of opposing demands from subnational party copartisans grow as decentralization increases.

There are two potential costs for subnational copartisans of claiming electoral credit for public expenditures against their national copartisans. First, they may be punished by national members of the party apparatus, if they have the capacity to hamper subnational copartisans' political careers (what I define as within-party costs). However, when subnational governments are endowed with a greater level of power and authority,

this introduces some centrifugal pressures within the structure of national parties and the national and subnational party organizations gradually become more independent. Subnational leaders gain more influence within the party structure to select the candidates that run for national and subnational elections or to set the political agenda. A more powerful position within the party structure diminishes the potential within-party costs. Second, confrontation among copartisans will make public the division within the party. Electorates usually punish divided national parties. These electoral costs could prevent subnational politicians from following a 'bickering' strategy with their copartisans at the centre. However, as decentralization increases and subnational leaders gain electoral independence from their national copartisans, it is less likely that the negative electoral boomerang from party division affects subnational leaders.

In addition, in a high-decentralized context, subnational leaders are more capable of mobilizing their own constituencies, and may use their powers against national copartisans' electoral interests. When this happens, the central incumbent will depend on subnational party branches to gain electoral support in national elections. Central government cannot fully count on local leaders' support to be reelected and subnational copartisans may make this support conditional on a higher transfer of resources. In summary, higher levels of decentralization make national politicians more vulnerable to subnational demands. Opposing them either may risk their chances of running for the following elections or lead to the withdrawal of local leaders' support in the national electoral campaign, or both.

How then will national politicians set up their allocation strategies in different decentralized settings? My theoretical claim is that in a centralized context, where central government is fully capable of accruing electoral rewards from grants, the best electoral strategy for central government will be to transfer more resources towards swing regions, that is, where the electoral return from each unit of transfers is maximized. The crucial thing here is that, for allocation purposes, it does not matter that political affiliation of the regional government (that is, if the regional government is run by the same party in central government).

In a decentralized context, where central government is less capable of reaping the electoral benefits that stem from services financed through transfers, national politicians will have incentives to transfer more resources towards affiliated regions. In this context partisan affiliation of regional governments becomes important to decide the distribution of grants for two reasons. First, the majority of electoral rewards from expenditure transfers leaks towards subnational governments. National politicians will be more capable of getting some electoral rewards from affiliated regional governments than from non-affiliated ones (where no positive electoral

externalities can work). Second, in a decentralized context, national politicians become more dependent on subnational copartisans. The latter have gained power within the party structure and are capable of mobilizing their constituencies in favour of the national candidate. In sum, in a decentralized setting, national politicians' best electoral strategy will be to skew more resources toward partisan affiliated regions.

2.2 Empirical Evidence: Spain as a Case Study

Spain is an excellent case study to analyse whether the allocation of intergovernmental grants varies across different institutional settings. Although the Spanish constitution of 1978 does not define itself as explicitly federal, Spain is a federation in all but in name, with 17 autonomous communities (ACs) that have been granted autonomy for a considerable degree of self-rule (Watts 2008: 42).[7] As a result, Spain is currently one of the most decentralized countries in Europe. The rapid and extensive decentralization has encompassed both expenditure and revenue powers. ACs have been gradually transferred powers over policy areas such as health care, education and welfare; and more recently they have also gained some tax powers. Since 2004, a number of ACs have passed new regional constitutions (statutes of autonomy) that provide an increased devolution of powers. Both expenditure and tax decentralization have increased over time, and more intensely since the second half of the 1990s. Variation in the level of decentralization allows testing whether central government has followed different strategies in the allocation of transfers over time.

I have shown elsewhere some empirical evidence that corroborates that the allocation of intergovernmental transfers in Spain responds to different political strategies at different periods (León-Alfonso 2007). A summary of this empirical evidence is presented in Table 10.1. I have operationalized the dependent variable in two different ways: as per capita unconditional financing from 1987 to 2001 (Model (a)) and as relative per capita unconditional financing (Model (b)), which measures per capita financing of each region relative to the group of regions with the same level of expenditure responsibilities (slow-track group vs. fast-track group) from 1987 to 2001. The main independent variables in the analysis measure political features of ACs (affiliation, swing and party power). I control for other non-political factors that account for differences in per capita financing across time and regions (competences, new transfers and ceded taxes).

To measure different decentralization periods I introduce dummy variables that correspond to models of regional financing at different periods. There are three models of regional financing operating from 1987 until

2001. The first one spans from 1987 to 1991; the second one operates from 1992 to 1996 and the third one from 1997 to 2001. The first dummy is coded as 1 for observations that correspond to the 1987–91 financing model and 0 otherwise. The institutional context in Spain has significantly varied between the first and third regional financing agreement. In order to test whether this variation has had any effect on the allocation of funds I assume that the first model of regional financing (1987–91) took place in the centralized context from which I derived the first hypothesis (more transfers to swing regions). I call this variable centralized context.[8]

The second dummy is coded as 1 for observations that fall within the 1997–2001 regional model of financing and 0 otherwise. A second assumption is that the institutional setting where the third definitive system of financing was enacted and implemented (1997–2001) is equivalent to the high-decentralized context from which I derived the second hypothesis (more transfers to affiliated regions). Therefore, I label this variable as decentralized context. I interact these dummies with two political explanatory variables – affiliation and swing – to check if the estimated impact of these variables varies across different models of regional financing as predicted in the hypotheses.

Having as a dependent variable per capita regional financing, results reveal that the interaction term between swing and centralized context (Test 1) is positive, although not significantly different from zero. As for the interaction between affiliation and decentralized context the estimated coefficient shows a positive correlation and is significant at a 10 per cent level (Test 2). The dependent variable of relative per capita financing allows for fixed-effect estimation[9,10] which provides more robust empirical findings. The estimated interaction coefficient between swing and centralized context (Test 3) shows a positive and significant coefficient. Results, therefore, corroborate hypotheses: swing regions receive more funds under the first model of financing (centralized context) than under subsequent systems of financing. As for Hypothesis 2 (Test 4), the interaction term shows a positive and significant coefficient, indicating that affiliated regions obtain greater funds through the reforms introduced in the third model of financing than under previous models.

3 THE INSTABILITY OF REGIONAL FINANCING

The aim of having a long-lasting regional financing system has permanently underlain each of its modifications. The first attempt to establish a stable model of regional financing took place in 1986, when the First Regional Financing Agreement was established. The model was named

Table 10.1 Pooled cross-sectional time-series analysis of unconditional financing (1987–2001)

	Dependent variable: regional per capita financing		Dependent variable: relative per capita regional financing	
	Test 1	Test 2	Test 3	Test 4
Competences	245.29 (22.09)***			
Affiliation	22.52 (17.55)		8.79 (2.12)***	5.33 (2.55)**
Party power	2.28 (1.29)*		.168 (.162)	−.098 (.188)
Swing	−2.19 (18.75)	11.96 (16.19)	−6.49 (2.25)***	−.815 (2.14)
New transfers	82.06 (21.77)***	80.59 (22.46)***	10.59 (2.58)***	11.27 (2.57)***
Ceded taxes	.579 (.460)	.514 (.459)	.328 (.053)***	.322 (.054)***
Centralized context	−856.18 (42.77)***		−19.92 (4.93)***	
Centralized context*swing	25.88 (30.32)		15.71 (3.59)***	
Decentralized context		9.03 (42.82)		−3.12 (5.70)
Decentralized context*affiliated		58.67 (34.19)*		10.30 (5.12)**
Constant	766.11 (66.66)	229.51 (57.32)	84.88 (8.01)	82.73 (9.16)
Year dummies	YES	YES	YES	YES
R^2	0.90	0.90	0.38	0.34
Observation	221	221	221	221
Method of estimation	Random effects	Random effects	Fixed effects[a]	Fixed effects[b]

Dependent variables:
Regional per capita financing
Relative per capita regional financing: measures per capita financing of each region relative to the group of regions with the same level of expenditure responsibilities (slow-track group vs. fast-track group)

Independent variables:
Swing is coded as 1 for regions *at risk* (that is, regional governments that were either at risk of being lost or won by the incumbent party at the centre in regional elections).[c]
Affiliation equals 1 when the incumbent at the central level and the incumbent at the regional level belong to the same party, and 0 otherwise.
Party power measures the percentage of votes that regions ruled by the incumbent party at the centre receive in national elections.[d]
Competences It controls for the level of expenditure powers that regions assumed when accessing autonomy, coded as 1 for fast-track regions (with higher levels of competences) and 0 for slow-track regions.[e]
New transfers controls for the ongoing devolution process. It is coded as 1 when there is a modification of regional unconditional financing due to a transfer of service provision and 0 if no transfer takes place.
Ceded Taxes control for the evolution of regional ceded taxes yield.[f]
Robust standard errors in parentheses. Levels of statistical significance are *** $p < .001$ ** $p < .005$ and * $p < .10$

Notes:

a. Test of fixed-effects significance: test that all $u_i = 0$: $F(14, 186) = 32.89$ Prob $> F = 0.0000$.
b. Test of fixed-effects significance: test that all $u_i = 0$: $F(14, 186) = 31.63$ Prob $> F = 0.0000$.
c. I code swing regions by taking into account three factors: first, electoral results of the incumbent party at the centre in previous regional elections. Second, I measure whether there is a potential winning coalition that allows the incumbent at the centre either to win a regional government or to lose it. Third, I compare electoral results of the central incumbent party in the previous general election.
d. This variable is aimed at measuring whether central government's allocation strategies are influenced by preferences from the party apparatus. The party apparatus is embodied by (and led by) politicians who come from regional electoral strongholds. The party organization wants national copartisans to skew resources towards these regions. In a centralized context, members from core-support regions align with the party's national guidelines. In a decentralized institutional setting, as regional elites gain more authority within the party apparatus, this variable will capture demands of regional party leaders that control both core-support regions and the party apparatus.
e. Per capita financing will be higher in those regions that took on broader powers, as they face higher financial needs.
f. Variation across time and regions in per capita unconditional financing may originate in ceded taxes, as their actual yield could be higher/lower than the normative amounts used to calculate the revenue-sharing revenues.

as the 'definitive system', indicating that it was aimed at initiating a new period characterized by a steady model of regional financing. However, it included a provision for its periodical revision, which stands as a contradiction. The origin of the instability of regional financing in Spain is not simply the result of the automatic revision of the model that has taken place every five years between 1986 and 2001. Important modifications on regional financing have been enacted in the middle of the implementation of a financing agreement. In addition, the automatic revision was removed in the last regional financing agreement (passed in December 2001) in an attempt to make it more stable. However, a new system of regional financing was approved in June 2009. This indicates that the origin of instability is not related to central government's attempts to commit to a stable system of regional financing, but to the compatibility between the existing rules and incentives.

Decentralization in Spain has been fundamentally derived from party strategies, competition among ACs and bargaining (Colomer 1998). Decisions on regional financing have been made through bilateral negotiations between regional governments and central executive at the Fiscal and Financial Policy Council, though they have been formally endorsed as multilateral agreements. I use an extensive-form game to illustrate the dynamic of bilateral bargaining between central government and regional governments when they negotiate each financing agreement in the Fiscal and Financial Policy Council. I then show that central government's commitment problem causes ongoing renegotiation of fiscal intergovernmental arrangements. The problem is that central government cannot credibly promise to ignore the political features of regional governments in designing intergovernmental transfers. In the extensive-form game the commitment problem makes central government unable to build a reputation as a 'strong' player. This means it cannot make credible the threat to oppose particular regional demands on financing. When regional governments realize they face a weak central government, they adopt a bargaining strategy that consists in renegotiating fiscal intergovernmental arrangements to introduce into the allocation formula those variables that grant them greater resources.

I represent fiscal intergovernmental bargaining between central government and ACs through the chain store model.[11] Accordingly, the monopolist is central government ('CG' in Figure 10.1) and it competes with ACs (which represent potential 'entrants') to control the design of fiscal intergovernmental arrangements. With the extensive-form game I formalize bilateral bargaining between the central administration and each regional government. It is a repeated game with 15 rounds, as there are 15 regions in the common system of regional financing (all except Navarre and the

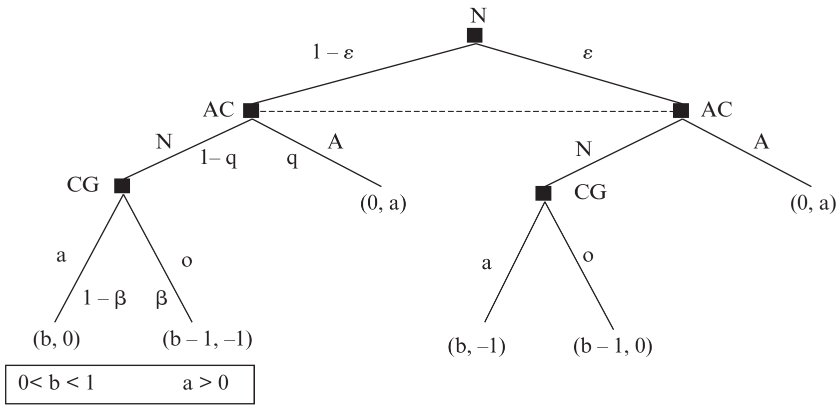

Figure 10.1 The chain store model applied to bilateral bargaining of the regional financing model in Spain

Basque Country), and each stage of the game represents bilateral bargaining between regional and central government representatives.

Before the game starts I assume that the central administration has decided autonomously on a particular distribution of intergovernmental transfers across levels of government. It commits to a stable distribution of transfers that follows the general principles of grant design (to compensate for vertical fiscal imbalances, to offset horizontal fiscal disparities or influence regional choices in the presence of positive/negative externalities across jurisdictions) and therefore no political considerations come into play. In bilateral commissions, ACs must decide whether to agree with the regional financing model that central government has designed (strategy 'A' for 'accept') or to negotiate the terms of the financing proposal (strategy 'N'). Should they choose to bargain, then central government must decide whether it opposes regional attempts to modify the financing model – with the threat to exclude regional governments from the financing agreement; (strategy 'o' for 'oppose') or to accept regional demands and introduce reforms in its proposal accordingly (strategy 'a' for 'accept').

The development of the game is determined by the ability of central government to deter regional representatives from modifying its financing proposal in bilateral negotiations. Central government is a weak player, so it will succeed in preventing regional governments from entering negotiation if it is able to build a reputation of being a 'strong' player. Why is the central administration a weak player? Because it cannot commit to make technical criteria prevail over political concerns in the configuration of fiscal intergovernmental arrangements. The central administration

threatens to exclude from the financing model regions that attempt to modify the terms of its proposal. But these are not credible threats as they are too costly. If central government opposes bilateral negotiation of fiscal arrangements it incurs costs because it restrains itself from designing fiscal arrangements in a way that advances its electoral goals. It cannot therefore make threats credible, as it is not capable of committing to disregard those political features when designing fiscal arrangements. The opportunity cost of doing so is represented by the potential electoral benefits it may obtain from designing fiscal arrangements in a strategic way.

If there is incomplete information, regional governments only know probabilities that central government is a strong or a weak player (in Figure 10.1 'ε' represents the probability that central government is a strong player. And '1−ε' represents the probability it is a week player). As they ignore the type of government they are playing with they cannot know central government's action. Then reputation becomes an instrument that central government can exploit to deter regional governments from entering into negotiation. In this 'deterrence strategy' central government invests to build a reputation of 'strong player' in the early rounds of the game in order to prevent ACs from entering negotiation in subsequent rounds. So it will oppose regional government in the early rounds, even when this strategy is costly, in order to build a reputation as a strong player. However, as negotiation rounds unfold, reputation becomes more costly to central government. That is, the costs that result from opposing renegotiation are accumulated as rounds follow; whereas the expected benefits of deterrence (that consist in preventing the remaining regions from entering into negotiation) gradually diminish, as the number of remaining rounds is increasingly lower. When the costs of maintaining a reputation as a strong player exceed the expected benefits of deterrence, central government accepts regional governments' demands and reputation is destroyed until the end of the game.

Reputation has therefore a fragile nature. When central government accepts once, its true nature is revealed and ACs are then certain that central government is a weak player for whom carrying out threats is too costly. Bilateral bargaining becomes a game with complete information (that is, the game is only played on the left branch of Figure 10.1). In this branch the best strategy of regions is to enter negotiation about central government's financing proposal.

3.1 The Impact of Asymmetries and the Role of the Leading Regions

The process of decentralization in Spain has been characterized by considerable asymmetry. The most important one is related to intergovernmental

fiscal arrangements. There are two financing regimes in place, a special one known as *foral regime* that applies to Navarra and the Basque Country and a common one for the remaining ACs. Whereas most ACs have been mainly financed through central government transfers, the Basque Country and Navarre have been granted full autonomy over taxes. This has filled some regions with a sense of grievance, above all those that are net contributors to the common pool of resources that are used to finance regional expenditures (this is known as *Fondo de Garantía*, which foral regions do not contribute to) that also happen to be those with above-average per capita income. Rich regions under the common system claim reforms oriented towards an increase of tax decentralization in an attempt to bring the system closer to that of the foral one.

Regional grievances that originate in asymmetric intergovernmental fiscal arrangements have pushed the richest regions in the common system towards a revision of the model. This has given rise to heterogeneity across regions regarding preferences for a modification of the common system of financing. Following the extensive form game of Figure 10.1, strong preferences for a modification of the central administration's financing proposal could be represented with higher payoffs of adopting strategy 'N'. These regions are more likely to enter negotiation on the central executive's proposal.

In addition, costs of opposing regional demands are not heterogeneous across bilateral negotiations. There are some regions that are more costly to oppose, as it is best exemplified by the role that Catalonia and Andalusia have played in regional financing.[12] Catalonia has combined a strong preference for renegotiating the model of financing (and make it closer to the foral regime) with high costs for central government of opposing its demands. These two features have turned Catalonia into a leading player in the reform of fiscal intergovernmental arrangements. On the one hand, the Catalan government's ambition to obtain a fiscal formula similar to those of the foral regions has prompted its regional leaders to periodically ask for an increase on regional fiscal autonomy.[13] On the other hand, central administration has traditionally faced higher political costs of opposing regional demands from Catalonia, since Catalan nationalists have given support to a number of single-party national minority governments.[14] Central incumbents have therefore depended on the ruling party in Catalonia to get a parliamentary majority. In addition, regional party leaders of the Spanish Socialist Workers Party (PSOE) in Catalonia have become highly influential within the Socialist Party, since the Catalan party federation has long constituted a majority of the Socialist party's electoral support. Fiscal arrangements have also been fundamentally driven by negotiations with Andalusia, particularly when the Socialist

Party was in office. This is likely to be the region with the highest bargaining power among electoral socialist strongholds, since important leaders from the party organization came from this region. However, their preferences for a revision of the model have not been so strong as in the case of Catalan leaders.

The fact that fiscal intergovernmental bargaining in Spain has been fundamentally driven by early negotiations with regions endowed with high bargaining power is a crucial factor in understanding the unstable nature of fiscal arrangements. Bringing the extensive-form game back in, when the central administration interacts in an early round with a type of region with a strong preference for a revision of the model and high political bargaining power, the costs of opposing its demands (as part of the 'deterrence' strategy) are too high. Central government is unable to maintain the reputation of a strong player and therefore it ends up accepting the revision of fiscal arrangements. It soon reveals its true weak nature, the remaining regions enter negotiation and the game unfolds with the renegotiation of fiscal decentralization until the last round.

3.2 Vertical Imbalances Foster Ongoing Renegotiation

The overly transfer-biased system of the regional financing in Spain has created incentives for regional governments to base their expectations on a revenue increase on higher transfers from the central administration. Transfers from the central administration represent on average 76 per cent of common-region financing revenues through the period 1986–2001; whereas regional own and ceded taxes only represent 19 per cent of total regional revenues.[15] Regional governments were gradually endowed with powers over the provision and management of public services that involve high expenditures (such as education, health care or social services); but this process did not come along together with further autonomy over taxes. In consequence, the fiscal gap was covered through grants from central administration.

With a financing system that is overly biased towards transfers, the demand to central government for higher transfers becomes the strategy that provides more revenues to regional governments at a lower cost.[16] Consider the only two existing alternative mechanisms to finance regional expenditures: to raise ceded taxes (or create new taxes) or to incur debt. First, regions have no incentives to increase tax pressure on their jurisdiction's population. On the one hand, tax decentralization and normative powers over ceded taxes have traditionally been very limited (until the reform of regional financing was passed in 2001) and therefore the capacity to generate extra revenue through ceded taxes is very limited. On the other

hand, the use of taxes may impose some electoral costs to the regional executive, as an increase in the tax burden is an unpopular measure that may hamper the electoral performance of the implementing administration. This is so because regional governments can generate greater revenue through these mechanisms than through ceded taxes without bearing political costs. Second, regional governments can incur debt to generate revenues. In fact, regional levels of indebtedness increased, above all, in the late 1980s and early 1990s (Suárez Pandiello 1996).[17] Some limits to regional borrowing were implemented afterwards, particularly through the Budgetary Stability Act in 2001.[18]

As incurring debt or raising taxes are not feasible regional revenue sources, the third type of revenue source – demanding higher transfers from the central administration – has remained as the only mechanism through which regions could obtain extra revenues. A rise in regional revenues through intergovernmental grants may occur if there is a general increase in the overall amount of monies that flow from central government to regions.[19] Alternatively, it may be the result of a different allocation of monies among ACs (caused by a modification of the distribution formula, for instance).[20] Both strategies involve a modification of the system of regional financing, which has low transaction costs. On the one hand, legal proceedings to modify the financing model are relatively simple, as agreements made in the FTPC have no legal status.[21] These agreements are presented to the central executive as a recommendation and therefore are not legally binding. On the other hand, agreements are only applicable if regional representatives ratify them in bilateral bargaining with central government. This ratification process reduces transaction costs, as regional governments have only to bargain with one actor (central government) and not with representatives from the remaining 14 ACs. In sum, the most efficient way for regions to obtain extra revenues consists in demanding an increase in grants from the central administration. This contrasts with the mild use of normative powers over ceded taxes, which have basically consisted in the introduction of tax exemptions (Ruiz 2003).

3.3 Ongoing Decentralization Fosters Renegotiation of the System

The process of decentralization in Spain is still open, since leaders from ACs are pressing for an increased devolution of powers. Initial asymmetries in expenditure responsibilities among ACs progressively became less pronounced and culminated when health care services were transferred towards slow-track regions in 2002.[22] However, in 2004, some regions began to reform their statutes of autonomy to expand their

autonomy further. Ongoing decentralization has resulted in a continuous flow of resources and authority from the central administration to ACs. This process has left the model of intergovernmental distribution of power excessively opened, which has fostered renegotiation of financing arrangements. Each transfer of services has involved an increase in the regional financing needs and, consequently, a modification of regional revenues, which has bestowed the regional financing model with a rather *unfinished* nature. Every time a region was granted new powers, it was regarded as a new opportunity to negotiate bilaterally a more favourable allocation of regional financing. The continuous revision of regional financing has fostered regional governments' expectation that their particular demands could eventually be introduced in future modifications of the model.

4 CONCLUSIONS

The foregoing analyses prompt two interesting questions related to the particular design of decentralization and the stability of federations. The first one has to do with preventing decentralization sub-optimal outcomes, such as a permanent renegotiation of regional financing. Empirical evidence on the Spanish case shows that, although from a normative point of view having a steady and clear-cut model of subnational financing is one of the conditions that fiscal systems must accomplish, in reality rational political strategies from both the central and regional administration may give rise to quite the opposite, that is, to ongoing renegotiation of fiscal arrangements. This suggests that the particular design of decentralization arrangements is crucial for guaranteeing efficiency and stability outcomes in a federation. Design requires that rules are compatible with incentives. Put in different words, the design of decentralization arrangements must contain rules that generate the proper set of incentives that prevent the opportunistic behaviour of national and subnational politicians.

The second question has to do with the irreversible nature of decentralization. In my analysis I showed that politicians' strategies in the allocation of transfers across regions, change as decentralization increases. This is so because after the first decision to decentralize is made, nothing remains the same. Decentralization modifies national and subnational actors' powers and the structure of incentives they face. Decentralization brings changes in the strength of electoral externalities among copartisans or in the strategies of subnational political elites. The central administration becomes more vulnerable to subnational demands and authority within political parties spins centrifugally towards subnational leaders. Fiscal arrangements are increasingly shaped by subnational officers' demands

and national politicians are willing to endorse them in order to maintain or foster subnational constituencies' electoral support. If subnational demands imply a further transfer of resources downwards and national politicians have no incentives to oppose them, does it mean decentralization becomes an irreversible process?

As decentralization unfolds it progressively modifies the allocation of power across jurisdictions. At a certain point, the process becomes virtually irreversible, as national politicians face increasing costs of attempting to backtrack the process or to put an end to a further transfer of powers towards subnational jurisdictions. In Spain, recent reforms of regional constitutions provide an increased devolution of powers, so subnational demands keep decentralization ongoing. In states such as Belgium, Italy (the northern regions), Great Britain (Scotland) or in developing countries such as Bolivia, territorial conflict remains despite then having formerly experienced decentralization. In these countries politicians undertook decentralization with the hope that it would help to soften territorial strain, but decentralization has in turn fostered centrifugal pressures. This issue sends a warning to short-sighted national politicians who may undertake decentralization without foreseeing that this decision may tie their hands in the future and make them unable to provide for federation stability.

NOTES

1. I refer to the ongoing process of decentralization that the Spanish State of Autonomies has experienced by which regional governments have been increasingly assigned expenditure and tax powers.
2. I refer to asymmetries in the intergovernmental fiscal arrangements between the foral regime (that is applied to the Basque Country and Navarra) and the common regime (that is applied to the remaining regions); vertical fiscal asymmetries (high expenditure decentralization vs. low expenditure decentralization) and asymmetries in access to autonomy (regions that accessed autonomy with broader authority over considerable self-rule – 'fast track' regions – and those that accessed autonomy with a lower level of authority – 'slow track' regions).
3. My approach follows the political economy approach of Second Generation Fiscal Federalism Theories. This new literature brings a new focus on the structure of incentives that stem from institutions and assumes that institutions and political choices play a major role in explaining the variation in the form, degree and success of decentralization. From this perspective, efficiency and equity concerns of public officials are complemented by considering their electoral goals. For a review of this literature see Weingast (2006).
4. See studies where the analysis of decentralization is grounded in political considerations: Willis et al. (1999, 2001), Boone (2003), O'Neill (2001, 2003, 2004), Escobar-Lemmon (2001), Eaton (2001, 2004), Watts (1993, 2003), Jeffery (2003), Montero and Samuels (2004), Penfold-Becerra (2004).
5. See Case (2001), Schady (2000), Dahlberg and Johanssen (2002), Khemani (2003),

Ansolabehere and Snyder (2006), Levitt and Snyder (1995), Gibson et al. (1999), Porto and Sanguinetti (2001), and Alurampalam (2009).

6. I represent two idealized contexts: a 'centralized context' and a 'decentralized context' in order to capture different levels of decentralization. In both contexts there is a devolved structure of power (subnational governments democratically elected). The only difference between them lies in the degree of authority over revenues and expenditures of subnational governments.
7. Decentralization in Spain has developed with considerable asymmetry. The Constitution established two different mechanisms for autonomous communities to be formed. The first mechanism provided ACs for larger and faster autonomy and it is usually referred to as the 'fast-track' process. Five ACs followed this path: Basque Country, Navarre, Catalonia, Galicia and Andalusia. In 1982, Valencia and the Canary Islands were endowed with the same level of expenditure powers than fast-track regions, although they had accessed autonomy following the slow-track process. The slow-track process provided regional governments with more limited autonomy and established a slower path of expenditure devolution (Extremadura, Castilla León, Castilla la Mancha, Asturias, Cantabria, La Rioja, Aragón, Murcia, Balearic Islands and Madrid). In 1992 the Autonomous Pacts (Pactos Autonómicos) granted slow-track regions the same authority powers as fast-track communities.
8. It is not easy to draw a neat line between different degrees of decentralization during the relatively short period of time during which the devolution process has taken place. However, it is possible to make some distinctions between the institutional context in the mid-1980s and the context in the mid to late 1990s to justify the assumptions made on the institutional context of each system of financing. From 1987 to 1991 the regional expenditures represented 22 per cent of overall expenditures, whereas from 1997 to 2001 they had increased to 30 per cent. As for revenue decentralization, in the 1987–91 period, regional revenues from own and ceded taxes were 15 per cent of total revenues; whereas in the 1997–2001 period they had risen to 27 per cent and regional governments had transferred some regulation powers over ceded taxes.
9. Regions (autonomous communities) are used as the unit of analysis. I cannot assume that the observations are independently distributed across time. There are unobserved factors in each unit (for instance, demography) that are constant over the analysed period (or roughly constant) and that are correlated with the explanatory variables in all time periods. I cannot therefore use OLS estimators, as to be valid they require that the errors (unobserved factors) are uncorrelated with explanatory variables (the strict exogeneity assumption). This unobserved heterogeneity is removed with the fixed-effects estimator (see Wooldridge 1999: chapters 13 and 14).
10. The most important advantage in calculating relative per capita financing is that it allows testing hypothesis with fixed-effects estimation. Fixed-effects do not permit the use of explanatory variables that do not vary over time (as is the case with the Competences variable). Therefore, the econometric models 1 and 2 cannot be estimated with fixed-effects, as the competences variable would drop from the regression. Alternatively, the elimination of the competences variable from the econometric model would generate an omitted variable problem.
11. See similar empirical applications of this model in James (1999) and Alt et al. (1988).
12. In a series of interviews made to socialist leaders who had closely followed fiscal intergovernmental negotiations, all of them agreed that Catalonia and Andalusia were the two most important regions in the bargaining process (see León-Alfonso 2007: 198–9).
13. Catalan regional leaders have traditionally held a strong preference for higher levels of regional fiscal autonomy. They have been crucial political actors in promoting the reforms of the financing system that have resulted in higher fiscal decentralization (in 1993, in 1997 and in the reform that was initiated in 2008). Catalan leaders' ambition is for higher levels of fiscal autonomy that results in a level of regional per capita financing similar to that in the foral regions, since the different systems of regional financing have

granted Catalonia below-average unconditional per capita financing (see León-Alfonso 2007: 167, 171 and 172).

14. Catalan nationalists supported the Socialists from 1993 to 1996 and during the 2004–08 period and gave parliamentary support to the Popular Party from 1996 to 2001.
15. After the 2001 regional financing reform, ACs gained tax authority. In 2004, transfers represented 31 per cent of overall common-regions' revenues and own and ceded taxes amounted to 69 per cent. Source: own-calculations from BADESPE series (Institute on Fiscal Studies).
16. The central government also has incentives to maintain high vertical imbalances. Central government's bargaining power is proportional to regional governments' dependence on transfers. In addition, transfers allow central government to allocate funds in a more discretionary way. These benefits may explain central government's reluctance to increase regional government's fiscal autonomy.
17. This result corresponds with existing empirical evidence in other countries where sub-national revenues are mainly composed of transfers from a higher level of government (see Rodden 2002; Jones et al. 2000).
18. However, the process of fiscal consolidation before the Stability Act was passed resulted in higher regional dependence on transfers. Solé and Esteller (2005), using regional data from 1980 to 2000, show that the fiscal consolidation scenarios that were implemented before Maastricht succeeded in reducing regional debt. However, debt reduction was not so much the consequence of regional economic adjustments but the result of the central government's increase in regional transfers, above all to most indebted regional governments.
19. Regions succeeded in adopting this strategy, as financing agreements (except the 2001 agreement) included revenue guarantees whereby each region was receiving under a new financing system at least as much as under the former model.
20. See Ruiz-Huerta and Herrero 2005: 8; Pérez 1991: 108; Herrero 2005: 153; Castells et al. 2005: 74.
21. Except the 2001 financing agreement, which was approved as the Act 21/2001.
22. The ten slow-track regions accessed more limited autonomy whereas the five fast-track regions accessed autonomy with a higher level of powers and authority.

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Comment VII

Santiago Lago

Politics determines intergovernmental grants at different levels and times. Fiscal equalization grants are a good example. Equalization financial flows tend to be stronger in countries with societies greatly committed to equality. But this political foundation is qualified by another political variable: the strength of local or regional political cleavages and their translation into the degree of nationalization of party systems.[1] In countries with poorly nationalized party systems, fiscal equalization becomes a multi-player game with multiple potential equilibria. In particular, in a political situation where seats from regional parties in rich regions become a key for attaining majorities in national parliament, equilibria with a lower degree of equalization will be more probable: even rich regional political communities seriously concerned with equality might be more prone to concentrate efforts inside their own territory (Lago-Peñas, 2008). Regardless of the volume of grants, they must be allocated to granted governments. And politics plays again. Empirical evidence on many countries, both unitary and federal, shows that this distribution is affected by political variables.[2] Different mechanisms, sometimes with opposite implications, are at stake: central government may target jurisdictions with a higher proportion of swing voters, but also may reward their supporters, who are more likely to engage in political patronage. Jurisdiction size may also exert an uncertain effect: the larger the population of a jurisdiction, the more seats in the national parliament to be gained, but also a lower per capita grant benefits if the ratio between votes and seats increases with the jurisdiction size, as usual. While all those relationships are supply-side mechanisms governed by the grantor, demand-side mechanism may be also relevant, insofar as the bargaining power of granted jurisdictions is often unequal.

