ADVANCES IN INTERNATIONAL ACCOUNTING

VOLUME 19

J. TIMOTHY SALE

Editor

ADVANCES IN INTERNATIONAL ACCOUNTING

ADVANCES IN INTERNATIONAL ACCOUNTING

Series Editor: J. Timothy Sale

Recent Volumes:

ADVANCES IN INTERNATIONAL ACCOUNTING
VOLUME   19

ADVANCES IN INTERNATIONAL ACCOUNTING

EDITED BY

J. TIMOTHY SALE

Department of Accounting, University of Cincinnatti, USA

ASSOCIATE EDITORS

STEPHEN B. SALTER

Department of Accounting, University of Cincinnati, USA

DAVID J. SHARP

Accounting and Control Area, University of Western Ontario, Canada

ELSEVIER
JAI

Amsterdam – Boston – Heidelberg – London – New York – Oxford
Paris – San Diego – San Francisco – Singapore – Sydney – Tokyo

For information on all JAI Press publications
visit our website at books.elsevier.com

Printed and bound in The Netherlands

06 07 08 09 10 10 9 8 7 6 5 4 3 2 1

Working together to grow
libraries in developing countries

www.elsevier.com | www.bookaid.org | www.sabre.org

ELSEVIER   BOOK AID
            International   Sabre Foundation

CONTENTS

v

LIST OF CONTRIBUTORS

Kamran Ahmed	LaTrobe University, Melbourne, Australia
Ahmad Al-Hussaini	Public Authority for Applied Education and Training, Kuwait
Muhammad Jahangir Ali	LaTrobe University, Melbourne, Australia
Duha Al-Kwari	Cardiff Business School, Cardiff University, UK
Asokan Anandarajan	New Jersey Institute of Technology, Newark, NJ, USA
Ilias Basioudis	University of Aston, Birmingham, UK
Richard A. Bernardi	Roger Williams University, Bristol, RI, USA
Paul M. Clikeman	University of Richmond, Richmond, VA, USA
Kevin Devine	Xavier University, Cincinnati, OH, USA
Edwin R. Etter	Eastern Michigan University, Ypsilanti, MI, USA
Dorothy Feldmann	Bentley College, Waltham, MA, USA
Marshall A. Geiger	University of Richmond, Richmond, VA, USA
Mahendra Gujarathi	Bentley College, Waltham, MA, USA
Iftekhar Hasan	Rensselaer Polytechnic Institute, Troy, NY, USA
Darren Henry	LaTrobe University, Melbourne, Australia
Ihsan Isik	Rowan University, Glassboro, NJ, USA
Catherine C. LaCross	University of Maryland, MD, USA
John Y. Lee	Pace University, NY, USA

Philip A. Lewis	Eastern Michigan University, Ypsilanti, MI, USA
Barbara Lippincott	University of Tampa, Tampa, FL, USA
Cornelia McCarthy	Columbia University, NY, USA
Kamal Naser	Academy of Graduate Studies, Libya
Rana Nuseibeh	Academy of Graduate Studies, Libya
Priscilla O'Clock	Xavier University, Cincinnati, OH, USA
Brendan T. O'Connell	James Cook University, Townsville, QLD, Australia
Elena Ochoa	Universidad de Deusto, Spain
Jacqueline Reck	University of South Florida, Tampa, FL, USA
Stephen B. Salter	University of Cincinnati, Cincinnati, OH, USA
Lloyd "Pat" Seaton	University of Nebraska at Kearney, NE, USA
Charles Tang	Pace University, NY, USA
Surinder Tikoo	State University of New York at New Paltz, Albany, NY, USA
Kristen Witkowski	PricewaterhouseCoopers, USA

EDITORIAL BOARD

This page intentionally left blank

REVIEWER ACKNOWLEDGMENT

This page intentionally left blank

DETERMINANTS OF CORPORATE SOCIAL DISCLOSURE IN DEVELOPING COUNTRIES: THE CASE OF QATAR

Kamal Naser, Ahmad Al-Hussaini, Duha Al-Kwari and Rana Nuseibeh

ABSTRACT

In this study, an attempt is made to test the validity of theories employed in the literature to explain variation in the extent of corporate voluntary disclosure within the corporate social disclosure context. The annual reports of 21 out of the 22 companies listed on the Doha Stock Exchange in Qatar were used as a basis for the study. Variations in corporate social disclosure by the sampled Qatari companies are found to be associated with firm size measured by the firm's market capitalisation, business risk measured by leverage and corporate growth. The outcome of the study lends partial support to agency theory, political economy theory, legitimacy theory, stakeholder theory as well as the accountability approach.

INTRODUCTION

Different factors have been used in the literature to explain variations in the extent of voluntary information disclosed by firms. Numerous articles have investigated factors that impact the extent of firms' voluntary disclosure in general.[1] A limited number of studies, however, have examined the determinants of corporate social disclosure (CSD) in particular.[2] In addition, most of the studies undertaken in the area of corporate social reporting focused on developed countries. In this study, an attempt is made to examine factors that influence the extent of CSD in Qatar. Qatar is the fastest growing country within the Gulf Co-operation Council (GCC) countries. It hosts the youngest stock exchange in the region. As an oil and gas exporting country, the country's fixed capital formation increased from US $1,332 million in 1997 to US $3,732 million in 1998. Between 1992 and 2002, the country's GDP increased from QR 24,289 to QR 63,578 million (1.618 times) and achieved an average growth of 8.5 percent (International Financial Statistics, 2003). At the end of the first half of 2003, the Doha Securities Market Index increased by 865.67 points (32.09%) in comparison with that achieved at the end of 2002. The gross value of shares traded in the Doha Securities Market, in the first half of 2003, increased by 113.3% in comparison with the same value reported at the end of 2002. At the end of the first half of 2003, the number of trading shares and the executed contracts increased by 51.1 and 173.7% respectively.[3] With a population around 600,000, Qatar is among the highest per capital nations in the world (International Financial Statistics, 2003).

The above statistics seem to convince policy makers in Qatar to move toward a diversified economy. Currently, Qatar economy is mainly dependent on oil exports. Fluctuations in oil prices make the country's economy subject to endless shocks. Hence, governments in the GCC countries realised that it is time to give the private sector a role in shaping the national economies.

The substantial increase in the market capitalisation of companies listed on the Doha Stock Market is an example of the authorities' policy to mobilise the country's savings. In addition to local investors, policy makers are introducing measures to facilitate foreign investments. The country is now hosting a modern stock exchange and working on developing its listing requirements. Parallel to these developments, the authorities are developing a new foreign investment law to facilitate foreign investment in Qatar. In line with these developments, the authorities are reconsidering the financial reporting system. Currently, the country lacks proper accounting standards

that govern financial reporting by firms. Almost every thing disclosed in the annual report is viewed as being voluntary. A study by Naser and Abu Baker (1999) revealed that it is unlikely to see detailed corporate social reporting voluntarily disclosed in developing countries unless regulated. In a developing country like Qatar, proper guidelines for financial reporting are largely absent. Most information that appears in a firm's annual report is viewed as voluntary disclosure. Empirical evidence on factors behind such disclosure from a developing country like Qatar will add a new dimension to the literature.

FINANCIAL REPORTING AND AUDITING SYSTEMS IN QATAR

Al-Khater and Naser (2003) envisaged Qatari users' perception of corporate social responsibility and accountability and made the point that the current Qatari financial and auditing systems are still primitive. Qatar was without any type of accounting or audit guidelines until 1974, when the authorities published Law Number 7 that provides guidelines to external auditors. This law was then followed by Law Number 11 in 1981. This law formed the basis for the country's Companies Acts since it gives broad guidelines about how companies should operate in Qatar. The 1981 Companies Acts, however, was adjusted by Law Number 9 in 1998. This newly introduced law coincided with the creation of the Doha Securities Market. The Law asks companies listed on the Doha Securities Market to publish annual report that includes an income statement, a balance sheet and a cash flow statement, together with the basis upon which the statements were prepared. The Law also requested companies listed on the Doha Securities Market to employ an external auditor to verify the published statements prior to their publication.

According to Al-Khater and Naser (2003) the creation of the Doha Securities Market, together with the privatisation program adopted by the Qatari authorities, led to the publication of the latest Companies Acts Number 11 in 2002. In May 2002, the newly published Act replaced the 1981 Companies Acts and become effective 60 days after their publication. Al-Khater and Naser (2003) indicated that the Acts provide detailed guidelines that range from conditions that a company should satisfy before being listed on the Doha Stock Exchange to the financial statements that should be produced to the duties and characteristics of the external auditor.

PREVIOUS STUDIES

Different theories have been advanced in the literature to explain variations in the extent of corporate voluntary disclosure. A number of researchers employed agency theory to explain such variations (see for example, Wallace et al., 1994; Wallace & Naser, 1995; Naser, 1998; Naser & Al-Khatib, 2000). According to agency theory, management tends to voluntarily disclose detailed information to reduce agency costs.

Other theories, on the other hand, have been used in the literature to explain variations in CSD. Cooper and Sherer (1984) used political economy theory; Lindblom (1984), Guthrie and Parker, (1989) and Patten (1992) used legitimacy theory; Ullmann (1985) used the stakeholders' theory, while Gray, Owen, and Maunders (1987) employed an accountability approach.

Owing to the limitations associated with current accounting systems and annual reports, Cooper and Sherer (1984) suggested the political economy perspective as an alternative approach to external accounting for corporate performance. Advocates of the political economy perspective argue that the current reporting system disregards social welfare because of its bias toward shareholders (Mathews, 1993). According to the political economics perspective, accounting reports are viewed as social, political and economic documents. Hence, CSD is seen as having the aptitude to communicate social, political and economic messages for a varied set of recipients. Thus, companies tend to make voluntary CSD to reflect a positive response to social pressure and thus avoid possible regulation regarding its disclosure. According to Guthrie and Parker (1989), companies adopt such a policy to pacify outside sociopolitical demands and attempts to keep the support of specific pressure groups within the society.

Legitimacy theory, on the other hand, is based on the social contract (Lindblom, 1984; Guthrie & Parker, 1989; Patten, 1992). According to this theory, the firm attempts to justify its existence in society by legitimising its activities. In this context, Lindblom (1984) and Patten (1992) emphasised that legitimacy cannot only be considered in terms of economic performance. Tinker and Niemark (1987) believe that the public is becoming increasingly informed of adverse effects of companies' operations. Patten (1992) affirmed that pressure groups within society demand that the organisations address social issues. According to legitimacy theory, to respond to the pressure and ensure survival and continuity within society, the company's management improves its communication (Mathews, 1993). Under legitimacy theory, therefore, the company attempts to maintain its survival and continuity by voluntarily disclosing detailed information to society to

prove that it is a good citizen (Guthrie & Parker, 1989). Thus, the company justifies its continued existence by legitimising its actions.

Ullmann (1985) used stakeholder theory to explain variations in CSD. He developed a conceptual framework in which he explained the relationship between CSD and social and economic performance. Such a framework is predicated upon the stakeholder theory of strategic management that was advanced by Freeman (1984). He offers a three dimensional model to explain such a relationship. The first dimension of the model is related to stakeholders' power and makes the point that an organisation is expected to respond to stakeholders' demand since they control resources critical to the organisation. If activities related to social responsibility are viewed as being part of management strategy to deal with stakeholders, a positive relationship between stakeholder power and social performance and social disclosure is expected (Roberts, 1992). The second dimension is the strategic posture of the organisation toward social responsibility activities. It describes the mode of an organisation's management response toward social demands, which could be either active or passive. Ullmann (1985) believes that an organisation will possess an active posture when its management seeks to influence the relationship with stakeholders. An organisation's management would follow a passive posture when the management is neither involved in continuous monitoring activities nor in developing specific programs to address stakeholders' influences. Consequently, the more active the strategic posture, the greater the expected social responsibility activities including CSD. The third dimension is related to past and present economic performance. Firstly, it determines the relative weight of a social demand and the attention it receives from management and secondly, it directly influences the financial ability to institute programs related to social demands.

As for the accountability approach, accountability is usually related to some desirable property (Perks, 1993). Burchell, Cooper, and Sherer (1982) demonstrated that under accountability, those who have power over resources are required to explain and justify the use of that power. In this context, Jackson (1982) asserted that accountability explains and justifies what has been done, what is currently being done and what is to be done. Accountability, therefore, involves disclosing more information. Gray et al. (1987) use the notion of accountability as an emancipatory concept, assisting to expose and develop social relationships and social contract through a re-examination and expansion of established rights to information. They believe that accountability can be the most useful ideological framework for analyzing accounting information transmission in general and in CSD in particular.

MODEL DEVELOPMENT

As mentioned earlier, different factors were advanced in the literature to explain variations in the extent of CSD. Drawing from agency theory, CSD can be used by a firm's management to reduce agency cost (Jensen & Meckling, 1976; Rozef, 1982; Easterbrook, 1984). According to agency theory, managers need to raise funds, and in an attempt to decrease agency costs, publish more detailed information. In this respect, Belkaoui and Karpik (1989) investigated the relationship between a firm's decision to disclose social responsibility information and each of the social and economic performance and political visibility variables. They found that CSD is correlated with firms perceived to display social responsiveness, firms that have high systematic risk and low leverage and large sized firms.

In this study, the following model is developed to predict the extent of CSD:

$$
\begin{aligned}
\mathrm{CSDIndex}_j = {} & \alpha_0 + \alpha_1 \mathrm{GROTH}_j + \alpha_2 \mathrm{DIPAY}_j + \alpha_3 \mathrm{LEVER}_j \\
& + \alpha_4 \mathrm{IDIVD}_j + \alpha_5 \mathrm{GOVER}_j + \alpha_6 \mathrm{INTIT}_j \\
& + \alpha_7 \mathrm{MAJOR}_j + \alpha_8 \mathrm{MARKE}_j + \varepsilon_i
\end{aligned} \tag{1}
$$

where:

$\mathrm{CSDIndex}_j$ = CSD score for company j;
GROTH = growth in assets for company j;
DIPAY = dividends paid by company j;
LEVER = gearing ratio for company j;
IDIVD = percentage of ordinary shares held by individual investors for company j;
GOVER = percentage of ordinary shares owned by government for company j;
INSTIT = percentage of ordinary shares held by institutional investors for company j;
MAJOR = number of majority shareholders who hold 10% or more of company j's shares; and
MARKE = market capitalisation.

As employed by Rozef (1982), GROTH is used as a proxy for transaction costs structure. Rozef (1982) makes the point that if a firm made rapid growth, it tends to pay less dividends and seeks financing from the outside market, thus forcing more disclosure. A positive relationship is, therefore, hypothesised between CSDIndex and GROTH.