Chapters by Stuti Khemani (SK) and Sandra León Alfonso (SLA) make real contributions to this literature on the allocation of intergovernmental grants. While SL presents a new political mechanism determining grants, SLA builds a model to integrate two different mechanisms and explains how the relative strength of them depends on the institutional framework.

In contrast with previous literature on the determinants of grants, the

point of departure of SK is a primary institutional choice.[3] Politicians select local jurisdiction boundaries, both physical and fiscal, to enable themselves to target pivotal voters to win elections, akin to the phenomenon of gerrymandering districts in electoral politics. Under this model, there will be multiple small local jurisdictions, financed mostly by granted revenues allocated to target private benefits to political supporters, at the expense of broad public goods. SK develops her theory and surveys empirical evidence for a number of countries consistent with it.

SLA deals with two highly relevant questions. The first one, how increasing decentralization impacts upon the distribution of intergovernmental transfers. Her hypothesis is that political factors that have an influence on this distribution depend on the institutional context. While grants will be targeted to swing regions in a centralized setting, in a more decentralized context allocation will favour affiliated regional governments. The second issue is the instability of the intergovernmental transfer system in Spain. According to the author, vertical fiscal instability and ongoing and asymmetric power devolution would be main causes. In both cases, SLA combines theoretical arguments with empirical evidence for Spain, as a useful social experiment of decentralization.

Regarding the contribution by SK, my comments refer to the generality of her theory and their testable implications. All in all, the author acknowledges that her contribution is in a preliminary stage in the sense that she is still working on developing the theoretical model and on a more rigorous test with large sample data.

With respect to the generality of the theory, real freedom of central or regional governments to change boundaries of local jurisdictions is very constrained in many countries. Path dependence is here a relevant concept. Governments have to deal with local identities in order to change boundaries of previous ones or create new ones affecting powers of the previously existing jurisdictions. Once defined (or redefined), boundaries are difficult to change again in the short run. Then it must be hypothesized that pivotal voters are constant over time or local boundaries may no longer be useful for politicians after a while.

Second, the prominence of grants in the early stages of decentralization may be explained by gerrymandering decentralization but also by the fact that revenue assignment uses to come after the assignment of responsibilities had been completed, according to the well-know dictum 'finance should follow function' (Martínez-Vázquez, 2008). Moreover, as SK shows, grants received by local governments in developed countries as the United Kingdom, the Netherlands, and Ireland were over 70 per cent of total revenues in 2001; Italy and the Netherlands were over 80 per cent in 1985 (Ambrosiano and Bordignon, 2006). Some of the countries analysed

in the chapter as potential examples of gerrymandering decentralization are not far away from this figure. In sum, testing the implication of the gerrymandering decentralization theory on the share of grants should take into account not only the dynamic nature of the decentralization process, with taxes running along behind expenditure, but also control by other potential causes of low tax decentralization. In a similar way, international data on average jurisdiction size (both in terms of population or surface) record that Europe and North America are much more fragmented than Asia and Latin America (Martínez-Vázquez and Gómez-Reino, 2008). Insofar as average jurisdiction size is explained by more causes than gerrymandering politics, empirical studies with cross-section time-series data should control by the rest of fragmentation drivers.

In the case of the contribution by SLA, comments can be grouped into four points:

- The theoretical model developed in section 2 focuses on within-national-party relationships.
- The role of subnational (regional) parties is also crucial to understand the decentralization path in Spain.
- Regional parties are not an exogenous variable to decentralization.
- Decentralization changes the institutional framework and then incentives to the emergence and strengthening of regional parties.

In other words, decentralization affects the nationalization of party systems, and the other way round (Chhibber and Kollman, 2004). Therefore, the theoretical model should also include regional parties as a new political actor boosted by decentralization.

Concerning the econometric estimates, using cross-section time-series data for per capita unconditional financing may not be the best choice. Focusing on gains obtained when the formula governing unconditional financing is periodically renegotiated and on discretional grants may be more accurate.[4] In this sense, Lago-Peñas (2005) analyses the effect of partisan affiliation (that is, when the ruling party is the same in both national and subnational levels) on three endogenous variables: gains obtained in the renegotiation of the system in 1986 and in 1991, and discretionary capital grants received by regional governments (*convenios de inversion*) in the whole period 1992–6. A non-significant relationship is found in the first case. A positive relationship, but only statistically significant at a 10 per cent level, is found in the rest.[5] This empirical evidence is not in contrast with that by SLA, but it is less conclusive. In my opinion, the research question demands a more sophisticated econometric analysis.

I also have some doubts on defining the period 1997–2001 as ‘decen-

Table C7.1 Mistakes in assigning responsibilities in health care and education

	Citizens living in slow-track regions		Citizens living in fast-track regions	
	%	Number polled	%	Number polled
Health care	69	569	43	839
Education	67	569	46	839

Source: Instituto de Estudios Fiscales (2006).

tralized context' by contrast to the so-called 'centralized context' (1987–91). I agree with SLA that political arenas in Spain are increasingly independent. Empirical evidence shows that regional elections in the 1980s and early 1990s were much influenced by political and economic trends at national levels, but things have changed. Since 1995, national trends are not statistically significant to explain the evolution of electoral results of regional incumbents (Lago-Peñas and Lago-Peñas, forthcoming). On the contrary, data challenges the description of the current scenario as the decentralized context defined by SLA. The capacity of citizens to assign responsibilities to the several fiscal tiers on both expenditure and tax sides stays low. Some opinion poll data gathered in 2005 by the Instituto de Estudios Fiscales (2006) demonstrate that fiscal federalism in Spain is not yet well understood by citizens. More than 50 per cent of citizens made a mistake when asked about the responsibility on the two main competences of regional governments such as health care and education. Almost 80 per cent of people chose a wrong answer when asked about the allocation of the main sources of revenues of regional governments (income tax, value added tax and excises). Most of the mistakes are due to the misconception that taxes and expenditure powers are still under central government control. In sum, the test of theory presented by SLA should be repeated with data for subsequent years or, at least, with data from the fast-track group of regions, insofar as mistakes are significantly lower in those regions (Table C7.1).

Regarding the instability of the system, I basically agree with the analysis. Spanish regional governments face a soft budget constraint. In spite of the fact that tax autonomy has progressively increased since the late 1980s, regional incumbents are reluctant to use it. When more public revenues have been necessary, indebtedness, in the 1980s and early 1990s, and increases in grants from the central government have been the solution. All

players win: subcentral governments avoid the political costs of increasing taxes and central government holds the real tax power. However, as far as public revenues are never enough when the cost of taxation is not internalized by taxpayers and politicians, it is a never-ending story of bargaining. How to get a harder budget constraint? As far as regional indebtedness is already under control, the key interventions would be giving more tax autonomy to regions, and clarifying the existence of two separate fiscal tiers with their own tax powers and responsibilities.

NOTES

1. In nationalized party systems the highly localized and territorialized politics is replaced by national electoral alignments and oppositions: programmes and policies become national in scope and cancel out or at least reduce the scope of local problems, with the most relevant issues being transferred from the local to the national level (Chhibber and Kollman, 2004).
2. See, for instance, surveys by Veiga and Pinho (2005), Jarocinska (2006, Chapter 3), Khemani (2007), and León-Alfonso (2007).
3. In the same sense, Lago Peñas and Ventelou (2006) analyse how choices on the boundaries may be used as an instrument to affect public choices in different fiscal federalism frameworks.
4. Once an agreement is reached on the unconditional grants formula, grants in following years evolve in all regions at the same growth rate.
5. Jarocinska (2006) cannot find any significant effect of political variables on investment programmes, but she uses data for the whole period 1986–96 and an index of loyal electors to central government in each region instead of partisan affiliation of incumbents, as defined above.

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11. The determinants of regional transport investment across Europe

Achim Kemmerling and Andreas Stephan

1 INTRODUCTION

In recent years a fruitful dialogue across disciplines has spurred academic scholarship on regional redistribution and fiscal federalism. In particular, older predominantly normative claims about the regional allocation of transfers and public investments have been questioned both in economics and political science by positive accounts of the political process that leads to this allocation. Among others, the works of Inman (1988), Dixit and Londegran (1998) or Persson and Tabellini (2002) have developed theoretical models to show how political institutions and the distribution of voter preferences affect the regional redistribution across different tiers of the government. Empirical contributions have shown the relevance of such factors in various fields of public policy and in very different political systems (for example, Levitt and Snyder 1995; Kemmerling and Stephan 2002; Kemmerling and Bodenstein 2006).

A key factor in this literature is the relevance of country-specific political institutions. However, the causal influence of these institutions is only visible in cross-country comparisons given that political institutions do not vary much over time. The need for comparative studies is hence an important lacuna for empirical research. In this chapter we contribute to the understanding of the role of political institutions by comparing the determinants of regional redistribution across countries.

We focus our analysis on the determinants of regional road infrastructure investments in four major European countries: France, Germany, Italy and Spain. All four countries have similar levels of GDP per capita but have very different political systems. Germany and Spain are both federalist countries, whereas France and Italy are centralized. Italy and Spain both have proportional voting systems, whereas France and Germany have hybrid voting systems that mix proportional and majoritarian

elements. By comparing the four different polities we are able to shed some light onto the nature of distribution mechanisms in all four countries while we control for the efficiency of public investment in infrastructure. This is done by estimating a equation for regional infrastructure investments with endogeneous productivity effects. The focus of this contribution, however, lies on the political determinants of public investment.

In the following section we briefly review the literature on both the determinants of regional redistribution and allocation of public investments. We distinguish between normative principles and positive factors causing the distribution of investments. For this purpose we derive a set of hypotheses to be tested later on. In section 3 we present our data and the operationalization of our key variables. We also give some descriptive evidence of how investment in road infrastructure is regionally distributed. In section 4 we explain our estimation methodology and show the results of our simultaneous equations. The last section concludes with some qualifications to and broader (policy) implications of our findings.

2 LITERATURE REVIEW AND HYPOTHESES

We distinguish between two broad categories of determinants: normative principles and positive political factors (cf. Oates 1999). The former include normative concerns of policy makers such as efficiency considerations or the equalization of living conditions which is in some countries – for example, Germany – even part of the constitutional law. The latter include all positive explanations of the political process that reveal concerns of policy makers about their own political fortune and the role of institutions in shaping public policy.

2.1 Normative Principles: Efficiency, Redistribution and Equity

To begin with the normative principles for the regional allocation of infrastructure investment, we follow previous research by Mera (1973), De la Fuente and Vives (1995) and Stephan (2007). They use three normative principles that politicians may use as guidelines for the distribution of infrastructure investment across regions:

- $\text{Efficiency}_i = \frac{y_i}{g_i}$
- $\text{Redistribution}_i = \frac{y_i}{l_i}$
- $\text{Equity}_i = \frac{g_i}{s_i}$

where y_i denotes regional output, g_i is the regional infrastructure stock, l_i is regional labour force, and s_i is the size of the geographic territory (that is, the area in square-kilometres.

Efficiency implies that infrastructure spending should be concentrated on those regions where its expected impact on economic growth is highest. We would expect investment flows to be highest to those regions where its marginal productivity is highest. This allocation of investment would guarantee that the aggregate national income is maximized. Based on a Cobb–Douglas production function, marginal productivity of infrastructure is given by $\alpha y_i/g_i$, where α is the elasticity of output with respect to infrastructure capital. We simplify this insight by defining our measure of efficiency as the ratio between the gross domestic product (y_i) and the infrastructure stock (g_i) for region i, and assuming $\alpha_i = \alpha$ for all regions.

Hypothesis 1: *According to the efficiency hypothesis, central or regional governments should target infrastructure investment to those regions where the marginal productivity of infrastructure is highest.*

Until recently, the traditional literature on public infrastructure and investments (for example, Aschauer 1989a,b) has focused on the inverse causal relationship measuring the productivity-enhancing effect of public investments. For Germany, Hofmann (1996) and Stephan (2002) have found a positive contribution of infrastructure investment to growth and productivity. Similar things apply for the other Western European countries. For Italy, Bonaglia et al. (2000), among others, find a positive contribution of public capital to regional growth in productivity. Mas et al. (1998) find similar effects for Spanish regions. Indeed, there appears to exist a consensus now about the growth-enhancing effects of public infrastructure investment, even if some studies have not found positive effects at all (for recent surveys, see Bom and Ligthart 2008; Romp and de Haan 2007; OECD 2007).

Most of these studies treat regional infrastructure investment as an exogenously determined input to private production. However, more and more scholars have questioned this assumption (for example, Crain and Oakley 1995; Duffy-Deno and Eberts 1991). Some studies have introduced political explanations for public investments to control for the potential endogeneity between investments and growth (for example, Cadot et al. 2006, Kemmerling/Stephan 2002).

The second principle, redistribution, implies in our simple terminology that the distribution of funds follows the principle of using infrastructure investment as a means of regional policy to promote the development of

poorer regions. If governments follow this logic, infrastructure investment should be targeted on those regions where per-capita GDP is lowest.

Hypothesis 2: *If the national government is concerned about promoting the development of poorer regions, it should target the infrastructure investment on regions with the lowest per-capita income.*

It should be noted that the redistribution objective is in most cases in conflict with the efficiency objective.

Equity, our third normative principle, refers to the idea of guaranteeing equal living conditions in all regions. We calculate a proxy measure for it as the ratio between infrastructure endowment (g_i) and the geographical size of the territory (s_i) of a region. For instance, a fundamental norm of German federalism which is stated in the constitution is to guarantee the equality of living conditions in all regions. The German Federal Court is known to base its judicial review of public policy on the basis of such norms. Our criterion measures to what extent a government tries to equalize the public infrastructure endowment (in terms of 'infrastructure density' g_i/s_i. Regional inflows should therefore be inversely related to public capital stocks adjusted for regional geographical differences.

Hypothesis 3: *If the national government has the objective of equal infrastructure endowment across regions, it should target its investment on regions with the lowest infrastructure endowment.*

We now contrast these normative principles with positive explanations of the allocation of public infrastructure.

2.2 Political Factors

The four countries under inspection have very different constitutions. Therefore it appears difficult to develop a uniform framework for explaining the political factors behind regional public investment policies across countries. To simplify the exposition we will initially assume for all four countries that the central government is the decisive political actor. Of course, this is not true for federalist countries, but we can then move on to show the effects of departure from this assumption in comparison with the highly centralized countries Italy and France. If the central government is the central actor, there are several hypotheses explaining why for central politicians, some regions are politically more important than others.

The traditional political-science approach to public spending relates transfers to ideological preferences of parties (for example, Klingemann et

al. 1994). The most common example is the idea that left-wing parties have a stronger inclination to spending and 'big government' than right-wing parties. Although the salience of infrastructure investment as compared to other policy areas is not necessarily very high for left-wing parties, preference for high spending usually affects most policy areas. Indeed, there is some empirical evidence for such a proposition in the context of spending on regional infrastructure. Grossman (1994), for instance, finds that US regions in which the Democrats were the dominant party received more transfers than other regions.

Yet the ideological distribution of voters on issues of regional infrastructure is unlikely to be one-dimensionally left-versus-right (Kemmerling and Bodenstein 2006). Regional interests also loom large in the political process so that parties with a strong regional base will favour higher levels of spending in their regions. Examples of such parties can be found in most European countries: In Germany there is the regionalist Christian Social Union, in Spain there are the Catalan and Basque separatist parties, and in Italy there are separatist parties in the northern part of the country. This leads us to the formulation of our first hypothesis on the political-economy determinants of infrastructure spending.

Hypothesis 4: *Infrastructure investment is higher in regions with either strong left or strong regional/separatist parties.*

If we relax the assumption of the government as a unitary actor we see that infrastructure investment at the regional level is to a large part financed by investment grants from higher-tier governments in many countries. The fundamental question in these cases is why some regions are more successful in receiving grants than others. The politico-economic theory of multi-tiered political systems holds that regions are unlikely to receive equal shares of public transfers or shares in accordance with equity or efficiency considerations, if some regions have relatively more political clout to influence the allocation of funds from the central government or national policymakers rely on some regions more than others to muster electoral support. These two claims allow deriving the remaining hypotheses on the political factors influencing infrastructure investment.

To start with the first claim, regions may differ either in their lobbying or institutional power (Cadot et al. (2006)). Local politicians differ in the extent to which they lobby the national government, as the cases of intergovernmental grants in Norway (Sørensen 2003) and the United States (Grossman 1994) show. Institutional factors that enhance the lobbying power of local politicians are the size of and the number of seats of an

electoral district (Worthington and Dollery 1998) or the voting power of regions (Ansolabehere et al. 2002). Most important, channels of influence from lower to higher tiers of government should be easier when reinforced by partisanship. In Germany, for instance, it seems to be the partisan congruence between the national and the regional level (Kemmerling and Stephan 2002). Since there are many ways how to theorize the political clout of a region, we select the following formulation of:

Hypothesis 5: *The higher the political influence of a region and, in particular, the higher the political congruence between the regional and the national governments, the higher the infrastructure investment in the region is.*

The second claim focuses on the preferences of national politicians rather than the resources of local politicians. The idea is that national politicians equalize marginal costs – that is, transfers to a region – with marginal benefits, predominantly in the form of higher electoral success. Assuming that central governments depend on local electoral support or money, national politicians will allocate funds to political strongholds (Cox and McCubbins 1986) or alternatively to those regions in which they can gain the most from additional spending (Dixit and Londregan 1998). Several studies (Levitt and Snyder 1995; Grossman 1994) found some evidence for the logic of partisan strongholds and incumbency bias in the regional distribution of federal outlays in the US. An additional hypothesis is that central politicians are more interested in those regions in which additional spending has a disproportioned effect on the election outcome (for example, Jacobsen 1987; Johansson (2003); McGillivray 2004). Castells and Solé Ollé (2005) use several indicators of 'electoral productivity', that is, the marginal gains in form of additional seats from marginal increases in votes, in their relationship to public transport grants in Spain. We therefore formulate:

Hypothesis 6: *Central governments will send transfers to regions if these are either (1) regional party strongholds, (2) pivotal districts offering electoral gains, or (3) have strong incumbency effect with certain outcome.*

One might think of the three claims as competing, since a central government may care either for strongholds, very tight electoral races or races in which it is clearly ahead. In practice, however, one may also think of multiple political goals of the central government. This is an empirical question to be answered in the next sections.

Table 11.1 Summary statistics and details for data on road infrastructure

	France	Germany	Italy	Spain
Mean (StdDev.)				
$\Delta \ln g$	0.03 (0.01)	0.03 (0.02)	0.02 (0.03)	0.05 (0.04)
Minimum				
(Maximum)	0.0032 (0.09)	−0.00 (0.22)	−0.01 (0.14)	−0.02 (0.21)
Regions (years)	21 (78–92)	16 (70–04)	20 (70–98)	17 (82–95)
Method	PIM	PIM	PIM	PIM
Source	Cadot et al. (2006)	Stephan (2007)	Picci (2002)	Mas et al. (2003)

3 DATA

3.1 Operationalization

We have collected a data set of regional flows in transport infrastructure investments for four countries over 15 to 30 years.[1] Table 11.1 gives summary statistics and information on our key dependent variable which is the annual change in the log of the public infrastructure stock. For details of operationalization and sources we refer to the appendix (cf. also Kemmerling and Stephan 2008).

The regional capital stocks of road infrastructure are determined from the regional investment series using the 'perpetual inventory method' (PIM). However, in all four cases there are differences in the definitions and assumptions used in the PIM so that across countries they are not directly comparable.

As for the other economic variables we have used various country-specific data sources (cf. Kemmerling and Stephan 2008). From these sources we extracted information on GDP growth, the input of labour and private capital.

For the electoral variables we use Caramani's (2000) database. This data set includes regional electoral results for major parties in general elections in all countries up to 1996. In France and Italy retrieving electoral results for individual parties is not of great use, given the notorious instability of the respective party systems. In France we retrieved results for four major party groups, merging splinter groups in cases where the literature deems this appropriate. We use the vote share of seven party families in Italy. For Germany we could directly use the results of the five major parties. For Spain we extracted the vote shares of four major parties and merged all

regional parties anchored in only one or two regions (such as the Catalan or Basque parties) into one party 'family'.

Unlike the economic variables, the definitions of political variables need more explanation. Hence we will briefly turn to each of them to show how we operationalize our hypotheses on the political economy of transport infrastructure investment. We operationalize the partisan strongholds as the regional vote share of the central government party.[2] Following Johansson (2003) we operationalize the idea of regional incumbency as the difference between the two largest parties in a region in national elections. Moreover, we operationalize the concept of electoral race by coding a dummy variable that equals 1 whenever this difference is very small, that is, less than 5 percentage points. This accounts for a nonlinear effect of the electoral race in cases where the race is really tight. Finally, for multi-tiered political systems such as Spain and Germany, we use political information on both the central and the regional level. We compare the partisan constellation of central and regional governments to compute a measure of congruence between both levels (Kemmerling and Stephan 2002). For Spain, however, we use a simple congruence measure due to the lack of information on regional election outcomes. We code a dummy variable that equals 1 if the partisan composition of the regional and the central government coincide.

Table 11.2 summarizes our major political-economy variables, their operationalization and the expected sign of the relationship with public investment in road infrastructure. Following the previous discussion, the first three capture broad normative goals in decision-making whereas the latter three focus on the political process and the electoral gains derived from investment in road infrastructure.

3.2 Descriptive Statistics

Table 11.1 showed simple descriptive statistics for the dependent variable in all four countries. There is a marked variety across regions within each country. The negative sign for the minimum shows that there are even regions which disinvested in road infrastructure. If one looked at average growth rates across time, one would find increasing rates both in France and in Spain even though growth rates in Spain have decreased after their peak in the 1990s. In contrast, for Germany and Italy we note a decrease in the average growth rate of regional infrastructure stocks. Moreover, the standard deviation does not decrease in the same proportion, implying an increasingly heterogenous growth pattern across regions.

To get a first flavour of the regional distribution of road infrastructure

Table 11.2 Summary of major hypotheses and their operationalization

Hypothesis	Label	Operationalization	Expected sign
H1	Efficiency	y/g (potentially endogeneous)	+
H2	Redistribution	y/p	−
H3	Equity	g/s	−
H4	Left/regional parties	Vote share of left or regional parties	+
H5	Political congruence (only federal systems)	For Germany: share of governmental party in regional elections For Spain: $d = 1$ if same government on central and regional level, otherwise $d = 0$	+
H6	1. Partisan strongholds 2. Electoral race 3. Incumbency	1. Regional vote share of central government party in national election 2. d = 1 if difference of 2 largest parties ≤ 5 per cent, otherwise $d = 0$ 3. Difference in vote shares of 2 largest parties	+

investments in all four countries we have computed cross-sectional correlations between the three criteria with annual investments in road infrastructure. We have also split the time series in order to track changes across time. A look at Table 11.3 reveals remarkable differences of these bivariate relationships across countries. In France throughout the period we see that investments seem to reveal little concern for efficiency, but some for equity. Similar things apply to Germany where we can also see a redistributive concern throughout the whole period. In Italy we see an inversion across time: whereas redistributive reasons where visible up until the 1980s, efficiency seems to play a more important role nowadays, accompanied by progressive redistribution to richer regions. In Spain, finally, we see that all three principles seem to inform public investment decisions. To investigate these principles more thoroughly we now proceed to multivariate tests.

Table 11.3 Correlations of the three principles with annual investments in road infrastructure

		Efficiency	Redistribution	Equity
Sign expected		+	−	−
France	78–85	**−0.17**	0.06	**−0.11**
	86–92	**−0.23**	0.04	−0.12
	78–92	**−0.20**	0.07	**−0.11**
Germany	70–89	**−0.39**	**−0.63**	**−0.43**
	90–06	**−0.27**	**−0.41**	**−0.34**
	70–06	**−0.30**	**−0.47**	**−0.35**
Italy	70–85	0.04	**−0.18**	**0.26**
	86–98	**0.36**	**0.11**	**−0.15**
	70–98	0.05	**−0.31**	0.04
Spain	85–98	**0.39**	**−0.16**	**−0.24**

Notes: Pairwise coefficients of correlation for region–years. Bold face characters mark a level of significance of 5 per cent or lower.

Source: Author's calculations.

4 EMPIRICAL ESTIMATION AND RESULTS

4.1 Specification of the Policy Equation

We use a simultaneous-equation approach where public infrastructure investment is endogenously and explicitly explained by several variables (cf. also Duffy-Deno and Eberts 1991; Kemmerling and Stephan 2002; Cadot et al. 2006). While our model consists of two equations, a production function and a policy equation, we focus our analysis on the policy equation only.[3]

The policy equation describes the change of the regional road capital stocks relative to the existing stock (that is, the growth rate of the stock).[4] To describe the politico-economic determinants of regional infrastructure stock changes we use the following stylized policy equation:

$$\Delta \ln g_{it} = \alpha_0 + \theta_t + \alpha_{eff}\frac{y_{it}}{g_{it}} + \alpha_{redistr}\frac{y_{it}}{l_{it}} + \alpha_{equi}\frac{g_{it}}{s_{it}} \tag{11.1}$$

$$+ \alpha_{str}strong_{it} + \alpha_{inc}incumb_{it} + \alpha_{race}elrace_{it} + \alpha_{left}left_{it}$$

$$+ \alpha_{reg}regional_{it} + \alpha_{congr}congruence_{it} + \nu_{it}, i = 1,\ldots,N, t = 1,\ldots,T$$

The dependent variable of the policy equation is the growth of the infrastructure stock, $\Delta \ln g_{it}$ in region i at time t. The first three terms on the right-hand side of equation 11.1, describe the efficiency, equity and redistribution criteria, respectively. The last terms of equation 11.1 correspond to the political variables discussed in the previous section. Note that y_{it} is treated as an endogenous variable in the policy equation.

As we aim to analyse the cross-regional allocation of investment (and not the intertemporal within-region allocation), we do not include the full battery of region-specific dummies, but we did include time-effects θ_t in the policy equation. These time-effects control for any common shocks at time t so that the remaining heterogeneity in investment allocation captures the differences across regions.

The endogeneity of the growth rate of the regional road capital stocks in the production function is taken into account by using the non-linear GMM estimator suggested by Andrews (1991) where the exogenous variables of both equations are used as instruments. The GMM estimator provides consistent estimates of standard errors in the presence of heteroscedasticity and autocorrelation.[5] The results of specification tests on autocorrelation, heteroscedasticity and stationarity are discussed in the Appendix. They support the application of consistent estimators in general. In the context of simultaneous equation estimation an issue that is even more important is the validity of instruments, that is, their non-correlation with the error term. In the context of the GMM estimation the validity of overidentifying moment restrictions can be tested as proposed by Hansen (1982).[6]

4.2 Estimation Results

Table 11.4 shows the results of the policy equation of the non-linear GMM system estimation for each country.[7] The model fit of the policy equations in satisfactory, ranging from an R^2 of 0.46 for Italy to 0.69 for Germany.[8] The time-effects are significant in the policy equations for all countries. The choice of instruments in the GMM estimation is backed for all countries as the Hansen test does not reject the null hypothesis of valid instruments in any equation at the 5-per cent significance level.

The table displays very diverse estimates for the determinants of regional transport infrastructure investments across countries. As for the three normative principles, we find that efficiency concerns matter for the growth rates of the infrastructure stock in all countries. These findings are partly in contrast to previous work. For instance, Cadot et al. (2006) do not find that efficiency matters for the regional allocation of investment in France. However, their policy equation is specified in a different way

Table 11.4 Non-linear GMM system estimation results

Policy equation Dependent variable: $\Delta \ln g$	France 1978–1992		Germany 1970–2004		Italy 1970–1994		Spain 1982–1995	
Time effects	Included[a]		Included[b]		Included		Included	
Efficiency	0.0049	(11.97)	0.0005	(3.07)	0.0016	(3.59)	0.7682	(3.22)
Redistribution	−0.0001	−(0.84)	−0.0005	−(2.87)	−0.0011	−(5.27)	−0.0025	−(4.18)
Equity	−7.8559	−(2.16)	0.2294	(0.48)	1.9850	(3.03)	−0.0141	−(1.44)
Partisan strongholds	0.0168	(1.62)	−0.0279	−(1.72)	0.0883	(6.04)	0.0716	(2.05)
Incumbency	−0.0019	−(0.15)	0.0433	(4.19)	−0.0255	−(2.03)	−0.0556	−(1.76)
Electoral race	0.0024	(1.40)	0.0044	(2.64)	−0.0018	−(0.68)	−0.0117	−(2.02)
Left share	0.0217	(2.62)	−0.0206	−(1.21)	0.0413	(3.54)	0.0345	(1.06)
Regional parties share	–	–	–	–	0.0929	(6.25)	0.0120	(0.53)
Political congruence	–	–	0.0172	(2.57)	–	–	0.0018[c]	(0.41)
R^2	0.5269		0.6924		0.4591		0.5000	
N	315		439		500		255	
No. of regions	21		16		20		17	
Hansen test	43.33		42.91		42.83		37.84	

Notes: t-values in parentheses. Hansen test is distributed χ^2 with $(r - s)$ degrees of freedom.
(a) Dummy variable for Ile-de-France included.
(b) Dummy variables for East German *Länder* included.
(c) Dummy variable for congruence.

and the period of investigation is shorter than in our case. In addition, the sign of the coefficient for the redistribution criterion is negative and significant as expected for three countries but insignificant for France. This is perhaps not surprising as inter-regional redistribution appears not to be a priority in France in contrast to federalist countries like Germany or Spain. The equity criterion shows a more ambiguous pattern. Here only France has a significant estimate with the expected sign whereas the effect is even positive for Italy. This implies that Italian regions with a good endowment of infrastructure receive more investment than those with a poor endowment. To some extent imprecise estimate signs stem from correlation between some of the explanatory variables.[9] However, they also show the remarkable difference between the political processes in the four countries.

The effects of the political variables vary across countries. In general, the political influences appear to be relatively moderate. Partisan strongholds do not seem to play a marked role in France or Germany whereas in Italy and Spain regions where strongholds of the national government party are located indeed receive more investment than others. The incumbency effect, that is, the coefficient for the difference of the two largest parties, is only significant with the expected sign in the case of Germany. Similarly, the tightness of the electoral race shows an effect in Germany but has an unexpected negative impact in the case of Spain. Furthermore, we find that left parties matter in France and Italy but not in Germany and Spain. Regional parties only influence the distribution of public investment significantly in Italy but not at all in Spain. Finally, the congruence variable has the predicted effect on the distribution of investment in one of the two federalist countries, that is, Germany but not in Spain.

Taken together, the findings of our (positive) political variables reveal two interesting patterns. First, the ideological variables – left or regionalist votes – only play a role in a centralized system, arguably because in federalist systems these effects are either politically contained or dominant at the regional level. In contrast, partisan congruence does play a role in one of the two federalist systems (Germany). Second, the variables on electoral incentives show that – as expected – partisan strongholds and the electoral race are competing hypotheses, considering the signs of the coefficients for Germany, Italy and Spain. In addition, for Germany we find evidence of a complementary relationship between the tightness of the electoral race and incumbency: Elections that are either very tight or very clear lead to a significant increase in infrastructure spending.

5 CONCLUSIONS

In this chapter we have investigated the determinants of regional transportation infrastructure investment. The analysis has been conducted for four major European economies: France, Germany, Italy, and Spain. Of course, our methods have some limitations. First, the robustness of the results depends less on the econometric estimation method chosen (OLS vs. GMM estimates) than on the quality of the underlying data and differences in the operationalization. Second, we are aware that in particular, the political proxy variables are sometimes rather crude measures of the underlying mechanism formulated in the hypotheses. Third, for reasons of simplicity we focused on the central government only and neglected the fact that lower-tiers of the government may be in charge of public investments. Nesting different levels of government activity is an important area for further research.

A final caveat deals with the increasing role of the European Union. Is is clear that for many countries EU funding is a major stimulus for public investment in infrastructure (Rodriguez-Pose and Fratesi 2003). It has been argued that such an intervention on the EU level disturbs both the productivity effects and the political distribution process of regional investments (Fuente 2002; Weise 2002). And yet it is clear that the distribution process on the European level is also political. This not only holds for the level of intergovernmental negotiations on public investments (Carrubba 1997). It is also true for regional actors who try to influence national governments and the distribution of EU funds (Bodenstein and Kemmerling 2008, Kemmerling and Bodenstein 2006). Hence, the EU level is important in flows of public investment, but it does not 'switch off' political processes on the regional level.

These caveats nonwithstanding, two major findings of the study are worth emphasizing. First, we can establish that normative principles guide the distribution of investment to a large extent. In particular, we find that efficiency and redistribution criteria are relevant for the allocation of infrastructure investment across regions whereas the equity criterion is less important. These normative goals have arguably important functions as stabilizers for the political system.