The increase in earnings is correlated with dividends. Companies have the tendency to pay more dividends when they report high earnings. This might give management less incentive to disclose more information.[4] Thus, a negative association is hypothesised between CSDIndex and DIPAY.

Companies with a high leverage ratio will find it difficult to attract outside financing. In addition, they are expected to pay less dividends, since they have to meet short term and long term obligations resulting from borrowing. Hence, companies with high leverage are viewed as being risky. In an attempt to assure investors and lenders, they tend to disclose more detailed information than those who have relatively low levels of risk (leverage).

As far as ownership of the company is concerned, Jensen and Meckling (1976) concluded that institutional investors as well as major investors play an important role in monitoring management behavior. The existence of institutional investors and majority shareholders forces management to disclose more information to reduce agency costs. On the other hand, the dispersion of shareholders may weaken the monitoring process. In an attempt to assure investors, management tends to disclose more information. A positive association is, therefore, hypothesised between CSDIndex and the INSTIT and IDIVD variables.

Family and government ownership is the main feature of businesses operating in the GCC countries in general and Qatar in particular. In the absence of labor unions and pressure groups in the Qatari society, the government is expected to show that it acts to the benefit of society at large by enhancing employees' welfare. A company with high government ownership is expected to observe environmental as well as energy issues. Such a company is also very likely to offer good pension plans and training programs to be seen as a good example for other companies totally owned by the private sector. To emphasise its role in society, a company with government ownership is expected to disclose more detailed information that reflects it social responsibilities. A positive association is, therefore, hypothesised between CSDIndex and the GOVER variable.

Jensen and Meckling (1976) indicated that agency costs increase as firm size increases. Hence, it is more likely to see large sized firms disclosing more detailed information than small sized ones. Various measures are used to proxy size. For example, Naser (1998), Naser and Al-Khatib (2000) used assets, number of employees, market capitalisation and sales; Eddy and Seifert (1988) and Gosh and Woolridge (1988) used market capitalisation; and Murali and Welch (1989) and Titman and Wessels (1988) used assets. In this study, size is used as a control variable for both agency and transaction costs proxies. Market capitalisation is used as a proxy of corporate size.

A positive association is, therefore, hypothesised between CSDIndex and the MARKE variable.

Majority shareholders in a small society like Qatar prefer to associate themselves with companies that promote a clean environment, guarantee a certain level of training to their personnel, improve security at work, enhance individual welfare and play an effective role in society at large. In a conservative religious society like Qatar, investors are likely to put their money in companies that observe environmental issues and give support to charitable as well as educational organisations. Majority shareholders are expected to exert pressure on firms' management to disclose more detailed information that emphasises their responsibility toward society. Hence, majority shareholders monitor closely such activities. To assure majority shareholders and to reduce monitoring costs, management voluntarily discloses detailed social responsibility information. A positive association is, therefore, hypothesised between the majority shareholders and CSDIndex.

METHODOLOGY

Before investigating the determinants of CSD in Qatar, it was useful to identify the extent of corporate general disclosure. At the start, 50 disclosure items expected to be published in the annual report were examined. The items include historical information about the company, information concerning the administration of the company, information about corporate sources of finance and information about assets and performance. Scoring the accounts indicated that some of the expected items were either not disclosed by all companies or by the majority of the companies. Hence, the maximum disclosure items number was reduced from 50 to 34 items. The inclusion of the items in the maximum expected score was based on the grounds that it is disclosed by more than four companies in the sample. In other words, an item that was not disclosed by all companies, or only four companies or less, was excluded from the expected score.

Similar to other studies undertaken to measure the extent of CSD, content analysis is used to examine written material contained in the annual reports. For example, Berelson, 1971; Wallace, 1988; Gray, Kouhy, and Lavers, 1995b; Wallace and Naser, 1995; Naser, 1998; and Abu Baker and Naser, 2000, defined such a method as a technique employed to measure objectively, systematically, and qualitatively the content of communication. Abbot and Monsen (1979) also defined content analysis as a technique used

to gather data that form codifying quantitative information in anecdotal and literary form category to derive scales of different levels of complexity.

Although companies tend to make public disclosure in the annual reports and other channels of distribution such as advertising and promotional leaflets, in a developing country like Qatar, the annual report is viewed as the main channel of distribution. Some researchers contend that different channels of disclosures contribute to the discharge of accountability (Zeghal & Ahmed, 1990; Gray et al., 1995b). The analysis of such channels as an endeavour to capture social disclosure, however, may face practical difficulties. In a developing country like Qatar, different means of corporate disclosure, with the annual report being the exception, are of little use to most companies and it is very likely to see most of the information disclosed in the published annual report.

Drawing from the majority of studies used to assess CSD practices (see for example Ernst & Ernst, 1978; Abbot and Monsen, 1979; Beresford & Cowen, 1979; Krippendorff, 1980; Maunders, 1981, 1982; Guthrie, 1983; Guthrie & Mathews, 1985; Guthrie & Parker, 1989, 1990; Zeghal & Ahmed, 1990; Roberts, 1992; Kirkman & Hope, 1992; Gray, Kouhy, & Lavers, 1995a, 1995b ; Abu Baker & Naser, 2000), this study utilised the annual report as a principal focus of the firm's reporting and thus defined the bounds of the analysis. In this context, Gray et al. (1995b) pointed out that the annual report is widely viewed as a major official and legal document that a firm produces on a regular basis and acts as a significant forum for the presentation of the firm's communication within political, social and economic systems. Hines (1988) claimed that the annual report is seen as the most important document in terms of the firm's construction of its own social image. Lavers (1993) suggested two distinct advantages for using the annual report: Firstly, the firm can exercise editorial control to prevent any possible journalistic interpretation or distortion, and; secondly, the report can be used for the purposes of comparison.

The measurement instrument employed in this study is derived from the work of Guthrie and Mathews (1985) and Abu Baker and Naser (2000). Their work was drawn from previous research undertaken by Holsti (1969) and Krippendorff (1980) to measure the extent of CSD in the annual reports. The approach contains 15 content categories within four testable dimensions as summarised below:

1. Theme – environment, energy, human resources, products, community involvement and others.
2. Evidence – monetary, non-monetary, declarative and none.

3. Amount – page measurement.
4. Location in the report – chairman review, separate sections, other section and separate booklet.

The content analysis employed in this study presumed that content categories identified in the written messages of the annual report have evident meaning (e.g. environment, employee practices, community involvement, etc.) that can be categorised. According to Guthrie and Parker (1990), the definition of each category is based on the issue under examination and concentrates mainly on what was said and how it was said. This will form a basis for determining the subject of concern, methods, amount and location of CSD.

Lavers (1993) criticised the approach used by Guthrie and Mathews for page measurement as being over-modest. He claimed it referred to the proportion of pages without being clear as to how this was measured and controlled. Relevant literature, on the other hand, is not clear on the subject of analysing and recording the data (Guthrie & Parker, 1989, 1990). To overcome the above-mentioned limitations concerning page measurement and data recording and analysing, the following steps were adopted in this study, as suggested by Gray et al. (1995b) and adopted by Abu Baker and Naser (2000):

1. Annual reports were read carefully, individually and relevant data were collected manually.
2. Pages were measured (to the nearest 1% of the page) by utilising a grid and resulting numbers transferred manually to the scoring sheet.
3. Each annual report was allocated a scoring sheet and the resulting data on the scoring sheets was entered into a database. The sheets were retained for further query and replication.
4. The accumulated data was then transferred to the relevant computer program for further data analysis.

Multicollinearity poses a problem when a number of explanatory variables are employed. As a consequence, the effect of each of the independent variables on the dependent variables becomes difficult to identify (Naser, 1998; Naser & Al-Khatib, 2000). To measure multicollinearity, the variance inflation factor (VIF) was employed. The VIF is computed as follows:

$$\text{VIF} = 1/\left[1 - R_i^2\right] \qquad (2)$$

where R_i^2 = Coefficient of multiple determination of explanatory variable X_i.

Multicollinearity is viewed as a serious problem when the VIF exceeds 10.

DATA COLLECTION

By the end of 2001, 22 companies were listed on the Doha Stock Exchange. The companies were classified into four major sectors: banking and financial, insurance, manufacturing and services companies. Letters were forwarded to all companies (22) requesting the latest published annual report. Annual reports from all listed companies were received for the year 1999/2000. After scanning the annual reports, one company was dropped from the analysis, as it is recently listed on the stock exchange and reported little information. Hence, the number of companies that formed the sample of this study was reduced to 21, resulting in a 95% useable response rate.

The sampled companies' distribution among different sectors of the economy showed that only three companies were classified as manufacturing and eight services. It was then felt that such a limited number of companies could not form a basis for statistical analysis. As a result, the sampled companies were classified into financial (banks, financial and insurance companies) and non-financial (services and manufacturing companies). The distribution of the population and sampled companies among different sectors of the economy, together with responses rates, are presented in Table 1.

The annual reports of the 21 sample companies were scored by a group of final year students in the Accounting Department of Qatar University to obtain a corporate general disclosure score for a maximum of the 34 disclosure items as indicated in the methodology section above.

The CSDIndex for each sample company was obtained for the 1999–2000 using the following model:

$$\text{CSDIndex}_j = \sum (\text{ENVR}_j + \text{ENER}_j + \text{HUMN}_j + \text{PROD}_j + \text{COMM}_j + \text{OTHR}_j) \tag{3}$$

Table 1. Distribution of Responses of Sample Companies.

	Financial Sector			Non-Financial Sector			Total Companies
	Banks	Insurance	Total	Services	Manufacturing	Total	
Population	6	4	10	9	3	12	22
Sample	6	4	10	8	3	11	21
%	100	100	100	89	100	91.67	95.45

where:

CSDIndex$_j$ = CSD score for company j:
ENVR$_j$ = environment information disclosed by company j;
ENER$_j$ = energy information disclosed by company j;
HUMN$_j$ = human resources information disclosed by company j;
PROD$_j$ = product information disclosed by company j;
COMM$_j$ = community involvement information disclosed by company j;
and
OTHR$_j$ = other social information disclosed by company j

FINDINGS

Descriptive Statistics

The general and CSD scores achieved by the sample companies are sum-marised in Table 2. It is evident from the Table 2 that while the average corporate general disclosure score achieved by the sample Qatari companies was 65%, the average CSD score was only 33%. What attracts attention in Table 2 is that there is no significant difference in the level of disclosure achieved by the financial and non-financial companies. The overall average score and the results of the Krusakl Wallis test reported in Table 2 confirm this reality.

Table 3 reports descriptive statistics of the dependent and explanatory variables employed in this study. The table reveals that the level of CSD is far below the average, as reflected by the reported mean. The resultant mean is less than 50% of the standard CSD items that formed the index. It ranges between 13 and 45% of the expected number of items that formed the CSDIndex. The table also reflects the level of variation in the extent of CSDIndex between the sample companies. Further, the table indicated that the sample companies vary in size, ownership, capital structure and the level of dividends paid. This grants credibility to the results of the study since it not only covers a significant proportion of the population but also a wide range of companies that represent all industries with various features.

Pearson Correlation

The Pearson correlation coefficient matrix that shows the sign of the re-lationship between the dependent and independent variables is presented in

Table 2. General and Corporate Social Disclosure Scores of Sample Companies.

No.	Sector	Corporate General Disclosure Score	Corporate Social Disclosure Score
Corporate sector/Name banking			
1	Qatar Islamic Bank	0.68	0.37
2	The Commercial Bank	0.59	0.29
3	Al-Ahli Bank Of Qatar	0.59	0.36
4	Qatar National Bank	0.65	0.44
5	Doha Bank	0.79	0.45
6	Qatar International Islamic Bank	0.50	0.27
	Average	0.63	0.36
Insurance			
7	Qatar General Insurance	0.68	0.33
8	Qatar Insurance	0.59	0.23
9	Alkhaleej Insurance	0.74	0.38
10	Qatar Islamic Insurance	0.76	0.42
	Average	0.69	0.34
Manufacturing			
11	Qatar Flour Mills	0.59	0.30
12	Qatar National Cement	0.71	0.39
13	Qatar Industrial Manufacturing	0.68	0.35
	Average	0.66	0.35
Services			
14	Al-Ahli Hospital	0.44	0.13
15	Qatar Electricity And Water	0.74	0.33
16	Qatar National Cinema & Film Distribution	0.65	0.31
17	Qatar Real State Investment	0.68	0.32
18	Qatar Telecom	0.68	0.36
19	Qatar National Navigation & Transport	0.65	0.31
20	Qatar Shipping	0.65	0.33
21	Qatar Leisure and Tourism Development	0.56	0.25
	Average	0.63	0.25
	Overall average	0.65	0.33
	Krusakl Wallis test	0.154	1.989
		0.698	0.158

Table 4. The signs of correlation between dependent and independent variables are mostly as predicted. In addition, collinearity was evident between numbers of explanatory variables. It should be noted that although the correlation matrix can be used to detect possible collinearity between the

Table 3.   Descriptive Statistics of All Variables Used in the Study.

	N	Minimum	Maximum	Mean	Std. Dev.
GenIndex	21	0.44	0.79	0.6457	0.08498
CSDIndex	21	0.13	0.45	0.3291	0.07318
GROTH	21	−9.43	315.23	22.4883	69.4963
DIPAY	21	0.00	84.26	39.1635	32.3689
LEVER	21	0.24	92.56	50.5655	30.5833
IDIVD	21	0.00	98.60	67.5150	27.7606
GOVER	21	0.00	50.00	10.4210	17.7043
INSTIT	21	0.00	43.10	15.9800	11.9919
MAJOR	21	0.00	1.00	0.4500	0.5104
MARKE	21	5.5E + 06	5.7E + 09	5.E + 09	1.6E + 09

Table 4.   Correlation between Variables Used in Study.

Variable	CSDINDEX	GROTH	DIPAY	LEVER	IDIVD	GOVER	INSTIT	MAJOR	MARKE
CSDIndex	1.000								
GROTH	−.057	1.000							
DIPAY	.321	.045	1.000						
LEVER	.557*	.088	1.000						
IDIVD	−.189	−.440	.142	−.046	1.000				
GOVER	.207	.476*	.071	.080	−0.594**	1.000			
INSTIT	.065	.232	.148	−.039	−.251	.047	1.000		
MAJOR	.259	.318	.106	.255	−.378	.688**	.174	1.000	
MARKE	.633**	.083	.316	.254	−.264	.365	.345	.390	1.000

*Correlation is significant at 0.05 level (2-tailed).
**Correlation is significant at 0.01 level (2-tailed).

explanatory variables, the absence of collinearity does not always mean that it does not exist. To curb this problem, a diagnostic procedure that utilises the VIF is employed.