Second, our findings show that political factors influence the regional distribution of infrastructure investment. As we have elaborated in this chapter, the results support the view that political factors have a different impact depending on the political system at hand. For example, partisan strongholds and ideologic preferences matter to a greater extent for centralist political systems compared to federal ones. The effect of political congruence (same political affiliation of higher- and lower-tier

governments) on the allocation of investment is supported at least for Germany. We also find evidence for a competing relationship between favouring partisan strongholds on the one hand, and favouring very tight or very clear electoral races on the other.

All in all we see that the decisions for the allocation of regional infrastructure investments are governed by much more than pure efficiency considerations. The political process seems to strike a balance between various principles and the political importance of some regions over others. In that respect it is somewhat counterintuitive that separatist and regionalist groups seem to have more political power in centralist than in federalist systems. This is one of the questions that need to be addressed in future investigations in more detail.

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NOTES

1. The level of regional aggregation corresponds to NUTS2 regions for France, Italy and Spain and to NUTS1 regions for Germany. Italy the regional level of aggregation (20 provinces) does not match the 32 electoral districts. However, a problem of overlapping only exists for two constituencies of minor importance. For France we had to exclude Corsica and for Spain, Ceuta and Melilla due to lack of data.
2. For France 'Incumbent party' refers to either the Gaullists or the Socialists. For Germany it refers to sum of vote shares of the coalition of the CDU-CSU and FDP before 1998 and to that of the SPD and Grüne thereafter. For Italy it is the Democrazia Cristiana for most of the period and for Spain it is the PSOE until 1996 and the Partido Popular thereafter.
3. We use a Cobb–Douglas production function with private capital, labour and public investments as inputs. For details see Kemmerling and Stephan 2008.
4. Note that:

$$inv_{it}/g_{it} = (g_{it} - g_{it-1})/g_{it} \approx \Delta \ln g_{it}$$

5. Using SAS V9.2 proc model we specify the GMM estimator using the Parzen kernel. Different kernel/bandwidth choices are tested but most results are unaffected by these choices.
6. The null hypothesis states that instruments and errors are uncorrelated. The test statistic is χ^2-distributed with $r - s$ degrees of freedom, where r is the number of instruments multiplied with the number of equations and s is the number of parameters.

7. The results from simple OLS regressions turn out not to be very different from the GMM results in terms of parameter estimates, suggesting that endogeneity is not a serious concern in most of the estimations.
8. For the production function we find public capital to be productive in all countries except for Spain. The elasticities are well in range of previous studies (for details cf. Kemmerling and Stephan 2008).
9. We have performed several checks for specification and robustness. There are some issues with multicollinearity in our specification. The presence of heteroscedasticity and autocorrelation have led us to the use of the GMM estimator. We have run a battery of Levin–Lin (Levin et al. 2002) tests, but have not found serious evidence for non-stationarity. German reunification, however, represents an interesting case for a structural break in the data.

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APPENDIX: DATA SOURCES

France: The data for France are partly the same as described in Stephan (2000) and Cadot et al. (2006). They include 21 of the 22 French regions for the period 1978–92. Corsica was excluded due to incomplete information. All values have been converted into ECU at constant 1991 prices. For investment in transport infrastructure we are able to differentiate between roads, rail, and inland waterways. The infrastructure data for France are also described in Fritsch and Prud'homme (1994) and Fritsch (1995). Road infrastructure investment in France includes both public investment for all road categories and private investment for licensed motorways. The regional capital stocks of road infrastructure are determined from the regional investment series using the 'perpetual inventory method' (PIM). The initial capital stock for 1975 for each region is determined in the following way. The aggregated transport infrastructure stocks in France as given by the Fédération Nationale des Travaux Publics (FNTP) are allocated proportionally to the individual regions in accordance with the investment shares of the individual regions. The calculated value is then used as the initial stock for the PIM. For the linear depreciation rate we assume a value of 2.5 per cent. The measures for labour and regional value added data at market prices have been taken from the Eurostat 'New Cronos' database (June 1999 edition). The values for 1979 and 1978 were extrapolated using GDP data for these years. The data relating to the regional stock of private capital for the period 1978–91 have been provided by Professor Prud'homme. A description of these data can be found in Prud'homme (1996). We use Caramani (2000)'s data on the electoral shares of party groupings (Communists, Conservatives/Gaullists, right-wing parties such as Front National and the Socialists).

Germany: For Germany we use a data set for *Länder* governments from 1970 to 2004. We calculate regional road capital stocks separately for roads funded by federal states, districts and municipalities (*Landes*-, *Kreis*-, and *Gemeindestrassen*, district roads) on the one hand and roads financed by the federal government on the other (*Bundesstrassen*, federal roads). In both cases the PIM is applied based on investment series deflated with the GDP deflator and assuming annual depreciation rates of 0.8 per cent for federal roads and 0.6 per cent for district roads. These rates are chosen so as to minimize the difference between the sum of our regional road capital stocks and the nationwide figures of the stocks estimated for the government by the German Institute for Economic Research (DIW 2007). The initial regional capital stocks of road infrastructure for the West German federal states for the year 1970 are obtained from Bartholmai (1973). The

information regarding investment made by the federal, state and local governments is taken from Statistisches Bundesamt (2005) which contains the road investment figures of the different bodies at the regional level. As for the additional region-specific variables, the production function data originate from the regional accounts published by Statistisches Landesamt Baden-Württemberg. Value added is used as a measure for output. Private capital in period t is measured as the gross stock of fixed assets in all sectors at the end of year $t - 1$ in constant prices of 2000. Labour is measured as the number of employees in all sectors at the level of the federal states. For the political data we use Caramani (2000)'s data but cross-checked them with Brancati (2007)'s constituency-level data set and our own compilations. We used information on all five major parties: CDU/CSU (Christian Democrats), SPD (Social Democrats), FDP (Liberals), Grüne (Green Party) and PDS/Die Linke (Communists/Socialists).

Italy: The dependent variable is the public capital stock of roads taken from Picci (2002). We use data for 20 provinces from 1970 to 1994. Picci also uses the PIM to calculate his capital stock data. Data on private capital stocks come from the CRENoS Regio-IT database (Paci and Pusceddu 2000; Paci and Saba 1997). This also holds for the other economic variables, which we extract for the years between 1960 and 1996. For the electoral variables we use Caramani's (2000) database. This data set includes electoral results for all major parties in general elections between 1977 and 1996 at the regional level. The 20 Italian provinces are not easily reconcilable with the 32 electoral districts. We use information provided by Golden and Picci (2008) and found difficulties only for two minor subregions. Retrieving electoral results for individual parties is not of great use, since the Italian party system is notoriously unstable. Therefore we use the vote share of party families. This leads to seven families of which one reflects regional parties as in Caramani (2000).

Spain: We use data on transport infrastructure investment by the central and regional governments of 17 *comunidades autónomas* during the period 1982–95. The data on capital stock and infrastructure investment by government level and region come from the Fundación BBVA (Mas et al. 2003). We use investment in roads, which constitutes the largest part of overall spending. The stock is calculated using the PIM. Private capital stock data also come from the Fundación BBVA. The other economic variables are taken from the Regional Accounts of the National Institute of Statistics. For the political variables we again extract information from Caramani (2000). We extract vote shares of the Partido Socialista Obrero Español (PSOE), the Partido Popular, the now defunct Unión

de Centro Democrático, and the communists. The problem of regional parties anchored in only one or two regions (such as the Catalan or Basque parties) is addressed by creating a variable that lumps together the vote shares of all parties Caramani (2000) denominates as 'regional'.

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12. The determinants of the regional allocation of infrastructure investment in Spain

Albert Solé Ollé

1 INTRODUCTION

The geographical pattern of the central government's investment in infrastructure accounts in large measure for the 'net fiscal flows' among the Spanish regions (see Bosch and Espasa, this volume). Moreover, such infrastructure-related 'fiscal deficits' are especially contentious for, at least, three reasons. First, these deficits, particularly if sustained over time, mean that the infrastructure capital stocks of rich regions become too small in relation to the size of their private economy. This has an immediate impact of increased levels of congestion, rising prices, and additional difficulties when competing in global markets.

Second, the central government can exercise considerable discretion in the territorial allocation of infrastructure investment. For example, it is much easier to reallocate highway funds from one region to another than it is, say, to achieve the same level of redistribution through public consumption or employment policies. Even in cases where infrastructure projects have been subject to lengthy planning processes, annual budget decisions eventually determine the real amount of funds allocated to each project and, thus, the speed with which they are executed. This means that, although the regional allocation of infrastructure investment is partly based on 'objective' economic criteria (for example, income, land area, etc.), purely political interests also play a prominent role.

Third, it is not entirely clear as to what exactly the 'objective' criteria are in this case, since infrastructure investment could be directed either to regions with high project impact, adhering to an efficiency criterion, or to regions with low output levels (in order to foster convergence), thus adhering to an equity criterion. The degree of redistribution observed in a given country depends, in part, on the specific details contained within the constitutional contract – which, as in Spain or the EU might form the basis for the implementation

of a regional cohesion policy – that has supposedly been endorsed by poor and rich regions alike. However, although constitutions place constraints on the options open to governments regarding inter-regional redistribution, the evolution of the ideological preferences of parties and voters, and the territorial structure of power in a democracy could also determine the final equity–efficiency orientation of infrastructure investment.

This discussion suggests that understanding the real motives of the central government when allocating regional infrastructure investment is of particular relevance. The purpose of this chapter is, therefore, to answer such questions as: to what extent is the regional allocation of infrastructure investment affected by tactical considerations? What are the variables that determine these short-term political strategies? To what extent is infrastructure investment biased against rich regions? What political reasons underlie this bias? Does this bias have any constitutional basis or is it the result of electoral politics?

In seeking to respond to these questions, we have assembled a database for Spain covering the years 1964–2004, with electoral district (*provincia*) data on the central government's infrastructure provision and capital stock, as well as on other economic and political variables. Our analysis suggests that both 'objective' economic variables and political forces play a role in determining the amount of infrastructure investment allocated to a district. Political considerations influence investment through two channels. First, there is evidence of particularistic or pork-barrel spending (what we refer to as 'tactical redistribution'), in the sense that districts which are economically equal (that is, with the same per capita income) receive different amounts of money if the political profitability of the investment is not the same in both places. Political productivity is influenced by several factors: the incumbent's margin of victory/defeat in the last election, the percentage of votes needed to win an additional representative, the fact that some regional parties have been pivotal at the central level during certain periods, and the partisan alignment between central and regional executives. Second, political factors can also influence the equity/efficiency orientation of infrastructure investment, measured by the elasticity of investment to per capita income (this is what we call 'programmatic redistribution'). This elasticity fell with the arrival of democracy, was considerably lower for left-wing and for right-wing governments before uncontested elections, and presents a statistically significant relation with the correlation between per capita income and political productivity (that is, the intensity of redistribution is mitigated as richer regions become more powerful).

There are only a few papers in the literature that analyse the political motives underlying the regional allocation of public investment. The papers by Knight (2002, 2004), Castells and Solé Ollé (2005), Cadot et al.

(2006), and Joanis (2007) perform such analyses for the US, Spain, France and Canada, respectively. Of course, many other papers analyse the political determinants of intergovernmental grants (see, for example, Levitt and Snyder, 1995; Case, 2001; Dahlberg and Johansson, 2002; Johansson, 2003). No papers, to my knowledge, have tried to explain why infrastructure investment (or even intergovernmental grants) is more or less redistributive (see Rodden, this volume, for an exception). In the Spanish case, a number of papers have previously analysed the rules implicit in the territorial distribution of public investment (Bosch and Espasa, 1999; De la Fuente, 2004). These papers do not account for political factors, which were previously discussed by Boix (1998), De la Fuente and Vives (1995), and Castells and Solé Ollé (2005). This last paper focused on the period 1986–96, but since central government was controlled by the political left throughout that decade, it was unable to study the effects of ideology on the equity–efficiency trade-off. By extending the period to 1964–2004 we are able to study the factors that have influenced the evolution in inter-territorial redistribution over time.

The chapter is organized as follows. In the next section we provide an interpretative framework for our analysis. In section 3 we describe our empirical strategy. In section 4 we present our data and explain how we have computed the different variables. In section 5 we present the results obtained. The last section concludes.

2 INTERPRETATIVE FRAMEWORK

The regional allocation of infrastructure investment acts to redistribute money from certain regions (those that pay taxes) to others (those in which the investment is made). In line with Dixit and Londregan (1996), we identify two distinct forms of redistributive policy. First, there is 'tactical redistribution' (pork-barrel politics in the US or particularistic spending elsewhere) in which the benefits (building the infrastructure) are paid to a few regions while the costs are shared by all. The implicit allocation criterion here is simply: if I invest in this region, am I more likely to retain power? Second, there is 'programmatic redistribution', in which the government withdraws resources from certain regions and redistributes them to others, with electoral considerations in mind, but subject to certain constraints, so that the beneficiaries usually present a low income level. Programmatic benefits, therefore, have public good qualities in that they redistribute from a given class of beneficiaries to another (from rich to poor regions), but within the class of beneficiaries, particular regions that qualify cannot be excluded. Below we discuss in greater detail the

empirical predictions obtained when analysing the allocation of infrastructure investment in accordance with these two redistributive policies.

Tactical Redistribution

The main theoretical models of tactical redistribution are those proposed in papers by Lindbeck and Weibull (1987) and Cox and McCubbins (1986). Both assume that the incumbent seeks to stay in office and, thus, distributes resources among electoral districts with the aim of winning future elections. The main empirical prediction made in the first of these two papers is that monies will flow to *swing* districts, that is to constituencies with a high proportion of relatively unattached voters, which in practice are identified as districts in which the incumbent won or lost by a narrow margin. The second paper, by contrast, suggests that politicians are risk averse and prefer to send money to their strongholds or to the districts that house their 'core' voters, as this is a safer investment.

Additional factors have been identified that might further influence the regional allocation of funds. First, depending on the electoral system, the incumbent will distribute more funds to constituencies that are *swing* districts but also pivotal, that is, sufficiently important to change the overall outcome of the election (Stromberg, 2004). Second, legislative malapportionment is another relevant factor: the smaller the number of votes needed to win a seat the cheaper that seat will be and the higher the electoral productivity of any funds sent there (Atlas et al., 1995; Castells and Solé Ollé, 2005). Third, partisan alignment between central and regional governments also means that any funds delivered will be more productive, since it prevents the opposition claiming any credit (Solé Ollé and Sorribas, 2008). Finally, the formation of coalition governments in parliamentary systems opens the door for the influence of pivotal parties that are regionally based (Castells and Solé Ollé, 2005).

Programmatic redistribution

It would be unfair to claim that all infrastructure investment is a result of tactical redistribution. When determining the amount of infrastructure investment in a specific region, the government considers not only its political reality but also certain 'objective' economic criteria. And the government will usually be restricted to some extent by the 'objective' criteria laid down in the constitution and other legislative acts that cannot easily be amended. Moreover, within the boundaries of these constraints, the government will be obliged to justify their criteria to both party followers and the general electorate. Thus, both voter preferences and party

ideology will influence the implementation of these 'objective criteria'. What should not be overlooked is that we are dealing with programmatic redistribution, which means that the reallocation cannot go ahead without certain criteria being applied.

Yet, what criteria might the government wish to consider? On the one hand, it might decide to invest more heavily in areas with the most infrastructure users (for example, measured in terms of numbers of cars, trucks or miles driven, in the case of roads), which eventually comes down to investing in rich regions, or in those with a lower stock of capital (since, if a region is 'rich' and already has the appropriate road stock, it might not be deserving of any more investment in its highways). Such a policy is said to be 'efficiency-oriented'. However, a constitutional mandate or the government's own ideology might oblige it to use investment as an instrument of regional policy, with funds being allocated to less developed regions. In such an instance, the policy is said to be equity-oriented. According to Castells and Solé Ollé (2005), an efficiency-based rule would allocate infrastructure investment in proportion to regional income (that is, GDP), while a rule which gives weight to equity would allocate funds less than proportionally to income (and might even invest more heavily in poor regions). So, the elasticity of investment to income will inform us about the efficiency–equity trade-off (or *taste* for inter-regional redistribution) of a given government.

This taste for redistribution will differ from country to country, depending on values and constitutional provisions (Wibbels, 2005). A democratic constitution can be considered conceptually as a contract in which the regions decide over future redistribution under uncertainty about future incomes (Persson and Tabellini, 1996; Bodenstein and Ursprung, 2005). This contract will influence redistribution both through the inclusion of certain principles and mandates, as well as through the electoral rules that will provide poor people/regions with more influence than they would enjoy under an undemocratic system (Meltzer and Richard, 1981; Boix, 2003; Rodden, this volume). In the case of Spain, the 1978 Constitution directly calls for policies to ensure territorial equity (De la Fuente, 2007). Moreover, EU funds can also be considered the result of a country's constitutional arrangements, in the sense that they are imposed from above and determined before national partisan politics are made operative. Some of these funds are strongly equity-oriented (for example, European Regional Development Fund), with highly redistributive rules constraining the internal allocation of funds between regions.

Yet, despite any institutional constraints, incoming governments have the opportunity to influence the regional distribution of funds. This means that in the case of programmatic redistribution, the government should not be modelled as directly choosing the money to be sent to each district, but

rather as having to pick a taste-for-redistribution parameter (that is, from the above discussion, the elasticity of investment to income). There are several ways of addressing this problem. First, the 'median voter' theory of redistribution (Meltzer and Richard, 1981) claims that the amount of redistribution will be that preferred by the median region and, thus, will tend to increase in the distance between median regional income and average regional income. Second, 'partisan' theories of redistribution (see, for example, Alesina and Rosenthal, 1999) suggest that if left- and right-wing parties hold different views on inter-territorial redistribution – and they cannot credibly commit themselves to adopting regional policies that voters know differ from their preferred measures – they will probably implement different policies once in office. Third, the partisan view can be combined with the median voter model, whereby it is assumed that parties compete for office by proposing a platform that appeals to the median voter, though they value not only winning office but also being able to implement their ideological platform (which will differ from one side of the political spectrum to the other). In such a situation, redistribution will be influenced by the degree of electoral competition at each election (Solé Ollé, 2006). If the election is uncontested – in the sense that the incumbent knows for sure he or she will be re-elected – the party in office can implement its preferred level of inter-territorial redistribution, but if the election is contested, the level of redistribution will approach that of the median voter. This means that in contested elections, left-wing parties will tend to redistribute less (than would be the case in uncontested elections) and parties on the political right will tend to redistribute more.

Fourth, in the 'probabilistic voting' model of redistribution (Persson and Tabellini, 2000, Ch. 6) no single voter-region has the full power to determine the outcome (as in the median voter case), but the resulting taste for redistribution is a weighted sum of the tastes of the different income groups, the weights being the electoral power of each group. As in the tactical models discussed above, the regions with the most electoral power are the 'swing' regions. Thus, these models conclude that redistribution will be higher if the low income regions are swing regions. Empirically, the theory can be tested by focusing on the effect of the correlation between regional income (GDP per capita) and the incumbent's margin of victory.

3 EMPIRICAL DESIGN

First Step: Tactical Redistribution

We begin by using Spanish electoral district data for the entire period (1978–2004) of the country's democracy to identify the political variables

that influence infrastructure investment (i, computed as the percentage of investment over the capital stock available at the end of the previous year), controlling for a set of economic covariates. We posit an error correction mechanism (ECM) type equation, which allows investment to adjust in response to a disequilibrium between the previous capital stock and output and other determinants (Solé Ollé, 2009):

$$i_{J,T} = \alpha_P z_{J,P} - \rho_P \left(k_{J,T-1} - \varphi_P y_{J,T-1}\right) + \beta_P x_{J,T-1} + u_{J,T} \quad (12.1)$$

Where z = political variables, k = logged capital stock per capita, y = logged income per capita, x = other economic controls, and u = error term. The subscript J indicates electoral district, T indicates year, and P each of the periods analysed, which for the democratic era coincides with the various terms-of-office. Note that the coefficients α_P, ρ_P, φ_P, and β_P are assumed to be period-specific; the expectation that these coefficients (or at least some of them) are not stable over time explains why we chose to estimate the model by sub-periods. Note also that the political variables are not indexed by T, but only by P, meaning that most of them do not show any variation during a term-of-office. This accounts for the fact that we do not include fixed electoral district effects in the equation. Obviously, this might mean that our estimators lose some of their consistency. We deal with this problem by including some district traits that are fixed in time (for example, land area, coast) in x and which, therefore, could not be included in a fixed effects regression. But, in any case, there is no solution to this problem since the estimation of a fixed effects regression by sub-period makes it very difficult to identify the time-varying coefficients in which we are interested. However, we do account for the possibility that infrastructure investment across the districts is affected by common yearly shocks. For this purpose, the annual mean has been subtracted from each of the variables. Equation (12.3) can then be estimated by GLS including a lag of i among the controls to take into account the short-run dynamics of the investment decisions.[1] Finally, we recognize our concerns about the potential endogeneity of output, due both to the simultaneous multiplier effect of public investment and to the future growth-enhancing effect of public capital. Expression (12.1) deals with this problem by assuming that there is no simultaneous interaction between output and investment (so $\Delta y_{J,T}$ is excluded) and by appropriately accounting for short-run investment dynamics. The inclusion of output after it has been lagged means that we consider it difficult for the government to adapt the allocation of investment to a region immediately following a change in its characteristics (see also Castells and Solé Ollé, 2005). This assumption has an intuitive appeal because a government's investment decisions are most likely

to be based on the most recent data available from each region. These data will generally be for the previous year, given that investment projects are included in the budget during its formulation.[2]

The results of the estimation of equation (12.1) allow us to assess, for the different periods evaluated, the explanatory capacity of the political factors associated with *tactical redistribution* theories (included in the z vector). Note that the coefficient of these variables will tell us if two electoral districts that are on an equal economic footing (same income per capita, y, and same economic traits, x) receive the same amount of funds and, if this is not the case, the reasons why some receive more money than others even when the objective criteria suggest that this should not be the case.

Second Step: Programmatic Redistribution

The results obtained in the estimation of equation (12.1) also allow us to assess the equity–efficiency trade-off implicit in the inter-regional allocation of infrastructure investment, and embedded in the φ parameter (see Castells and Solé Ollé, 2005). The value of this parameter in the different periods will allow us to determine which political factors associated with programmatic redistribution theories might explain the intensity of inter-regional redistribution (see section 2).

But, in order to provide a more formal test of these theories, we begin by estimating equation (12.1) on a year-by-year basis, in order to obtain a time series for the φ parameter. Then we use the estimated φ parameter to run a time series regression with explanatory variables that proxy for several possible explanations of the degree of inter-regional redistribution. Obviously, the use of an estimated regression coefficient as a dependent variable in another regression poses certain problems. Scholars fitting 'estimated dependent variable' (EDV) models generally recognize that any variation in the sampling variance of the observations on the dependent variable will induce heteroskedasticity, and suggest using a two-step FGLS approach to fix the problem (Lewis and Linzen, 2005; Hanushek, 1974).

4 DATA AND VARIABLES

Sample

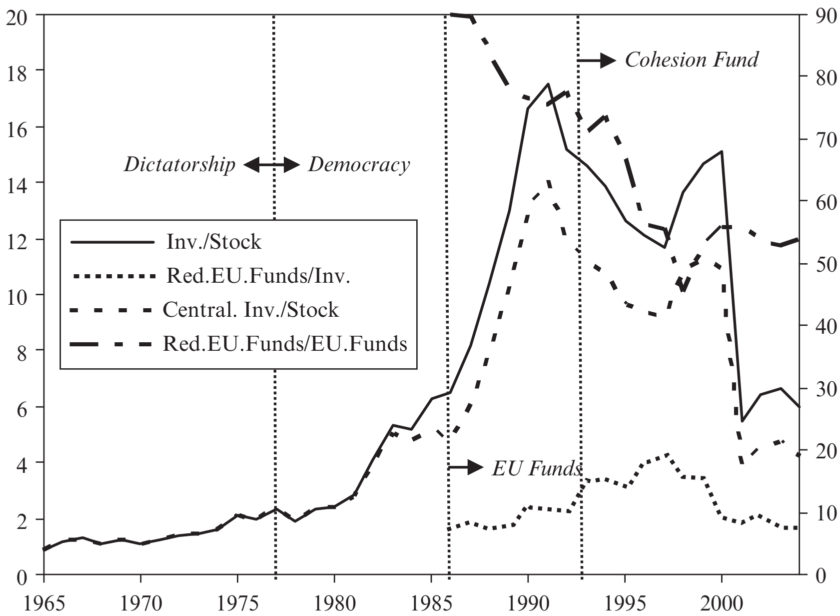
In order to obtain a complete picture of the factors determining inter-regional redistribution in Spain, we first estimate equation (12.1) with data

for the entire democratic period (that is, 1978 to 2004). The year 2004 is the last one for which we have been able to collect the data on investment and capital stock at the electoral district level (that is, *provincia*). We also use the years 1964 to 1977, which belong to the pre-democratic period (that is, Franco's dictatorship). By including this period we seek to analyse the effect of the democratic constitution on the inter-territorial redistribution. We divide the democratic period in eight sub-periods, corresponding to the terms of office of each of the Spanish governments since 1978. The first two sub-periods correspond to the right-of-centre UCD governments (Union de Centro Democrático, 1978–9 and 1980–82), the following four sub-periods to those of the left-of-centre PSOE governments (Partido Socialista Obrero Español, 1983–6, 1987–9, 1990–93 and 1994–6) and the last two to the two right-of-centre PP governments (Partido Popular, 1997–2000 and 2001–04).

Dependent Variable

Our data on infrastructure investment includes only economic infrastructure, deemed to have the most marked effects on growth (Castells et al., 2005 and Montolio and Solé Ollé, 2009). The data are drawn from a database prepared by the Fundacion BBVA (*El stock de capital en España y su distribución territorial*, 1964–2002 and 1965–2004). This database provides information at the provincial level on investment made by the Spanish central government in roads, railroads, ports, airports and water projects, which are the categories that we include in our definition of infrastructure (see Solé Ollé, 2009, for additional details on the construction of this variable).

Figure 12.1 shows a time plot of the investment effort made by the central plus the regional governments and by the central government alone. The infrastructure investment effort was quite low during the dictatorship, increased with the arrival of democracy, and experienced an abrupt increase with the arrival of the left-of-centre government in 1982 and again in the second half of the 1980s, with the receipt of EU funds. Infrastructure investment then decreased during the 1990s, coinciding with the economic crises at the beginning of the decade and with the pre-Maastricht budget stabilization policy. Finally, infrastructure investment fell again after 2000, due to the stringent deficit policy of the new right-of-centre government. We also plot the evolution in the share of infrastructure investment funded by redistributive EU funds, understood as being those funds that are earmarked for poor regions and which have been used to fund infrastructure projects; as a practical solution, we measure these funds in terms of the finance from NUTS Objective 1 and which have been



Notes: (1) Inv./Stock: Central and Regional government infrastructure investment (as a percentage of infrastructure capital stock); Central. Inv.Stock: Central government infrastructure investment (as a percentage of infrastructure capital stock); Red.EU.Funds/ Inv.: EU Funds earmarked for poor regions (measured as NUTS Objective 1 Funds) and used to fund infrastructure investment as a share of central and regional government infrastructure investment; Red.EU.Funds/EU.Funds: EU Funds earmarked for poor regions and used to fund infrastructure investment as a share of total EU funds used to fund infrastructure investment. (2) Investment on the left *y*-axis and EU funds on the right *y*-axis.

Sources: (1) Fundación BBVA (2005, 2008) for investment and capital stock; (2) Ministerio de Economía y Hacienda (various years) for EU funds.

Figure 12.1 Infrastructure investment (as a per cent of capital stock) in Spain 1964–2004. Total and central infrastructure investment, and share funded by the EU

used to fund projects of this type. The source of these data are the annual reports published by the Ministerio de Economía y Hacienda. Note that the share of this infrastructure funded by the EU reached a peak of 19 per cent in 1997 and subsequently fell to 9 per cent in 2004. This means that although these funds cannot be reallocated from poor to rich regions, their limited share will probably allow rich regions to be compensated by other means (though, of course, only if the government considers it desirable to do so). The final plot included in Figure 12.1 is the ratio of

redistributive EU funds to overall EU funds, which has fallen since their initiation, first, because Objective 1 Funds represented a higher share of the ERDF's resources during the 1980s than subsequently and, second, as a result of the creation of the Cohesion Fund in 1993, whose resources are not earmarked for infrastructure projects in poor regions. We return to this evidence in section 5 to interpret the evolution in the redistributive intensity of infrastructure investment in Spain.

Economic Variables

The infrastructure *capital stock* used to compute the investment effort, and also as a control variable, comes from the same data source and is measured at 2000 prices. In this case the variable refers to the overall capital stock, and the information has never been available provided by tier of government. The coefficient of this variable can be interpreted as the share of the adjustment towards the desired capital stock which is implemented in a given year (see also Castells and Solé Ollé, 2005). This parameter is crucial for estimating the long-run impact of income per capita over investment (calculated as the ratio between the income and the capital stock coefficients).

The other economic control variables included are: *income* per capita, *land area* per capita, a *coast* dummy, an *island* dummy, variables measuring climate (per cent *days freezing*, per cent *days raining*) and terrain ruggedness (per cent *land over* 500 and per cent *land over* 1000 metres above see level), and an indicator of the level of *responsibilities* in the provision of infrastructure retained by the central government in a given year. Income per capita is the GDP per capita at market prices, measured at 2000 prices. The information comes from a yearly report published by the BBV (*La renta nacional de España y su distribución provincial*, various publication dates), and from the Spanish regional accounts published by the Instituto Nacional de Estadística (INE) (www.ine.es). The geographical variables have been taken from the *Anuario Estadístico de España*, also published yearly by INE. The performance of most of these variables, it must be said, was rather poor; only income, land area and the coastal dummy were statistically significant and gave consistent results in a substantial number of cases.

Political Variables

We include four political control variables: *margin*, *votes/seats*, *aligned* and *pivotal.* The information used in constructing these variables comes from the website of the Ministerio del Interior (www.elecciones.mir.es). The variable *margin* of victory in the last election aims to capture the

influence of voters that are not particularly attached to the incumbent or to the alternative party/parties and, therefore, are more prone to change their vote in response to an economic premium.

The second political variable included is the ratio *votes/seats*, logged. The marginal electoral productivity of investment in a district depends on the proportion of *swing* voters there (which we proxy with the *margin* variable), but it also depends on the probability of these swing voters giving the incumbent an additional seat, which will depend on how many votes are needed to win that seat (see Castells and Solé Ollé, 2005).

The third political variable used is a dummy indicating if the regional government is or is not aligned with the central one. We consider the two governments to be *aligned* if they are controlled by the same party (either as a majority party or as the leader of a coalition). This is the variable that gave the best performance in a previous analysis of the effects of alignment in Spain (Solé Ollé and Sorribas, 2008). The final political variable is a dummy, *pivotal*, indicating if any of the regional parties give support to a minority central government. In practice, this dummy takes the value 1 for the provinces in Catalunya, País Vasco and the Canary Islands, during the two minority governments of the 1990s (PSOE between 1993–6 and PP between 1997–2000). Previous analyses have shown that this variable is of some relevance (Castells and Solé Ollé, 2005).