Multiple Regressions

First of all, a multiple OLS regression was undertaken by regressing CSD-Index on all explanatory variables used in this study. Given that none of the resulted VIF exceeded 10 in Table 5, multicollinearity is not viewed as a serious problem. Hence, all explanatory variables were used in the regression model. The results of the regression are presented in Table 5.

Table 5. Regression between Dependent and Independent variables.

Variable	SC Beta	T	Sig.	VIF
CONSTANT	0.072	0.515	0.617	
GROTH	0.470	2.718	0.020	2.433
DIPAY	−0.027	−0.209	0.838	1.326
LEVER	0.367	1.902	0.084	3.035
IDIVD	0.010	0.065	0.949	1.991
GOVER	0.084	0.443	0.667	2.920
INSTIT	−0.096	−0.734	0.478	1.382
MAJOR	−0.057	−0.355	0.729	2.061
MARKE	0.285	1.891	0.085	1.845
$R^2 = 77\%$				
SE = 0.06256				
F = 8.8				
Sig. = 0.001				

Table 5 reported a positive and significant association between the extent of CSD and corporate size, level of leverage and corporate growth. A positive but insignificant association was also reported between the extent of CSD and each of the government size of ownership and percentage of shares owned by individual shareholders. On the other hand, a negative but insignificant association appeared between the extent of CSD and each of dividend payout ratio, individual and majority shareholders.

The results are not surprising and are in line with results obtained in previous studies (Naser, 1998; Naser & Al-Khatib, 2000). Size, measured by market capitalisation, seems to be a major determinant of CSDIndex, as Naser (1998), Naser and Al-Khatib, (2000) found when they investigated the determinant of level of corporate disclosure and the extent of voluntary disclosure in the board of directors' statement in a sample of Jordanian companies. Large companies tend to disclose more information than small sized ones, since they have the resources to collect, analyze and report data. In addition, large sized companies are less fearful of competition from much smaller companies. Moreover, it is likely to see large companies raising funds from the stock exchange or banks more than small companies. Hence, one expects them to disclose detailed information to convince both lenders and investors. More importantly, large companies are monitored by the public eye and are expected to be under political pressure more than small companies. To avoid such pressure, they tend to voluntarily disclose

additional information. Needless to say, large companies are subject to the scrutiny of pressure groups that campaign for clean "green" environment and defend individuals' welfare within the company and society at large. In a conservative and religious society like Qatar, pressure is likely to come from religious groups. Such groups would like to see large companies emphasising Islamic values. To maintain continuity and survival, company management assures these groups by improving communication with society by voluntarily disclosing detailed information that reflects their responsibilities toward society. Thus, this gives support to each of the political economy, agency and legitimacy theories.

As for the level of leverage, companies with high leverage are viewed as risky ones. These companies will find it difficult to raise extra funds, whether from banks or stock markets, unless they disclose detailed information that explains their leverage position. In addition, companies heavily involved in borrowing are more likely to pay high interests on the loans. This would result in less dividends being paid. Hence, the companies have incentives to disclose more detailed information. More importantly, Naser (1998) found that in the Arab countries, banks tend to grant loans to large and reputable companies. It is, therefore, possible to see large companies taking loans more than smaller companies. Thus, leverage can also be viewed as a size measure. This lends support to the hypothesis that companies reporting high earnings are very likely to pay dividends. Companies that pay dividends have little incentives to disclose more detailed information. Company management that declares and pays dividends will be convinced that this is sufficient enough to attract external funding, since the aim of majority investors is to secure a high return on their investment. Companies with stable dividend policy avoid the cost of collecting, analyzing and disclosing additional information.

What attracts one's attention is that while the ownership variables IDIVD and GOVER showed a positive but insignificant correlation with CSDIndex, INSTIT reported a negative association with the variable. The outcome of the analysis may reflect the business nature in a country like Qatar where shares of most companies are owned by a number of families or government. If a limited number of families owned most of the outstanding shares of most companies listed on the stock exchange, these companies would have little incentive to disclose social responsibility information. A similar situation applies to companies the majority of which shares are owned by the government. In this case, dominant families and the government can get information through direct contact with the company. If they cannot find the information that they demand in the annual report, they can request the

information directly from company management by using their influential position within society.

On the other hand, the positive association reported between CSDIndex and IDIVD can be explained on the grounds that the Qatari government is undertaking a privatisation program. In an attempt to mobilise local savings and inject them into the stock market, companies assure current and potential investors by disclosing more information. Needless to say, the positive association reported between CSDIndex and IDIVD was insignificant.

The results of the analysis lend little support to the stakeholders' theory. The theory contends that powerful stakeholders can exert pressure on company's management and force it to disclose more information. The theory based its view on the fact that, after all, powerful stakeholders inject company with scarce resources. Hence, a positive association is expected between the degree of stakeholders' power and CSDIndex. Majority shareholders and the percentage of shares owned by institutional investors can be used as a proxy of stakeholders' power. The analyses reported an insignificant association between the two variables. Hence, the theory was rejected. This can be explained on the grounds that stakeholders of most companies listed on the Doha Stock Exchange belong to specific families and/or government. These stakeholders can use their power by requesting information directly from company management. In this case, the possibility of forcing management to voluntarily disclose social information in the annual report is remote. More importantly, the concentration of company ownership in the hands of a number of families and the government makes accountability a minor issue. Hence, companies have little incentive to voluntarily disclose information. Company management, however, can adopt other approaches to improve their images in society. The company can improve its personnel's standard of living. It can also make donations to Islamic charitable organisations. Such measures can be employed to neutralise religious pressure groups. Consequently, the company tends to follow an inactive strategic posture and becomes less involved in social responsibly activities, including CSD.

In summary, the cross sectional analysis of variations in corporate social reporting practices of a sample of Qatari companies appears to partially support the tenets of agency theory (see Table 6). Firms appear not to respond to proxies agency cost/transaction cost structure. The variation in the social responsibility disclosure practices increases as a function of firm's size. This supports the proposal that larger firms incur higher agency costs and relatively lower transaction costs than small firms.

Table 6. Summary of Results.

Variable	Expected Sign	Resulted Sign	Significant ($\sqrt{}$) Insignificant (X)
GROTH	(+)	(+)	($\sqrt{}$)
DIPAY	(−)	(−)	(X)
LEVER	(−)	(+)	($\sqrt{}$)
IDIVD	(+)	(+)	(X)
GOVER	(+)	(+)	(X)
INSTIT	(+)	(−)	(X)
MAJOR	(−)	(−)	(X)
MARKE	(+)	(+)	($\sqrt{}$)

CONCLUSION

In this study, different factors that have been employed in the literature to explain variation in the extent of corporate voluntary disclosure were used to test their validity within the CSD context. In this respect, theories such as agency, political economy, legitimacy, stakeholders and accountability approach are employed to explain variations in the extent of corporate social reporting in a sample of Qatari companies. Variations in corporate social disclosure by the sampled Qatari companies are found to be associated with the firm size measured by the firm's market capitalisation, business risk measured by the leverage and corporate growth.

In a developing country like Qatar, banks tend to grant loans to large sized and reputable companies. Thus, large companies are expected to be highly leveraged. The results of the analysis imply that companies that are expected to be large in size, maintaining growth and are highly leveraged, are more likely to voluntary disclose social responsibility information. The result lends partial support to agency and political economy theories. According to the theories, large sized companies are more visible to the public eyes and therefore subject to more political pressure than small sized ones. In an attempt to minimise monitoring cost, they tend to voluntary disclose detailed social responsibility information. In addition, large sized companies will be targeted by pressure groups that advocate green environment and better social welfare. To assure these groups, large sized companies voluntary disclose information that highlight their contribution to a friendly environment.

The proportion of the institutional investors, dispersion of individual investors and government ownership proved to have little impact on the level of CRD by the sample of Qatari companies. Given that institutional

investors as well as majority shareholders are concentrated within few families in a small society like Qatar, the country will then lack pressure groups similar to those operating in the developed countries; these groups exert pressure on companies and force them to disclose information that reflect their responsibilities toward the society. Dispersion of individual shareholders, on the other hand, reduces pressure on management to disclose detailed CSR information. Hence, management sees little incentives to voluntary disclose information. This lends little support to the legitimacy and stakeholders theories as well as the accountability approach.

The most important conclusion that can be drawn from this study is that the support or otherwise to various theories advanced in the literature to explain why companies voluntary disclose information that reflect their involvement in the society is related to the stage of economic development reached by the country under study. The theories would gain support in developed economies more than in emerging economies.

NOTES

1. See for example, Copeland and Fredericks (1968), Singhvi and Desai (1971), Busby (1975), Barrett (1976), Belkaoui and Kahl (1978), Firth (1979a, b, 1980), Imhoff (1992), Lang and Lundholm (1993), Cooke (1989a, 1989b), Cooke (1991, 1992, 1993), Wallace, Naser, and Mora (1994), Inchausi (1997). Few studies, however, have been conducted in the less developed countries Fierer and Meth (1986), Chow and Wong-Boren (1987), Wallace (1988), Ahmed and Nicholls (1994), Solas (1994), Naser (1998), Wallace and Naser (1995), Naser and Al-Khatib (2000).

2. See for example, Fogler and Nutt (1975), Alexander and Bachholz (1978) Abbot and Monsen (1979), Ingram (1980), Anderson and Frankle (1980), Chen and Metcalf (1980), Tortman and Bradley (1981), Shane and Spicer (1983), Cochran and Wood (1984) Ullmann (1985), Cowen, Ferreri, and Parker (1987), Cowen et al., 1987 Belkaoui and Karpik (1989).

3. Statistics are extracted from the semi-annual report published by the website of the Doha Securities Market.

4. It should be noted that profitable companies may prefer to retain earnings for future investments. It is also possible that profitable companies would be monitored from external investors and creditors and may disclose more information. Yet, profitable companies have the tendency to pay dividends more than the non-profitable ones.

ACKNOWLEDGMENT

REFERENCES

Abbot, W. F., & Monsen, R. J. (1979). On the measurement of corporate social responsibility, self-reported disclosures as a method of measuring corporate social involvement. *Academy of Management Journal*, *22*(3), 501–515.

Abu Baker, N., & Naser, K. (2000). Empirical evidence on corporate social disclosure CSD. Practices in Jordan. *International Journal of Commerce and Management*, *10*(3&4), 18–34.

Ahmed, K., & Nicholls, D. (1994). The impact of non-financial company characteristics on mandatory disclosure in developing countries: the case of Bangladesh. *International Journal of Accounting Education and Research*, *29*(1), 62–77.

Alexander, G. J., & Bachholz, R. A. (1978). Corporate social responsibility and stock market performance. *Academy of management Journal*, *21*, 479–486.

Al-Khater, K., & Naser, K. (2003). Users' perception of corporate social responsibility and accountability: Evidence from an emerging economy. *Managerial Auditing Journal*, *18* (6/7), 538–548.

Anderson, J. C., & Frankle, A. W. (1980). Voluntary social reporting: An iso-beta portfolio analysis. *Accounting Review*, *55*, 467–479.

Barrett, M. E. (1976). Disclosure and comprehensiveness in an international setting. *Journal of Accounting Research*, *14*, 10–26.

Belkaoui, A., & Kahl, A. (1978). *Corporate financial disclosure in Canada*. Vancouver: Research Monograph of Canadian Certified General Accountants Association.

Belkaoui, A., & Karpik, P. G. (1989). Determinants of the corporate decision to disclose social information. *Accounting. Auditing and Accountability*, *2*, 36–51.

Berelson, B. (1971). *Content Analysis in Communication Research*. New York: Hafner.

Beresford, D., & Cowen, S. (1979). Surveying social responsibility in disclosure annual reports. *The Magazine of Managerial Thought and Action*, *29*(2), 15–20.

Burchell, S., Cooper, D., & Sherer, M. (1982). Conceptual framework – one-step forward. two back. *Accountancy*. May 15.

Buzby, S. L. (1975). Company size, listed versus unlisted stocks, and the extent of financial disclosure. *Journal of Accounting Research*, *13*, 16–37.

Chen, K. H., & Metcalf, R. W. (1980). The relationship between pollution control record and financial indicators revisited. *The Accounting Review*, *55*, 168–177.

Chow, C. W., & Wong-Boren, A. (1987). Voluntary financial disclosure by Mexican Corporations. *Accounting Review*, *62*, 533–541.

Cochran, P. L., & Wood, R. A. (1984). Corporate social responsibility and financial performance. *Academy of management Journal*, *27*, 42–56.

Cooke, T. E. (1989a). Disclosure in the corporate annual reports of Swedish companies. *Accounting and Business Research*, *19*(Spring), 113–124.

Cooke, T. E. (1989b). Voluntary corporate disclosure by Swedish companies. *Journal of International Financial Management and Accounting*, *2*(Summer), 171–195.

Cooke, T. E. (1991). An assessment of voluntary disclosure in the annual reports of Japanese Corporations. *International Journal of Accounting Education and Research*, *26*(3), 174–189.

Cooke, T. E. (1992). The impact of size. Stock market listing and industry type on disclosure in the annual reports of Japanese listed Corporations. *Accounting and Business Research*, *22*(Summer), 229–237.

Cooke, T. E. (1993). Disclosure in Japanese Corporate annual reports. *Journal of Business Finance and Accounting*, *20*(June), 521–535.

Cooper, D. J., & Sherer, J. J. (1984). The value of corporate accounting reports: Arguments for a political economy of accounting. *Accounting, Organisations and Society*, *9*(3/4), 207–232.

Copeland, R., & Fredericks, W. (1968). Extent of disclosure. *Journal of Accounting Research*, *6*(1), 106–113.

Cowen, S. S., Ferreri, L. B., & Parker, L. D. (1987). The impact of corporate characteristics on social responsibility disclosure: A typology and frequency based analysis. *Accounting, Organisation and Society*, *12*(2), 111–122.

Easterbrook, F. (1984). Two agency cost explanation of dividends. *American Economic Review*, *74*, 650–659.

Eddy, A., & Seifert, B. (1988). Firm size and dividends and announcements. *Journal of Financial Research*, *11*(winter), 295–302.

Ernst & Ernst (1978). *Social responsibility disclosure*. Survey of 500 annual reports 1972–1978. Ernst and Ernst, Cleveland, OH.

Fierer, C., & Meth, G. (1986). Information disclosure in annual reports in South Africa. *Omega. The International Journal of Management Science*, *4*(5), 373–382.

Firth, M. A. (1979a). Disclosure of information by companies. *Omega*, *7*(2), 129–135.

Firth, M. A. (1979b). The impact of size. Stock market listing and auditors on voluntary disclosure in corporate annual reports. *Accounting and Business Research*, *9*(Autumn), 273–280.

Firth, M. A. (1980). Raising finance and firms' corporate reporting policies. *Abacus*, *16* (December), 100–115.

Fogler, H. R., & Nutt, F. (1975). A note on social responsibility and stock valuation. *Academy of Management Journal*, *18*, 155–160.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. New York: Pitman Publishing Co.

Gosh, C., & Woolridge, R. J. (1988). An analysis of shareholder reaction to dividend cuts and omissions. *Journal of Financial Research*, *11*, 281–294.

Gray, R., Kouhy, R., & Lavers, S. (1995a). Corporate social and environmental reporting – a review of the literature and longitudinal study of UK disclosure. *Accounting Auditing and Accountability Journal*, *8*(2), 47–77.

Gray, R., Kouhy, R., & Lavers, S. (1995b). Methodological themes – construction research database of social and environmental reporting by UK companies. *Accounting Auditing and Accountability Journal*, *8*(2), 78–101.

Gray, R., Owen, D., & Maunders, K. (1987). *Corporate social reporting: Accounting and accountability*. London: Prentice-Hall International.

Guthrie, J. (1983). *Corporate social accounting and reporting: An Australian empirical study*. Paper presented at the AAANZ conference. Griffin University, Australia.

Guthrie, J., & Mathews, M. R. (1985). Corporate social accounting in Australia. *Research in Corporate Social Performance and Policy*, *7*, 251–277.

Guthrie, J., & Parker, L. D. (1989). Corporate social reporting: A rebuttal of legitimacy theory. *Accounting and Business Research*, *19*, 343–352.

Guthrie, J., & Parker, L. D. (1990). Corporate social practice: A comparative international analysis. *Advances in Public Interest Accounting*, *3*, 159–176.

Hines, R. D. (1988). Financial accounting: In communicating reality. We Construct Reality. *Accounting. Organization and Society*, *13*(5), 251–261.

Holsti, O. R. (1969). *Content analysis for social science and humanities*. London: Addison-Wesley.

Imhoff, E. A., Jr. (1992). The relationship between perceived accounting quality and economic characteristics of the firm. *Journal of Accounting and Public Policy*, *11*(Summer), 97–118.

Inchausi, B. G. (1997). The influence of company characteristics and accounting regulation on information disclosed by Spanish firms. *European Accounting Review*, *6*(1), 45–68.

Ingram, R. W. (1980). An investigation of the information content of certain social responsibility disclosure. *Journal of Accounting Research*, *18*, 14–22.

International Financial Statistics. (2003). *International Monetary Fund IMF* (September). Washington, DC.

Jackson, P. M. (1982). *The political economy of bureaucracy*. London: Philip Allan.

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behaviour. Agency cost and capital structure. *Journal of Financial Economics*, *3*, 305–360.

Kirkman, P., & Hope, C. (1992). *Environmental disclosure in UK company annual reports*. Cambridge: Cambridge University Press.

Krippendorff, K. (1980). *Content analysis: An introduction to its methodology*. New York: Sage.

Lang, M., & Lundholm, R. (1993). Cross sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, *31*(Autumn), 246–271.

Lavers, S. (1993). *An empirical investigation of UK social and environmental disclosure: A political economy perspective and analysis*. A Master Thesis, University of Dundee. UK.

Lindblom, C. E. (1984). The accountability of private enterprise: Private – No. Enterprise – Yes. In: A. M. Tinker (Ed.), *Social accounting for corporations*. New York: Marcus Weiner.

Mathews, M. R. (1993). *Socially responsible accounting*. London: Chapman Hall.

Maunders, K. T. (1981). Social reporting and employment report. In: D. J. Tonkins & L. C. L Skerratt (Eds), *Financial Reporting 1981–1982* (pp. 217–227). London: ICAEW.

Maunders, K. T. (1982). Social reporting and employment report. In: D. J. Tonkins, & L. C. L. Skerratt (Eds), *Financial Reporting 1982–1983* (pp. 178–187). London: ICAEW.

Murali, R., & Welch, J. (1989). Agents owners, control and performance. *Journal of Business Finance and Accounting*, *16*(Summer), 385–398.

Naser, K. (1998). Comprehensives of disclosure of non-financial companies listed on the Amman financial market. *International Journal of Commerce and Management*, *2*(8), 88–119.

Naser, K., & Abu Baker, N. (1999). Empirical evidence on corporate social responsibility reporting and accountability in developing countries: the case of Jordan. *Advance in International Accounting*, *12*, 193–226.

Naser, K., & Al-Khatib, K. (2000). Determinants of the depth of voluntary disclosure in the board of directors' statement in a sample of Jordanian listed companies. *Advances in International Accounting*, *13*, 99–118.

Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory. *Accounting, Organisations and Society*, *17*, 471–475.

Perks, R. W. (1993). *Accounting and society*. London: Chapman & Hall.

Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting. Organizations and Society*, *17*, 595–612.

Rozef, M. (1982). Growth, beta and agency cost as determinants of dividend payout ratios. *Journal of Financial Research*, *V*, 249–259.

Shane, P.B., & Spicer, B.H. (1983). Market response to environmental information produced outside the firm. *The Accounting Review*, *58*(2), 521–338

Singhvi, S., & Desai, H. B. (1971). An empirical analysis of the quality of corporate financial disclosure. *Accounting Review*, *XLVI*(1), 621–632.

Solas, C. (1994). Financial reporting practice in Jordan: An empirical test. *Advances in International Accounting*, *7*, 43–60.

Tinker, T., & Niemark, M. (1987). The role of annual reports in gender and class contradictions at general motors: 1917–1976. *Accounting, Organisations and Society*, *12*, 65–88.

Titman, S., & Wessels, R. (1988). The determinant of capital structure choice. *Journal of Finance*, *48*(March), 1–19.

Tortman, K. T., & Bradley, G. W. (1981). Association between social responsibility disclosure and characteristics of companies. *Accounting, Organisation and Society*. December, 355–362.

Ullmann, A. A. (1985). Data in search for a theory: A critical examination of the relationship among social performance social disclosure and economic performance. *Academy of Management Review*, *10*, 540–577.

Wallace, R. S. O. (1988). International and international consensus on the importance of disclosure items in financial reports: A Nigerian case study. *British Accounting Review*, *20*, 223–265.

Wallace, R. S. O., & Naser, K. (1995). Firm-specific determinants of the comprehensiveness of mandatory disclosure in the annual corporate reports of firms listed on the stock exchange of Hong Kong. *Journal of Accounting and Public Policy*, *14*, 311–368.

Wallace, R. S. O., Naser, K., & Mora, A. (1994). The relationship between the comprehensiveness of annual corporate reports and firm characteristics in Spain. *Accounting and Business research*, *25*, 41–53.

Zeghal, D., & Ahmed, S. A. (1990). Comparison of social responsibility information disclosure media used by Canadian firms. *Accounting, Auditing and Accountability Journal*, *3*(1), 38–53.

This page intentionally left blank

HARMONIZATION OF ACCOUNTING MEASUREMENT PRACTICES IN SOUTH ASIA

Muhammad Jahangir Ali, Kamran Ahmed and Darren Henry

ABSTRACT

This study examines the extent of harmonization of selected accounting measurement practices in three South Asian countries, India, Pakistan and Bangladesh. The study is based on a sample of 566 non-financial companies for the financial year 1997–1998. The degree of harmonization is measured using Van der Tas's (1988) I index and Archer, Delvaille, and McLeay's (1995) modified C index. The values of the I index and the C index show a relatively higher degree of harmonization in the areas of property, plant and equipment, foreign currency translation and long-term investment, and a lower level of harmonization in the areas of inventory, amortization of goodwill and leases. The results suggest that low harmonization levels are both due to the degree of flexibility available in selecting benchmark treatments in some International Accounting Standards (IAS) and also to non-compliance by companies with IAS-mandated requirements. Significant further work is required by South Asian Federation of Accountants and the other regional accounting bodies if the goals of regional and international accounting harmonization are to be achieved.

INTRODUCTION

Harmonization of International Accounting Standards (IAS) has been an issue of great importance for accountants and business people since almost the beginning of the 20th century. Investors would ideally like to direct their capital to the most efficient and productive companies globally, provided they are able to understand their accounting numbers. Nevertheless, if accounting practices differ between countries this may impose burdens on capital providers, resulting in investment being directed to less efficient and lower performing companies in countries where the understandability of financial statements is greater and, thus, they are regarded as less risky (Saudagaran, 2001). Harmonization of accounting practices among countries enhances the comparability of financial statements, thus making them more useful for investors to understand and interpret. The increasing globalization of business operations is responsible for bringing the questions of international accounting harmonization to the forefront. Currently, the magnitude of cross-border financing transactions, securities trading and foreign direct investment is enormous, often in smaller as well as larger countries.

In recent years, there has been a move towards regional harmonization as a step towards greater international harmonization. The reason being that environmental factors are less heterogeneous within a regional boundary and, once regional harmonization is achieved, international harmonization would be much easier to accomplish. To this end, a growing number of regional organizations have come into existence (Radebaugh & Gray, 1993). Within Asia, these organizations include the Asian Federation of Accountants (AFA) (established in 1977) and the South Asian Federation of Accountants (SAFA) (established in 1984). While regional professional organizations are supportive of the worldwide harmonization efforts of the IAS Board (IASB), there would also appear to be some initiatives to retain a measure of regional identity and to influence developments of accounting and reporting practices at the wider international level.

The purpose of this study is to examine the extent of harmonization of accounting practices with particular focus on measurement practices of listed companies in three South Asian countries, India, Pakistan and Bangladesh, which are members of the SAFA. One important objective of the SAFA is to achieve harmonization of accounting practices and audit procedures among the South Asian Association of Regional Cooperation (SAARC) countries.[1] These countries are also members of the IASB, and

hence are committed to following its standards, either wholly or with minor modifications.

Prior harmonization studies have mainly concentrated on countries within the European Union (EU) and the Association for South-East Asian Nations (ASEAN) (see Emenyonu & Gray, 1992, 1996; Herrmann & Thomas, 1995; Emenyonu & Adhikari, 1998; Diga, 1996). There appears to be either no or very little research on accounting harmonization within the SAARC countries (see Talwatte, 1998). To this end, this study makes a significant contribution to our understanding of corporate accounting practices in South Asia. It will also provide an insight into the effectiveness of the SAFA and the national accounting bodies in these countries in fostering coordination and improvement in financial reporting within the region.

This study assesses the extent of harmonization by examining eighteen measurement practices drawn from seven IAS (now known as International Financial Reporting Standards (IFRS)) covering the following broad areas:

1. accounting for inventory,
2. property, plant and equipment,
3. accounting for leases,
4. pension and retirement benefit costs,
5. foreign currency transactions and translations,
6. business combinations, and
7. accounting for investments.

The seven IAS have all been adopted by these three countries either in toto or in modified form to suit local corporate environments. The study focuses on material harmonization, which measures corporate accounting practices rather than the accounting standards in the country, as used in other prior studies. The principal reason for measuring material harmonization is ''that a particular practice is required by a professional standard does not necessarily indicate that it is practised by all companies'' (Herrmann & Thomas, 1995, p. 255). This concern is more relevant in the context of emerging nations where the regulatory agencies and professional bodies are not as effective as in Western developed countries. Further, Herrmann and Thomas (1995) criticized earlier harmonization research (Nair & Frank, 1981; McKinnon & Janell, 1984; Evans & Taylor, 1982; Choi & Bavishi, 1982: Purvis, Gernon, & Diamond, 1991) arguing that, in these studies, measurement practices and disclosure issues were combined and the distinction between material harmonization and disclosure harmonization was not recognized.

It is also important to point out that the analysis to follow does not directly evaluate or benchmark compliance with IAS, rather it measures harmonization in the accounting practices among these countries within the framework of these seven IASB-adopted standards. Even so, inferences can be drawn relating to the degree of compliance with IAS by sample companies from these countries from the results, and instances of major departure for IAS-mandated practices are highlighted in the results discussion. For interpretation purposes, the finding of a high degree of harmony in application of a particular measurement item does not necessarily imply a high level of compliance with IAS and, alternatively, a low level of harmony is not necessarily associated with a low IAS compliance level, especially in situations where IAS advocate multiple benchmark treatments. Also, as there are no substantive prior harmonization studies for the region, it is impossible to benchmark our results to previously observed harmony levels to determine whether the initiatives of the SAFA and economic and structural development have improved the harmony of accounting practices within the South Asian region.[2]

MOTIVATION AND JUSTIFICATION OF THE STUDY

Development of the South Asian Region

The reason for conducting this research is to understand the development of accounting measurement practices by companies in the three South Asian countries since their independence from Britain in 1947. With the inception of IAS (IFRS) in Pakistan and Bangladesh, and with the basis of national standards in India being IAS, testing the degree of measurement harmonization of accounting practices in these countries is an important issue.

The South Asian Association of Regional Cooperation (SAARC) offers a particularly appropriate context for this study for several reasons. The three South Asian countries, India, Pakistan and Bangladesh were known as the Indian subcontinent before 1947. The British ruled India for about 200 years until 1947 when India and Pakistan became two independent countries. Bangladesh was formerly a province of Pakistan and was known as East Pakistan and won independence from the former West Pakistan in 1971. Accordingly, these countries inherited similar corporate reporting laws/practices from the United Kingdom. Among the SAARC countries, India, Pakistan and Bangladesh occupy important positions because of their

geographical location, population, and economic potential. Although based historically around agricultural production, the countries have become increasingly involved in manufacturing activities, which now contribute between 20 and 30per cent of GNP for the three countries. South Asian countries have also liberalized their economies with the aim of attracting increased foreign direct investment (FDI) and portfolio investment. Facilitating such investment flows, the stock exchanges in India, Pakistan and Bangladesh have been operating for about 80 years (Ahmed & Zafarullah, 2000). The total market capitalization of the stock exchanges in India, Pakistan and Bangladesh was US$105,188 million, US$5,418 million and US$1,034.5 million, respectively, in the financial year 1998. India has the second highest number (5,860) of listed domestic companies in the world, while 773 and 208 companies are listed on the stock exchanges in Pakistan and Bangladesh, respectively (International Finance Commission (IFC), 2000). A large number of foreign affiliates are also operating in these countries (1,456 in India, 644 in Pakistan and 161 in Bangladesh). India has 187 parent corporations based in the home economy while Pakistan has 61 (IFC, 2000).