5 RESULTS

Tactical Redistribution

The results of the estimation of equation 12.1 for each of the eight terms of office of the Spanish democratic governments are presented in Table 12.1. We also provide these results for each of the parties that have been in power (UCD, right from 1978 to 1982; PSOE, left from 1983 to 1996; and PP, right from 2000 to 2004), and also for the full democratic period. The results in the top panel show that the four political variables have the expected sign and are statistically significant for the full period. Moreover, the coefficients are of a considerable magnitude. For example, an increase of 10 per cent in the *margin* of victory of the incumbent party reduces the investment effort by 0.42 per cent (for example, if the mean investment effort is 6.1 per cent, then it would be reduced to 5.68 per cent). Increasing one standard deviation in the ratio *votes/seats* (around 15 000 votes) will reduce the investment effort by 1.5 per cent (from 6.1 per cent to 4.6 per cent). Not being *aligned* with the central government or not being *pivotal* in the formation of the central executive will reduce the investment effort

Table 12.1 *Economic and political determinants of the regional allocation of infrastructure investment in Spain: (1964–2004 and subperiods)*

Period:	1978–9	1980–82	1978–82	1983–6	1987–9	1990–93	1994–6	1983–96	1997–2000	2001–04	1997–2004	1978–2004	1964–77
Regime/ Party	UCD1	UCD2	**UCD**	PSOE1	PSOE2	PSOE3	PSOE4	**PSOE**	PP1	PP2	**PP**	***Dem.***	***Dic.***
1. *Political factors*													
Margin	−0.162	−0.102	−0.147	−0.144	−0.172	−0.106	−0.122	−0.057	−0.075	−0.127	−0.079	−0.042	–
	(−3.66)***	(−3.76)***	(−3.14)***	(−1.57)	(−3.34)***	(−2.23)**	(−1.77)*	(−2.33)***	(−2.13)***	(−2.71)***	(−2.17)***	(−4.30)***	
Votes/ Seats	−0.005	−0.004	−0.005	−0.002	−0.002	−0.002	−0.001	−0.001	−0.003	−0.002	−0.005	−0.005	–
	(−2.38)***	(−5.36)***	(−2.51)***	(−2.46)***	(−1.24)	(−2.22)**	(−2.10) ***	(−3.87)***	(−5.30)***	(−1.39)	(−5.61)***	(−2.71)***	
Aligned	–	–	–	0.003	0.010	0.014	0.007	0.005	0.003	0.004	0.004	0.008	–
				(1.65)*	(2.31)***	(1.89)*	(1.55)	(2.19)***	(1.34)	(1.54)	(1.20)	(3.86)***	
Pivotal	–	–	–	–	–	–	0.014	0.012	0.006	–	0.006	0.011	–
							(2.14)**	(2.51)***	(2.23)**		(2.20)**	(2.78) ***	
2. *Economic factors*													
Capital stock	−0.077	−0.063	−0.068	−0.049	−0.101	−0.103	−0.089	−0.084	−0.048	−0.077	−0.042	−0.072	−0.079
	(−2.76)***	(−2.72)***	(−3.13)***	(−10.25)***	(−11.31)***	(−5.91)***	(−7.77)***	(−13.28)***	(−2.14)**	(−3.90)***	(−4.94)***	(−15.71)	(−12.89)
Income	0.050	0.028	0.045	−0.010	0.008	−0.004	0.005	0.003	0.028	0.027	0.025	0.034	0.071
	(3.04)***	(2.70)***	(5.72)***	(−3.11)***	(3.47)***	(−2.15)**	(1.81)*	(4.00)***	(4.82)***	(4.56)***	(4.04)***	(4.88)***	(6.92)***
φ	0.685	0.440	0.662	−0.205	0.082	−0.038	0.058	0.039	0.580	0.732	0.678	0.472	0.902
[*s.e.*]	[0.236]	[0.163]	[0.166]	[0.041]	[0.018]	[0.019]	[0.034]	[0.011]	[0.181]	[0.203]	[0.170]	[0.074]	[0.113]

Table 12.1 (continued)

Period: *Regime/ Party*	1978–9 UCD1	1980–82 UCD2	1978–82 **UCD**	1983–6 PSOE1	1987–9 PSOE2	1990–93 PSOE3	1994–6 PSOE4	1983–96 **PSOE**	1997–2000 PP1	2001–04 PP2	1997–2004 **PP**	1978–2004 ***Dem.***	1964–77 ***Dic.***
Land area	0.006	0.005	0.007	0.021	0.015	0.031	0.022	0.023	0.008	0.010	0.009	0.017	0.004
	(0.231)	(0.110)	(0.328)	(4.38)***	(4.51)***	(6.16)***	(4.14)***	(2.75)***	(0.654)	(0.654)	(0.543)	(4.02)***	(0.871)
Coast	0.003	0.003	0.002	0.009	0.008	0.004	0.019	0.005	0.002	0.001	0.003	0.005	0.002
	(0.120)	(0.098)	(0.134)	(2.89)***	(1.60)	(1.13)	(4.56)***	(2.34)**	(0.221)	(0.189)	(0.320)	(2.45)***	(1.210)
Adjusted R2	0.398	0.391	0.393	0.546	0.620	0.515	0.512	0.550	0.235	0.239	0.228	0.400	0.276
F-statistic	13.40	18.50	15.02	28.18	31.68	27.71	26.23	29.23	9.21	9.78	8.70	21.85	9.871
[*s.e.*]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]

Notes: *t*-statistics in parentheses, ***, ** and * = statistically significant at the 99, 95 and 90 per cent levels; standard errors in brackets; Capital stock, Income and Land area measured in per capita and logged; margin is computed as abs (incumbent's vote share – vote share at the peak), aligned = central and regional government controlled by the same party (either as a majority party or as the leader of a coalition), pivotal=regional parties giving support to a minority central government;
φ = *equity-efficiency trade-off*, computed as the ratio between the coefficient of income and that of the capital stock (in absolute value);
Method of estimation: GLS (random effects) with time effects and an AR(1) term.

by 0.8 per cent and by 1.1 per cent, respectively (that is, from 6.1 per cent to 5.3 per cent and 5 per cent, respectively).

Moreover, the results of the *margin* and *votes/seats* variables hold for the three different parties in government and, with two exceptions, for each of the terms of office. Centre-left PSOE governments seem to have been a little less influenced by these tactical considerations. The coefficients for the centre-right UCD governments seem to have been the strongest. The *aligned* results only hold (at conventional statistical significance levels) in the case of the PSOE, with the coefficients being of the expected sign but not statistically significant under the PP.

Using the results in Table 12.1 it is possible to evaluate the 'relative' *political power* of an electoral district J in period P as:

$$Power_{J,P} = \frac{\exp(\beta_P z_{J,P})}{\exp(\beta_P z_P)} \tag{12.2}$$

This indicator should be interpreted as the relative ability of a district to attract investment over a standard amount, determined by its 'objective' economic traits. This indicator has a polarized distribution, with a high proportion of districts with either low (50 per cent of Spanish average) or high political power (150 per cent of average). The political power of some districts has remained more or less the same throughout all the period (for example, Navarra, Murcia and the average district in Castilla-León), while for others it has fluctuated between the two modes from one sub-period to the other (for example, Catalunya).

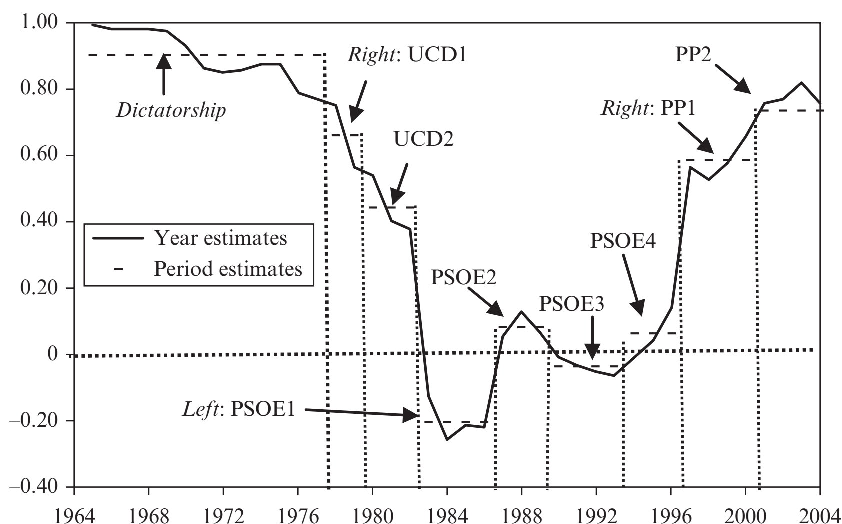
Programmatic Redistribution

The bottom panel of Table 12.1 analyses the effect of economic variables on investment effort. The results suggest that the higher the previous level of capital stock, the lower the investment effort will be. During the period of full democracy, the capital stock coefficient suggests that investment closes the gap between actual and desired capital stock by 7.2 per cent each year. This number is higher during the PSOE governments and lower during the PP central administration, surely reflecting the different amounts of funding assigned to infrastructure investment at different points in time. The results also indicate that the central government invests more in regions with lower population density and a coastal location (although the coefficient is not statistically significant in all the sub-periods), taking into account the differential spending needs and/or costs of these areas (see also Castells et al., 2005). Any attempt to account for other factors, related either to needs/costs (for example, climate, terrain ruggedness) or responsibilities has been unsuccessful.

Investment effort is affected positively by income, with the exception of the PSOE1 and PSOE2 terms-of-office. The row below the income results shows the equity–efficiency trade-off parameter (φ), with values that are positive and lower than one for most of the sub-periods, with the exception of the two aforementioned left-wing governments who display negative but modest values. In relative terms, the UCD governments had an efficiency orientation ($\varphi = 0.662$), but they were the first governments to implement the new demands for redistribution that arose with the birth of democracy; note, for instance, the quasi-absolute efficiency-orientation of infrastructure investment during the dictatorship ($\varphi = 0.902$). Also, the more recent right-wing governments (PP, between 1997 and 2004) have been more efficiency-oriented ($\varphi = 0.678$) than their previous left-wing counterparts (PSOE, between 1983 and 1997), who placed greater emphasis on equity ($\varphi = 0.039$). However, in no case was the regional allocation of investment fully efficient ($\varphi = 1$).

The value of this parameter for each sub-period is also shown in Figure 12.2, which also plots the estimated φ value for each of the years of the sample. The inspection of the figure suggests several explanations for the time evolution of the value of this equity–efficiency trade-off. First, the arrival of democracy brought the first impulse for equity in the allocation of infrastructure investment. Second, left-wing governments are more redistributive (equity-oriented) than right-wing administrations. Third, the maximum level of inter-regional redistribution occurred with the first left-of-centre PSOE government. To understand this, recall that PSOE won the 1983 election by a huge margin; this fact, coupled with the desire to implement a long-delayed ideological programme (this was the first left-wing government in nearly half a century) might explain this intense equity orientation. Fourth, the next redistributive impulse occurred in the PSOE's third term of office (1989–93), conditioned by the huge amount of EU funds that were earmarked for poor regions since Spain had joined the European Community. Fifth, the last PSOE government (1994–96) and the PP administrations (1997–2004) sought to increase the orientation of infrastructure investment towards efficiency. To understand the causes behind this recall that, as shown in Figure 12.1, the amount of EU funds earmarked for poor regions, and which had funded infrastructure investments, gradually fell over time. This was due both to a decrease in the relative amount of money allocated to NUTS Objective 1 regions, and to the creation of the Cohesion Fund in 1993.

But, of course, there might be additional explanations that are not immediately detectable from a bird's-eye inspection of the data. For instance, some of the programmatic redistribution theories (see section 2) suggest that the level of redistribution in a democratic system will be that preferred



Note: Equity–efficiency trade-off (φ) is the 'long-run' elasticity of investment to income, obtained after estimating a regression between infrastructure investment (as a percentage of infrastructure capital stock) and GDP per capita, controlling for the capital stock and other economic and political covariates (see Notes in Table 12.1 for more methodological details).

Figure 12.2 Equity–efficiency trade-off (φ) for infrastructure investment: Spain, period 1964–2004 and sub-periods

by the most powerful group of citizens. In this instance, that group could be either the median income region or a weighted sum of all the regions, where the weights reflect the political power of each one. In terms of the political power variable presented above, powerful might mean a lower *margin* of victory, a lower *votes/seats* margin, that the regional and central governments are *aligned*, or that regional parties are *pivotal* in the formation of the central executive. As such, different theories can lead to different predictions being made. If the median voter theory is true in our context, we would observe an increase in the efficiency orientation of the government (that is, φ) as the ratio between median and average income increases. The other possibility is that the efficiency orientation of the government increases as the political power of the electoral districts becomes less negatively/more positively correlated with income. That is, as poor/rich regions become less/more powerful, the degree of redistribution falls.

Table 12.2 presents the results of a regression that seeks to test the different hypotheses introduced so far in the discussion. The dependent variable is the value estimated for φ with yearly data. In the first column we

Table 12.2 Determinants of the equity–efficiency trade-off (φ) in the regional allocation of infrastructure investment, Spain 1964–2004

	(1) *Constitution*	(2) *Partisan*	(3) *Partisan*	(4) *Median voter*	(5) *Power*
Constant	0.663	0.663	0.663	0.738	0.826
	(7.05)***	(7.63)***	(7.63)***	(9.19)***	(36.77)***
Democracy	−0.251	−0.100	−0.098	−0.109	−0.103
	(−2.22)**	(−1.76)*	(−1.69)*	(−1.25)	(−1.34)
Red. EU Funds/ Investment	−0.015	−0.004	−0.005	−0.005	−0.001
	(−5.30)***	(−2.65)***	(−3.37)***	(−2.41)***	(−0.100)
Left	–	−0.434	−0.607	−0.562	−0.550
		(−9.67)***	(−13.44)***	(−9.32)***	(−12.30)***
Left × Electoral competition	–	–	0.087	0.076	0.112
			(0.651)	(0.540)	(0.611)
Right × Electoral competition	–	–	−0.216	−0.231	−0.209
			(−4.21)***	(−4.34)***	(−4.78)***
Median income/ Income	–	–	–	−0.013	–
				(−0.67)	
Corr(Power, Income)	–	–	–	–	0.355
					(4.10)***
Adjusted R^2	0.320	0.616	0.653	0.660	0.670
F-statistic	27.13	65.98	83.96	78.15	98.42
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]

Notes: *t*-statistics in parentheses, ***, ** and * = statistically significant at the 99, 95 and 90 per cent levels; standard errors in brackets;
Red.EU.Funds/Investment = share of infrastructure investment funded by European Union redistributive funds (see Figure 12.1 for a definition);
Left = PSOE executives (1983–96); Median Income/Income = ratio between median GDP per capita and average GDP per capita;
Corr(Power, Income) = correlation between political power and GDP per capita = weighted sum of margin, votes/seats, alignment and pivotal, with weight obtained from regression analysis (see Table 12.1);
Estimation by two-step FGLS (Solé Ollé, 2009).

test the so-called 'constitutional' explanations for redistribution; that is, the hypotheses that say that the inter-territorial redistribution is basically affected by the arrival of democracy and EU funds. The results in column 1 do in fact show that the *equity–efficiency trade-off* was on average higher during the dictatorship (φ = 0.663, picked up by the constant term) than in the democratic period (φ = 0.412, computed as the sum of the coefficient of *Democracy* and the constant term). Moreover, these differences

are statistically significant. Further, the amount of *Redistributive EU Funds* as a proportion of infrastructure investment reduces the efficiency orientation of that investment. For each percentage point of *Redistributive EU Funding* the φ coefficient is reduced by 0.015. This means that at the peak of EU infrastructure funding in 1997 (when this share accounted for 19 per cent) the predicted value of φ was 0.127 (= 0.663 – 0.251 – 0.015 × 19) and at the end of the period (when this share accounted for just 9 per cent) the value of φ was 0.135. Note, however, that even if we accept that EU funds had a statistically significant effect on redistribution, this does not explain the bulk of the differences between periods.

In the second and third columns we present the results of what we call the 'partisan' explanation for redistribution. The results in column 2 show a negative and strongly statistically significant coefficient for the *Left* variable. While a right-wing democratic government has a predicted φ coefficient of 0.553 (= 0.663 – 0.100), the same parameter takes a value of 0.119 (= 0.663 – 0.100 – 0.434) for a left-wing executive. Column 3 tests a variant of the partisan theory, which states that ideology is mediated by the degree of electoral competition. We expect that in contested elections left-wing parties will redistribute less (than they would do in uncontested elections) and right-wing parties will redistribute more. We test this hypothesis by interacting the *Left* and *Right* dummies with an *Electoral competition* dummy, which takes a value of 1 for the years when the incumbent expected a narrow margin of victory/defeat at the next general election and zero otherwise (see Solé Ollé, 2009, for details of the calculation of this variable). As can be seen in the table, *Left* governments still redistribute much less than the *Right* ones if the election is uncontested (the coefficient of the *Left* dummy without interactions is negative and statistically significant). However, we observe now that *Right* governments redistribute more in contested than in uncontested elections. In fact, the φ coefficient drops by −0.216 between these two situations.

The fourth column of Table 12.2 tests the *Median Voter* theory of redistribution. The results are, however, rather disappointing. The coefficient of the ratio between median and average regional income is not only statistically insignificant but its sign is the opposite of that expected. Finally, the fifth column of Table 12.2 tests the hypothesis that the degree of redistribution is affected by the correlation between political power and income per capita, corr(*power, income*). Here, our measure of power is that derived from the estimation of equation (12.1) (see Table 12.1 and expression 12.2), which is a geometrically weighted average of the variables *margin*, *votes/seats*, *alignment* and *pivotal*. The results suggest that this variable has a positive and statistically significant effect on redistribution. Additional results, breaking this variable down into its different components (though

not displayed here) show that all of them have a positive and significant effect. An additional intriguing effect of the inclusion of this variable is that the coefficients of both *Democracy* and *EU Funds* are no longer statistically significant at conventional levels. The results for the ideological variables remain the same. This would mean that the degree of interterritorial redistribution is at a practical level determined to a lesser degree by constitutional rules and laws that seek to channel funds towards less developed regions, and is more dependent on the ideology of the party in office and on the electoral incentives that this party faces in each election.

6 CONCLUSION

Infrastructure investment represents a sizeable component of regional fiscal flows, and a component over which the central government has considerable discretion to act. Given this situation, it is natural to expect that pork-barrel spending tactics (what we refer to here as 'tactical redistribution') do shape (at least, in part) the regional allocation of investment. In this chapter we have shown that, after controlling for the key economic traits of Spain's electoral districts (income, capital stock and land area), the districts that are most 'electorally productive' still receive disproportionately higher amounts of investment. These districts are those in which there is a high proportion of swing voters (those that are not especially attached to any of the standing parties), where the 'price of a seat' is low (fewer votes are needed to win a seat), where the regional government is controlled by the same party as that which sits in central government, and where there are regional parties that are pivotal in the formation of the central executive.

However, we have also been at pains to argue that it is not the case that infrastructure investments are fully discretionary and, therefore, that programmatic redistribution theories also explain part of the overall picture. The equity orientation of the regional allocation of infrastructure investment is conditioned by constitutional rules, understood in their broadest sense, including both the mandate of the Spanish Constitution as well as the effects of EU policies. These rules place certain constraints on the investment allocation possibilities open to governments, forcing politicians to design formula-based allocations based primarily on regional income. This is the realm of programmatic regional redistribution, where the government basically determines the weight given to income in the allocation of investment, what we call here its equity–efficiency trade-off or its taste for redistribution. Here we have shown that the long-run effects of income on the investment effort are lower than 1, meaning that the allocation of investment is not only efficiency-oriented. The weight given to

equity was very low during the dictatorship, increased with the arrival of democracy and, more markedly so, after the election of the first left-wing government, and again after *EU Funds* began to flow into Spain. In this chapter we have sought to test these highly intuitive explanations against others derived from different theories of programmatic redistribution. We show that both *Democracy* and *EU Funds* did have some effects on inter-territorial redistribution, but that these effects disappeared after accounting for politics. Ideology seems to be a more powerful determinant of the equity orientation of infrastructure investment, left-wing governments redistributing much more than their right-wing counterparts. In addition, redistribution seems to decrease as less developed regions lose some of their earlier political power.

Thus, contrary to widely held beliefs, our results suggest that the allocation of infrastructure investment in Spain is not constrained to any great degree by rules. Rather the allocation of these funds tends to be more strongly influenced by politics, both by particularistic politics (tactical redistribution) and also by programmatic considerations (programmatic redistribution) that eventually influence the way in which the country's redistribution formulae are determined.

NOTES

1. Specifications including additional lags of i and of Δy and Δx were also tried, but proved unnecessary (see Solé Ollé, 2009).
2. However, to check the appropriateness of this assumption, the equation was re-estimated using instrumental variables, including $\Delta y_{J,T}$ as an additional explanatory variable and using as an instrument the stock of human capital, computed as the average number of schooling years of the labour force (data taken from IVIE, 2008). Human capital can be plausibly considered to be exogenous and this factor had a substantial impact on regional growth in Spain during the period analysed (De La Fuente and Vives, 1995; De La Fuente, 2002). After instrumenting, the effect of $\Delta y_{J,T}$ was positive but very small in most of the periods analysed and, in any case, not significant at a conventional level; more importantly, the estimated long-run income coefficient φ did not change greatly.

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Comment VIII

Germà Bel

The economic literature has given increasing attention to the analysis of the factors that explain the regional allocation of public investment in infrastructure. Initially, scholars focused on the trade-off between efficiency and equity. Soon other works extended the analysis to include the role of political factors as determinants of government investment in infrastructure. Two chapters in this volume follow this stream of the literature. In the first one, Achim Kemmerling and Andreas Stephan's 'The determinants of regional transport investment across Europe', emphasize the importance of country-specific political institutions in order to explain the regional distribution of investments. To analyse this issue, the authors undertake a cross-country empirical analysis, considering France, Germany, Italy and Spain. This set of countries includes federal (Germany and Spain) as well as unitarian (France and Italy) countries, as well as a variety of electoral systems.

Kemmerling and Stephan distinguish between (1) normative factors: efficiency, redistribution and equity, noting that efficiency and redistribution are usually conflicting objectives; and (2) political factors, within which they emphasize the ideological stance of political parties (assuming left-wing and regionalist/separatist parties positively related with investment in the region), partisanship (those regions where the governmental party is the same as the party in the national government receive more investment), and (3) electoral interest of the national government (higher investment in pivotal regions and in party's strongholds).

The results obtained from the empirical estimation suggest that efficiency concerns are important in all countries, and redistribution is an important objective in all countries as well (although not statistically significant for France). However, the equity objective shows more ambiguous results, and no strong conclusion can be made about it. Regarding political variables, the results are much more mixed, and show important differences between countries. In this way, partisan strongholds receive more investment in Spain and Italy, but this does not happen in Germany and France. Regional parties are positively related to regional investment in Spain, but they are not so in Italy. Regarding left-wing parties, they are

related to higher regional investment in Italy and France, but they are not so in Germany and Spain. All in all, there exists a wide diversity regarding the effects of political variables, and two general results are emphasized by the authors: (1) ideological variables only play a significant role in centralized systems, and (2) electoral incentives play a role in most countries.

The other chapter in this section, Albert Solé Ollé's 'The determinants of the regional allocation of infrastructure investment in Spain', begins with a discussion on why 'fiscal deficits' related to infrastructure are subject to harsh discussions. First, because infrastructure-related fiscal deficits sustained over time lead to too-small infrastructure capital stocks in rich regions; second, because the central government has considerable discretion in the territorial allocation of infrastructure investments; and third, because it is not clear what 'objective criteria' of infrastructure investment allocation means. Of course, there is an important distinction to keep in mind in order to interpret the concepts. On one hand, we can think of the existence of tactical redistribution, usually called pork barrel politics. On the other hand, we can consider the existence of programmatic redistribution.

Solé Ollé uses data on investment and capital stock at the province level data for 1978 through 2004. Data for 1964–77, before democracy was reestablished in Spain, is considered too in the study, but is not included in the analysis for the political variables. The author includes four political variables in his empirical model; (1) *Margin*, deriving from the swing voter theory; (2) *Votes/seats*, related to maximizing effectiveness of money invested to 'buy' votes; (3) *Aligned governments*, that is to say, Do your comrades rule the region?; and (4) *Pivotal*: indicating whether the central government needs support from regional specific parties. Regarding the results obtained from the estimations, all these variables work reasonably well, although results for alignment are mixed: alignment is usually significant for social-democrat – PSOE governments, but it is not for conservative – PP governments.

Overall, Solé Ollé's results suggest that regional allocation of infrastructure investment in Spain is heavily affected by politics, both by tactical redistribution as well as by programmatic redistribution. It is worth emphasizing the specific results obtained regarding the two reasons explaining why a region would obtain less investment than deserved: (1) being a region with low political power, and (2) belonging to a group (according to the region's characteristics) that enjoys low political power.

Both chapters use robust empirical techniques, and they obtain interesting results. In some way, Solé Ollé results seem to be more consistent, perhaps reflecting the fact that single-country studies usually allow using a wider set of variables. Undoubtedly, his estimation benefits from this.

One interesting question that can relate to both chapters is that of how to approach the efficiency criteria. One approach, relating regional output to the regional infrastructure stock, seems a sensible way to approach the issue in an aggregated way. However, this type of analysis could benefit from using a more detailed and disaggregated analysis. Rich regions do not always have high project impact, and poor regions do not always have low project impact. It crucially depends on the previous stock of a *given type of infrastructure.* For instance, the Spanish motorways plan 1984–91 emphasized investment where high capacity roads were absent. It was likely following an efficiency criterion. Technically, what really matters in not whether a region is rich or poor, but the traffic intensity (for example, average daily traffic) adjusted for the existing motorway capacity (current level of service).

More importantly, a further distinction that could be useful to take into account is that distinguishing between budgeted funded infrastructures and user-funded infrastructures. The first one is the case of railway infrastructure in all countries, and most motorways in Spain and (almost all) in Germany. However, most motorways in France and Italy are tolled (as well as a non-negligible part – roughly the 25 per cent – of the motorway network in Spain). Generally, airports and ports are funded with users' charges (even if some cross-subsidies are allowed in the different countries). It is quite possible that national government will use different criteria on the regional allocation of specific infrastructure investment depending on how the investment is going to be funded. Basically, redistribution and political objectives would likely have more room in budgeted-funded infrastructures than in infrastructures that are paid for by the users. Therefore, disaggregated analysis, distinguishing by infrastructure type could provide interesting and more robust results.

USING INFRASTRUCTURE INVESTMENT FOR CENTRALIZATION PURPOSES

In an interesting paper, Faguet (2004) tries to explain why there is so much centralization. His model locates central government in a particular geographical space, the capital, and considers self-interest on the part of the capital residents. According to Faguet's analysis, centralization is a consequence of the interest of those who live in the capital city. In this way, they benefit directly from a strongly centralized government within a context where territorial governments enjoy weak constitutional guarantees.

I believe this approach can help to understand why infrastructure investment is allocated by the central government. This can add to the analysis based on the efficiency–equity dilemma and its extension by considering

Table C8.1 Infrastructure investment as a means for territorial policy (1991–2004)

Region	Average distance from Madrid (1)	Total investment (% GDP) (2)	Investment in highways (% GDP) (3)	Investment in railways (% GDP) (4)
Castille La Mancha	**146**[1]	**1.9**	**1.0**	**0.5**
Castille-León	**210**	**1.7**	**1.0**	**0.4**
La Rioja	321	0.9	**0.6**	0
Aragón	330	**2.5**	**0.9**	**1.2**
Extremadura	351	**2.3**	**1.2**	0.1
Cantabria	387	**2.1**	**1.6**	0
Murcia	387	**1.3**	0.5	0.1
C. Valenciana	393	0.9	0.4	0.2
Asturias	435	**2.3**	**1.3**	**0.3**
Andalucía	498	**1.4**	**0.6**	0.2
Galicia	550	**1.6**	**1.0**	0.2
Catalonia	563	0.7	0.2	0.2
Spain (aggregated)		**1.1**	**0.5**	**0.2**

Note: [1] Bold numbers indicate the percentage is above the national percentage in the same column.

Source: Data on investment taken from Sànchez (2006). Data on distances between Madrid and provincial capitals taken from Ministerio de Fomento and Campsa Guide (shorter route).

political factors. We can take Spain as a field to check this. Table C8.1 displays several ratios of 1991–2004 infrastructure investment in each region (allocated by the central government) to regional GDP: columns (2) total investment; (3) investment in highways; and (4) investment in railways. The table includes as well a column (1) displaying the average distance between the capital city, Madrid, and the provincial capitals in each region. The table does not include those regions where the regional government is responsible for all highways: Canary Islands, Balearic Islands, Basque Country, and Navarre.

When considering total investment (column 2) we do not observe a clear relationship between the investment/GDP regional ratio and the distance to Madrid. However, the picture looks quite different when looking at highways (column 3). In this case, all six regions closer to Madrid enjoy ratios higher than the Spanish aggregate. In the case of the regions more

distant from Madrid we find more diverse ratios. Something similar happens when we look at the investment in railways. Those regions closer to Madrid receive higher investment/GDP ratios, and the opposite happens in the regions in the periphery.

Particularly interesting is the case of Castille La Mancha and Castille-León. These two regions surround the capital city, the first one on the way to the South, South-East and South-West; the second one on the way to the North, North-East and North-West. Both regions receive investment/GDP ratios that more than double the Spanish average in surface transportation. And both regions have GDP per capita below the Spanish aggregated GDP per capita.

Do they receive high investment because they are relatively poor, or because they are the regions that must be crossed by that infrastructure intended to develop a radial network? Indeed, both motivations are compatible. This being said, I think that there exist good reasons to believe that a centralization policy has played a big role in determining this type of regional allocation of infrastructure. A highly illustrative example of this political purpose is found in the statement made by the Spanish president José María Aznar, in his first speech in the Spanish Parliament in the 2000–04 mandate: 'The existence of a healthy situation of the public budget, together with the results of the 2000 Agenda, will allow us to implement an ambitious investment programme. This programme will put together all the Spanish territories by completing the motorway network; *a high speed network that – in ten years – will put all province capitals less than four hours to the centre of the Peninsula*, and ports and airports adjusted to the demand requirements' (Aznar, 2000: 29; emphasis added).

By recalling the motorway network in Spain we obtain a clear picture of what this type of radial network of surface transport infrastructure means. The main motorways in Spain converge on to the capital city, Madrid. The most important exceptions are those of the Mediterranean Corridor and the Ebro Valley Corridor. Note that both of them are tolled motorways, whereas the motorways converging onto Madrid are free. In the case of the high-speed train network the picture would be still stronger: no exception to the centre–periphery lines.

Instead, the investment policies regarding ports and airports – both determined by the central government in Spain – follow a different type of rationale, closer to the idea of efficiency-led investment. The case of the airports has been empirically analysed in Bel and Fageda (forthcoming). Their empirical results show that – besides political factors related to strongholds and alignment already mentioned above – regional allocation of investment in 1992–2004 was positively related as well to GDP per capita and to demand. Indeed, efficiency – much more than redistribution or

equity – has been the main economic driver of airport investment in Spain. It is worth adding here that efficiency reasons do not mean that centralization has not been an objective in the Spanish airport policy as well. On one side, Madrid has received a disproportionately large share of total airport investment (much higher than the capital's share in traffic). On the other, centralization is achieved by preserving a centralized and integrated system of management of the Spanish airports, which is unique among the developed countries with large or medium air markets (Bel and Fageda, 2007).

FINAL REMARK: IS IT THE EFFICIENCY–EQUITY DILEMMA; IS IT CENTRALIZATION, OR BOTH?

The literature on determinants of regional allocation of infrastructure investment has shown that efficiency and redistribution are important drivers of the decisions made by the central governments regarding infrastructure investment. Besides this, political factors related to electoral strength and party alignment play a role as well. In addition to this, I suggest paying attention to factors related to wider meta-political objectives that the central government can follow by means of specific policies such as infrastructure investment.

The Spanish case illustrates that centralization can be a main driver of the allocation of surface transportation infrastructure. And it could well be the case that, sometimes, we take as redistribution what really is connecting the capital city (geographical centre) with peripherical regions with infrastructures that happen to cross through less developed regions. Is it redistribution or centralization?

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PART III

In or out? Regional redistribution and the stability of federations

13. Federalism, regional redistribution and country stability

Enrico Spolaore

1 INTRODUCTION

In recent decades a large number of new sovereign states has been created through secessions, decolonization and breakup of existing countries. Since 1990, the Soviet Union has split into 15 independent countries, Yugoslavia gave way to six sovereign states (not counting Kosovo), Czechoslovakia broke into two separate states, Eritrea seceded from Ethiopia, Namibia gained independence from South Africa, and Timor Leste left Indonesia. Today there are 193 internationally recognized sovereign states in the world, up from 74 in 1945 (the latest UN member is Montenegro, which joined in 2006). At the same time, numerous countries, while remaining unified, have taken steps towards more regional autonomy and decentralization.[1] Regional redistribution, decentralization and federalism have played a prominent role in political debates across Europe (for example, in Belgium, Italy, Spain, the United Kingdom) and all over the world – from Canada to Colombia, from Nigeria to South Africa, from Iraq to India.

These trends have motivated a growing literature on the political economy of national borders, which has addressed questions such as: Why do countries break up? What are the costs and benefits of secessions and border redrawing?

Are country breakups efficient from an economic perspective? Is the demand for sovereignty and independence connected to the demand for regional decentralization and autonomy within unified countries? Do decentralization and federalism reduce the periphery's incentives to secede?

In this chapter we will review some key concepts and results about the efficiency and stability of national borders from an economic perspective (section 2). Building on those ideas, we will then discuss two related questions:

1. We will consider the relationship between inter-regional redistribution and the stability of national borders, and argue that inter-regional

redistribution is a two-sided sword, depending on whether transfers are based on regional preferences or income (section 3).
2. We will ask whether decentralization and federalism promote or hamper country stability (section 4). In particular, we will provide a simple analytical model of the relationship between decentralization and incentives to secede, and briefly discuss some empirical evidence.

2 THE POLITICAL ECONOMY OF NATIONAL BORDERS: AN OVERVIEW

The formation and breakup of sovereign states has been at the center of a vast philosophical, political, and historical literature for centuries.[2] In contrast, economists have usually taken political borders as given. Only in recent years has the literature started to address questions of country formation and breakup with the tools and concepts of economic analysis. This is an appropriate development, because political borders are not a fixed part of the geographical landscape, to be treated as given ('exogenous'), but human-made institutions, affected by the decisions and interactions of individuals and groups pursuing their objectives under constraints. Therefore, understanding the formation and breakup of nations is a natural extension of political economics. The central goal of contemporary political economy is to understand ('endogenize') collective decisions and institutions, and such institutions include sovereign states and federations. General discussions of the economic literature on national borders are provided in Alesina and Spolaore (2003), Bolton et al. (1996), and Spolaore (2006), on which this section mainly builds. Contributions to the economic literature on national borders and secessions include Alesina and Spolaore (1997, 2005, 2006), Alesina et al. (2000), Bolton and Roland (1997), Bordignon and Brusco (2001), Ellingsen (1998), Goyal and Staal (2004), Le Breton and Weber (2003), Wittman (2000), and others.