In these circumstances the study of harmonization of accounting practices in South Asia is much needed. It is clear that the harmonization of accounting practices would help to increase cross border fund flows in South Asian countries. India, Pakistan and Bangladesh have relatively strong capital markets, therefore, greater comparability of financial statements would provide significant assistance for international investors by generating greater confidence in investing in these countries. The IASB has taken the initiative to harmonize IAS worldwide to achieve a greater comparability in the financial statements. The three South Asian countries have also supported the IASB harmonization project and have accepted IAS as their domestic standards/or developed standards with minor modification.

SAFA's Harmonization Initiatives and Support for IASB's Standards

Harmonization of accounting measurement practices is relevant to regulators, users and preparers of general-purpose financial statements in SAARC countries. Although the SAARC has not achieved the same level of success in terms of political and economic integration as the EU, it has made a substantial contribution to coordinating the national economic policies among member countries. One initiative, in this regard, that has been taking place over the past two decades is the formation of economic regional

trading blocks in order to facilitate and promote intra-regional trade. The SAARC region's South Asian Preferential Trading Agreement (SA-PTA) being one such grouping. The SAPTA and the South Asian Free Trade Agreement (SAFTA) are obviously directed towards increasing trade and other economic activity within the region. SAARC has achieved success in the vital area of trade, commerce and investment. The success of the SAARC countries in achieving significant development and growth in these areas is an essential pre-requisite for peace, progress and stability in South Asia. The members of the accounting profession in all members countries have a major role to play in creating the necessary conditions for sustained economic progress by providing the necessary professional services, not only for the management of accounts in a transparent manner, but also for effective planning and implementation of business and invest-ment projects. In fact, the lack of professional services in these areas in the past has been a major factor inhibiting greater gainful economic activities, business confidence and transparency (SAFA, 1999). Harmoni-zation of accounting and reporting practices would enhance trade among the SAARC countries, as well as attract additional foreign direct investment and portfolio investment into the member countries of the SAARC.

The SAFA is the professional accounting counterpart of the SAARC. The principal objective of the SAFA is the development of a harmonized accounting profession in the region (Saeed, 1997). The SAFA focuses on regional accounting harmonization in the context of SAARC regional economic development. Since its inception, the SAFA has made rapid strides in achieving the objectives of harmonization of the accounting profession and for developing brotherhood among the SAARC countries. For exchanges of wealth of knowledge, the SAFA organizes a series of conferences and workshops on different issues of accounting in order to harmonize accounting standards in the region. Recently (4–5 July 2003), the SAFA organized a seminar on harmonization of accounting standards in the SAFA region in Sri Lanka. The SAFA has not attempted to develop any regional accounting standards and member countries rely mainly on adopting IAS subject to modification (Ma, Lambert, & Hopkins, 1997).

Therefore, this study will help accounting regulators to measure to what extent harmonization has been achieved, and to what extent South Asian companies comply with IAS, and help them to formulate accounting policies to reduce any observed diversity that exists in accounting practices among companies.

Institutional Regulations on Accounting Measurement

Although the three countries share similar institutional structures, accounting regulations are not necessarily the same. In India, the two professional bodies, namely the Institute of Chartered Accountants of India (ICAI) and the Institute of Cost and Works Accountants of India (ICWAI), are responsible for implementing and monitoring accounting standards. Resulting from their membership with the IASB, they have agreed to give due consideration to IAS and to integrate them in the light of local economic and environmental context (IAS Plus, 2001a). As in March 1997, out of 34 IAS, 15 accounting standards have been issued in India and comply in all material respects with IAS (Narayanaswamy, 1997).

In Pakistan, accounting standards are recommended to the Corporate Law Authority (CLA) for the Government of Pakistan to issue necessary notification for mandatory compliance by the listed companies under the Companies Ordinance, 1984. In Pakistan, IAS are used as national standards and explanatory material is added (IAS Plus, 2001b). As in March 1998, the National Committee for Steering IAS, the Institute of Chartered Accountant of Pakistan (ICAP) and the Institute of Cost and Management Accountants of Pakistan (ICMAP) have adopted 27 IAS from 1 to 34 IAS with the exception of the following: IAS 15, 22, 29, 30 and 34. The listed companies in Pakistan, by virtue of the Companies Ordinance, 1984, and being governed by the Securities and Exchange Commission of Pakistan (SECP), are required are required to follow IAS (ADB, 2001).

In Bangladesh, both the Institute of Chartered Accountants of Bangladesh (ICAB) and the Cost and Management Accountants of Bangladesh (ICMAB) are responsible for the support of and compliance with IAS. Bangladesh Accounting Standards (BAS) include IAS adopted by ICAB. The IAS so adopted by ICAB through its Technical and Research Committee is called Bangladesh Accounting Standards (BAS). In Bangladesh, IAS are used directly as national accounting standards but, in some cases, are modified for local conditions and circumstances (IASC, 1997). Up to 1998 the ICAB has adopted 15 accounting standards based on related IAS by taking into consideration local laws and regulations. Despite adoption of certain IAS, there was no legal enforceability of these standards until 1997 when the Securities and Exchange Commission (SEC) made these mandatory for all listed companies to comply with the IAS.

PRIOR RESEARCH AND REVIEW OF LITERATURE

As mentioned earlier, prior harmonization research has mainly concentrated on the EU. For example, Emenyonu and Gray (1992) examined accounting harmonization in France, Germany and the UK, Herrmann and Thomas (1995) examined eight EU countries: Belgium, Denmark, France, Germany, Ireland, the Netherlands, Portugal and the UK. Their results show a high degree of harmonization in the areas of foreign currency translation of assets and liabilities, treatment of translation differences and inventory valuation, and a low level of harmonization in the areas of fixed asset valuation, depreciation, goodwill, research and development costs, inventory costing and foreign currency translation of revenues and expenses. Canibano and Mora (1999), using a bootstrapping procedure, found a high level of harmony during 1996–1997 within these countries. Peill (2000) examined the industry effect on harmonization within the EU and reported a substantially higher level of harmonization among transnational corporations. Aisbitt (2001) examined the trend over a period between 1981 and 1998 within Nordic countries, namely Denmark, Finland, Sweden and Norway, and reported a high level of within-country harmony and an increase in harmonization over this period.

At the global level, Emenyonu and Adhikari (1998) found significant differences in the measurement of accounting for inventory, fixed assets and investments and a high degree of harmony in the treatment of gains or losses on the disposal of fixed assets, short-term investments and long-term investments in Germany, France, the UK, Japan and the US. Within the Asia-Pacific region, Diga (1996) examined material harmonization of 15 measurement practices among five ASEAN countries: Indonesia, Malaysia, the Philippines, Singapore and Thailand. He identified a relatively high level of measurement harmonization in the areas of inventory, marketable securities, long term investments, business combinations, consolidated financial statements, research and development expenditures and foreign currency translation methods. Tarca (1997) compared the level of harmonization of accounting measurement practices between IAS-reporting companies and Australian Accounting Standards Board (AASB)-reporting companies (Malaysia, New Guinea, Hong Kong, Bermuda and Isle of Man) for the year 1996. The χ^2 tests indicated significant differences in accounting measurement practices between the AASB-reporting companies and IAS-reporting companies for seven accounting policies. Chong, Tower, and Taplin (1999) found variations in the degree of harmony across five Asia-Pacific countries in accounting measurement practices. Recently, Parker and Morris (2001)

examined the influence of US GAAP as an impediment to the international harmony of accounting measurement policies between other countries. They tested eleven accounting measurement policies of forty matched pairs of large companies from Australia and the UK using data from 1993 annual reports. Their results showed that, while there was considerable national harmony in the UK for seven accounting policies and in Australia for five accounting policies, there was only complete international harmony for three policies. They also found that Australian companies appeared to conform more to US GAAP than UK companies, and UK/Australian international harmony was higher when both countries conformed to US GAAP. However, US listing status seemed to have no influence on measurement harmony.

It is evident from the above literature that while there have been a number of studies conducted on the issue of measurement harmonization in the European and South East Asian countries, South Asian countries have not been explored. The present study redresses this omission and will contribute to our understanding of accounting and reporting practices in South Asia.

RESEARCH METHODOLOGY

Data

Data used in this study were collected from 566 listed companies' annual reports for the year 1997–1998. The annual reports were obtained from the Dhaka Stock Exchange in Bangladesh, the Research Development Association in India and Paksearch in Pakistan.[3] The sample includes 219 annual reports from India, 228 from Pakistan and 118 from Bangladesh. The selected companies are non-financial in nature and are listed on the Mumbai Stock Exchange (MSE), the Karachi Stock Exchange (KSE) and the Dhaka Stock Exchange (DSE), respectively. The sample was structured to include major industries (such as cotton, jute and textile, chemical, pharmaceuticals, and electrical equipment), and represents 3.75, 29.19 and 58.42 per cent of the total listed companies in India, Pakistan and Bangladesh respectively.

Statistical Analysis

Following prior research, we used the 'I' index, suggested by Van der Tas (1988), and the modified version of the 'C' index by Archer et al. (1995),

to measure harmonization. Van der Tas (1988) defined the I index as follows:

$$I = \left(\sum_{i=1}^{n} (f_i^1 x f_i^2 x \ldots f_i^m x \right)^{1/(m-1)} \tag{1}$$

where f_i^1, f_i^2, ... f_i^m are the relative frequencies of accounting method i in each of m countries and n the number of alternative accounting methods.

According to Van der Tas (1988), the I index is applicable to a two-country comparison, although this index is also suitable when more than two countries are compared. However, the I index tends to be lower when more countries are compared due to a large number of fractions being multiplied. Van der Tas (1992) overcomes this problem by applying the (m-1)th root as a correction.

The correction factor is as follows:

$$I^* = I^{1/(m-1)} \tag{2}$$

where I^* is the corrected I index and m the number of countries.

Values of the I index range from 0 (indicating no harmony, with an infinite number of alternative methods all with the same frequency) to 1 (all apply the same accounting method). Van der Tas (1988) also introduced the C index that takes into consideration multiple reporting of accounting practices in company annual reports. Archer and McLeay (1995) criticized Van der Tas's (1988) comparability or C index, suggesting that it does not differentiate between national and international effects to measure international harmony. To correct this deficiency, Archer et al. (1995), decomposed Van der Tas's (1988) C index into a between-country (inter-national) C_b index and a within-country (intra-national) C_w index. For international comparisons, Archer et al. (1995) suggest the use of the between-country comparability index.

The between-country C_b index is applied to measure international harmonization of accounting practices. The between-country C_b index may be defined as the number of different pairs of companies from a different country, divided by the total number of company pairs if all companies used the same accounting method but each pair member is from a different country. Intuitively, the between-country C_b index gives the probability that any pair of randomly selected companies, each from a different country, uses the same accounting method (Morris & Parker, 1998, p. 73). Archer

et al.'s (1995) between-country C_b index is as follows:

$$C_b = \frac{\sum_i \sum_j \left(X_{ij} \left(X_{+j} - X_{ij} \right) \right)}{\sum_i (X_{i+} (X_{++} - X_{i+}))} \tag{3}$$

Where: C_b = the between-country index;

x_{ij} the number of companies in country i using accounting method j;

x_{+j} the number of companies in all countries using method j;

X_{++} the total number of companies across countries; and

x_{i+} the total number of companies in all countries using method j.

The within-country C_w index is defined as the number of pairs of companies using the same accounting method where each pair member comes from the same country, divided by, for the same countries, the number of company pairs in each country if all companies used the same accounting method. Archer et al.'s (1995) within-country C_w index is as follows:

$$C_w = \frac{\sum_i \sum_j \left(X_{ij} \left(X_{ij} - 1 \right) \right)}{\sum_i (X_{i+} (X_{i+} - 1))} \tag{4}$$

where C_w is the within-country index.

Archer et al. (1995) also provided the overall comparability index C_o as follows:

$$C_o = \frac{\sum_j \left(X_{+j} - 1 \right)}{X_{++} (X_{++} - 1)} \tag{5}$$

where C_o is the overall comparability index.

Following Archer et al. (1995), other researchers (Morris & Parker, 1998; Canibano & Mora, 1999; Chong et al., 1999; Aisbitt, 2001; Parker & Morris, 2001) also used this model due to its superiority over Van der Tas's (1988) C index. The present study also decomposes the comparability index into between-country and within-country comparability indices and applies these to analyse the harmonization results. Previous research on measurement harmonization focused on use of either the I index or the C_b and C_w comparability indices. Both the I index and comparability indices are used in this study to determine the extent of overall and within-country harmonization and χ^2 tests are employed to evaluate whether any significant differences exist in measurement practices among the three countries.

Hypothesis Statement

As stated earlier, the IASB recommends that all member countries around the world comply with its standards. India and Bangladesh have accepted modified IAS, while Pakistan has fully accepted IAS and they are mandatorily enforced by parliamentary legislation. Owing to these different levels of IAS adoption and enforcement, it is very important to investigate whether companies are using IAS required accounting treatments in these three countries. On the basis of the literature review it was found that a lack of actual material harmonization is still evident, despite the essence of regulatory harmonization. Although India, Bangladesh and Pakistan draw their professional accounting standards based on the IASB, it is not necessarily appropriate to assume that companies would follow similar accounting measurement rules and practices across the three countries due to differences in socio-economic and regulatory conditions. The following general hypothesis is stated:

H_A. There are significant differences in the measurement of accounting treatments by the companies in India, Pakistan and Bangladesh.

The above alternative hypothesis (H_A) is tested individually by examining the accounting policy choices of companies in these countries with regard to the following 18 accounting measurements:

1. inventory valuation,
2. inventory costing,
3. depreciation of property, plant and equipment,
4. valuation of property, plant and equipment,
5. gains or losses on disposal of property, plant and equipment,
6. accounting for leases,
7. cost of pension and retirement benefits,
8. past service costs/experience adjustments,
9. foreign currency translation of assets and liabilities,
10. foreign currency translation of revenue and expenses,
11. translation differences from foreign financial statements,
12. accounting for business combination,
13. accounting for goodwill,
14. amortization of goodwill,
15. valuation of long-term investments,
16. gains or losses on disposal of long-term investments,
17. measurement of short-term investments, and
18. gains or losses on disposal of short-term investments.

The above accounting measurements have been selected since they comprise the seven IAS they have been adopted as national standards across the three countries and because these practices significantly affect measures of net assets and/or profits and company annual reports contain sufficient disclosure to determine the policy choice.

RESULTS AND ANALYSIS

This section of the study presents an analysis of the results, statistical tests and discussion. This study examined 18 measurement practices prescribed in seven IASB standards. The categories of alternative accounting methods are detailed and are based on the actual wording contained in the company annual reports. The IASB prescribes alternative treatments for accounting methods along with the benchmark method.

Inventory Valuation

IAS 2 (revised effective 1995) requires that inventories should be valued at the lower of historical cost or net realizable value. Cost should be determined on a specific identification basis for goods not ordinarily interchangeable or produced and segregated for specific projects. Two measurement practices related to inventory are investigated, the inventory valuation method and the inventory costing method, which are reported in Table 1.

Four specific methods are analysed to measure the extent of harmonization in the inventory valuation practices in India, Pakistan and Bangladesh. These include: lower of cost or net realizable value (NRV), lower of cost or market (LOCOM), lower of cost or replacement cost (RC) and a combination of the above methods. Panel A indicates that use of a combination of the inventory valuation methods is predominantly practised in these countries. About 50per cent of the total sampled companies use a combination of the inventory valuation methods, followed by application of the lower of cost method and net realizable value (43.46 per cent). The χ^2 statistic (27.05) supports the position that there are significant differences in the treatment of inventory valuation between companies in the three South Asian countries. The I index for the inventory valuation is comparatively low (0.43), which similarly suggests a low level of harmony. The results for the comparability indices are also similar to the I index value. The likely

Table 1. Accounting for Inventory.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Inventory Valuation Practices								
Lower of cost or NRV	67	30.59	121	52.84	58	49.15	246	43.46
LOCOM	8	3.65	3	1.31	5	4.24	16	2.83
Cost	12	5.48	9	3.93	6	5.08	27	4.77
Combination	132	60.27	96	41.92	49	41.53	277	48.94
Total	219	38.69	229	40.46	118	20.85	566	100.0

$\chi^2 = 27.05$, p-value $= 0.0001$, D.F $= 6$, I index $= 0.4295$, C indices: $C_w = 45.12$, $C_b = 41.90$, $C_o = 43.05$.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel B: Inventory Costing Method								
FIFO	142	64.84	34	14.85	33	27.97	209	36.93
LIFO	1	0.46	0	0.00	0	0.00	1	0.18
Weighted average	71	32.42	162	70.74	82	69.49	315	55.65
Combination	5	2.28	33	14.41	3	2.54	41	7.24
Total	219	38.69	229	40.46	118	20.85	566	100.0

$\chi^2 = 142.54$, p-value $= 0.0000$, D.F $= 6$, I index $= 0.4317$, C indices: $C_w = 53.60$, $C_b = 13.11$, $C_o = 45.04$.

reason for the low level of harmonization is due to the availability of several alternative methods for the valuation of inventories in India, Pakistan and Bangladesh. The harmony level would likely be increased if one method was more strongly prescribed by IAS 2.

Inventory Costing Methods

Inventory costing methods are recognized as a subset of the valuation of inventory. The 1975 version of IAS 2 permitted companies to adopt the first-in, first-out (FIFO), weighted-average cost, last-in, first-out (LIFO), or base stock costing methods. However, LIFO and base stock methods were not prescribed in the Comparability Project. Although LIFO was initially eliminated during the Comparability Project, the IASB endorsed this method due to its popularity among some countries around the world, such as the USA (Epstein & Mirza, 1997). Under the revised IAS 2, there are two benchmark cost flow assumptions and one additional method, which is referred to as an "allowed alternative method". The benchmark treatment of

IAS 2 prescribes more conservative treatment using the FIFO or weighted-average cost methods and allowed the alternative method, this being LIFO. LIFO is suggested to result in a more meaningful measure of earnings in periods of rising prices (Epstein & Mirza, 1997). In India, the corresponding standard of IAS 2, AS 2 for valuation of inventories, requires companies to follow either the FIFO or weighted-average methods. LIFO is not allowed in India; hence, the LIFO formulae are eliminated from the standard.

Similar to the results for the valuation of inventory, disharmony is also evident in respect of inventory costing practices. The FIFO method is predominantly practised by the Indian companies, while the weighted average method is more widely used in Pakistan and Bangladesh. Panel B in Table 1 demonstrates that 55.65 per cent of companies in India, Pakistan and Bangladesh adopt the weighted average cost method. The weighted average method is widely practised in Pakistan (70.74 per cent) and Bangladesh (69.49 per cent), while the FIFO method is predominantly used in India (64.84 per cent). One Indian company adopted the LIFO method, although it is not an allowed measurement practice under AS 2. The χ^2 statistic (142.54) is significant, which indicates that there is significant difference among the costing methods used in the three countries. This supports the low *I* index measure of harmonization of 0.432.

Depreciation of Property, Plant and Equipment

IAS 16 has superseded IAS 4 regarding guidance on depreciation of property, plant, and equipment. IAS 4 remains in effect for amortization of intangibles, although it may be made obsolete by the new standard on intangibles currently being developed. The IASB allows for flexibility in depreciation policy requirements since it does not prescribe any specific depreciation method. The companies in the three different countries predominantly use the straight-line method, the reducing balance method or a combination of the two methods. Selection of depreciation policy has an important impact on tax policy (Herrmann & Thomas, 1995). Companies may switch from one depreciation method to another for tax purposes, for example, a company may change from reducing balance to straight-line depreciation for the remaining life of property, plant and equipment to obtain maximum potential tax benefits. The revised IAS requires companies to depreciate assets on a systematic basis over the useful life of the asset. The standard requires that companies follow the depreciation method consistently, but it does not prescribe any particular method of depreciation.

Table 2 presents the results for the three measurement practices in relation to property, plant and equipment.

It is evident from Panel A of Table 2 that straight-line depreciation is the most popular method used in India (52.51 per cent), while the vast majority of the companies in Pakistan (69.43 per cent) and Bangladesh (73.73 per cent) apply the reducing balance method. Panel A reveals that, although a combination of straight line and reducing balance methods is not widely used in Pakistan and Bangladesh, this method is considerably applied in India (23.74 per cent). Only 11 companies in Pakistan and none in Bangladesh adopted a combination of the straight line and the reducing balance methods. Similarly, the use of the pro-rata method is also not prominent in the three South Asian countries, although 20 companies in India, 12 in Pakistan and one in Bangladesh practice this method. The χ^2 statistic is

Table 2. Accounting for Property, Plant and Equipment.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Depreciation of Property, Plant and Equipment								
Straight line	115	52.51	47	20.52	30	25.42	192	33.92
Reducing balance	32	14.61	159	69.43	87	73.73	278	49.12
SL & RB	52	23.74	11	4.80	0	0.00	63	11.13
Pro rata & others	20	9.13	12	5.24	1	0.85	33	5.83
Total	219	38.69	229	40.46	118	20.85	566	100.00

$\chi^2 = 185.75$, p-value $= 0.0000$, D.F $= 6$, I index $= 0.3198$, C indices: $C_w = 46.60$, $C_b = 31.70$, $C_o = 37.10$.

Panel B: Property, Plant and Equipment Valuation								
Historical cost	186	84.93	171	74.67	97	82.20	454	80.21
Modified historical cost	33	15.07	58	25.33	21	17.80	112	19.79
Total	219	38.69	229	40.46	118	100	566	100.00

$\chi^2 = 7.79$, p-value $= 0.0203$, D.F $= 2$, I index $= 0.7267$, C indices: $C_w = 68.19$, $C_b = 68.20$, $C_o = 68.20$.

Panel C: Gains or Losses on Disposal of Property, Plant and Equipment								
To reserves	3	1.61	7	3.87	1	1.43	11	2.53
In the current income	183	98.39	174	96.13	67	98.57	424	97.47
Total	186	42.76	181	41.61	68	16.02	435	100.0

$\chi^2 = 2.30$, p-value $= 0.3162$, D.F $= 2$, I index $= 0.9654$, C indices: $C_w = 94.87$, $C_b = 95.17$, $C_o = 95.06$.

significant (185.75), which indicates that there is a significant difference in the use of depreciation methods in India, Pakistan and Bangladesh. The *I* index (0.3198) shows that the harmony level is 31.98 per cent, reflecting the fact that India's practice seems to be not consistent with the reducing balance method predominantly used in the two other South Asian countries. Hence, the results suggest a lower level of harmony with respect to depreciation of property, plant and equipment practices in these countries. The comparability indices produce similar results with the *I* index, although the within-country C_w index is higher than the between-country C_b index.

Valuation of Property, Plant and Equipment

IAS 16, issued in 1982, prescribed that property, plant and equipment should be carried at historical cost or revalued amounts. The revised IAS 16 benchmark treatment requires that property, plant and equipment may be carried at cost less any accumulated depreciation. The allowed alternative treatment prescribes that property, plant and equipment may be carried, after initial recognition, at revalued amounts less any subsequent accumulated depreciation (Coopers & Lybrand, 1996). The revised IAS 16 suggests that any revaluation is to be made at fair value at the date of revaluation and that revaluations should be made with sufficient regularity. For Indian companies, AS 10 requires that companies should present fixed assets under each heading at original cost including additions there-to and deductions there-from during the year. AS 10 conforms in all material respects with IAS.

From Panel B of Table 2, it is apparent that historical cost is the most popular (80.21 per cent) method in all three countries, while a limited number (19.79 per cent) of companies use the modified historical cost method for the valuation of property, plant and equipment. The modified historical cost method (adoption of revalued amount) is still not popular in India, Pakistan and Bangladesh. The *I* index value of 0.7267 suggests that a 72.67 per cent level of harmony exists among the three countries on the issue of the valuation of property, plant and equipment.

Gains or Losses on Disposal of Property, Plant and Equipment

The IASB recommends that gains or losses arising from the retirement or disposal of an item of property, plant and equipment should be recognized as an income or an expense in the income statement. Gains or losses need to

be determined as the difference between the estimated net disposal proceeds and the carrying amount of the assets (ICAB, 1995). AS 10 also has the similar requirement of IAS 16 regarding gains or losses on disposals of fixed assets. Two methods are selected to examine the degree of harmony for disposal of property, plant and equipment. These include: gains or losses are taken in current income and or gains or losses are taken to reserves.

Panel C of Table 2 shows that the majority (97.48 per cent) of disclosing companies in South Asia prefer to recognize gains or losses on disposal of property, plant and equipment in the income statement. In contrast, only a small number companies record gains or losses on fixed asset disposal to the reserves. The χ^2 value of 2.30 is not statistically significant at the 0.05 level, highlighting that there is no significant difference in the accounting treatment of gains or losses on disposal of property, plant and equipment. The I index value (0.965) suggests that a high degree of harmonization exists among the three South Asian countries.

Accounting for Leases

IAS 17 deals with accounting for leases. Leasing has become an important means to finance acquisitions of business assets. Leasing is popular because it offers flexibility coupled with a range of economic advantages over ownership in many situations. The lessee may be able to obtain total financing from leasing, on the other hand, under a credit purchase arrangement a buyer needs to pay the initial amount that would not be financed. The lessee has two alternatives in classifying a lease from the accounting and reporting point of view i.e. operating and finance. Three types of accounting for leases are examined including recognition as operating leases, recognition as capital or finance leases and the use of a combination of operating and finance leases.

The results in Table 3 suggest that 85 companies (15.02 per cent) do not disclose treatment for leasing in their annual reports. The likely explanation for non-disclosure of leasing is that these companies do not undertake lease financing. It is evident from the table that the majority (73.26 per cent) of disclosing companies have finance leases, while about 6.11 per cent of the disclosing companies recognize operating leases. Approximately 20.63 per cent of companies recognized both finance and operating leases. The χ^2 value of 17.96 is statistically significant at the 0.05 level, signifying that a significant difference exists in the treatment of accounting policy in regard to leases in these countries. The I index value of 0.632 indicates that the level of

Table 3. Accounting for Leases.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Operating	13	6.34	8	3.65	7	12.28	28	6.11
Capital/Finance	133	64.88	176	80.37	41	75.44	352	73.26
Combination	59	28.78	35	15.98	7	12.28	101	20.63
Total	205	42.62	219	45.53	57	11.85	481	100

$\chi^2 = 17.96$, *p*-value $= 0.013$, D.F $= 4$, *I* index $= 0.6319$, *C* indices: $C_w = 59.37$, $C_b = 57.44$, $C_o = 58.22$.

harmonization among countries is reasonable but not high. The comparability indices also suggest similar results regarding lease practices among three Asian countries.

Accounting for Pensions and Retirement Benefits Costs

IAS 19 prescribes the accrued benefit valuation method as the benchmark treatment and the projected benefit valuation method as the allowed alternative treatment for the measurement of pension and retirement benefits (Street, Gray, & Bryant, 1999). Further, IAS 19 also suggests that current service costs be expensed in the current period. Past service costs, experience adjustments and the effects of changes in actuarial assumptions should generally be systematically amortized over the expected remaining working lives of active employees. Amounts in respect of retired employees should be expensed immediately. In contrast, for defined contribution plans, the enterprise's contribution applicable to a particular period should be expensed in that period. Past service costs relating to active employees should be systematically amortized over the expected remaining working lives of participating employees. AS 15 paragraphs 21–23 outline that past service costs arising in a defined contribution plan or defined benefit plan should be charged to the profit and loss account as they arise or allocated systematically over a period not exceeding the expected remaining working lives of participating employees.

Table 4 reports two measurement issues related to pension and retirement benefit costs. These include the determination of the cost of pension and retirement benefits and recognition of past experience cost/experience adjustments of pension and retirement benefits.

Table 4.   Pension and Retirement Benefit Costs.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Determination of Cost of Pensions and Retirement Benefits								
Accrued benefit	88	84.62	75	72.82	30	78.95	193	78.78
Projected benefit	11	10.58	26	25.24	8	21.05	45	18.37
Pay-as-you-go	5	4.81	2	1.94	0	0	7	2.86
Total	104	42.45	103	42.04	38	15.51	245	100.00

$\chi^2 = 9.92$, p-value = 0.0417, D.F = 4, I index = 0.7015, C indices: $C_w = 65.92$, $C_b = 65.03$, $C_o = 65.37$.

Panel B: Recognition of Past Service Costs/Experience Adjustments								
In current income	7	8.54	12	12.77	2	5.71	21	9.95
Over a period	75	91.46	82	87.23	33	94.29	190	90.05
Total	82	38.86	94	44.55	35	16.59	211	100.0

$\chi^2 = 1.71$, p-value = 0.4242, D.F = 2, I index = 0.8677, C indices: $C_w = 80.99$, $C_b = 82.59$, $C_o = 81.99$.

With regard to determination of the cost of pensions and retirement benefits three methods are examined, including the accrued benefit method, the projected benefit method and the pay-as-you-go method. Panel A of Table 4 reveals that a substantial number of companies do not disclose determination of cost of pensions and retirement benefits. This may be due to very few companies having employee pension and retirement policies. It is also evident from Table 4 that the majority (78.78 per cent) of the companies, in line with the revised IAS 19, applied the accrued benefit valuation method, while 18.37 per cent and 2.86 per cent of companies used the projected benefit valuation and pay-as-you-go methods respectively. The χ^2 test statistic (9.92) is significant at the 0.05 level. This signifies that a significant difference exists in the accounting treatment for determination of cost of pension and retirement benefits among countries. The I index score of 0.7015 indicates that the harmony level in the practice of cost of pension and retirement benefits is 70.15 per cent. The comparability indices also show similar results to the I index, although they are relatively lower than the I index.