When we consider the number and size of sovereign states from an economic perspective, a natural starting point is the trade-off between benefits and costs from a larger size. An essential role for states is the supply of public goods to their citizens. Providing public goods comes with economies of scale, because public goods are typically non-rival in consumption. That is, each citizen can benefit from them without reducing the benefits for other citizens, and therefore public goods are cheaper per person when more taxpayers pay for them. Empirically, the share of government spending over gross domestic product (GDP) is decreasing in population: smaller countries tend to have proportionally larger

governments.[3] Moreover, in principle, larger nations can better internalize cross-regional externalities – an issue extensively studied in the literature on decentralization and fiscal federalism. Additional benefits from size come from insurance against imperfectly correlated natural and economic shocks through inter-regional transfers, when economic agents cannot perfectly insure against those shocks in international capital markets.

However, a larger size also comes with significant economic and political costs. As states become larger, administrative costs and congestion may overcome some of the scale benefits. More importantly, an expansion of a state's borders is likely to bring about higher diversity of preferences for public policies and types of governments across different groups of citizens. As national borders include more diverse populations – with different cultures, languages, ethnicities, religions, and so on – disagreements over the fundamental characteristics of the state (for example, legal system, official language, foreign policy) become more likely to emerge and harder to reconcile. In general, being part of the same country implies sharing jointly-supplied public goods and policies in ways that cannot always satisfy everybody's preferences. This induces a trade-off between economies of scale and heterogeneity of preferences. Such trade-off has played a central role in the economic literature on the size of nations (see Alesina and Spolaore, 1997, 2003).

The trade-off depends not only on the degree of heterogeneity of preferences but also on the political regime through which preferences are turned into policies. For example, rent-seeking dictators (Leviathans) that are less concerned with the preferences of their subjects may pursue expansionary policies leading to the formation of inefficiently large countries and empires. In contrast, democratization leads to secessions and formation of smaller countries. Up to a point, the breakup of countries associated with democratization can improve efficiency. However, in the absence of effective political mechanisms to integrate populations with diverse preferences, self-determination and voting outcomes tend to bring about excessive fragmentation and costly breakup. Such political costs tend to depend not only on the degree of heterogeneity of preferences, but also on the quality of institutions through which individual preferences are turned into collective action. While in some societies and political systems there exist effective mechanisms to integrate populations with diverse preferences, in other societies heterogeneity comes with higher political and economic costs. On the other hand, the quality of institutions itself is likely to depend on the extent preferences are heterogenous within a society. At the same time, diversity may also bring about some direct economic benefits through learning, specialization and exchange of ideas and innovations. Successful societies manage to minimize the costs of heterogeneity while

maximizing the benefits stemming from a diverse pool of preferences, skills and endowments.

The study of the relationship among heterogeneity of preferences, quality of institutions and stability of countries is still in its infancy. A difficult task is how to measure relevant heterogeneity of preferences and characteristics across individuals and regions. Valuable information is provided by measures of ethnolinguistic fractionalization (introduced in the economic literature by Mauro, 1995), but such variables proxy only imperfectly for the extent and intensity of preference heterogeneity that affect the determination of national borders. More recent economic contributions have considered direct measures of long-term historical differences across populations, including measures of genetic, linguistic and religious distance that explain the diffusion of technological and institutional innovations across societies (Spolaore and Wacziarg, forthcoming). An interesting analysis that connects genetic, linguistic and cultural distances to national stability in Europe is provided by Desmet et al. (2007).

As stressed by the economic literature on national borders, the trade-off between benefits and costs of size is not invariant with respect to the political and economic environment. For instance, it is also a function of the degree of international openness (Alesina and Spolaore, 1997; Alesina et al., 2000, 2005; Spolaore and Wacziarg, 2005). This is because international openness affects the economic impact of a country's domestic size. The extent of the market is an important determinant of economic prosperity, but the size of the market does not necessarily coincide with the political size of a country as defined by its national borders. Larger nations mean larger markets when political borders imply barriers to international exchange. In contrast, market size and political size would be uncorrelated in a world of perfect free trade in which political borders imposed no costs on international exchanges. Consequently, market size depends both on country size and the degree of international openness. Small countries can prosper in a world of free trade and high economic integration, whereas a large political size is more important for economic success in a world of trade barriers and protectionism. This is confirmed by empirical evidence from cross-country regressions. The effect of size on economic performance (income per capita, growth) tends to be higher for countries that are less open, and the effect of openness is much larger for smaller countries.[4] This has important consequences for the stability of countries. As international economic integration increases, the benefits of a large political size are reduced, and the formation of smaller political units (political disintegration) becomes less costly. Hence the trade-off between size and heterogeneity shifts in favor of smaller and

more homogeneous countries. We can also think of the reverse source of causality. Small countries have a particularly strong interest in maintaining free trade, since so much of their economy depends upon international markets. When openness is endogenized, the analysis can be extended to capture two possible worlds: a world of large and relatively closed economies, and one of more numerous, smaller, more open economies (Spolaore, 2004). In a nutshell, economic integration and political disintegration tend to go hand in hand.

Another prominent set of forces affecting national borders and their stability stems from conflict, defense and security. Contributions to the economic literature on endogenous borders have explicitly modeled provision of defense, international conflicts and wars, building on the formal literature on conflict and appropriation pioneered by Haavelmo (1954), Tullock (1980), Hirshleifer (1989, 1991) and Grossman (1991). For instance, international conflict and defense are at the center of the analysis of country formation and breakup in Alesina and Spolaore (2005, 2006) and Spolaore (2004). In those papers the size of nations is affected by the fact that a country's military power matters in the settlement of international disputes. Defense and national power are public goods, and, in principle, larger countries can provide better and cheaper security for their citizens. In a more bellicose world, larger, more centralized countries may be at an advantage, whereas a reduction in international conflict reduces the incentives to form larger political unions. However, a decrease in the importance of military force may not reduce the total number of violent conflicts in the world. When borders are formed endogenously, a lower role for defense and security, by bringing about the formation of more numerous countries, may paradoxically increase the number of observed conflicts in the world, because, even if the use of force is less likely in each specific international dispute, the higher number of countries raises the probability that some of those countries may enter into a military confrontation. For example, Alesina and Spolaore (2006) show that a *lower* probability of having to use force in international relations increases the number of nations in equilibrium, and can lead to an increase in the number of international interactions that are resolved by force. In sum, a reduction in global conflict between larger political units may lead to an increase in more localized conflict between smaller political units. Analogously, improvements in the enforcement of national 'control rights' through a more effective rule of international law will reduce the need for defense and force, and may therefore cause breakups of nations, possibly leading to more rather than less conflicts in equilibrium (Alesina and Spolaore, 2005). In more recent work, Spolaore (2008) has provided a formal analysis of endogenous border formation when secessions are

the direct outcome of civil conflict between two regions within a unified country. In that context, total spending on civil-conflict inputs and the probability of secession are endogenous variables, which depend on the incentives to secede and on the incentives to oppose a secession. Such incentives depend on heterogeneity costs (associated with different preferences over the type of government), economies of scale in the provision of public goods, and the relative size of the two regions. In particular, separatist conflict tends to be more intense when the two regions are of roughly equal size, consistently with the empirical literature on civil and ethnic conflict (see Horowitz, 1985 and Collier, 2001). As we have seen, a special case of economies of scale from a larger size stems from the provision of defense and security against external threats. Interestingly, external threats do not necessarily reduce the intensity of separatist conflict within a country, because, while they reduce the incentives to secede in the smaller region, they also increase the larger region's incentives to resist the smaller region's secession, and may therefore lead to more diversion of resources towards civil conflict in the aggregate. Finally, the possibility that civil conflict about government policies may also occur *after* borders have been determined reduces both the incentives to secede in the smaller region and the benefits from union in the larger region. In fact, as also shown in Spolaore (2008), it is even possible that the perspective of civil conflict over government policies (within a unified country) may induce the 'center' itself to prefer a country breakup.

In summary, recent research on the political economy of national borders points to the following conclusions:

1. Large national unions come with substantial costs as well as benefits.
2. Democratization, globalization and reduction in international conflict are associated with the formation of smaller countries.
3. Up to a point, the breakup of countries can be efficient and welfare-improving.
4. However, these trends may also lead to inefficient fragmentation and costly civil conflict, in the absence of appropriate mechanisms for compensation of regions and groups that are far from the central government in terms of preferences over public policies.

These considerations raise two related questions. First, what kind of compensation and redistribution across regions could ensure efficient and stable borders? Second, would direct decentralization of power reduce the incentives for breakup and conflict? We will discuss these two issues in the rest of the chapter.

3 INTER-REGIONAL REDISTRIBUTION AS A DOUBLE-EDGED SWORD

As we have mentioned in the previous section, inefficient breakups and secessions may occur when borders are determined democratically. Voters with preferences that are 'far' from the central government bear higher heterogeneity costs from living in a larger, more diverse country, and may decide to form a smaller, more homogenous political unit when they perceive that such heterogeneity costs are higher than the scale economies associated with a larger size. Such breakups may lead to a lower sum of everybody's utilities (inefficiency), so that, in principle, everybody could be better off in a unified country, given appropriate transfers from the center to the periphery. Inefficient outcomes occur under the assumption that there is no redistribution of resources across regions: all citizens contribute equally to the public good, independently of their location. An important question is whether actual inter-regional redistribution of resources may change the voters' calculation and affect the stability of national borders. The response depends on a crucial distinction between two kinds of inter-regional transfers: (1) preference-based transfers, and (2) income-based transfers. Preference-based transfers are payments to regions that are 'distant' from the central government in terms of preferences over public policies. In contrast, income-based transfers are redistributive transfers from richer regions to poorer regions, based on income differences. These two different kinds of transfers have very different properties and effects on border stability. We will examine them in order.

3.1 Preference-based Transfers and Country Stability

Conceptually, preference-based transfers can be viewed as 'side payments' to regions that are distant from the central government in terms of preferences over public policies. In principle, as we have already mentioned, such transfers could compensate regions that would otherwise secede, and therefore ensure efficiency and stability.[5] The theoretical rationale is straightforward: if a country breakup is inefficient, it means that the sum of everybody's utilities is lower after a breakup. Then, one could transfer resources from those who would lose from a breakup (people 'close' to the central government) to those who would benefit from a breakup (people 'far' from the central government) such that, after the transfers, everybody (or at least a large enough majority) would be better off in the unified country, and therefore unity (with transfers) would be preferred over a breakup in a democratic equilibrium. In theoretical contributions, transfer schemes as means to prevent secessions and implement efficient borders

have been studied by Alesina and Spolaore (1997, 2003), Le Breton and Weber (2003), Haimanko et al. (2005), and others. For example, Le Breton and Weber (2003) explore the case in which a nonlinear transfer scheme can prevent unilateral secessions in a country of optimal size. In the case of linear utility from consumption, an efficient solution could be achieved by majority voting if taxes could be set according to a full-compensation formula, according to which individuals who are far from the government pay lower taxes as compensation for the heterogeneity costs they suffer. In principle, by appropriately lowering the taxes of individuals in proportion to the political costs they bear, the government can ensure that all voters end up with identical utility levels. However, are preference-based preferences observed in practice, and do they work?

There is some anecdotal evidence that border regions with different preferences and ethnic/linguistic/cultural characteristics from the rest of a country sometime receive a relatively favorable fiscal treatment. These cases include special-status regions in Italy, Northern regions in Sweden, some provinces of Canada and Argentina, etc. However, in general, pure preference-based transfers seem to be relatively rare. There are several reasons why, in practice, preference-based redistribution across regions is unlikely to be widespread: (1) feasibility and administrative costs; (2) political credibility; and (3) incompatibility with other social goals. We will briefly discuss each of these issues separately.

Preference-based transfers may be very expensive to implement because of administrative costs and distortions. The preferences on which those transfers must be based are defined in terms of individuals' utility or disutility from belonging to countries with different characteristics – including cultural, linguistic and religious characteristics. Consequently, a large part of those costs and benefits are non-pecuniary, and very hard to observe and measure objectively. And even if those heterogeneity costs could be perfectly observed or 'revealed', redistributive schemes to compensate for them are likely to require an expensive administrative setup, implying high taxes and tax distortions (disincentives to work, save and invest). In summary, preference-based transfers may be either unfeasible or economically costly.

Even if one abstracts from issues of feasibility and administrative costs, the implementation of preference-based transfers may face a more subtle obstacle: political credibility. Suppose that a region is enticed to remain within a larger country with the promise of a more favorable tax treatment. Once the region has accepted to remain within the country, the central government can break its promises. Borders are hard to change, whereas taxes and transfers can be changed more often and more easily. Consequently, regions that accept to be part of a given country face the

risk that tax and transfer policies may be changed in the future, when the option of secession is no longer available, or available only at a much higher cost. In other words, for preference-based transfers to be politically credible, the threat of secession must be persistent and credible. Alternatively, preference-based transfers must be backed by some other credible 'commitment technology' – for example, an international treaty protecting the country's minority. An example of international guarantee for a minority region is the 1971 treaty between Italy and Austria about the German-speaking Italian province of Bozen/Bolzano, following serious separatist disturbances (including some acts of terrorism) in the 1960s. The 1971 treaty stipulated that the province of Bozen/Bolzano should receive greater autonomy within Italy, including significant fiscal autonomy, and that disputes in the province would be submitted for settlement to the International Court of Justice in The Hague.

Haimanko et al. (2005) show that even in the absence of an appropriate commitment technology, linear transfer schemes can be supported by a majority of the population in polarized societies in which the median distance from the government is higher than the average distance. However, even in this case, there is no assurance that the feasible redistributive mechanism will enforce efficient borders. In some circumstances, preference-based redistribution decided by majority voting will even imply excessive transfers to the periphery, and induce the center to secede!

Finally, even if preference-based transfers were perfectly feasible and credible, they might still face political obstacles because they may clash with other social and political objectives. Since preference-based transfers, by definition, abstract from income differences, they may imply substantial transfers of resources from poorer to richer regions and individuals. This may conflict with goals of 'interpersonal equity' or other social objectives and constraints, therefore making a preference-based redistributive scheme difficult to implement politically.

3.2 Income-based Transfers

In contrast to preference-based transfers, income-based transfers are widespread and much easier to implement and maintain economically and politically. However, their efficiency properties and effects on country stability are quite different from those of preference-based transfers.

Unlike preference-based transfers, income-based transfers are much more likely to play a 'centrifugal' role, by adding to the costs from inter-regional political heterogeneity (different political preferences over public policies) when there is substantial income inequality across regions. Income-based inter-regional transfers can help keep poorer regions 'in'

if their political heterogeneity is not too high. That is, income-based transfers from the center to the periphery might accidentally operate as a compensation mechanism and help keep some regions within a country. However, in general these transfers will not ensure optimality or stability of borders, since there is no guarantee that poorer regions would be those farther from the central government in terms of preferences for public policies and types of government. On the contrary, it is at least as likely that income-based redistribution would *add* to heterogeneity costs within a country, by generating an additional source of political conflict across regions, and providing additional incentives for richer regions to secede. In fact, even in the absence of any other form of preference heterogeneity, inter-regional disagreements over income-based redistribution may be sufficient to induce country breakup. For example, in their pioneer analysis of the relationship between income-based transfers and country stability, Bolton and Roland (1997) studied a model of country breakup by majority vote when individuals differ in productivity and income, but not in preferences over types of governments. In Bolton and Roland's model, differences in income distributions across regions are at the root of all differences in preferences over public policies, and may generate incentives to break up, even in the absence of other forms of heterogeneity. More generally, as shown in this literature (Bolton and Roland, 1997; Alesina and Spolaore, 2003, Chapter 4), income-based redistribution has three effects on the incentives to secede in a given region: (1) a political effect, capturing the difference in desired fiscal policy between the region's median voter and the median voter in a unified country; (2) a tax-base effect, capturing the difference between average income in the region and in the unified country, and (3) an 'efficiency/economies of scale' effect, capturing a reduction in average income because of country breakup (for example, because of a smaller extent of the market when there are barriers to trade across nations, consistently with the results about international openness mentioned in section 2). Unless the regional median voter shares identical preferences with the national median voter (which is unlikely), the political effect is always centrifugal: any region would prefer to breakup and implement its own favored fiscal policy, other things being equal. In contrast, the tax-base effect is centrifugal for richer regions (which, therefore, are more likely to prefer separation, other things being equal), and centripetal for poorer regions, which benefit on average from income-based redistribution. Finally, the economies-of-scale effect is centripetal for all regions – that is, it reduces the incentives to breakup. Consequently, when the economies-of-scale effect is small (say, because of high international openness and/or a reduction in the economies of scale associated with the provision of defense), richer regions become much more likely to prefer

separation, given effects (1) and (2), and even poorer regions may prefer separation, when effect (1) dominates effect (2). The bottom line is that, on balance, income-based redistribution is likely to play a centrifugal role – that is, to reduce the stability of national borders.

In conclusion, the relationship between redistribution and country stability can be summarized as follows:

1. In principle, well-designed inter-regional transfers could ensure country stability, but they would have to compensate regions with more heterogeneous preferences with respect to the central government, rather than be based on income differences.
2. In practice, such 'efficient' compensation schemes based on preferences are difficult to implement both economically and politically.
3. In contrast, most inter-regional redistribution is based on income differences across regions, and such income-based transfers are likely to play a centrifugal role when incomes differ substantially across regions.
4. Consequently, actual inter-regional redistribution is likely to be destabilizing.

As follows from our discussion in section 2, an important point to stress is that the (centrifugal) effects of inter-regional redistribution on country stability depend on how centralized political power is within the country. The higher the degree of political centralization, the higher the heterogeneity costs for the periphery, and therefore the higher the pressure to compensate regions with diverse preferences, and the larger the centrifugal effects when those transfers fail to work, or even end up adding to the heterogeneity costs. This raises a key question: since compensations and transfers are unlikely to work as efficient side payments, can country stability be enhanced by a direct transfer of *power* from the center to the periphery? What if central governments attempt to keep regions together using not only inter-regional transfers but also direct decentralization of public functions, including federal power-sharing? This will be the subject of the next section.

4 DO DECENTRALIZATION AND FEDERALISM PROMOTE COUNTRY STABILITY?

If the incentives to secede depend on the political costs from belonging to a larger, more heterogeneous country, more power to the periphery can reduce the periphery's heterogeneity costs from staying in a union,

and hence the net benefits from secession. Therefore, decentralization and regional autonomy, in principle, can promote country stability – in other words, decentralization can have centripetal effects. This is the more intuitive effect of decentralization, and has received considerable attention in the politico-economic literature. However, a few commentators have pointed out to possible centrifugal effects from decentralization as well, if more power to the periphery also increases local governments' capabilities and resources, therefore enhancing their ability to secede. In a nutshell, decentralization may reduce a peripheral region's willingness to secede while increasing its ability, with ambiguous net effects.

In this section we will briefly review a few arguments in favor and against the stabilizing role of decentralization and federalism. We will then present a simple analytical model that captures those opposite effects. Finally, we will discuss some recent empirical contributions that shed some light on this complex issue.

4.1 Federalism and Decentralization: Centripetal or Centrifugal Forces?

The idea of decentralization and federalism as a way to preserve diversity in a democracy has a long pedigree. For example, in 1764 Cesare Beccaria wrote:

> To the extent that society increases, each member becomes a smaller part of the whole, and the republican sentiment becomes proportionally smaller, if the laws do not take care to reinforce it. Societies, like human bodies, have their circumscribed limits, and if they grow beyond them their economy is necessarily disturbed. The size of a state must necessarily be inversely proportional to the sensitivity ['sensibilità'] of those who comprise it. A republic that is too vast cannot save itself from despotism except by subdividing itself and uniting itself into so many federative republics.

Similar ideas about the role and limits of federalism in reducing the risks of instability and despotism (including a possible 'tyranny of the majority') can be found in the exchanges between Federalists and Anti-federalists in eighteenth-century America. More recently, a number of political scientists have emphasized the positive effects of federalism on country stability. As Bakke and Wibbels (2006, p. 2) summarize 'The theoretical justification for federalism, or decentralization, is based on the combination of shared rule and self-rule: federalism offers the potential to retain the territorial integrity of the state while providing some form of self-governance for disaffected groups'. The benefits of regional autonomy as a 'power-sharing approach' are emphasized by Lijphart (1990), while the positive effects of checks on the central government associated with federalism are stressed

by Weingast (1995) and others. More recent work emphasizing the 'peace preserving' nature of federalism includes Bermeo (2002), who argues that federal states tend to do better than unitary states when accommodating ethnic conflict and minority discrimination.[6] Commentators who stress the benefits of federative arrangements for diverse, multiethnic societies also rely on case studies of 'successful' federations, such as Switzerland and, to some extent, Canada, India and South Africa.[7]

However, less successful cases of federations and attempts to decentralization have provided counterarguments against federalism as a stabilizing force. For example, the Civil War in the United States has been viewed by many as an instance when federal decentralization provided the means and mechanisms for a costly attempt to secede. Power decentralization and federal arrangements are also 'blamed' by some for the breakup of the Soviet Union, Czechoslovakia, and Yugoslavia.[8] Criticisms of the costs of fiscal federalism and decentralization in Argentina are provided by Saiegh and Tommasi (1999) and Spiller and Tommasi (2003). A particularly extreme case of 'centrifugal' and destabilizing effect of decentralization is associated with the creation of a safe haven for guerrilla rebels (FARC) in Colombia in the late 1990s. Criticism of decentralization as a destabilizing force leading to civil conflict has also been aired with respect to recent reforms in a few African countries (for example, Nigeria).

In sum, the political and historical literature is mixed. A majority of commentators views federalism and decentralization as stabilizing forces, but some critics stress counter-examples in which decentralization seems to be associated with increasing country instability.

Below we provide a simple analytical model that clarifies conceptually the interplay between centrifugal and centripetal effects of decentralization and federalism. Empirical contributions are briefly discussed at the end of this section.

4.2 A Simple Model of Decentralization and Country Stability

Consider a country in which the government provides a continuum of public goods, indexed from 0 to 1.[9] Some public goods are provided by the central government, while some others are provided by the periphery's own local government. The periphery's citizens obtain net utility equal to g from each public good provided locally, while the net utility from a centrally-provided public good is equal to $g - h + k$, where h measures heterogeneity costs associated with central provision of the public good, and k captures net economies of scale from central provision.[10] Since we are interested in the study of potential secessions, we focus on the case when heterogeneity costs are higher than economies of scale ($h > k$), and

therefore the periphery would prefer decentralized provision of *all* public goods (that is, full independence). Let δ measure the proportion of locally provided public goods – that is, the degree of decentralization. In general, for a given degree of decentralization δ, the periphery's utility from public goods is given by:

$$U_{\delta} = \delta g + (1 - \delta)(g - h + k) \tag{13.1}$$

which is maximized at $\delta = 1$ and $U_{\delta=1} = g$ (full independence). Now, assume that the periphery can choose whether to attempt a secession or remain within the unified state. If the periphery does not attempt a secession, its citizens' utility is given by U_{δ}. If the periphery attempts a secession, two outcomes are possible. With probability π the secession is successful, the periphery gains full independence, and utility from public goods becomes $U_{\delta=1} = g$. With probability $1 - \pi$ the secession fails, and the periphery ends up with a lower utility $U_f > U_{\delta}$.[11] To fix ideas, let C denote the cost from a failed secession, so that:[12]

$$U_f = U_{\delta} - C \tag{13.2}$$

The periphery obtains higher expected utility from attempting a secession than from the status quo if and only if:

$$\pi g + (1 - \pi)(U_{\delta} - C) > U_{\delta} \tag{13.3}$$

which can be re-written as:

$$S \equiv \frac{\pi}{1 - \pi}(1 - \delta)(h - k) > C \tag{13.4}$$

where the left-hand side of the above inequality measures the 'incentives for the periphery to secede', which we denote with S. When the incentives to secede S are higher than the cost from a failed secession C, the periphery will attempt secession. Not surprisingly, the incentives to secede S are increasing in the heterogeneity costs h and decreasing in the economies of scale k, consistently with the theory of national borders reviewed in section 2. But what about decentralization? The above equation shows that, for given π, a higher degree of decentralization δ *reduces* the incentives to secede. This is the intuitive, direct effect of decentralization on the incentives to secede: by decentralizing the supply of public goods, the central government can reduce the extent of heterogeneity costs from centralized public-good provision, and hence lower the incentives for the periphery to breakup. However, as we discussed above, decentralization may indirectly

affect the probability that the secession may succeed, if attempted – that is, π might be itself an (increasing) endogenous function of δ. In order to illustrate this point more specifically, let's assume that π can be expressed in terms of a 'contest success function', increasing in the periphery's capabilities F_p (that is, inputs that can be used in conflict), and decreasing in the center's capabilities F_c. That is, we have $\pi = \pi(F_p, F_c)$. To fix ideas (and simplify the algebra), consider for instance a logistic specification in which the odds of success for the periphery depend on the difference between its own conflict capabilities F_p and the center's conflict capabilities F_c, according to the following equation[13]

$$\frac{\pi}{1 - \pi} = exp\{\phi(F_p - F_c)\} \tag{13.5}$$

where the parameter φ captures the 'effectiveness' of conflict inputs. It is reasonable to assume that decentralization will increase the periphery's resources in case of conflict, and reduce the center's. Specifically, assume that, in addition to some exogenous additional resources F_{c0} and F_{p0}, center and periphery can access some common pool of resources R, in proportion to the fraction of public goods they control, so that $F_p = F_{p0} + \delta R$ and $F_c = F_{c0} + (1 - \delta)R$.[14] Then we have

$$\frac{\pi}{1 - \pi} = exp\{\phi[F_{p0} - F_{c0} - (1 - 2\delta)R]\} \tag{13.6}$$

implying that an increase in decentralization δ will be associated with higher odds of success for a secession, and henceforth a larger S, other things being equal.

In other words, this indirect effect of δ on π increases the incentives to secede, and can offset the direct effect of δ on S. In general, by substituting (13.6) into (13.4) and taking the derivative of S with respect to δ, we have

$$\frac{dS}{d\delta} = \frac{\pi}{1 - \pi}(h - k)[2\phi R(1 - \delta) - 1] \tag{13.7}$$

which implies that decentralization will reduce the incentives to secede

$$\frac{dS}{d\delta} < 0$$

if and only if $2\varphi R(1 - \delta) - 1 < 0$, or, equivalently, if and only if decentralization 13.6 is above a given threshold δ^*

$$\delta > \delta^* = 1 - \frac{1}{2\phi R} \tag{13.8}$$

In other words: more decentralization will *reduce* the incentives to secede if and only if decentralization is high enough ($\delta > \delta^*$). In contrast, at low levels of decentralization (that is, when $\delta > \delta^*$), more decentralization will *increase* the incentives to break up. The critical value depends on the parameter φ, which measures the effectiveness of 'conflict inputs'. Not surprisingly, the threshold above which decentralization has stabilizing effects is *higher* in societies where the difference in capabilities has a bigger effect on the probability of success. On the other hand, when 'force' has less impact on outcomes, decentralization is more likely to imply *more stable* polities. This can be interpreted in terms of a key role for the political and institutional environment where a potential secession may occur: an increase in decentralization is more likely to have a *positive* effect on country stability in societies in which political institutions and societal characteristics ensure that conflict capabilities are less effective at determining national borders. Moreover, for given effectiveness of capabilities, an increase in decentralization is more likely to have a stabilizing effect in societies that are already highly decentralized, whereas it may have a centrifugal effect in more centralized societies.[15]

While the specifics of these results depend on highly simplifying assumptions and functional forms, the message of the analysis is quite general: the effects of decentralization on country stability are analytically ambiguous because decentralization has two opposite effects: it reduces the net payoff from a secession, but, on the other hand, it may increase the probability of success should a secession be attempted. In general, the net outcome will depend on the complex interplay of those different forces, and it is possible that, especially at *low* levels of decentralization, the destabilizing effect may dominate the stabilizing effect, with the critical threshold depending on the political-institutional setting in which conflict takes place.

4.3 Federalism and Country Stability: What do the Data Say?

As our highly simplified model illustrates, the effects of decentralization on country stability are ambiguous. In general, the relationship between decentralization and country stability may go either way, depending on the interplay between centripetal and centrifugal effects in different societal, political and institutional environments. This makes it even more urgent to study these issues from an historical and empirical perspective. What do the data say? Are more decentralized countries and federations more or less stable? Unfortunately these are not easy questions to address empirically, because of several practical and conceptual issues that arise when we attempt to measure the relevant variables and interpret their links.

A first problem is how to define and measure decentralization. As Bird

(1993) notices, 'decentralization seems often to mean whatever the person using the term wants it to mean'. Different studies use a vast range of definitions and measures for decentralization, devolution, and degree of federalism. Second, it is even harder to come up with good measures of 'country stability'. Actual breakups and secessions, while not infrequent, are relatively rare. Moreover, secessions per se do not necessarily reflect an institutional failure, if the redrawing of borders is peaceful, consensual and efficiency-enhancing. Measures of 'negative' outcomes (armed conflict, rebellions, protests) associated with ethnic and civil conflict may capture more directly some of the costs usually associated with border instability. More generally, as we have seen, the ability to mediate conflict within countries and to reduce potential heterogeneity costs is associated with the general effectiveness of political institutions, which can be measured in terms of orderly transfer of power, protection of political rights, etc.

Even if decentralization and country stability were to be measured appropriately and unambiguously, a third issue would be how to identify causality. For example, a positive correlation between having a more decentralized regime and observing ethnic conflict would *not* demonstrate that decentralization causes ethnic conflict, or vice versa. In fact, consistently with a political-economy approach to national borders, more heterogenous societies are likely to be more decentralized (because of higher demand for autonomy) and also more prone to ethnic conflict (because of higher heterogeneity and higher demand for additional sovereignty), without a necessary causal link going directly from decentralization to ethnic conflict. Historically, while several countries that eventually broke up were indeed federations (for example, the Soviet Union and Yugoslavia), did they break up *because* they were federations, or were they shaped as federal systems because they were formed by heterogeneous regions and groups to start with? Given the endogeneity of the institutional system and the complexity of circumstances associated with successful or unsuccessful secessions and breakups, it is intrinsically difficult to disentangle the causal links between decentralization and the stability of federations.

A very interesting attempt to assess the relation between decentralization and ethnic conflict is provided by Bakke and Wibbels (2006), who focus on differences across federal states. Intriguingly, they find that fiscal decentralization increases the likelihood of ethnic conflict when there are wide disparities in income across regions. This is consistent with the view that heterogeneity of preferences and differences in income interact as sources of potential country instability, and may offset the beneficial effects of decentralization. However, these results do not imply that governments faced with high ethnic heterogeneity and economic inequality across regions should move *away* from decentralization and federalism.

On the contrary, the positive correlation between decentralization and ethnic conflict in the presence of income inequality may reflect the fact that economically diverse federations prone to ethnic conflict may indeed *need* more decentralization, the same way that individuals prone to disease need and use more doctors and medicine. Taking decentralization away from those countries may be as unwise as taking doctors and medicine away from patients because those variables (medicines and doctors) are usually observed in conjunction with sick people and disease!

A recent empirical analysis of the effects of federalism that attempts to control for endogeneity is provided in Inman (2008). In this study, Inman compares 73 federal and non-federal countries, and finds positive economic and political effects of federalism in democracies, but not in dictatorships. The positive effects of federalism include more orderly transfer of executive power, better protection of civil and political rights, and less corruption (see also Fisman and Gatti, 2002). Inman attempts to address the issue of endogeneity and causality by using instrumental variables (country land area, number of provinces, and provincial representation to the central government), and by limiting the sample to countries whose current constitutions were established before 1950. As one may expect, it is very difficult to find appropriate instruments that are both exogenous and affect the dependent variables (in this case, various measures of political and economic performance) only through federalism. One may indeed take issue with the validity of those instruments – for instance, the number of provinces itself is probably endogenous, and one could argue that the characteristics that determined which countries adopted federal constitutions before 1950 may also affect political and economic outcomes of interest today. Nonetheless, Inman's analysis is a valuable first step towards assessing the causal effects of federalism on important political and economic variables, and sheds insight on the positive correlation between democratic federalism and a range of important outcomes. However, a comprehensive empirical analysis of the effects of federalism and decentralization on the stability of states and federations remains an important task for future research.