Two specific methods are analysed in regard to recognition of past service costs and experience adjustments, these being the current income method and the over a period method. Panel B of Table 4 summarizes the

methods applied in recognizing past service costs and experience adjustment practices for the three South Asian countries. Consistent with other accounting measurement practices, a notable amount of non-disclosures of accounting policy is found among the countries. It is also seen from Table 4 that past service costs, experience adjustments and the effects of changes in actuarial assumptions are amortized systematically over the expected remaining working lives of active employees by the majority (90.05 per cent) of the companies, while only 9.95 per cent of sampled companies charged these in the current income. The χ^2 test value of 1.71 is insignificant at the 0.05 level, suggesting that there is no significant difference in the treatment of past service costs and experience adjustments practices among countries. The I index value of 0.868 reveals a moderately high level of harmony existing among the practices in India, Pakistan and Bangladesh.

Accounting Treatment for Foreign Currency Translation and Transactions

IASB suggests that foreign currency transactions should be accounted for by applying the exchange rate in effect at the date of transaction. The exchange rate in effect at the date of transaction is often referred to as the spot rate, although for practical reasons a rate that approximates the actual rate at the date of transaction is often used. For instance, an average rate for a week or a month might be used for all transactions in each foreign currency occurring during that period. However, the use of an average rate for a period is unreliable if exchange rates fluctuate significantly. IAS 21 requires that foreign currency monetary assets and liabilities should be translated at the closing rate at the balance sheet date. Non-monetary items should be translated at the historical rate of acquisition. With regard to self-sustaining foreign entities, assets and liabilities should be translated using the closing rate, and income statements should be translated either at the actual translation rates or a reasonable approximation thereof. Differences arising on translation should be taken to shareholders' equity (Coopers & Lybrand, 1996).

Table 5 reveals the measurement issues relating to foreign currency transactions and translations. Three measurement issues are examined: foreign currency translation of assets and liabilities, foreign currency translation of revenue and expenses, and the treatment of translation differences.

Two translation accounting methods are chosen to measure the degree of harmony on the issue of translation of assets and liabilities. These include

Table 5. Foreign Currency Transactions and Translations.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Accounting for Foreign Currency Translation of Assets and Liabilities								
Current rate	157	97.52	177	96.20	37	94.87	371	96.61
Average rate	4	2.48	7	3.80	2	5.13	13	3.39
Total	161	41.93	184	47.92	39	10.16	384	100.00

$\chi^2 = 0.86$, p-value $= 0.6491$, D.F $= 2$, I index $= 0.9434$, C indices: $C_w = 93.63$, $C_b = 93.31$, $C_o = 93.44$.

Panel B: Accounting for Foreign Currency Translation of Revenue and Expenses								
Current rate	155	94.51	164	94.80	56	96.55	375	94.94
Average/actual rate	3	1.83	5	2.89	2	3.45	10	3.54
Actual rate	6	3.66	4	2.31	0	0.00	10	3.54
Total	164	41.52	173	43.80	58	14.68	395	100

$\chi^2 = 2.94$, $p = 0.5674$, D.F $= 4$, I index $= 0.9301$, C indices: $C_w = 89.90$, $C_b = 90.44$, $C_o = 90.23$.

Panel C: Treatment of Translation Differences								
Reserves	7	4.49	9	5.14	2	4.17	18	4.75
Income	149	95.51	166	94.86	46	95.83	361	95.25
Total	156	41.16	175	46.17	48	12.66	379	100.00

$\chi^2 = 0.12$, ρ- value $= 0.9419$, D.F $= 2$, I index $= 0.9319$, C indices: $C_w = 90.76$, $C_b = 91.04$, $C_o = 90.93$.

the current rate method and the average rate method. Panel A of Table 5 demonstrates that the number of foreign affiliates in Bangladesh is very low compared to India and Pakistan. India has a large number of foreign affiliates since it has a very large domestic market. The results in Table 5 also reveal that the majority (96.61 per cent) of companies in these countries used the current rate method for translating their assets and liabilities. Only a few companies adopt the average method. The widely adopted practice of the current rate method indicates that foreign subsidiaries appear to use functional currency. The χ^2 statistic of 0.86 is insignificant at the 0.05 level, signifying that there is no significant difference in the measurement methods for translating foreign financial statements by companies among the countries. The I index value of 0.943 indicates a high degree of harmony among the countries. The comparability indices also supports the results of the I index.

Three rates of translating the revenue and expense items of foreign operations are chosen to measure the extent of harmony among the countries. These are the actual rate method, the average rate method and the current rate method. Panel B in Table 5 summarizes the results for the translation of revenue and expenses among countries. It indicates that most (94.94 per cent) of the companies adopted the current rate method. Panel B in Table 5 also shows that India has the highest number of foreign affiliates out of the three countries and Bangladesh has the smallest number (14.68 per cent) of foreign affiliates. The χ^2 value (2.94) is not statistically significant, indicating that no significant differences exist in the rate of translating foreign revenue and expenses by selected companies in the three countries surveyed. The I index value of 0.930 indicates a high level of harmony among the countries and the comparability indices also signify a high degree of harmony.

IASB recommends that companies should recognize translation differences in shareholders' interests. IAS 21 is not supportive of the alternative method treatment of recognising translation differences in current income. Two accounting policy choices are chosen for the treatment of translation differences, namely that differences are taken to reserves or taken to profit and loss. Panel C reveals that most (95.25 per cent) of the companies recognize translation differences in the current income, although IAS requires companies to recognize translation differences in the reserves or shareholders' interests. The table shows that about 4.75 per cent of companies took exchange differences to reserves. The χ^2 test statistic (0.12) is insignificant at the 0.05 level and, thus, suggests that there is no significant difference in the treatment of translation differences among countries. The I index value of 0.932 indicates a relatively high level of harmony prevailing in the treatment of translation losses and gains three South Asian countries. The within-country, between-country and total comparability indices are also similar to the I index. Thus, although the degree of harmony among the three countries is high, the results suggest that a large majority of sample companies are breaching IAS requirements in regards to this issue.

Business Combinations

IAS 22, 'Business Combination' and AS 14, 'Accounting for Amalgamations', in India deal with the accounting treatment of business combinations. Table 6 shows the measurement issues for business combinations. Three measurement methods are examined, representing accounting for business combination, the treatment of goodwill and the amortization period of goodwill.

Table 6.   Business Combinations.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Accounting for Business Combination								
Purchase	32	88.89	28	93.33	8	1.00	68	91.89
Pooling	4	11.11	2	6.67	0	0.00	6	8.11
Total	36	48.65	30	40.54	8	10.81	74	100.00

$\chi^2 = 1.23$, *p*-value $= 0.5419$, D.F $= 2$, *I* index $= 0.9108$, *C* indices: $C_w = 83.17$, $C_b = 86.07$, $C_o = 84.89$.

Panel B: Goodwill Accounting								
Capitalized	50	96.15	38	100.0	9	100.0	97	97.98
Expensed	2	3.85	0	0.00	0	0.00	2	2.02
Total	52	52.53	38	38.38	9	9.09	99	100.00

$\chi^2 = 1.85$, *p*-value $= 0.3975$, D.F $= 2$, *I* index $= 0.9806$, *C* indices: $C_w = 95.16$, $C_b = 96.63$, $C_o = 96.00$.

Panel C: Amortization Period of Goodwill								
1–5 years	15	47.37	18	47.37	6	35.00	39	40.21
6–10 years	11	26.32	10	26.32	2	22.22	23	23.71
11–15 years	17	1053	4	10.53	0	0.00	21	21.65
16–20 years	7	15.79	6	15.79	1	11.11	14	14.43
Column total	50	51.55	38	39.18	9	9.28	97	100.00

$\chi^2 = 11.29$, $p = 0.0597$, D.F $= 8$, *I* index $= 0.3318$, *C* indices: $C_w = 26.77$, $C_b = 26.67$, $C_o = 26.72$.

Two methods are identified for examining the degree of harmony level among countries in relation to accounting for business combination. These include the purchase method and the pooling of interest method. The results in Panel A of Table 6 highlight that a large proportion (492 companies or 86.93 per cent) of total sample companies in the three South Asian countries do not disclose accounting for combinations. The likely reason for this is because the business combination structure is very rare in these countries. The results indicate that the purchase method (94.44 per cent) is predominantly used by the companies. The *I* index value of 0.941 indicates a high degree of harmony among the countries for companies disclosing this measurement practice. The χ^2 statistic value of 1.41 is statistically insignificant at the 0.05 level, suggesting no significant difference in the treatment of business combinations.

Treatment of Goodwill

IAS 22 requires that goodwill be amortized by recognising it as an expense over its useful life. The revised IAS 22 does not accept previous recommended treatments of goodwill, such as charging off goodwill against shareholders' equity at the date of acquisition, or carrying goodwill forward at its original amount until it becomes 'impaired' (Coopers & Lybrand, 1996). The amortization period should not exceed 5 years unless a longer period, not exceeding 20 years from the date of acquisition, can be justified. Although IAS prescribes maximum periods for amortization of goodwill, there is however, no minimum period. Comparatively, AS 14 in India does not adequately deal with the amortization of goodwill. It recommends that goodwill should be amortized to income on a systematic basis not exceeding a period of 5 years unless a longer amortization period is justified.

Two methods are identified to analyse the degree of harmony in the treatment of goodwill, these being the capitalized method and the expensed method. Panel B of Table 6 demonstrates that the majority of the companies do not disclose accounting for goodwill, with only 99 companies disclosing the treatment for goodwill in their annual reports. The results suggest that the majority (97.98 per cent) of the companies recognized goodwill as an asset and amortize to income on a systematic basis. On the other hand, 2.02 per cent of companies wrote off goodwill against the current income. The table also reveals that the I index (0.981) is high. The comparability indices also support the I index result, although these indices are slightly lower than the I index value.

Panel C shows that the amortization period of goodwill is rarely disclosed. The χ^2 value (11.29) is close to being statistically significant at the 0.05 level that supports the low I index value of 0.332, indicating a low level of harmony among countries. The comparability indices also show that within-country, between-country and total comparability indices are lower than the other accounting measurements examined.

Accounting for Long-Term Investments

In regard to long-term investments, IAS 25 requires that long-term investments should be carried at cost, revalued amounts or the lower of cost or market value determined on a portfolio basis for marketable securities. If revalued amounts are used, a policy for the frequency of revaluation should be adopted and an entire category of long-term investments should be

revalued at the same time (ICAI, 1995). Contrary to this standard, AS 13 paragraphs 30 and 32 prescribes that long-term investments should be carried in the financial statements at cost. Table 7 displays the results regarding the accounting for long-term investments in India, Pakistan and Bangladesh.

Table 7.   Accounting for Investments.

Methods	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel A: Accounting for Valuing Long-Term Investment								
Cost	184	87.62	158	73.49	104	93.52	443	83.11
Revalued amounts	17	8.10	23	10.70	3	2.78	43	8.07
LCM	9	4.29	34	15.81	4	3.70	47	8.82
Total	210	39.40	215	40.34	111	20.26	533	100.00

$\chi^2 = 29.93$, p-value $= 0.0000$, D.F $= 4$, I index $= 0.7763$, C indices: $C_w = 69.56$, $C_b = 70.95$, $C_o = 70.45$.

	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel B: Treatment of Gains/Losses on Disposal of Long-Term								
In the current income	146	96.05	95	97.94	41	100.0	282	97.24
Taken to reserves	6	3.95	2	2.06	0	0.00	8	2.76
Total	152	52.41	97	33.45	41	14.14	290	100.0

$\chi^2 = 2.14$, p-value $= 0.3431$, D.F $= 2$, I index $= 0.9699$, C indices: $C_w = 93.71$, $C_b = 95.23$, $C_o = 94.62$.

	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel C: Measurement of Current Investment in India, Pakistan and Bangladesh								
LCM on individual basis	79	94.05	35	64.81	37	94.87	151	85.31
LCM on portfolio basis	5	5.95	19	35.19	2	5.13	26	14.69
Total	84	47.46	54	30.51	39	22.03	177	100.00

$\chi^2 = 26.06$, $p = 0.0000$, D.F $= 2$, I index $= 0.7612$, C indices: $C_w = 79.95$, $C_b = 71.85$, $C_o = 74.79$.

	India	%	Pakistan	%	Bangladesh	%	Total	%
Panel D: Treatment of Gains/Losses on Disposal of Current Investment								
In the current income	53	96.36	37	100.0	14	100.0	104	98.11
Taken to reserves	2	3.64	0	0.00	0	0.00	2	1.89
Total	55	51.89	37	34.91	14	13.21	106	100.0

$\chi^2 = 1.89$, p-value $= 0.3886$, D.F $= 2$, I index $= 0.9816$, C indices: $C_w = 95.27$, $C_b = 96.93$, $C_o = 96.26$.

Three specific methods are analysed to measure the degree of harmonization in valuing long-term investments: the cost method, the revalued amounts method and the lower of cost or market method. Panel A of Table 7 demonstrates that the vast majority of the companies (83.11 per cent) used the cost method. In contrast, 43 companies report long-term investment under revalued amounts and 47 companies exercised the lower of cost or market value rule. The χ^2 value of 29.93 shown in Table 7 is statistically significant at the 1per cent level, signifying that the accounting methods used to value long-term investments by the three South Asian companies are significantly different. The I index of 0.776 indicates, however, that there is a tendency of convergence towards use of the cost method of accounting for long-term investment. The value of I index also suggests that a comparatively high degree of harmonization exists among the countries. Although the harmony level is quite high in respect of accounting for long-term investment, the extent of harmonization would be higher if the companies in Pakistan did not use revalued amounts (10.70 per cent) or the lower of cost or market (15.81 per cent) method.

Disposal of Long-Term Investments

IAS 25 requires that gains or losses on sale of investments should be recognized as income. If a realized gain relates to an amount previously recognized in the revaluation surplus, that amount should be transferred to retained earnings or recognized in income in the current period (Coopers & Lybrand, 1996). AS 13 also has a similar requirement to that of IAS 25 regarding disposal of long-term investments, namely that gains or losses on investments should be charged to the profit and loss account.