5 CONCLUSIONS

In this chapter we have reviewed some ideas and results from the recent economic literature on the formation and breakup of sovereign states. We have shown how the political-economic analysis of national borders points to a potentially stabilizing role for inter-regional redistribution and decentralization. However, we have also discussed several reasons why, in

practice, we should be skeptical about the extent to which inter-regional transfers can actually reduce regional conflict and potential separatism, especially when there are large 'heterogeneity costs' across regions, because of cultural, linguistic and/or economic differences. In fact, actual income-based regional redistribution, especially when interacting with ethnic and cultural diversity, is likely to increase inter-regional conflict and separatism. We have also argued that federalism and decentralization raise the periphery's benefits from political union, but also its ability to secede, with ambiguous effects on country stability. Empirically, decentralization within federal states is associated with more ethnic conflict when economic inequality is high across regions. However, the evidence also suggests an overall positive effect of federalism and decentralization on political and economic outcomes, when accompanied by strong democratic institutions.

NOTES

1. For instance, according to Dillinger (1994), 63 out of 75 developing countries with populations greater than 5 million claimed to be transferring fiscal authority from central to local governments.
2. For example, see the references in Dahl and Tufte (1973).
3. See Alesina and Wacziarg (1998) and Alesina and Spolaore (2003, Chapter 10).
4. See Alesina et al. (2000; 2005) and Spolaore and Wacziarg (2005).
5. See Alesina and Spolaore (2003, Chapter 4) and Le Breton and Weber (2003).
6. See also Lake and O'Mahony (2004).
7. For instance, see Inman and Rubinfeld's (2006) analysis of democratic federalism in South Africa. I thank the discussant, Massimo Bordignon, for this reference.
8. For example, see Roeder (1991) and Suny (1993).
9. For simplicity we abstract from the level of provision, and assume that all public goods are provided in fixed amounts.
10. For simplicity, here we assume that the parameters g, h and k are identical across all public goods. The model could be extended to allow for different public goods to provide different net utilities in terms of benefits, heterogeneity costs and economies of scale, as in Alesina and Spolaore (2003, Chapter 2).
11. If $U_f \geq U\delta$, the periphery would have nothing to lose should the secession fail, and would always attempt to secede, no matter how small π.
12. For simplicity, we assume that C is exogenous and does not depend on δ. The model could be extended to allow for C to depend on δ (for example, if a failed secession were to bring about a reduction in the degree of decentralization, compared to the status quo ante).
13. This specification, discussed in Hirshleifer (1989), is commonly used in the economic literature on conflict and appropriation. An alternative specification, based on ratios, would be

$$\pi = \frac{F_p^0}{F_p^0 + F_c^0}.$$

For a discussion of alternative specifications to model separatist conflict $F\$ + Ft$ see Spolaore (2008).

14. For simplicity, we assume that F_c0 and F_p0 are exogenous. However, in general the center and the periphery might invest resources to increase their capabilities (as in Spolaore, 2008), in addition to the resources that come from control of public-good provision. Such extension is left for further research.
15. Of course this is under the assumption that the degree of decentralization δ is given. An interesting extension would involve endogenizing δ, either as a decision of the center, or as the outcome of a political game between the center and the periphery. Even in that more complex setting, we should expect that decisions regarding δ would be affected by the balance between decentralization's centrifugal and centripetal effects.

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Comment IX

Massimo Bordignon

This is an interesting chapter on a fascinating topic, written by one of the most learned scholars of the field. The chapter has really three parts. The first is an up-to-date survey of the economic literature on the formation and breakup of countries. The second is an attempt to cast further light on the relationship between decentralization, regional redistribution and secession, using a simple model to highlight a few ideas. The third is a critical survey of some recent empirical studies touching on the same problem. The second part is the most novel one, and it is the one where I want to focus most my comments on.

WHY IS THIS AN IMPORTANT SUBJECT?

But before doing so, let me briefly comment on the importance of the issue. As the author notes, there are now 193 different countries around the world; there were only 74 (or less than one half) in 1945. Tendencies toward decentralization seem to be widespread around the world, so much so that the great international organizations, such as IMF, the World Bank, OCSE, have all felt obliged to give increasing attention to the subject. In Europe, and particularly after the formation of the Common Market (1992), all large countries have undergone important decentralization processes; in some cases, as in Belgium, getting very close to a separation of the original country into its linguistic components. Ethnic conflicts and separation have become a constant in many continents. Even the relatively peaceful Europe has known dramatic conflicts in the 1990s, leading in Eastern Europe and in the Balkans to a breakup of the pre-existing sovereign states. In the meantime, large international organizations, from the European Union to WTO, have witnessed an increase in both memberships and powers, and possibly the present world economic crisis will further strengthen these tendencies. To some extent, the traditional notion of a 'national state' seems to be put in jeopardy. Understanding which forces are behind these processes and what can we do about them is therefore a key challenge for all social scientists.

READING THE CHAPTER

With some delay, economists have also tried to offer their own contribution. The first part of Enrico Spolaore's chapter is a survey of what we have learnt, thanks to these latest contributions (mostly due to Spolaore himself, alone or with co-authors). Frankly, the answer is, not a great deal. Economics seems to have been successful in pointing out some basic trade-offs concerning the optimal size of a country (heterogeneity of preferences versus returns to scale in the centralized provision of public goods and services), and on how these trade-offs change with varying *political* landscape (for example, democracy versus autocracy) and varying *economic* landscape (for example, increasing trade and globalization). But key elements of the story still seem to be missing. On the positive side, it is still unclear for example, why we have witnessed these decentralization processes in some periods and not in others. And it would be very difficult to try to predict, on the basis of the economic models alone, whether, say, Catalunya or Lombardia will eventually secede from the respective countries. On the normative side, it is also unclear whether we should greet these separation processes as positive developments or as things to worry about. There are contrasting effects, and it is very hard to draw a line between beneficial separation and damaging secession. As usually, economic literature has been more successful in pointing out some counterintuitive effects of policies. Increasing redistribution to damaged regions, for instance, might reduce the latter's incentives to secede. But it might also increase the possibility that a secession occurs, by providing these regions with extra resources for fighting. A fall in the level of international conflict, by reducing the benefits of common defense, might increase the incentives to secede for some regions. Therefore, it might *increase* local conflicts, if the others attempt to resist. And so on. Clearly, these countervailing effects make it even more difficult to reach strong conclusions on the likely effects of different policies on the formation or dissolution of countries.

Nevertheless, in the second part of his work, Spolaore boldly attempts to meet this challenge. Instead of asking whether secession is a good or a bad thing, he explicitly asks what could be done to prevent it, assuming therefore that secession is undesirable. An obvious answer would seem to be 'inter-regional redistribution'. Indeed, if having a unified country is a Pareto improving move, redistribution, by compensating the losing parts of the country, should remove all incentives to secede, leaving everybody better off. But this is more easily said than done. To explain why, Spolaore draws an interesting, if disputable, distinction between preference-related and income-related redistribution. The first should have only centripetal effects, compensating individuals or regions with strongly different

preferences from the average (or median) national ones. The second, by forcing rich regions to compensate poor ones for staying in the country, might have both centripetal and centrifugal effects. And possibly, as suggested by Bolton and Roland (1997), the latter might overcome the former. The problem, according to the author, is that while income-related redistribution can be easily introduced (income is after all, observable, at least to some extent) preference-related redistribution is much more difficult to perform for both commitment problems and informational reasons. Hence, Spolaore concludes, inter-regional redistribution cannot be the solution, or cannot be the solution alone.

Can then policy decentralization (for example, the transfer of *powers*, rather than resources, to local communities) be the solution? Again, Spolaore's conclusion is agnostic. Policy decentralization may reduce the heterogeneity problem, allowing local public good supply to be chosen more in agreement with local preferences. But it might also increase the ability to secede by minority regions, by solving the collective action problem and providing them with more resources for conflict. The net effect is then uncertain. The answer can therefore only be found on empirical grounds. Consequently, Spolaore reviews a couple of recent empirical studies, both based on large sample of countries, which have touched on the issue. Bakke and Wibbels (2006) study the determinants of internal conflict. They suggest that what really matters is the interaction between ethnic concentration and regional income inequality. If the two are correlated, there is little to do, even redistribution and policy decentralization may only increase conflicts. Inman (2008) asks if federalism and policy decentralization produces all the good results ('federalist values') that economists expect from it, both on the political and economic side. The answer is 'yes', but only if decentralization is accompanied by democracy; otherwise, there is no beneficial effects.

Concluding, it would then appear that decentralization and redistribution may help in preventing secession, but only in democratic countries and only if income inequality is not correlated with ethnic differences. Somewhat in contrast with Spolaore's own theoretical framework, it is the interaction between income-ridden and preference-ridden heterogeneity which seems to be more difficult to deal with, rather than each one taken separately.

FURTHER COMMENTS

It would be difficult to dispute Spolaore's agnostic claim on the effect of policy decentralization on the tendency toward dissolution; after all, we

have plenty of historical examples going in opposite directions (some of which are mentioned in this chapter). But a few suggestions may be helpful. First, as already noticed, the distinction between preference and income related redistribution is a fine one. But it is also one which raises a few doubts. Preferences for public services are not uncorrelated with income. The demand for public goods typically depends on income, so that richer regions may ask for different services than poorer ones. Furthermore, there is typically a spatial correlation between income and preferences, due to history, culture or individual mobility, so that it is hard in practice to distinguish between the two. But the distinction is nevertheless interesting and worth pursuing. As local differences in preferences also depend on language or religion, and the latter are possibly less related to income or economic growth (but see Tabellini, 2007 for a different view), this may offer a way to distinguish between the two, and put Spolaore's ideas to the test.

Second, Spolaore's reading of some of the works discussed in the chapter is not complete; there are other results which may have been worth stressing for the present discussion. For instance, another important empirical result which emerges from Bakke and Wibbels (2006), is the importance of *national institutions* to keep a country together, being these national parties, national education, national TV, national soccer teams, or whatever. Autonomy and redistribution inside a country may help; but if there are no perceived common institutions and therefore no common feeling of belonging across the different peoples living in a country, it is difficult for them to be enough. This is why, for instance, one would feel inclined to pessimism concerning Belgium, in spite of the presence of some good economic reasons for the two linguistic communities to stay together (public debt, inter-regional insurance, etc.). Reversing the analysis, these results may also offer some precious suggestions for nation-building. What should we do in order to strengthen the European Union, another federation that (in my view) has some extremely good political and economic reasons backing it? Should we move it back to a simple agreement of sovereign countries, to avoid the emergence of 'secessionists' feelings among the different European peoples? Or on the contrary, should we centralize policies further, which also means creating European institutions (such as European political parties and European-wide competition for the European government) to deal with the unavoidable dissent that central decision will induce in some countries (see Hix, 2008)?

Third, and somewhat along the same lines, a very important 'institution' which Spolaore dismisses almost entirely in his work is the constitution; and in particular, the effects that constitutional provisions may have in defending local minorities and reducing the incentives for secession. Constitutional laws, that is, laws which are hierarchically superior to the

other laws and can only be changed under very restrictive conditions (for example, supermajority in Parliament, national referendums, etc.), are the main tools which have been used historically to defend minorities and allow for that preference-ridden redistribution that Spolaore believes so difficult to maintain. Indeed, in many cases, the constitution explicitly guarantees tax resources to defend the policy autonomy of minorities and to force inter-regional redistribution. For instance, in Italy, special regions' autonomy is defended by constitutional provisions which forces the central government to leave most tax resources levied in these territories to local communities; in Germany, tax revenue from VAT is explicitly assigned to inter-regional redistribution. By the same token, bicameralism, with powerful upper chambers whose representation is based on the founding states rather than on peoples (for example, the American Senate or the Council in the EU), is another institutional tool that has often been used with the same objective. It is true that constitutions must be enforced and a constitution or bicameralism might themselves be inefficient or not enough to prevent regional conflict and civil wars; but they are however a step forward in this direction. Hence, they would have deserved more discussion in a chapter focusing on the instruments to avoid inefficient separation.[1]

A final point is methodological. While we learned a great deal from empirical analyses based on international comparison, we should probably not overestimate the importance of these works. As the author himself acknowledges, empirical studies like the ones by Bakke and Wibbels (2006) or Inman (2008) are ridden with technical problems, endogeneity, reverse-causality, small sample, poorly observed variables (same institutions may play different roles), a lot of uncontrolled institutional variance (omitted variables), etc. It is hard to say how much faith we should put in the results of these studies. Perhaps, this is a field where we need more detailed national case-studies to complement inter-countries one. This does not mean that the former can only be descriptive; even national case-studies may be amenable to theoretical modeling and empirical analysis. A recent interesting example is offered by Inman and Rubinfeld (2008)'s formalization of South African recent constitution. They believe this constitution represents a stable dynamic equilibrium between the white elite and the black majority, and as such it will be able to prevent conflicts and further secessions. It will be interesting to see if they are right.

NOTE

1. Indeed, as Sandro Brusco and I suggested in a joint work a few years ago, in some cases it is the explicit lack of constitutional provisions to secede that might be thought of as a

commitment device to keep a federation together (Bordignon and Brusco, 2001). Under the present financial crisis, would the EMU have survived if explicit provisions to leave the monetary union had been introduced at the moment of introducing the common currency?

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14. The costs and benefits of staying together: the Catalan case in Spain

Elisenda Paluzie

1 INTRODUCTION

Spain is a plurinational country but Spanish identity has been built around Castilian language and culture. Three other historical nations with their own language (Basque Country, Catalonia or the Catalan countries, and Galicia) subsist in modern Spain. Since the process of transition to democracy in the late 1970s, the country has been organised as a decentralised state. It is not a federal country, but there is an important degree of political decentralisation. The country is composed of 17 autonomous communities, each one with its own parliament and some degree of legislative power. The fiscal decentralisation model is asymmetric: there are two systems, the Common and the 'foral' regime, with the latter being established only for the Basque Country and Navarre.[1]

In this case study, I will focus on the Catalan case for three reasons. First, because in Catalonia, nationalism has the majority in the regional elections, while this is not the case in Galicia. Second, because net fiscal flows are an important issue in the public debate, while this is not the case in the Basque Country.[2] And, finally, because as opposed to the Basque Country, the absence of violence in the Catalan political conflict eases the analysis, and allows us to focus on the economic issues at stake.

2 THE POLITICAL ECONOMY OF NATIONAL BORDERS

In the late 1990s and early 2000s, a line of research in political disintegration was developed in the context of the New Political Economy by Alberto Alesina and Enrico Spolaore.[3] According to this literature, countries are the result of a trade-off between two opposing forces: centripetal forces favourable to large countries (economies of scale in the provision of

public goods and market access) and centrifugal forces favourable to small countries (costs linked to the heterogeneity of preferences).

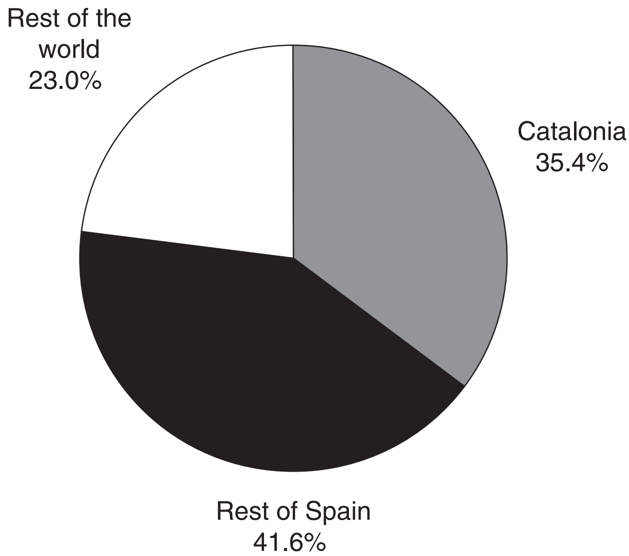
In a context of protectionism, centripetal forces tend to be stronger because of the need to benefit from a large national market. This would explain the formation of European nation-states in the 17th and 18th centuries by the aggregation of heterogeneous political units. This explanation fits the Catalan case well. In fact, Catalonia lost its state institutions, legal institutions and fiscal power in 1714, after the War of Succession to the Spanish Crown. Later, in the second half of the 19th century, Catalonia became Spain's factory in a context of domestic market integration. Economies of scale and the reduction in transport costs due to the construction of the railway, consolidated Catalonia's initial advantage (Tirado et al., 2002).

But in this framework, trade liberalisation weakens centripetal forces. Firms in the national economy are able to sell to the world market. The need to belong to a larger country to benefit from economies of scale disappears. Thus, in the case of Catalonia, trade liberalisation and the integration of the Spanish economy into the European Union in 1986, could have decreased the benefits of the union and increased the costs of staying together.

Figures 14.1 and 14.2 illustrate the growing internationalisation of the Catalan economy. In 1995, total exports from Catalonia to the rest of the world were only 23 per cent of total sales of Catalan firms; sales to the rest of the Spanish market represented 41.6 per cent of total sales and the domestic Catalan market was 35.4 per cent of the total market. Eleven years later, in 2006, the rest of the world had increased its share to 31.3 per cent of the total market, while the Catalan market maintained a very similar share (34.2 per cent) and the rest of the Spanish market had considerably decreased its share (from 41.6 per cent to 34.5 per cent).

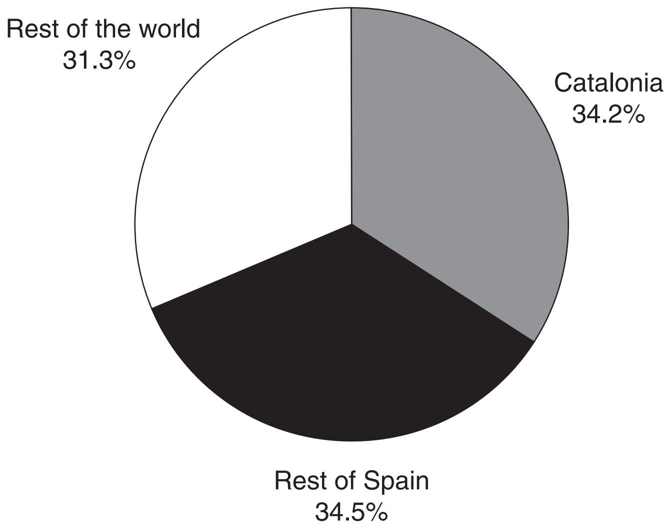
In the case of Spain, trade liberalisation has taken place at a multilateral level in the context of the GATT and the WTO rounds of negotiations, and in the European context since Spain joined the EU in 1986. In addition to the removal of trade barriers, we should also consider the effects of European monetary union since with the euro, the need to adopt a currency in the case of secession disappears. This could represent an additional reduction of the costs of breaking up the political union.

The main centrifugal force is the cost of the heterogeneity of preferences. This cost emerges because, in a large and diverse country, more individuals have to share common policies and common public goods. Thus, the average distance from public policy increases with size and diversity. Recently, several papers have tried to measure heterogeneity and its effects on income differences or on the likelihood of secession and unification.



Source: C-Intereg and Base de Datos de Comercio Exterior, Agencia Tributaria.

Figure 14.1 Market destination of the sales of Catalan firms in 1995



Source: C-Intereg and Base de Datos de Comercio Exterior, Agencia Tributaria.

Figure 14.2 Market destination of the sales of Catalan firms in 2006

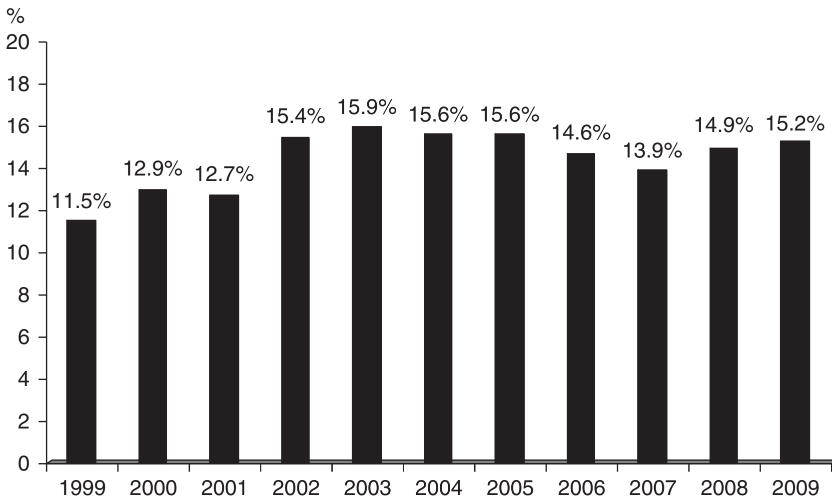
Desmet et al. (2006), using genetic distance as a proxy for cultural differences, calibrate a model of nation formation in Europe and find that the Basque Country is the region the most likely to secede. However, the data on genetic distance used (Cavalli-Sforza et al. (1994)) leave Catalonia out of the analysis. Spolaore and Wacziarg (2009) use the same measure of genetic distance as a proxy for cultural differences but apply it to explain the differences in per capita income between countries.

In the case of Catalonia, cultural differences are not based on ethnicity but on history, culture and language. As Conversi (2000) highlights, the relationship between language and nation has always been central in Catalan nationalist discourse since Catalonia was conceived as a nation by virtue of its linguistic distinctiveness.[4] Since the loss of Catalan institutions in 1714, the Catalan language only recovered an official status during brief periods of democratic rule accompanied by devolution (*Mancomunitat*, 1914–23, Second Republic, 1931–9). The Francoist dictatorship banned the Catalan language, suppressed the autonomous institutions (*Generalitat de Catalunya*) and undertook a policy of annihilation of Catalan culture.

In the transition to democracy in the late 1970s, the claim to autonomy came basically from Catalonia and the Basque Country, although the model adopted in the Spanish constitution generalised autonomy for all regions, including those without past experience of self-government. The first years of autonomy accommodated the demands of recognition of diversity and of protection of the Catalan language, but in recent years tensions over these issues have emerged again in Spanish politics. Political campaigns against the promotion of Catalan as the main language in Catalonia have been instigated by several Spanish parties and media. The reform of the Catalan Statute of Autonomy in 2006 was subject to intense political pressures including boycotts of Catalan products in Madrid and other Spanish regions.

At the same time, the increase in immigration from less-developed countries that has been extremely intense in Catalonia in the 1990s and especially the early 2000s has increased the fears of losing the Catalan language.

However, the heterogeneity of preferences over public policies might not only come from cultural differences but also from the differences in the economic structure of regions. Boix (2002) remarks that Catalonia, an exporting economy, would need a public investment complementary to its export industry, to favour the competitiveness of its firms in a globalising world. Yet, central government has systematically discriminated against projects such as the railway connection with France and the improvement of the Mediterranean axis in favour of projects that interest political elites of the central government and give votes in the less dynamic regions.



Source: Presupuestos Generales del Estado (Spanish National Budget), various years.

Figure 14.3 Central government investment in Catalonia (% over Spanish total), 1999–2009

Examples of such choices would be the decision to begin the high-speed railway in 1992 with the connection Madrid–Seville, instead of prioritising the connection with France through the Catalan border, or the construction of free highways in regions like Castile and Andalusia while most of the highways in Catalonia are private and subject to a high degree of congestion.

In this respect, a matter of heated debate in Catalonia has been the low degree of central government investment in infrastructures. Figure 14.3 shows the percentage of central government investment in Catalonia during the period 1999–2009. This percentage has been lower than the percentage of Catalan GDP over Spanish GDP (18.8 per cent) and even lower than the percentage of Catalan population over Spanish population (15.4 per cent in 1999, 16 per cent in 2008).

Another matter of intense debate has been the airport management model. In Spain, Aeropuertos Españoles y Navegación Aérea (AENA), a state-owned enterprise, manages the 48 airports in an integrated manner. As Bel and Fageda (2007, 2009) recently noted, this model constitutes an exception in the developed world, since Spain is the only European country with several large cities and airports in which all airports are managed by a single national agency. Bel and Fageda (forthcoming) show

that this choice is not motivated by an inter-territorial solidarity criterion towards smaller airports or less developed regions but rather by political motivations.

In Catalonia, two facts have fuelled the feeling of discrimination of Catalan airports, and in particular of Barcelona's airport, by the central government. First, the accumulation of investment in Madrid airport.[5] Second, the lack of intercontinental flights in and out of Barcelona airport, which has been linked to the centralist airport model that seems to be designed to favour Iberia, the former public Spanish airline, and the formation of a single inter-continental hub in Madrid. As Strauss-Kahn and Vives (2005) and Bel and Fageda (2008) show, the location of multinationals' headquarters is positively related to the availability of hub airports. The lack of such an airport in Catalonia has even mobilised the large entrepreneurs, normally reluctant to support sovereignist demands.

3 INTER-REGIONAL REDISTRIBUTION AND COUNTRY STABILITY

Inter-regional redistribution measures the fiscal revenues that are transferred from some regions to others. Most inter-regional redistribution transfers resources from rich to poor regions in order to reduce *horizontal imbalances* among the regions. To achieve this goal, equalisation schemes aimed at providing regions with the same services are established. Yet, the political economy literature has recently noted that complete equalisation might induce richer regions to separate, while a system of partial equalisation that reduces the gap between advantaged and disadvantaged regions, without completely eliminating it, guarantees the country stability (Le Breton and Weber, 2003; Haimanko et al., 2005).

To measure the degree of regional redistribution, net fiscal flows (the difference between the revenues collected in a region and government direct spending in the region) are calculated. In the case of Spain, they were not calculated by the central government until 2008. This estimation was limited to the year 2005. Previously, the Catalan Government had calculated Catalonia's fiscal balance for the period 1986–2005. Table 14.1 shows the fiscal balances of all Spanish autonomous communities in 2005 by two approaches: the cash-flow approach and the benefit approach. In the case of Catalonia the estimates of the Catalan government are also given.

According to these estimates, the fiscal deficit of Catalonia is considerable (almost 9 per cent of Catalan GDP and €15 billion in 2005). When the criterion used is the benefit approach, Madrid is the community

Table 14.1 Regional net fiscal flows, 2005

	Cash-flow approach (million Euros)	Cash-flow approach (% of GDP)	Benefit approach (million Euros)	Benefit approach (% of GDP)	Ranking GDP per capita	Catalan government estimates (cash-flow approach)
1. Balearic Islands	−3 191	−14.2	−1 922	−8.6	7	
2. Catalonia	−14 808	−8.7	−11 101	−6.5	4	16 735 (9.8 GDP)
3. Valencia	−5 575	−6.3	−3 192	−3.6	13 (below average)	
4. Madrid	−8 911	−5.6	−14 201	−8.9	1	
5. Navarre	−488	−3.2	−232	−1.5	3	
6. Murcia	−499	−2.1	+36	+0.1	15 (below average)	
7. Basque Country	−758	−1.3	+112	+0.2	2	
8. La Rioja	+44	+0.7	−99	−1.5	6 (above average)	
9. Canary Islands	+590	+1.6	+2 200	+6	14	
10. Aragon	+510	+1.8	−266	−0.9	5 (above average)	
11. Castile-la Mancha	+1 103	+3.5	+1858	+6	17	
12. Andalusia	+5 729	+4.5	+3 852	+3	18	
13. Cantabria	+571	+5.0	+308	+2.8	8 (above average)	
14. Castile-Leon	+3 692	+7.6	+2 164	+4.4	11	
15. Galicia	+3 807	+8.2	+2 985	+6.4	16	
16. Asturias	+2 780	+14.3	+1 980	+10.2	12	
17. Extremadura	+2 695	+17.8	+2 274	+15.0	19	
18. Ceuta	+388	+28.6	+96	+7.7	9	
19. Melilla	+421	+34.0	+95	+7.7	10	

Source: Ministerio de Economia y Hacienda (2008). Departament d'Economia i Finances, Generalitat de Catalunya (2008).

that has the largest deficit. This result was as expected, given that this approach benefits capital regions. When the criterion used is the cash flow, Madrid occupies fourth place, behind the Balearic Islands, Catalonia and Valencia.

Catalonia is the fourth community in GDP per capita, the Balearic Islands the seventh and Valencia the 13th, but these three autonomous communities occupy the top three places in the ranking of fiscal deficit.

There are regions with a GDP per capita higher than the Spanish average such as Aragon, Cantabria and La Rioja which show a fiscal surplus. The system does not seem to follow a rational path. The case of Valencia is paradigmatic: this region has a GDP per capita below the Spanish average (89 per cent) and has a fiscal deficit that attains 6.3 per cent of its GDP.

In this respect, López-Casasnovas and Pons (2005) posed several principles that should inspire regional redistribution in any federation and quantified these principles using data on the period 1995–2003 from FUNCAS (Fundación de las Cajas de Ahorro), a private foundation that calculated fiscal flows each year during this period. They found that none of these principles was observed in Spain during that period.[6]

We will now describe the regional financing system in Spain that is partly responsible for these results. In fact, the equalisation system is channelled mainly through the regional financing system (Sistema de Financiación Autonómica). Central government and autonomous communities determine, in the Consejo de Política Fiscal y Financiera, and in an 'organic law' (LOFCA), the expenditure needs of the 17 autonomous communities (CA) in the Common regime.

To calculate the expenditure needs of the regions, their services are split into three (common services, health and social services). For the common services, there is a fixed amount for each CA (€39.67 million) and then the distribution of funds is based on the following weighted variables: Population (94 per cent), Surface Area (4.2 per cent), Dispersion (1.2 per cent), Insularity (0.6 per cent). There are additional funds: relative income (for CA with an income under average) and funds to compensate a low population density (Aragon and Extremadura). And, finally, a series of modulation rules, which are a series of adjustments and corrections to favour or compensate some CA (those of per capita income under 82 per cent of average) and those of high dispersion (Asturias, Castile-Leon and Galicia).

Health funds are distributed according to the protected population and the rate of population older than 65 years. And, finally, the variable to distribute social services funds is population older than 65 years.

To finance these needs, a simple equation holds:

$$\text{Needs} = \text{Taxes transferred} +/- \text{Sufficiency Fund}$$

where the taxes transferred are the capital assets tax, the inheritance and donations tax, the transfer tax, 33 per cent of income tax, 35 per cent of VAT, 40 per cent of special taxes (alcohol, oil, tobacco), 100 per cent of the taxes on transport, 100 per cent of the taxes on electricity.

The sufficiency fund is an adjustment mechanism. If the taxes transferred

are larger than the needs fixed, the autonomous community has to transfer this fund (the fund is negative), otherwise it is positive and the autonomous community receives a transfer in addition to the taxes.

As a result of these mechanisms, the Spanish regional transfer system over-equalises. Thus, autonomous communities such as Catalonia with more fiscal capacity end up with less expenditure per capita than the majority of autonomous communities. Tables 14.2 and 14.3 show this effect. Catalonia ranks third in regional fiscal capacity (taxes transferred) before equalisation and eleventh after equalisation. The differences are considerable. Thus, Extremadura ends up with a fiscal capacity around 25 per cent higher than the Spanish average after equalisation, while the autonomous community most ill-treated by the system, the Balearic Islands, ends up with a fiscal capacity around 20 per cent below average.

4 DECENTRALISATION, FEDERALISM AND COUNTRY STABILITY

Spolaore (in this volume) analyses the effects that decentralisation and regional autonomy can have on the stability of countries. In principle, giving more power to the periphery may reduce the heterogeneity costs from staying in a union and promote country stability. However, decentralisation may also increase the ability of a region to secede by increasing regional government powers and resources. Thus, the net effects are ambiguous; moreover, it is not easy to assess empirically this relationship because of the endogeneity of the institutional system.

In Spain, after the death of Franco in 1975, a democratisation process (the so-called transition) led to the approval of the Spanish Constitution in 1978. This constitution recognised regional entities, the autonomous communities, and allowed them to have their own regional parliaments. At the same time, the Constitution emphatically stated that it was 'based on the indissoluble unity of the Spanish Nation'. Castilian or Spanish was instituted as the official language of Spain but the Constitution recognised the other languages as official in their respective territories. Although the Spanish Constitution does not include the world 'federal' and instead uses the term 'Estado de las Autonomías' to define the territorial structure of the country, it has been interpreted by some political scientists as an instance of 'devolutionary federalism' or 'imperfect federalism' (see Moreno, 2002). Other authors disagree with this view and consider that the Spanish Constitution differs dramatically from standard European models of constitutional federalism in the mechanism it creates to devolve power to the autonomies. In fact, it gives the Spanish Parliament unlimited

Table 14.2 Regional fiscal capacity before equalisation, 2006

	Regional fiscal capacity before equalisation (euros per capita)	Spain = 100
1. Madrid	2172	140.9
2. Balearic Islands	2038	132.2
3. Catalonia	1868	121.2
4. Aragon	1753	113.7
5. Cantabria	1577	102.3
6. La Rioja	1574	102.1
Spain	**1542**	**100.0**
7. Asturias	1537	99.7
8. Valencia	1505	97.6
9. Castile-Leon	1460	94.7
10. Galicia	1304	84.5
11. Murcia	1250	81.1
13. Castile-La Mancha	1236	80.2
12. Andalusia	1227	79.6
14. Extremadura	1042	67.6
15. Canary Islands	648	42.0

Source: Departament d'Economia i Finances, Generalitat de Catalunya (2008).

power to approve both the creation of autonomous communities and their assumption of powers through a statute of autonomy and its possible amendments (see Gardner and Abad, 2009).

The inclusion of both regions (mainly Castilian-speaking) and historical nationalities (such as the Basque Country, Catalonia and Galicia) in the set of 17 autonomous communities that were subsequently created was controversial and was seen in the Basque Country and Catalonia as a way to dilute their distinctiveness. In fact, asymmetrical federalism was, during the late 1980s and 1990s, a common demand of Catalan nationalism.

In Catalonia, the first election to the Catalan Parliament was held in 1980. Convergència i Unió, a centrist and nationalist party won the election and formed a minority government. This party was in power from 1980 to 2003 under the leadership of Jordi Pujol, President of the Catalan government for 23 years. In 2003, a coalition formed by three left-wing parties was able to form a new government, under the leadership of Pasqual Maragall, the former mayor of Barcelona. These three parties were a mixture of Catalan-only parties and both Catalan and Spanish

Table 14.3 Regional fiscal capacity after equalisation, 2006

	Regional fiscal capacity after equalisation (euros per capita)	Spain = 100
1. Extremadura	2816	124.7
2. La Rioja	2651	117.4
3. Cantabria	2637	116.7
4. Castile-Leon	2681	116.7
5. Aragon	2623	116.1
6. Galicia	2575	114.0
7. Asturias	2561	113.4
8. Castile-La Mancha	2465	109.1
9. Andalusia	2304	102.0
Spain	**2259**	**100.0**
10. Canary Islands	2168	96.0
11. Catalonia	2132	94.4
12. Murcia	2065	91.4
13. Valencia	2031	89.9
14. Madrid	2002	88.6
15. Balearic Islands	1838	81.4

Source: Departament d'Economia i Finances, Generalitat de Catalunya (2008).

parties: Partit dels Socialistes de Catalunya, PSC-PSOE, a party federated with the Spanish socialist party; and two parties based solely in Catalonia: Esquerra Republicana de Catalunya, ERC, a leftist and independentist party, and Iniciativa per Catalunya, IC, which arose from the former communists of the PSUC (Partit Socialista Unificat de Catalunya).

The first decade of self-government under the leadership of *Convergència i Unió* was marked by two crucial initiatives: the passing of the Catalan linguistic normalisation law in 1983 and the appearance of Catalan public media. Thus, a public company, also created in 1983, the Corporació Catalana de Ràdio i Televisió, ran a TV channel in Catalan (TV3) and several radio stations (Catalunya Ràdio, Catalunya Informació, and other specialised channels).

The main goal of the Catalan linguistic normalisation law was to promote the use of the Catalan language. One of its most important features was that it allowed the educational system to become bilingual (all students should be able to use both Catalan and Spanish at the end of their education), while it forbade the separation of pupils according to language differences and progressively imposed Catalan as students learned it. This

system was called linguistic immersion and received the approval of the Constitutional Court in 1996.[7]

Successful in its objective of integrating the children of Spanish immigrants in order to avoid an ethnic cleavage of Catalan society, in recent years the system of linguistic immersion has been questioned by Spanish parties and media, in particular by the Partido Popular, but also by some members of the Socialists, and by a new minority party in Catalonia (Ciudadanos-Partido de la Ciudadanía).[8]

As for the assumption of powers, Catalonia progressively assumed important powers in health, education, social policies, universities, culture, labour and industrial policy, as stated in the Catalan Statute of Autonomy passed in 1979. However, the assumption of the provision of public services was not always accompanied by legislative power and often the central government retained, through basic legislation, the capacity to define the public policies in these matters. This has led to a frequent conflict of powers in the Constitutional Court. Yet, the most important problem was the insufficient financing of these powers that we explained in section 3.

This situation led to the proposal by the Catalan Parliament of an amendment of the Catalan Statute of Autonomy in 2005 to obtain a reinforcement of regional powers and a new financing system. The project, passed by 90 per cent of the members of the Catalan Parliament, had to be and was subsequently passed by the Spanish Parliament, although after a considerable modification of the original project. Finally, the new Statute of Autonomy was approved in a referendum by the Catalan population in June 2006. However, this entire process was conducted in the midst of extreme political tension as the second party in Spain, the Partido Popular, opposed it, and posed a conflict of constitutionality of the new Statute in the Constitutional Court. As of spring 2009, this court has not yet issued a decision on the Catalan statute. In Catalonia, there are fears that this decision as the constitutional system of appointing magistrates is biased in favour of the centralist parties and the regions have very limited participation in the Court's composition.

5 CONCLUSIONS

The case of Catalonia in Spain is a good case study of the economic forces that shape the creation and break-up of nations. The equilibrium of these forces has changed due to globalisation and the development of regional blocs. Centripetal forces, pulling heterogeneous territories together, have weakened; and centrifugal forces, pushing towards disintegration, have

been reinforced. In the case of Catalonia, the regional redistribution system seems to be a key factor that would explain the growing dissatisfaction of the Catalan population reflected in the polls.[9] The political economy literature distinguishes between preference-based transfers and income-based transfers. The former consist of 'side payments' to regions that are distant from the central government in terms of preferences over public policies and could compensate regions that would otherwise secede. The Spanish redistribution system is an income-based system of transfers where, in addition to compensating poor regions such as Andalusia and Extremadura, the 'side payments' seem to be aimed at regions richer than average and without a strong sense of own identity, such as La Rioja, Aragon, Cantabria and Castile-Leon. In Spain, the transfer scheme seems not to be secession-proof in the line of Le Breton and Weber's (2003) proposals.

As for the debate on the efficacy of decentralisation to prevent secession, the self-government permitted by the Spanish Constitution seemed to accommodate the claims of identity recognition in Catalonia in the first years of the process of devolution. However, since the late 1990s, the conflicts of powers, the insufficient financing and the new challenges that the Catalan language and culture face in a globalising world, have led to an increasing claim for independence. Probably, success or failure in the implementation of the new Statute of Autonomy will condition this claim.

NOTES

1. For a comprehensive analysis of fiscal decentralisation in Spain see García-Milà and McGuire (2007).
2. The Foral regime has given high fiscal revenues to the Basques and the people of Navarre. Their fiscal deficit ranges only between 1 per cent and 3 per cent of their GDP.
3. Alesina and Spolaore (2003) is the book that summarises the research developed in this field by these two authors.
4. Conversi (2000) is a good comparative analysis of Catalan nationalism which emphasises that its roots are not found in ethnicity but rather in language.
5. Bel and Fageda (forthcoming) calculated that in the period 1992 to 2004, Madrid accumulated almost 60 per cent of total investment but only 22 per cent of total traffic.
6. These principles are developed by López-Casasnovas in his chapter in this volume.
7. Aspachs et al. (2008, 2009) recently analysed the impact of Catalan linguistic policy on identity formation.
8. This party obtained 3 per cent of the vote and 3 MPs in the 2006 election to the Catalan Parliament.
9. Belzunces (2008) summarises all the polls asking about the support for Catalonia's independence. This support has reached 35 per cent in recent years.

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15. The costs and benefits of constitutional options for Québec and Canada

François Vaillancourt

1 INTRODUCTION

The purpose of this chapter is to present the origin and evolution of the Québec independence movement, to describe the ties that bind the various parts of Canada (trade, labor, fiscal and debt) and how they have been discussed in the debates on independence and to examine various constitutional options and their costs and benefits for Québec and Canada. The chapter is thus divided in three main parts. This is related to the main theme of this book, fiscal flows, in two ways. First, the benefits described here are in part the direct results of various items that determine the fiscal flows to Québec. Second, the existence of these positive flows should, given the relative poverty of Québec inside Canada and according to the model put forward by Spolaore (this volume), decrease the secession threat from Québec. There is no robust empirical evidence on this point; it would need to be obtained from a time series multivariate analysis of the support for sovereignty and the data series are not sufficiently long to do this. We would argue that fiscal flows have increased over time since 1965, along with the support for sovereignty. But this does not show that they do not make this support smaller than it would have been otherwise. We also note that politicians of the sovereignty camp have long argued that, even if Québec objectively receives positive fiscal flows (something they do not concede easily), that these flows are not large enough relative to what they should be. Indeed, it is a sovereignist government that created the Séguin Commission in 2001[1] that concluded in 2002 that Québec was disadvantaged and suffered from fiscal disequilibrium. Hence positive fiscal flows that are too small are one item to blame federalism for. So the Spolaore conjecture is neither supported nor rejected by the available evidence in the case of Québec.

2 ORIGIN AND EVOLUTION OF THE INDEPENDENCE MOVEMENT IN QUÉBEC

The first sovereignist (the common usage in Québec for those seeking independence for Québec) movement in Québec is the Alliance Laurentienne,[2] founded in 1957. It was replaced in 1960 by the Rassemblement pour l'Indépendance Nationale (RIN).[3] It contested the 1966 election along with another sovereignist party, the Ralliement National (RN);[4] together, they obtained about 9 per cent of the votes. In 1967, a popular ex-minister, René Lévesque, split from the federalist liberal provincial party and founded the Mouvement Souveraineté Association[5] that transformed itself into the Parti Québécois (PQ) in 1968 with a merger with the RN and the dissolution of the RIN. The PQ contested the 1970 provincial election, obtaining 23 per cent of the votes and the 1973 provincial election, obtaining 30 per cent of the votes.[6] It had promised in these two elections that if it won, it would proclaim independence. In 1976, it ran promising good government and a referendum on independence and won with 41 per cent of the votes. The referendum was held in 1980, with 40 per cent of the votes in favor of independence. The PQ was reelected in 1981, defeated in 1985 and 1989 and elected in 1994. It held a second referendum in 1995, with 49 per cent of the votes in favor of independence. It was reelected in 1998, defeated in 2003, 2007 and 2008. Hence, the strength of support for sovereignty over the 1965–95 period has grown fivefold. Evidence from survey data shows that a majority of francophone voters (55 per cent or so) supported sovereignty in 1995; the support for sovereignty has been at or above 40 per cent over the last 30 years (42 per cent in April 2008[7]).

The strength of the support for sovereignty presumably depends on what the choices are. In both referendums, the other option was existing federal arrangements to be modified if the No side won. After 1980, the Canadian Constitution was amended as discussed later in the chapter (Bird and Vaillancourt, 2006). After 1995, the Constitution remained unchanged and the recognition of Québec as a 'distinct' society by Canada's parliament, the House of Commons, in 1995 has had, in practice, no consequences nor has the November 2006 adoption by the House of Commons of a motion indicating that 'this House recognize[s] that the Québécois form a nation within a united Canada'.[8]

This growth of support for sovereignty in the 1965–95 period occurred against the background of the increasing fiscal autonomy of Québec and lack of agreement on constitutional reform. Growth in tax autonomy resulted from changes in the sharing of the personal (PIT) and corporate tax fields (CIT). The federal government gave more and more tax autonomy to provinces, particularly Québec. For example, its share of

PIT collection rose from 0 per cent in 1947 to 44 per cent in 1967, and has ranged between 50 per cent and 60 per cent in the 1972–2002 period (Bird and Vaillancourt, 2006, table 7).

But during the same period, two attempts to alter the formula for amending the Constitution and two attempts to modify it failed. The amendment formula in place since 1867 required an Act of the British Parliament, enacted at the request of the federal government. The first attempt in 1964 to alter this formula was the so-called Fulton–Favreau formula for constitutional amendment. This proposal gave each province a veto on amendments on changes to the federal–provincial division of powers, allowed delegation of powers by the provinces to Ottawa and vice versa with the approval of the federal government and at least four of the provinces and for most other constitutional amendments the '7/50 rule' would be required: consent of the federal parliament plus the legislatures of seven of the provinces representing at least 50 per cent of the Canadian population. Québec rejected it. The second attempt was the 1971 Victoria Charter which also dealt with a variety of issues. Most constitutional amendments would have required approval by the House of Commons (the Senate would only be able to suspend an amendment), all provinces that have or had in the past 25 per cent of Canada's population (that is, Ontario and Québec), two of the four Atlantic Provinces; and two of the four Western Provinces with at least 50 per cent of the western population. Québec also rejected it, on the grounds that it offered Québec insufficient autonomy in the implementation of social policy.

After the 1980 referendum, a First Ministers' conference – the mechanism used to consult the provinces in all attempts to repatriate the constitution – ended in failure in September 1980. Prime Minister Trudeau announced, however, that the federal government would nonetheless proceed unilaterally with repatriation, as well as with the introduction of a Charter of Rights and Freedoms and an amending formula.

All provinces except Ontario and New Brunswick initially objected to the federal proposals. In September 1981, the Supreme Court ruled that while the federal government's request to the British Parliament did not legally require provincial consent, unilateral action went against Canada's constitutional conventions. Ottawa, said the Court, should obtain a 'substantial degree' of provincial consent. The federal government respected the Court's decision and returned to negotiations in November 1981. Eventually, all provinces except Québec agreed with the federal government and the 1982 Constitution Act was proclaimed.

Thus Québec was subject as of 1982 to a constitution to which its provincial government had not agreed. To solve this, a new round of constitutional talks began in 1985. After extensive discussion, in April 1987 the

First Ministers drafted the so-called 'Meech Lake Accord'. In order to be adopted, the Meech Lake Accord had to be ratified by Parliament and by the legislatures of all the provinces. Once the resolution was supported by one legislature, the other legislatures had three years to ratify it. Québec approved it on 23 June 1987. In the end, Newfoundland and Manitoba did not ratify the agreement.

The failure of the Accord was interpreted by many Quebeckers as an outright rejection by English Canada, especially as it recognized Québec as a distinct society. The immediate result was a sharp rise in the polling support for sovereignty, reaching a high of 60 per cent at one point. From the failure of Meech in June 1990 to the spring of 1992, yet another series of extensive public consultations as well as negotiations between First Ministers were held. The end product of this process was the Charlottetown Accord, which was much more complex than Meech Lake.

In October 1992, for the first time in Canadian history, a national referendum was held to decide whether Canada's constitution should be renewed based upon the Charlottetown Accord.[9] The participation rate was 75 per cent, higher than the usual participation rate in elections. The Charlottetown Accord was rejected by 54 per cent of those who voted (55 per cent in Québec) in the rest of Canada (ROC). In the end, the Accord received majorities in only four provinces (New Brunswick, Newfoundland, Prince Edward Island, and Ontario) and one territory (Northwest Territories).

How can the growing support for sovereignty or at least a distinct/unique society be justified, especially in the light of the evidence that Canada is along with Switzerland one of the more decentralized industrial countries in the world, with Québec being one of the strongest subnational units in a federal system (Vaillancourt, 1999).

To do so, one must go back to the original joining of Québec with Anglo-Saxon North America. Québec involuntarily joined British North America in 1760 following the conquest by British troops. The political (religion, language, etc.) rights of its French inhabitants then varied through time, increasing from the period directly following the Conquest as a result of the adoption by the British Parliament of the Act of Quebec of 1774 which aimed at securing the loyalty of Quebec's French-speaking and Catholic population in the face of growing unhappiness in the American colonies. It decreased with the adoption of the Union Act of 1840 following the unsuccessful rebellion of 1837–8 and then increased anew in 1867 with the British North America Act that gave birth to the Dominion of Canada, a federal state. This historical background is still relevant in 2008, since the conquest led to a reduction in the value of the linguistic human capital of the original French inhabitants. Their language, which they could use

before the Conquest for both intra-Québec and Québec–metropolis interactions, had therefore become useless for the latter type of interactions and had lost some of its importance for the first type. It is useful to distinguish between the two types of relations since the first are probably more relevant to the vitality of a language than the second and since language policies should differ in addressing these two situations.

The survival since 1760 of the francophones of Québec as a distinct language group in North America results from the high birthrate of francophones (1760–1950) and their low assimilation rate into English, in part, as a result of self-binding legal constraints (Bill 101 in 1977) that replaced the strictures ('qui perd sa langue perd sa foi') of the Catholic church. These constraints reflect a collective desire to remain French and the will to use reasonable means to achieve this end. But francophones have a high likelihood of remaining French-speaking only if they reside in Québec or parts of Eastern Ontario and New Brunswick (Vaillancourt, 1992), since network externalities are what allow a language to thrive (Grin and Vaillancourt, 1997). It is only in Québec that one can live exclusively in French while consuming a full array of services and thus make full use of this type of linguistic human capital. Hence, francophones are less mobile in North America than anglophones. This lack of mobility stems from the desire to avoid an English language assimilationist environment. It also stems from a lack of knowledge of English,[10] since from a labor market perspective, the rest of Canada (ROC) is English-speaking. This lack of mobility reduces the standard of living of francophones through a combination of lower labor force participation, higher unemployment and lower wages and salaries. Thus, there is a need for specific policies that recognize: the need to protect French (language skills of immigrants, language of work and leisure, etc.); the need to correct for reduced geographical mobility (industrial/occupational mobility, more general training) of Québec francophones.

Such policies are required because of the long-term demographic threat of the low birthrate (1.6–1.7) of francophones and of the natural attraction of immigrants, mainly allophones, towards English.

Such a threat would probably not occur in a sovereign Québec since immigrants would be coming to a French-speaking country with a small English-speaking minority. But with Québec, an officially French-speaking province in an officially bilingual country, with a large English minority and with easy out-migration to ROC, one should not be surprised by the linguistic choices of immigrants. One should also note that current Québec language policies still allow individuals to live in Montréal knowing only English, while having access to a full array of public and private goods and services and a limited but good selection of private employment opportunities.

Finally, Canada is increasingly an English-speaking country and one where the political weight of Québec is decreasing. Given that some English Canadians do not value highly the benefits they may derive from the existence of a French-speaking society in their midst, it is not surprising that Québec francophones prefer to give additional powers to the Québec government, which they control, than to the federal government.

3 THE ECONOMIC TIES BETWEEN QUÉBEC AND ROC

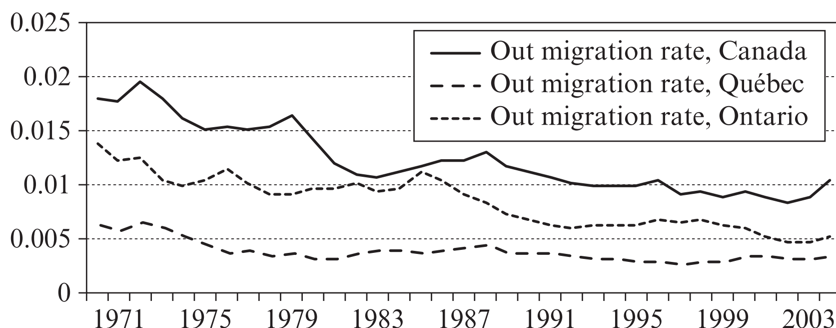
We now examine the ties between Québec and ROC that could be severed or weakened by independence. We start with trade ties, then labor market ties and finally fiscal ties including 'bonds that bind'.

3.1 Trade Ties

In the 1980 referendum debate, the issue of access by Québec to the Canadian markets post sovereignty was raised. Opponents noted that it would not be a sure thing and that it would have to be negotiated with some employment at risk. Proponents argued that while this was true, the importance of these trade links for both ROC and Québec meant that they could not be jeopardized. In 1995, the debate shifted to the place of a sovereign Québec within NAFTA (Brunelle and Deblock, 1997). Would Québec have in some sense, successor rights to Canada within NAFTA or would it have to negotiate as if it was a new member; interestingly, it was implicitly presumed that ROC would automatically remain a member even though its market had been amputated by about a quarter.

Menz (2001) reports that in a recent study, Courchene (1996) calculated ratios of provincial exports and imports of goods and services to the rest of Canada and to the rest of the world and found that international trade grew more than internal trade among provinces over the 1981 to 1994 time period. In 1981, exports from all provinces to destinations outside Canada (ROW) were 87 per cent of their exports to other provinces (ROC), and only four provinces exported more to ROW than to ROC. By 1994, exports to ROW had risen to 168 per cent of exports to the rest of Canada, and only one province (Prince Edward Island) exported more to ROC than to the rest of the world. Brunelle and Deblock present similar results (1997).

Vaillancourt (this volume, Table 3.4) presents evidence on interprovincial and international trade of Canadian provinces for 1992 and the most recent year available, 2003. It shows that, for Canada as a whole (Québec), interprovincial trade represented 19 per cent (19 per cent) of GDP in 1992



Source: Statistics Canada CANSIM tables 051-0012 (migrants) and 051-0001 population.

Figure 15.1 Provincial out-migration rate as percentage of population, Canada, Ontario and Québec, 1971–2005

and 20 per cent (20 per cent) in 2003 while international trade represented respectively 27 per cent (21 per cent) and 36 per cent (32 per cent) of GDP in those two years. In 1992, the share of international trade was larger than that of interprovincial trade for five provinces while in 2003, this is true for nine provinces.

3.2 Labor/Mobility Ties

In neither of the referenda was the access by Quebeckers after sovereignty to the labor market of ROC, an important issue. Why? Because such ties are weak. For the reasons noted in the first part of the chapter, Québec francophones are substantially less mobile than Québec anglophones, ROC francophones or ROC anglophones (Vaillancourt, 1992). This is shown in Figure 15.1 and indicates weak labor ties between Québec and ROC.

3.3 Fiscal Ties: Flows and Bonds that Bind (National Debt)

Québec is a net recipient of federal fiscal flows (Vaillancourt and Bird, 2005), in good part because of the explicit federal equalization program and the implicit equalization of the employment insurance system in Canada (Vaillancourt and Rault, 2003). Jutras calculates that net flows from the federal government into Québec (expenses − revenues) corrected for the deficit were always positive over the 1971–2004 period. In 1980, they were $429 per capita and in 1995 $869 (both in current $). Hence they are about 2.5 billion in 1980 and 5.5 billion in 1985. These inflows would

be lost if Québec became sovereign. This issue was raised in both the 1980 and 1995 referendums. The other public finance issue was raised mainly in the 1995 referendum debate; it was the sharing of the Canadian debt should Québec leave. The appropriate share was estimated by various parties to range from 17–18 per cent to 28 per cent (Fry, 1995). The lowest share was arrived at by a Québec government report and the highest by a Western Canada research institute. The most commonly agreed to number was the share of population that is about 23 per cent. The importance of this issue has diminished substantially with the reduction in the absolute and relative size of the debt. Net (of financial assets) debt was $598 billion (71 per cent of GDP) in 1995, peaking in 1997 at $607 billion (65 per cent) and down to $516 billion (23 per cent) in 2007.[11]

The debates on these two issues often took place in the context of a debate on the budget of a sovereign Québec, since one of the issues surrounding the debate on sovereignty is the financial viability of an independent Québec state. This has been addressed in a pro active fashion by the Parti Québécois.[12] It:

- Put forward the *Budget de l'an un* during the 1973 election campaign; it presented the public finances of a sovereign Québec for 1975–6;
- While in government set up in 1994 a *Secrétariat à la restructuration* that produced various studies, including one on the public finances of a sovereign Québec for 1993–4;
- Produced in 2000 a study of the public finances of a sovereign Québec for 1999–2000;
- Produced in 2005 a study of the public finances of a sovereign Québec for 2005–06.

In addition, the Bélanger-Campeau Commission set up by the provincial government of the federalist Liberal Party after the failure of the Meech Lake Accord also examined the issue for 1990–91.

The overall conclusion of these studies is that after sovereignty Québec would be a viable state. But this, of course, depends on the assumptions used. We thus briefly present the key assumptions used in the last study:

- Tax revenue shares: these are established tax by tax using past shares for 2003 coming to an overall 20 per cent. The numbers are reasonable although they neglect the downward trend in these shares in the past years.
- Transfer revenues: federal transfer revenues would stop. This is a loss of the order of $9.6 billion. The number is grounded in effective transfers.

- Transfers to individuals: these are old age pensions and unemployment insurance. The amount spent in Québec is known.
- Expenditures on program spending: allocators are used for each program yielding an overall share of 17.2 per cent. They are then examined for potential economies due to eliminating overlapping expenses and attaining greater efficiencies. These gains are estimated at $2.4 billion out of $11.4 billion of federal spending assumed by the Québec government.
- Expenditures on debt repayment: estimations are made of the value of the federal financial and non-financial assets and of the financial and pension related debt that the Québec government would assume. Overall, Québec is estimated to assume 17.9 per cent of the debt service charges (one additional percentage point is $350 million) and to do so at the federal interest rate.

Overall Québec is shown to gain $1.3 billion. Is this number plausible? No, unless one assumes that there are no revenue shocks whatsoever associated with sovereignty. There is no discussion of out-migration, reduced trade flows, reduced GDP, higher interest rates and any other possible impact of sovereignty on Québec's economy. Their complete absence is highly unlikely; one would expect some macroeconomic shocks and thus this is a card castle that collapses at the first shock.

4 THE CHOICE OF CONSTITUTIONAL OPTIONS: BENEFITS AND COSTS

In this section, we present five possible constitutional options for Canada/Québec and discuss their costs and benefits. Before doing so, let us note that the appropriateness of preventing the assimilation of Québec's francophone community is not obvious. Communities elsewhere in Eastern Canada have been significantly weakened by geographic mobility due to weak economic prospects. Most economists favor such labor market adjustments. Linguistic mobility (assimilation) is simply another form of adjustment for which there are numerous historical precedents, be they amongst First Nations in Canada or language groups in Europe. To counter this view, one may note that from a Canadian perspective, it can be argued that the existence of a French language group increases the size of possible export markets and helps differentiate Canada from the United States while from a world perspective, a bilingual (English–French) North American francophone community may be able to add a different input to labor markets.

4.1 The Choice of Options

In this section, we outline five possible options for Québec and Canada ranging from a uniform Canadian state to sovereignty.

1. *Uniform Canadian state* This option, while not discussed in the referendum debates, would imply that Canada would become an English-only state, would remove any distinct treatment of Québec and, in particular, would allow full freedom of choice of the language of schooling, work and consumption anywhere in Canada. This would slowly unravel network externalities and, over the course of time, lead to Québec becoming an English-speaking province.
2. *The status quo* This option, however ill-defined and changing over time, was the one put forward by the federalist leaders at the beginning of the 1995 referendum campaign. It implies no change in the existing degree of distinctiveness of Québec but changes in its other powers as ROC may see fit to grant it along with none, some or all other provinces through various non-constitutional means (administrative or legal).
3. *Asymmetric decentralization to provinces* This option, which was discussed in 1987–92 (Meech and Charlottetown Accords) gives Québec a 'distinct' status with additional powers not granted to other provinces. In the 1980 referendum and in the last week of the 1995 referendum campaign, an imprecise mix of this third option and of the second was put forward by the federalists' side.
4. *Symmetric decentralization to provinces* This option, also discussed in 1987–92, gives all provinces new powers though constitutional changes or at least the right to claim them but without an explicit recognition of Québec's distinction. Goldberg and Levi (1998) argue that from a portfolio perspective, this is an excellent choice for Canada.
5. *Sovereignty/independence* This is the policy proposal of the Québec sovereignists. After seceding from Canada, it allows Québec to enter willingly and not as a conquered people into an association with Canada.

4.2 The Costs and Benefits of the Various Options

In this section, we will examine the various costs and benefits of the five options identified above for Québec and ROC in qualitative terms. Young (1994) identifies both short-term or transition costs and long-term structural costs. Transition costs include transactions costs (new passports, debt sharing, etc.), fiscal costs (higher taxes to make the lost fiscal transfer

net of efficiency gains of doing away with one layer of government) and uncertainty costs (migration, interest rates). Long-term costs would result from changes in access to markets if any and from weakened integration; they could be offset by more appropriate economic policies for both Québec and Canada.

In the absence of sovereignty, one needs to assess if the selected constitutional arrangement will be such that the support (demand) for sovereignty will drop sufficiently for the uncertainty costs associated with this issue to fully dissipate. In our opinion, this is the case only with an option that increases the likelihood of French thriving in the long run in Québec and is supported by about 65 per cent of the French-speaking voters. One should add that in addition to the costs of potential sovereignty which are felt in both Québec and English Canada, Québec is also incurring the benefits and costs of a changing ownership structure of its economy with a steady departure or slimming down of non-francophone businesses that particularly affects Montréal. The share of employment in francophone controlled workplaces has gone from 47 per cent in 1961 to 55 per cent in 1978 to 67 per cent in 2003 (Vaillancourt and Vaillancourt, 2005, Table 3.1).

Before turning to the economic impacts of the various options, let us note that the demographic impacts are mainly on the percentage of francophones residing in Québec. It is only in the case of sovereignty that there are significant impacts on the population size of Québec and ROC. An assumption that 10 per cent of non-francophones, that is, 125 000 individuals, will leave Québec in the case of independence is, given past out-migration from Québec in politically uncertain times (1970, 1977) and survey evidence, a reasonable lower-bound estimate. An assumption of 250 000 departures (Côté, 1995b), half of the anglophones who state that they will leave (Côté, 1995a, p. 71) in the short- to medium-term (3–5 years), as an upper-bound estimate, seems reasonable, given the absorption capacity of ROC. Some francophones, say, 1 per cent, or about 55 000, may also leave. This yields a total of about 300 000 out-migrants, the figure used by Dungan and Vaillancourt (1991).

The economic impacts of non-sovereignty options are mainly in the area of human capital investments and are not very important. In the case of sovereignty, the impacts are likely to be more severe. GDP will be reduced both because some employment will be transferred outside of Québec and because trade relations will be perturbed. GDP per capita will be reduced since anglophones have higher mean employment income than francophones and since head office jobs produce export of services with multiplier effects. Dungan and Vaillancourt (1991) modeled the impacts of (1) an increase in international borrowing costs; (2) a drop in international direct investments; (3) a population outflow from Québec; (4) an increase

Table 15.1 Macro economic impacts of events. possibly associated with sovereignty

Scenario	Impact on (%Δ), ten-year horizon	
	Real GDP	Wages
1. International borrowing costs: interest rate : + 1%		
Canada	−1.06	−1.57
Québec	−1.33	−1.72
2. International investment reduced by 1 billion $		
Canada	−0.45	−0.50
Québec	−0.98	−0.54
3. Population outflow from Québec		
Québec	−4.75	0.85
Per capita GDP (−0.67%)		
4. Trade barriers		
Canada	−2.66	−2.99
Québec	−5.23	−5.95

Notes:
1. 1 per cent increase for Canada, that is, 2 % for Québec and 0.67 for Canada.
2. 750 million in Québec, 250 million in ROC.
3. 50 000 each of the first two years, 25 000 each of the remaining eight, for a total of 300 000.
4. For Canada, TFP is down. 0.5 per cent each of the first two years; 0.25 per cent each of the remaining eight years with a double impact on Québec.
   All the results are expressed as a percentage deviation from the no-disturbance base case.

Source: Vaillancourt (1998).

in trade barriers reflected in decreased total factor productivity. Their results are reported in Table 15.1. They show:

- That both Québec and Canada as a whole are affected negatively by investor uncertainty in particular when its manifest itself by reduced foreign direct investment (II);
- That an outflow of anglophones from Québec has an important impact on total, but not on per capita GDP in Québec (III);
- That reduced productivity through reduced trade is the most

devastating possible impact of sovereignty for both Québec and Canada (IV). Note that these results were obtained when interprovincial trade was more important than now. But since they were calculated using changes in TFP, they remain valid if the disruption in both intra-Canada trade and Canada-US trade is of the same order.

We assume a resumption of an unchanged growth path for the Québec economy after sovereignty since there is no indication that Québec politicians are economically more astute than the federal ones or that the synergies of the private and public sectors often mentioned (Proulx, 1995) will actually emerge. The greater role of the market, due to Québec being directly subject to NAFTA and GATT rules rather than somewhat sheltered as a subnational entity, probably leads to an increased inequality in market income. Our overall impact on GDP of sovereignty is similar to the results of the ECC (1991) which showed an impact of 1.5–3.5 per cent on GDP. To mitigate trade disruptions, Québec could make the payment of its share of interest and capital of the Canadian debt contingent on an appropriate level of economic union since trade barriers erected by ROC would directly reduce Québec's ability to pay.

The overall public finance impacts of non-sovereignty options are quite small, but the impacts on either the federal or provincial governments in terms of a simultaneous variation in expenditures and revenues could be important if major jurisdiction were transferred but with little macroeconomic impact, as shown by Dungan and Vaillancourt (1991). Note here that it would be appropriate to link the degree of asymmetry or distinctiveness offered to Québec to its access to implicit (unemployment insurance) or explicit (equalization) transfers from ROC. Hence, one could offer Québec jurisdiction over all manpower issues if its unemployment expenditures became self-financing. Or one could offer Québec a vast array of powers (communication, culture) and additional powers in controlling access to its territory by non-francophones in exchange for a renunciation of equalization payments. In the case of sovereignty, the federal transfers to Québec cease while it is faced with higher interest rates on both its original debt and its share of the federal debt. Given the small amount of true overlapping and the existence of some economies of scale, the reduction in expenditures resulting from the number of governments decreasing from two to one are unlikely to be very important (at most $1 billion annually). Reduction in the cost of public employees through wage rollbacks and increases in taxes for a francophone population even less mobile than before could be necessary, especially if an attempt was made to keep inequality in post-transfer income unchanged.

Table 15.2 Costs and benefits of five constitutional options, Québec and ROC, summary of impacts with respect to status quo

Scale/measures	Uniformity	Status quo	Decentralization (2)	Sovereignty
Percentage of francophones in Québec	−	0	+	++
Standard of living in Québec	+ (2%)	0	+ (1%)	−− (5–7%)
Power of Québec francophones on human capital issues	−	0	+	++
Standard of living, Canada	0	0	+	+
Power of Canada over Québec	+	0	−	−−

Source: Vaillancourt (1998).

The political impacts

The key issue is the degree of power in the area of linguistic choice, taking into account its link with human capital and economic choice.

Given the costs and benefits noted above and summarized in Table 15.2, the following points can be made. First, given the negative impact of sovereignty on their standard of living, Québec francophones must value highly the additional chance of survival of their language to select that option since these costs come on top of the existing costs of maintaining French. Perhaps one should think of the costs of sovereignty as being traded off against the costs of the half child required to bring back up the francophone birthrate from 1.65 to the population reproduction rate of 2.1. Depending on the degree of societal support for children and on its financing, the distribution of the costs of sovereignty will differ more or less from that of the costs of reproduction. Second, given the costs and benefits of decentralization as opposed to other options, this option should be preferred by Canadians in itself. Third, uniformity which benefits ROC could follow as a result of sovereignty.

5 CONCLUSION

Section 2 of this chapter reviewed the history of the sovereignty movement in Québec. It showed that support for that option grew over the 1965–95 period and is still in the order of 40 per cent of potential voters. Using history as background, it concluded that this nationalism was language-based with francophones a majority only in Québec and concerned about their linguistic survival and economic well-being. Section 3 of the chapter showed that weak labor market ties, weakening internal trade ties and important fiscal ties link Québec and ROC. Finally, section 4 examined the costs and benefits of five possible constitutional arrangements between ROC and Québec.

Given the costs to both Canada and Québec of the latter seceding, it would seem useful for both parties to come to an agreement. Such an agreement must be constitutional for symbolic reasons in Québec, that is, correcting the last constitutional settlement of 1982, and should be based on two principles. First, the need to reexamine, after 129 years, the list of powers held by both levels of government to both modernize the items and reassign them when appropriate. This is the modernization component (who does what) of constitutional reform. It benefits all Canadians. Second, the appropriateness of recognizing the role of Québec as the 'unique' viable French-speaking jurisdiction in North America, and thus the sole jurisdiction that can protect and nurture a French-language society. This is the protection component of constitutional reform.

With respect to modernization, the following points appear appropriate:

- The need to strike down all internal barriers (Vaillancourt, 2007) to trade in goods and services (provided in the language of the province);
- The need to facilitate capital movements across Canada (Vaillancourt, 1997) and between Canada and the rest of the world;
- The need for each level of government to respect the jurisdiction of the other level, which is more easily done if these jurisdictions are properly allocated to begin with;
- The need for self-financing by each level of jurisdiction to ensure that the true tax price of public services is correctly perceived by the population.

With respect to protection of the French language, the key issue is to accept that Québec is French-speaking and that it must be unconstrained

in its choice of means to protect French (Vaillancourt, 1991). This would involve an implicit tradeoff between the size (relative and absolute) of the English minority in Québec and the survival of Canada.

If such a renewed constitution is not possible, Québec is faced with a choice between the status quo and secession. Given predicted demographic trends and insofar as they wish to see their language survive in North America, francophones will have to support a costly secession. The terms of such a secession are obviously to be discussed but in the end will probably lead to:

- A share of the federal debt for Québec of 20–22 per cent initially with a revision every five years to account for out-migration;
- Québec keeping its existing borders with possibly a condominium with Canada for some Indian lands but Montréal intact, since the benefit to Canada from taking on an urban region made up of both federalists and sovereignists would be low while the costs Québec could impose (non-payment of share of debt, no access to Atlantic Canada) would be high;
- A NAFTA-based economic relationship.

This chapter has argued that Québec is unique in North America in that the majority of its inhabitants do not speak English fluently or at all. Long-term demographic forces, however, threaten this. The various constitutional proposals put forward since the mid-1960s implicitly recognize this. This should be made explicit by changes to Canada's constitution that impact solely on the long-run viability of Québec's francophone majority.[13] Doing this would give Québec the opportunity to freely associate with English Canada, something which has never happened in the past, since its initial association was the result of a conquest that led, amongst other effects, to a partial expropriation of the linguistic human capital of francophones through the reduced use of French in international relations. It would also allow Canada to recognize that it is an unusual federation in that it is both an historical and natural one. Historical federations are fairly homogeneous countries that were initiated as federations at birth but that have become increasingly centralized as communications improved (Australia) or differences diminished (US, Germany). Natural federations are countries with important ethno/linguistic differences that prevent a non-federal status (India, Switzerland). Canada is both an historical (nine ROC provinces) and natural (Québec/ROC) federation. Finally, in our opinion, this would dampen the demand for independence, since its key result, a higher likelihood of the survival of French Québec, would be obtained without it.

NOTES

1. Formally, the Commission sur le déséquilibre fiscal, see: www.desequilibrefiscal.gouv.qc.ca/fr/document/rapport_final.htm.
2. http://en.wikipedia.org/wiki/Alliance_Laurentienne.
3. http://en.wikipedia.org/wiki/Rassemblement_pour_l%27ind%C3%A9pendance_nationale.
4. http://en.wikipedia.org/wiki/Ralliement_National.
5. http://en.wikipedia.org/wiki/Mouvement_Souverainet%C3%A9-Association.
6. http://en.wikipedia.org/wiki/Parti_Qu%C3%A9b%C3%A9cois.
7. www.ledevoir.com/2008/04/25/186813.html.
8. http://en.wikipedia.org/wiki/Quebec#Quebec_as_a_nation.
9. The referendum was organized by the Québec government in Québec and by the federal government outside Québec; it was neither required nor binding constitutionally.
10. Sixty-four per cent of Québec francophones are uniligual francophones according to the 2006 census.
11. Tables 15 and 56, 2008 Fiscal Reference tables, Finance Canada http://www.fin.gc.ca/purl/frt-e.html.
12. The most recent study *Finances publiques d'un Québec souverain* is at www.pq.org/fichiers_pq/finance_quebec.pdf Past studies are listed on p. 11.
13. http://en.wikipedia.org/wiki/Quebec#Quebec_as_a_nation.

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16. Staying together? Scotland and the rest of the United Kingdom

David Bell

1 INTRODUCTION

Scotland's sense of identity has survived more than three centuries of union with the rest of the UK. It has waxed and waned during periods of war and peace, growth and recession. But recent developments mark a significant change from this experience: in the latter part of the first decade of the new millennium, support for the nationalist party has grown sufficiently to allow it to form a minority government within the recently revived Scottish Parliament. Scotland now has a government which intends to dismantle the United Kingdom. Economic considerations play a large part in the arguments that are deployed in favour or against this policy.

This chapter reviews such arguments: they will have an important bearing on the possibility that Scotland secedes from the rest of the UK (RUK). It also describes the economic forces binding the UK together. It is organised in three main sections. In the first, we describe the history of nationalism in Scotland. Next we describe the economic ties between Scotland and RUK. Finally, we look at where different constitutional futures might take the United Kingdom.

2 HISTORY OF NATIONALISM IN SCOTLAND

Scotland became part of the United Kingdom in 1707, as a result of the Act of Union which abolished the separate English and Scottish Parliaments. Though bitterly resented by many Scots politicians and most of the people, the Act of Union was fundamentally driven by economics. Some of this was personal – in the form of bribes given to key Scottish negotiators, but access to English colonies and protection of Scottish shipping by the English Navy were key incentives causing the merchant classes in Scotland to favour the Union. Thus one major result of the Act of Union was the creation of a customs and monetary union that was

important to the industrialisation of both Scotland and England during the 19th century.

After the Union, Scotland maintained its own legal and educational system and also its distinctive Presbyterian church. England might have forced greater integration on an unwilling Scotland, but chose not to do so, perhaps to avoid further conflict and perhaps because it was engaged in a period of rapid colonial expansion. Greater integration with English institutions would certainly have taken Scotland down a different historical path, but it is no means certain that it would have blunted the force of nationalism. In an institutional sense, Ireland was more closely aligned with England than was Scotland in the nineteenth century. Yet this did not prevent the Irish War of Independence in the early twentieth century.

Calls for some return of political power were evident from the mid-nineteenth century and in 1885, the post of Secretary of State for Scotland was created. This post had wide administrative and executive powers but, though a member of the UK cabinet, the Secretary of State's freedom to follow policies radically different from those in the UK was limited. At around this time, the first formula-based allocation mechanism for government expenditure across Great Britain was constructed. Thus, in 1888, Lord Goschen, Chancellor of the Exchequer, determined that government funding to England and Wales, Scotland and Ireland should be shared in the respective proportions of 80 per cent, 11 per cent, and 9 per cent. Rather than being equated to population shares, these proportions were based on estimates of the contribution of each territory to UK government revenue – this initial approach to funding was thus based on a 'balanced-budget' notion rather than one of 'needs-assessment'. Use of this formula to allocate some components of government spending continued until 1959 (see for example, Bell and Mitchell 2002). This approach implicitly recognised the primacy of the London administration in determining levels of expenditure in the outlying parts of the UK. This pattern has never been broken, and the UK continues to have a highly centralised fiscal structure, closely managed by the Treasury.

Pressure for 'home rule' in Scotland went into abeyance in the early part of the 20th century, overshadowed by the First World War and the Irish War of Independence. But by the 1930s, issues of nationalism and home rule once more came to prominence. The Scottish National Party was formed in 1934. Its initial preference was that Scotland should seek some form of devolved power within the UK, but it gradually shifted its position towards support for full independence. The party made its first dramatic intervention into UK politics when it won the Hamilton parliamentary by-election in 1967. The surge in support for the SNP at this time was linked partly with the decline in empire and also with waning support for the

Scottish Conservative and Unionist Party, which was strongly associated with the political and economic integrity of the UK.

In response to a perception of a growing nationalist threat, the UK government established the Royal Commission on the Constitution in 1969. It was asked to look into the future of the UK constitution: the issue of Scotland's status was one of its key concerns. It reported in 1973 (HMSO 1973) and argued that some form of legislative devolution should be given to Scotland and Wales. Meanwhile, the discovery of oil in Scottish waters in the North Sea in the early 1970s strengthened the SNP's economic case for independence. It won seven seats in the 1974 UK election and almost held the balance of power in this parliament, giving it considerable leverage over the Labour administration. Not surprisingly, this government brought forward bills to introduce limited devolution in both Scotland and Wales. The Scotland and Wales Acts were passed in 1978, but both required that 40 per cent of the electorate vote show support for their provisions in referenda. Neither passed this hurdle and the Acts were repealed.

During this period of uncertainty, a new approach to funding public expenditure in Wales and Scotland was developed. The Royal Commission argued that, alongside the establishment of devolved bodies, the arrangements for financing Scotland and Wales would have to be revised. It argued for the establishment of a 'Regional Exchequer Board' to ensure a 'fair' distribution of funds to different parts of the UK – a concept that is closely analogous to the Australian Commonwealth Grants Commission. Following from this, the UK Treasury conducted a needs assessment study that would consider how much it would cost to provide uniform levels of public service throughout the nations that comprise the UK. Its results were published in 1979 and showed that, to provide such a uniform level of public service in 1976–7, Scotland would require per capita funding some 16 per cent above England, Wales 9 per cent and Northern Ireland 31 per cent. In reality, spending per capita in Scotland, Wales and Northern Ireland exceeded that in England by 22 per cent, 6 per cent and 35 per cent respectively. There was a feeling, at least within government, that these discrepancies were relatively small and that any change to funding arrangements should not bring about radically different outcomes.

However, the Treasury wished to put public expenditure on a more consistent basis. With the Goschen Formula having fallen into abeyance, Scottish and Welsh funding was based on bilateral negotiations with the Treasury. A more formulaic approach was attractive to the Treasury because it would reduce the complexity of its annual negotiation procedures. Thus, the Barnett Formula came into existence. Unlike the Goschen Formula, it was based on allocating *changes in*, rather than *levels*

of, public spending in Great Britain in the ratios, 85 per cent to England, 10 per cent to Scotland and 5 per cent to Wales. From a Treasury perspective, this formulaic approach had the advantage that it need only negotiate with English spending departments during the annual public expenditure round. Scotland and Wales (and subsequently Northern Ireland) would then receive the 'Barnett consequentials' of any agreed spending changes. This formula has now been in existence for more than 30 years, and has been extended to include Northern Ireland. The evidence that the UK finds it difficult to revise fiscal arrangements between the constituent parts of the UK is evident from the longevity of both the Goschen Formula and the Barnett Formula. Key characteristics of the Barnett Formula that render it virtually unique include:

1. It has no basis in law. The London government can unilaterally change the formula against the wishes of other parts of the UK. While the formula itself has not been changed, its coverage is subject to regular, though usually minor, alteration by the Treasury.
2. The Barnett Formula has no link to any measures of relative 'need' across the UK. Whereas allocations to local authorities, health authorities etc. are based on careful assessment of the needs of different populations and the costs of supplying services in different locations, the Barnett Formula is immune to such considerations. It was felt that it was roughly appropriate, given relative needs as measured in 1976–7 and that significant change would risk a political backlash, particularly in Scotland.
3. Its operation is virtually costless. The rules by which 'Barnett consequentials' are determined the Treasury and set out in its 'Statement of Funding Policy'. A small number of Treasury officials apply these rules once the UK Budget is known and the Scottish, Welsh and Northern Irish administrations are informed of their allocations.
4. In theory, the Barnett Formula should lead to convergence in capital spend per head on public services across the UK. This is because, though Scotland, Wales and Northern Ireland initially had higher spending per capita than England, the formula ensures that the per capita value of increments to spending is equal across the UK. Eventually, when the effects of increments to spending dominate the initial allocation when the formula was established, spending per capita should be equated. In practice, convergence has been very slow due to a number of factors including:

    a. 'Formula bypass' meaning additional funds being secured by political means in addition to those allocated through the formula.

b. Failure to correct for relative changes in the size of the Scottish, Welsh and Northern Irish population relative to England until 1992, which significantly offset the convergence effects of the formula.
c. Relatively slow growth in nominal public spending over long periods during the 1980s and 1990s, restricting the speed of convergence.

The Barnett Formula is extremely unpopular in England. It is argued that it is unfairly generous to Scotland and Northern Ireland in particular. Indeed, Maclean (2009) argues that these areas have benefited from the formula, not because they are the most needy, but because they have the most credible threat to secede. He argues that the formula should be replaced by a system that reflects relative need and operates in similar away to the Australian Grants Commission.

Though these seemingly favourable financial arrangements were put in place, the pressure for devolution did not diminish. Fuelled by the fact that Scotland consistently elected a majority of Labour MPs, while Mrs Thatcher's Conservative government was in power throughout the 1980s, many of Scotland's key institutions such as the trade unions and the church began to support calls for enhanced devolution of power to Scotland. These found a voice in the Constitutional Convention, an ad hoc grouping of Scottish political parties and institutions that was formed following the 1987 election. Similar pressures were evident in Wales.

The Labour Party, who has been Scotland's largest political party for some considerable time, thereafter included political devolution to Scotland and Wales as part of its election manifestos. And with the election of a Labour Government in 1997, Acts enabling the creation of a Scottish Parliament and a Welsh Assembly were in place by 1998. The Scotland Act 'reserved' certain powers to the UK government – such as social security, macroeconomic policy and foreign relations. Thus, the UK government still accounts for a significant share of public spending in Scotland, principally on social security, which comprises 33 per cent of total public spending. The 'non-reserved' powers which the Scottish Parliament controls include health, education, economic development, transport, etc. There is virtually no interference by the UK government on Scottish policies in respect of these issues. The only funding constraint which the Treasury places on the Scottish government is that it determines the minimum level of capital spending out of the total grant allocated to Scotland. Until the recent financial crisis, this arrangement ensured that the UK as a whole could meet its 'golden rule' intention to restrict borrowing to that level required to finance investment.

Crucially, the Scotland Act did not significantly change the fiscal relationship between Scotland and the UK government. Under the Act, the Secretary of State for Scotland, a minister of the UK government, receives payments from the Treasury and passes these to the Scottish administration in Edinburgh. Though not specified in the Act, these payments continue to be determined by the Barnett Formula. The Scotland Act could not be used to stop the Treasury from unilaterally changing the Barnett Formula. The only significant fiscal instrument that the Act contained was the power to vary the standard rate of income tax by up to 3p in the pound. In 2008–09, the application of a 1p increase in the standard rate of income tax from its current rate of 20p would have raised £380 million (HM Treasury 2008). Application of the full 3p rate would have increased the funds available to the Scottish Parliament by £1.1 billion. But this comprises only 3 per cent of the budget allocated to Scotland by the Treasury via the Barnett Formula. This power has never been used.

The Scottish Parliament was not given any significant borrowing powers. In its first few years of existence it tended to significantly underspend its budget. These underspends were subsequently recovered from the Treasury and have been used to support additional spending in the current and previous financial years.

Unlike Westminster elections, Scottish Parliamentary elections use proportional representation, making it unlikely that any single party would hold an absolute majority. Thus the first two parliaments in 1999 and 2003 were governed by coalitions of the Labour Party and Liberal Democrats. The political conditions and social attitudes over this period are analysed thoroughly in Bromley et al. (2006). In 2007 however, the Liberal Democrats opted not to join another coalition with Labour and instead the largest party, the Scottish National Party, formed a minority government. This provoked a good deal of soul searching among the other parties – the so-called 'unionist' parties. They took the view that the Nationalists electoral success was due to dissatisfaction among the Scottish people with the powers of the Scottish Parliament. While the parliament could exert control over administrative, legal and social issues, it still lacked significant economic powers. In response, they jointly decided to set up a Commission on Scottish Devolution (2008) under the chairmanship of Sir Kenneth Calman, to investigate how the 1998 Act might be amended to extend the powers of the Scottish Parliament. This commission is currently sitting and its report is awaited with interest, particularly those parts of it which may suggest changes to the Barnett Formula and/or the fiscal powers of the Scottish Parliament.

The unionist parties in Scotland are seeking to determine whether there is a stable political equilibrium on the spectrum between full integration

of Scotland within the United Kingdom and Scotland's secession from the Union. However, the parties' view of proposals to change the devolution settlement will inevitably be conditioned by the stance of the London leadership of their respective parties. While all such parties publicly support the Union, they must make a strategic decision as to whether a union that did not include Scotland would be in their long-term electoral interest in England, whose population comprises 84 per cent of the UK. This issue is particularly important for the Conservatives who play a relatively minor role in Scottish politics but who have frequently commanded an electoral majority in England.

While the political parties focus on devolution, voter concerns are perhaps more diffuse. Support for independence in Scotland has been fairly stable at just under 30 per cent of the electorate for over a decade. Support for the SNP has been much more volatile. Curtice (2008) argues that the SNP won the 2007 Scottish election despite the fact that there was no increase in support for independence because (1) the SNP have consistently been more popular in the Scottish elections than in UK elections; (2) the SNP fought a more effective campaign in 2003 and (3) the UK Labour government at Westminster was very unpopular in 2007.

So, although support for independence is largely unchanged, the election of an SNP government has increased the probability of a chain of events taking place that might lead to the breakup of the UK. Secession could impose significant costs on both Scotland and RUK: it might also result in economic benefits. However, any breaking of the close economic ties that exist between Scotland and England would undoubtedly be costly. In the next section, we describe these ties.

3 ECONOMIC TIES BETWEEN SCOTLAND AND THE REST OF THE UK

Scotland and RUK have been part of a monetary union and free trade area since 1707. As a result, the economic ties binding Scotland with other parts of the UK are strong. These ties include the goods market, the labour market, the capital market and the structures which regulate these markets.

Many of the companies supplying goods and services in Scotland operate on both sides of the border. Thus, for example, the retail market is dominated by four major suppliers, all of which have headquarters in England. The telecoms market is similarly controlled by companies based in and around London. And while many financial services companies are headquartered in Scotland, most of these, such as those dealing with

pensions and life insurance, have many more clients in England than Scotland.

Many Scottish employees work for enterprises based in England. Many Scots also work in England on a temporary or permanent basis. Similarly, numerous individuals who would regard themselves as English work in Scotland. Such close linkages in the labour market are reflected in the fact that one in ten of those living in Scotland was born in England. Conversely, around 800 000 people who regard themselves as Scots live in England, equivalent to 16 per cent of the current Scottish population. Between 2001 and 2007, net migration from the RUK to Scotland averaged 9000 per annum. Gross flows are much larger than net flows. In 2006/07, gross inflows from RUK in 2006/07 were 54 000 – equivalent to 1.1 per cent of the Scottish population in a single year. Thus, there is a relatively high rate of migration between Scotland and RUK. The fact that there are no significant linguistic or cultural barriers aids such mobility.

Average weekly wages in Scotland during 2008 were £423 per week compared with £454 per week for the UK as a whole (Office of National Statistics 2008). However, average wages are higher in Scotland than in most other parts of the UK except London and the South East. In 2009, 79.7 per cent of the adult Scottish population was economically active, compared with 79.4 per cent in the UK as a whole. Scotland's unemployment rate was 5.1 per cent, somewhat lower than the UK rate of 6.5 per cent. Nevertheless, it is difficult to argue that the Scottish labour market differs substantively from the rest of the UK.

The UK has a relatively open capital market, with the banking system being dominated by five major banks, two of which are headquartered in Scotland. Whereas Scottish businesses were traditionally serviced by the Bank of Scotland and the Royal Bank of Scotland, competition in these markets has been intense in recent years. Thus, London-based banks such as Lloyds, Barclays, and HSBC have increased their market share in Scotland, while the Royal Bank of Scotland's takeover of National Westminster and the merger of the Bank of Scotland with the Halifax Building Society has led to these institutions increasing their share in the English market. Similar consolidation has taken place in other parts of the capital market, such as life insurance and pensions, again leading to increased integration in business activities south and north of the border.

Major economic institutions, such as trade unions, generally operate in both Scotland and England. Most unions are affiliated to the Trades Union Congress, a UK wide organisation. Employers' organisations also tend to operate throughout the UK. Thus the Confederation of British Industry and the Institute of Directors have Scottish offices, but are essentially UK-wide institutions.

The Scottish Parliament has no competence over the institutions which control industrial regulation. Thus, the Office of Fair Trading and the Competition Commission operate on a UK-wide basis. Similarly, the Financial Services Authority, which regulates interactions between the financial sector and consumers, operates throughout the UK. The Competition Commission (2009) issued a ruling forcing the British Airports Authority to put Gatwick and Stansted airports up for sale, plus either Glasgow or Edinburgh airport. The Competition Commission has no obligation to consult the Scottish Parliament on such a decision, though airports are regarded by the Scottish Government as a key component of its growth strategy.

A final issue tying the Scottish economy to RUK is the fiscal flows between them and their implications for government debt should Scotland secede. The Scottish Government conducts an annual exercise known as GERS (Government Expenditure and Revenue in Scotland), which estimates Scotland's fiscal surplus or deficit. This is a highly contentious exercise. In debates about secession, the GERS data are frequently used as indicators of whether Scotland could or could not 'pay its way'.

The latest (2006–07) estimates are consistent with UK public expenditure data and with the Office for National Statistics Public Sector Finance Statistics (Scottish Government 2008). Thus, although Scotland is the only part of the UK for which a full set of fiscal flows are estimated, the data are consistent with relevant UK aggregates. Such changes undoubtedly reflect past criticisms of the estimates by both academics and politicians.

Table 16.1 shows the revenue side of GERS for 2006–07. Most taxes raise around Scotland's population share (8.4 per cent) of the equivalent UK tax. Higher levels of alcohol consumption and smoking in Scotland are evident from the relatively high shares of tobacco and alcohol duties. Scotland's share of North Sea oil revenues, using the median line principle as a way of allocating oilfields between Scotland and England, would be 83.3 per cent, substantially in excess of its population share. In 2006–07, North Sea oil would therefore have contributed over 15 per cent of Scotland's total tax revenue. The importance of North Sea oil revenues varies with the level of production, which is in long-term decline, and with the oil price, which is highly volatile. Were Scotland to become independent, the Scottish government would have to hedge against significant variations in the revenue stream associated with this natural resource.

Table 16.2 shows levels of public expenditure in Scotland in 2006–07. GERS uses the 'benefit' principle to allocate spending. Thus, £2.7 billion of defence expenditure is allocated to Scotland, based on its population share, though defence spending in Scotland is considerably less than this amount. And whereas the £16.2 billion allocated to social protection is

Table 16.1 Tax revenues including and excluding north sea oil: Scotland 2006–07

Tax	Yield (£m)	Share of UK (%)	Tax	Yield (£m)	Share of UK (%)
Income tax	10338	7.32	Inheritance tax	228	6.30
Corporation tax (excl North Sea)	3019	8.13	Vehicle excise duty	400	7.78
Capital gains tax	308	8.08	Non-domestic rates	1833	9.21
Other taxes on income and wealth	248	8.29	Council tax	1812	8.11
National insurance contributions	7464	8.20	Other taxes and royalties	492	8.25
VAT	7449	8.49	Interest and dividends	628	9.94
Fuel duties	1958	8.30	Gross operating surplus	2757	12.28
Stamp duties	686	5.12	Rent and other current transfers	403	22.24
Tobacco duties	981	12.04			
Alcohol duties	768	9.70			
Betting and gaming and duties	95	9.89	**Total current revenue** (excluding North Sea revenue)	42353	8.29
Air passenger duty	94	8.45	**North Sea revenue**	7563	83.34
Insurance premium tax	195	8.46	**Total current revenue** (including North Sea revenue)	49915	9.60
Landfill tax	75	9.09			
Climate change levy	73	10.49			
Aggregates levy	50	15.43			

Source: Scottish Government, 'Government expenditure and revenue in Scotland 2006–07'.

all spent within Scotland, such spending is entirely controlled by the UK government. The Scottish government is largely responsible for spending on health, education and training, general public services and public order and safety. But as a result of the Barnett Formula and the powers available to it under the Scotland Act, it has limited power to vary the overall level of expenditure.

Spending per head in Scotland in 2006–07 was £8544. This compares with £7308 in the UK as a whole. Much of the difference is explained by the Barnett Formula continuing to provide relatively high levels of support for public services in Scotland, and by social protection spending in Scotland that is 9 per cent per head above the UK average.

Table 16.2 Total public expenditure: Scotland 2006–07

Expenditure category	Spending 2006–07 (£m)
Social protection	16 183
Health	9 108
Education and training	7 106
General public services	4 350
Defence	2 729
Public order and safety	2 292
Other	8 127
Total	49 895

Source: Scottish Government, 'Government expenditure and revenue in Scotland 2006–07'.

It is evident from Tables 16.1 and 16.2 that Scotland would have suffered a significant fiscal deficit during 2006–07 were it not for North Sea oil revenues. To maintain the same level of public services, and assuming that Scotland adopted proportionate defence policies to those currently followed in the UK as a whole, an independent Scotland would be heavily reliant on North Sea oil. Many commentators argue that this is an untenable position, given the volatility of oil revenues. Many would argue that the favourable fiscal treatment of Scotland is an important economic tie, which binds the union together. And because Scotland is relatively small, this outcome is achieved at no great cost to RUK.

In the final section, we assume that such ties are no longer strong enough to maintain the status quo and briefly discuss alternative constitutional futures for the United Kingdom.

4 DIFFERENT CONSTITUTIONAL FUTURES

The Calman Commission is currently investigating how the powers of the Scottish Parliament might be extended, while maintaining the integrity of the United Kingdom. The Scottish National Party continues to support full independence for Scotland within the European Union. Either one of these constitutional outcomes may well occur. We discuss both in this section.

In respect of fiscal powers, the Calman Commission is examining how the proportion of revenues raised in Scotland might be increased, either by assignment of taxes, allowing the Scottish Parliament to influence tax rates and/or tax bases, or by allowing it to introduce new taxes. The

argument in favour is that the Scottish Parliament lacks accountability for its own actions since it does not bear the revenue consequences of its own spending decisions.

While tax assignment would increase revenue from local sources, it would not significantly affect accountability if an equalisation grant was used to make up for any tax shortfall. Variations in tax rates would increase accountability, but are problematic because of the close economic ties between Scotland and RUK that have previously been discussed. Thus, for example, substantial differences in income tax rates might distort the Scottish labour market, just as variations in taxes on capital might lead to harmful tax competition. Taxing non-mobile factors would be less distortionary but, for example, council tax, which is raised by local government and is a form of property tax, is already high by international standards. Given the highly integrated nature of the UK market, it will be difficult for the Calman Commission to come forward with proposals that significantly increase the accountability of the Scottish Parliament without also increasing market distortions. Its difficulty will be to judge how these effects might be traded off, knowing that choices will be based on political as well as economic considerations. Comparisons with other countries, such as Canada, Spain and Australia may be helpful in helping redesign the UK's fiscal structure, but the uniqueness of the UK's institutional relationships, including its lack of a written constitution, means that one must be cautious of the applicability of such comparisons.

The SNP continues to argue in favour of full independence. One of its main economic arguments is that smaller countries in Europe have outperformed the larger European nations in recent years. The 'arc of prosperity' countries – Ireland, Iceland, Norway, Finland and Denmark – are often cited as examples of small economically-successful independent countries, to which an independent Scotland might aspire. The issue of Scotland's close economic ties with RUK is generally brushed aside because it is assumed that Scotland and RUK would be members of the European Union after the dissolution of the United Kingdom. As members of the single European market, there would be no impediment to trade between Scotland and RUK or to the free movement of capital and labour. But if this is the case, the Scottish government would have to wrestle with the same problems that the Calman Commission is now addressing, While RUK remained its main trading partner, Scotland's freedom to vary taxes would be constrained by the fiscal stance taken in the much larger RUK economy. Ireland was in a similar position for several decades after it became independent in 1922. It was only when it diversified its trade and redesigned its institutions that Irish fiscal policy started to deviate significantly from that of the UK.

This experience suggests that it would be unwise for Scotland to expect a rapid transition from existing markets and institutions immediately following independence. The economic and political costs of rapid change would be high. This issue of transition from one constitutional arrangement to another (or from one fiscal arrangement to another as in the case of the Calman Commission) has not generally received much attention from either politicians or economists, though it will affect long-run economic outcomes, which are likely to be path dependent.

However, an independent Scotland would not be able to make a gradual transition to achieving fiscal stability. Such stability might be imposed as a condition for joining the EU. It might be market-imposed if the Scottish government needed to finance a deficit. If the 2006–07 estimates of Scotland's fiscal balance are accurate and the independent Scottish government broadly follows the same policies as the UK as a whole on reserved matters, then such finance would be required in the short-run. Mortgaging oil revenues would achieve short-run fiscal balance while maintaining public services, but such a strategy is hardly fair to future generations.

The allocation of existing debt and assets would likely be an important point of conflict between Scotland and RUK during independence negotiations. One simple approach would be to allocate net debt using population shares on the argument that all UK citizens bear an equal allocation of UK liabilities. Counter-arguments might be that historic production of North Sea oil contributed significantly to the UK's much more robust government finances during the 1980s and 1990s. And while this argument might suggest that a lower than pro-rata share is appropriate, an alternative is that historically higher levels of expenditure and lower non-oil tax revenues from Scotland suggest that Scotland should pay a higher than pro-rata contribution towards debt repayment. The lack of any accurate calibration of these historic debt flows means that there is considerable scope for political conflict over the financial settlement should Scotland secede.

A final issue is the extent to which an independent Scottish economy might be dependent on financial services as a major industry. During the last decade, following the demise of electronics, this sector has been Scotland's main source of economic growth. But the recent experience of Iceland and Ireland suggest that allowing the domestic banking system to outgrow the size of the domestic economy places risks on the government finances, since governments generally cannot countenance bank failure. In large economies, there is a greater opportunity to diversify such risks. In smaller economies that are seeking a greater degree of fiscal autonomy or complete independence, the issue of the stability of the financial sector has

become a more important issue than has previously been recognised in the literature on fiscal federalism. For Scotland, achieving greater autonomy might require a reorientation of its industrial policy towards other sources of growth.

So where do such economic arguments leave the possibility of Scotland seceding from RUK? it could be difficult to argue that there would not be short-run economic costs. These would result from any dislocation of trade, a readjustment of Scotland's fiscal position, and any additional costs (for example, those associated with the collection of taxes) that would have to be incurred if Scotland was again a sovereign country. In the longer run it is impossible to predict what the outcome might be. Changes to the structure of the economy resulting from independence might have positive or negative impacts on productivity. For example, a smaller public sector might 'crowd in' more efficient private sector activities. Nevertheless, it is true that Scotland would face a more risky future. For example it could no longer count on financial support from the London government, should it experience adverse events such as the near demise of its two largest financial institutions, the Bank of Scotland and the Royal Bank of Scotland, as happened in late 2008. In economic terms, whether the Scottish electorate would be willing to increase the risks it faces in return for an uncertain reward remains to be seen.

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