Two specific methods are chosen to measure the extent of harmonization in the treatment of gains or losses on disposal of investment, firstly, gains or losses are recognized in the current income and second, the gains or losses recognized are taken to reserves. Panel B in Table 7 shows that 97.24 per cent of the companies in the sample recognize disposal of long-term investments in income immediately, while 2.76 per cent company transfer gains or losses on disposal to owner's equity. It is also evident from the table that 276 companies (48.76 per cent) appear not to disclose information on the disposal of long-term investments. The χ^2 value of 2.14 is insignificant at the 0.05 level that signifies that there are no significant differences in the treatment of disposal of long-term investments in South Asian countries. The

calculated I index 0.9699 indicates a high degree harmony in the treatment of gain or losses on disposal of long-term investments.

Measurement of Current Investments

IASB requires that current investments should be carried at their market value or the lower of cost or market value. In regard to lower of cost or market value, the carrying value should be determined on either an aggregate portfolio basis or an individual investment basis. For gains or losses related to current investments previously carried on a portfolio basis and valued at the lower of cost or market value, the gain or loss on sale should be stated at cost (Coopers & Lybrand, 1996). Consistent with IAS 25, the Indian accounting standard, AS 13 paragraph 31 prescribes that current investments should be carried in the financial statements at the lower of cost and fair value.

Two methods for the measurement of short-term investments are analysed to examine the extent of harmonization among the South Asian countries. These include lower of cost or market value on an individual basis and lower of cost or market value on a portfolio basis. Panel C in Table 7 demonstrates the results for the measurement of current investment in India, Pakistan and Bangladesh. The results suggest that the carrying amount of current investment is mostly (85.31 per cent) stated at lower of cost or market value on an individual basis. The results also reveal that a large number of companies (389 companies or 68.73 per cent of the total sample) appear not to disclose current investments. This may be due to the companies not having current investments during the financial year 1997–1998, or that they are reluctant to disclose this information in the annual reports. The χ^2 value of 26.06 indicates that significant differences exist among current investment valuation methods used by the surveyed companies from India, Pakistan and Bangladesh. The computed I index 0.761 also signifies that a moderate level of harmony exists in the measurement of current investments in South Asian countries.

Treatment of Gains and Disposal of Current Investment

Panel D in Table 7 outlines that only 106 companies disclose accounting treatment for gains or losses on disposal of current investments. Gains or losses are transferred to the current income by the majority of the companies in India, Pakistan and Bangladesh. The χ^2 value of 1.89 is insignificant at the

0.05 level, which indicates that there is no significant difference in the treatment of gains and losses on disposal of current investment by the selected companies in India, Pakistan and Bangladesh. The computed *I* index (0.982) indicates that the degree of harmony for current investments is relatively higher than other investment-related measurements used by the sample companies. The comparability indices are also supportive of the *I* index result.

SUMMARY AND CONCLUSIONS

The purpose of this study is to examine accounting and reporting practices in three South Asian countries, namely India, Pakistan and Bangladesh, with reference to the harmonization of 18 measurement practices drawn from seven IAS. Prior studies have mostly focused on the EU and ASEAN countries, with either nil or very little research on this important topic within South Asia. Data used in this study were collected from 566 non-financial listed companies' annual reports for the year 1997–1998 comprising 219 companies from India, 228 companies from Pakistan and 118 companies from Bangladesh. The study used established statistical tools to measure the extent of harmonization, namely Van der Tas's (1988) *I* index and Archer et al.'s (1995) *C* index. The *I* index values are compared with Archer et al.'s (1995) comparability indices to examine the differences in the two indices used for measuring the harmony level across countries. The study also used χ^2 statistics to examine whether significant differences exist in the measurement of accounting practices across countries.

The results show that, across various measurement practices, different levels of accounting harmonization exist in these countries. With regard to measurement practices in South Asia, in general, a moderately high level of harmonization is observed. This is likely due to a similar micro-user oriented emphasis and the extensive use of IAS for national financial reporting purposes. The *I* index scores derived from the measurement practices examined in this paper strongly indicate, however, that measurement practices are not harmonized in several areas of IAS. This is surprising to some extent, and particularly in view of the efforts that have been made by the IASB to enhance the comparability of financial reporting practices around the world. A summary of the *I* index values, comparability indices and χ^2 statistics with associated significance levels is given in Table 8. The summary figures in Table 8 shows that the values of the *I* index ranges from 0.320 for depreciation of property, plant and equipment to 0.982 for the treatment of gains

Table 8. Summary of *I*-Index and *C*-Indices Values.

Measurement Practices		*I*-Index		*C*-Indices			χ^2
		Value	%	C_w	C_b	C_o	
1	Inventory valuation	0.4295	42.95	42.12	41.90	43.05	27.05**
2	Inventory costing method	0.4317	43.17	53.60	13.11	45.04	142.54**
3	Depreciation methods	0.3198	31.98	46.60	31.70	37.10	185.75**
4	Valuation bases for PPE	0.7267	72.67	68.19	68.20	68.20	7.79*
5	Gains or losses on disposal of PPE	0.9654	96.54	94.87	95.17	95.06	2.30
6	Leases	0.6313	63.13	59.37	57.44	58.22	17.96*
7	Determination of cost of PRB	0.7015	70.15	65.92	65.03	65.37	9.92*
8	Recognition of past service cost/ experience adjustments of PRB	0.8677	86.77	80.99	82.59	81.99	1.71
9	Methods of foreign currency translation of assets and liabilities	0.9434	94.34	93.63	93.31	93.44	0.86
10	Methods of foreign currency translation of revenue and expenses	0.9319	93.19	89.90	90.44	90.23	2.94
11	Treatment of translation differences	0.9319	93.19	90.76	91.04	90.93	0.12
12	Business combination	0.9108	91.08	83.17	86.07	84.89	1.23
13	Treatment of goodwill	0.9806	98.06	95.16	95.63	96.00	1.85
14	Amortization of goodwill	0.3318	33.18	26.77	26.67	26.72	11.29*
15	Valuation of long-term investments	0.7763	77.63	69.56	70.95	70.45	29.93**
16	Disposal of long-term investments	0.9699	96.99	93.71	95.23	94.62	2.14
17	Measurement of current investments	0.7612	76.12	79.95	71.85	74.79	26.06**
18	Treatment of gains or losses on disposal of current investments	0.9816	98.16	95.71	96.93	96.26	1.89
Overall average I index scores		0.7552	75.52				

*Significant at 0.05 level.
**Significant at 0.01 level. PPE = property, plant and equipment; PRB = pension and retirement benefits.

or losses on disposal of current investment. This suggests that measurement of depreciation of property, plant and equipment is the least harmonized of all the IAS, while measurement for the treatment of gains or losses on disposal of current investment has the highest level of harmonization for the financial year 1997–1998. This also indicates that there are substantial differences between the levels of harmonization achieved on the different IAS-related measurement topics covered in this study.

The results show that a relatively higher degree of harmonization exists in the practice of accounting treatment of gains or losses on disposal of property, plant and equipment, recognition of past service costs/experience adjustment of pension and retirement benefits , method of foreign currency

translation of assets and liabilities, method of foreign currency translation of revenue and expenses, treatment of translation differences, business combination, treatment of goodwill, disposal of long-term investments and treatment of gains or losses on disposal of current investments. One possible reason that may be put forward for these higher levels of harmonization is that the IASB prescribes only a small number of alternatives for the above treatments.

It is evident from Table 8 that moderate levels of harmonization exist in the accounting treatment of valuation bases for PPE, accounting for leases, determination of the cost of PRB, valuation of long-term investments and measurement of current investments. However, a lower level of harmonization is found in the treatment of inventory valuation, inventory costing methods, depreciation methods and amortization of goodwill. The χ^2 statistics of these nine measurements are statistically significant, suggesting the existence of significant differences in accounting measurement treatments across the countries.

With the particular exception of inventory valuation practices, prior harmonization studies, such as Diga (1996) and Emenyonu and Adhikari (1998), have identified lower levels of harmonization to be associated with similar measurement practices and related IAS to those identified above. This may be due to the fact that IAS relating to these accounting practices (e.g. inventory, depreciation and amortization of goodwill) provide multiple measurement alternatives, as opposed to more stringent requirements for other standards, which increases the available flexibility in accounting policy choices and is likely to result in less-harmonized and diverse measurement practice outcomes. As such, the low levels of harmonization identified above primarily result from companies selecting different benchmark treatments and not non-compliance with IAS directives, although instances of the use of measurement practices conflicting with IAS are also reported. Nevertheless, the significant differences in accounting practices owning to either of these reasons are likely to hamper comparisons of corporate performance across the different countries and possibly between regional subsidiary and parent companies also.

Making compliance with IAS mandatory for companies through Acts of Parliament (such as the requirement in the Companies Ordinance, 1984 in Pakistan) or Stock Exchange Listing Requirements (such as the SEC requirement for listed companies in Bangladesh) also does not appear to be the solution to enhancing harmonization in accounting practices. Even ensuring compliance is questionable, as the results in this study show evidence of non-compliance with various IAS by Pakistan companies, even though

full compliance with IAS has been legislatively mandated in Pakistan. Thus, the lack of harmonization of measurement practices across the countries presents additional work for the SAFA and the regional accounting bodies, before thoughts of international harmonization can be entertained.

NOTES

1. Other SAARC countries include Sri Lanka, Nepal, Bhutan and Maldives. These countries were not included in the analysis because they have a less developed accounting profession and undeveloped economic and financial market structures.

2. As such, the results of this paper may potentially be used as a starting benchmark against which the results of future, or longitudinal, harmonization studies of South Asia can be compared. For discussion purposes in this paper, harmonization results are interpreted as follows: high – if the index is 80 per cent or above; moderate – if the index lies between 60 and 79 per cent; and low – if the index value is less than 60 per cent.

3. Paksearch is a commercial database company that provides scanned images of the annual reports of all listed companies in Pakistan, along with other economic data, on its web page, which is accessed through subscription. The web address is http://www.Paksearch.com. For India and Bangladesh, actual annual reports were purchased.

ACKNOWLEDGEMENTS

REFERENCES

ADB. (2001). *Financial management and governance issues in Pakistan*. Manila: ADB.

Ahmed, K., & Zafarullah, H. M. (2000). A comparative study of accounting education and certification in South Asia. *Research in Accounting in Emerging Economies*, *4*, 73–95.

Aisbitt, S. (2001). Measurement of harmony of financial reporting within and between countries: The case of the Nordic countries. *The European Accounting Review*, *10*(1), 51–71.

Archer, S., Delvaille, P., & McLeay, S. (1995). The measurement of harmonization and the comparability of financial statement items: Within-country and between-country effects. *Accounting and Business Research*, *25*(98), 67–80.

Archer, S., & McLeay, S. (1995). *On measuring the harmonization of accounting practices*. Paper presented at workshop on international accounting, Geneva.

Canibano, L., & Mora, A. (1999). *The measurement of accounting harmonization: An empirical evidence of material harmonization vs formal harmonization*. 22nd Annual congress of the European Accounting Association, Bordeaux, France, May.

Choi, F. D. S., & Bavishi, V. B. (1982). Diversity in multinational accounting. *Financial Executive*, August, pp. 45–49.

Chong, W. L., Tower, G., & Taplin, R. (1999). *Determinants and harmonization of Asia-Pacific manufacturing companies' measurement practices*. 11th Asia-Pacific conference on International Accounting Issues. Melbourne, Australia, November 21–24.

Coopers and Lybrand. (1996). *Understanding IAS analysis and interpretation*. London: Coopers and Lybrand.

Diga, J. G. (1996). *The feasibility and desirability of pursuing accounting harmonization in five ASEAN countries: A study of corporate financial reporting in Indonesia, Malaysia, the Philippines, Singapore and Thailand*. Unpublished doctoral dissertation. The Australian National University.

Emenyonu, E. N., & Adhikari, A. (1998). Measuring the degree of international harmony in selected accounting measurement practices. *Australian Accounting Review*, *8*(2), 25–33.

Emenyonu, E. N., & Gray, S. J. (1992). EC accounting harmonization: An empirical study of measurement practices in France, Germany and the UK. *Accounting and Business Research*, *23*(89), 49–58.

Emenyonu, E. N., & Gray, S. J. (1996). International accounting harmonization and the major developed stock market countries: An empirical study. *International Journal of Accounting*, *31*(3), 269–279.

Epstein, B. J., & Mirza, A. A. (1997). *Interpretation and application of International Accounting Standards*. New York: Wiley.

Evans, T. G., & Taylor, M. E. (1982). Bottom-line compliance with the IASC: A comparative analysis. *International Journal of Accounting Education and Research*, *18*(1), 115–128.

Herrmann, D., & Thomas, W. (1995). Harmonization of accounting measurement practices in the European community. *Accounting and Business Research*, *25*(100), 253–265.

IAS Plus. (2001a). *Country ppdates: India*. http://www.iasplus.com/country/india.htm.

IAS Plus. (2001b). *Country updates: Pakistan*. http://www.iasplus.com/country/pakistan.htm.

International Accounting Standards Committee (IASC). (1997). *IAS insight*. http://www.iasc.org.uk.

International Finance Corporation (IFC). (2000). *Emerging Stock market fact book*. Washington, DC: IMF.

Ma, R., Lambert, C., & Hopkins, R. (1997). International harmonization and the Pacific Asia region. In: R. Ma (Ed.), *Financial reporting in the Pacific Asian region*. London: World Scientific Publishing Co. Pte. Ltd..

McKinnon, S. M., & Janell, P. (1984). The International Accounting Standards Committee: A performance evaluation. *International Journal of Accounting Education and Research*, *19*(2), 19–33.

Morris, R. D., & Parker, R. H. (1998). International harmony measures of accounting policy: Comparative statistical properties. *Accounting and Business Research*, *29*(1), 73–86.

Nair, R. D., & Frank, W. G. (1981). The harmonization of International Accounting Standards 1973–1979. *International Journal of Accounting*, *17*(1), 61–77.

Narayanswamy, R. (1997). Indian accounting aims for the world. *Accountancy*, *120*(1247), 60–63.

Parker, R. H., & Morris, R. D. (2001). The influence of U.S. GAAP on the harmony of accounting measurement policies of large companies in the UK and Australia. *Abacus*, *37*(3), 297–328.

Peill, E. (2000). *An empirical analysis of accounting measurement practice harmonization across industries in the European Union.* Annual conference of the British Accounting Association, University of Exeter, April 11–13.

Purvis, S. E. C., Gernon, H., & Diamond, M. A. (1991). The IASC and its comparability project: Prerequisites for success. *Accounting Horizons*, *5*(June), 25–44.

Radebaugh, L. H., & Gray, S. J. (1993). *International accounting and multinational enterprises.* New York: Wiley.

Saeed, K. A. (1997). *SAFA constitution.* New Delhi: SAFA.

Saudagaran, S. M. (2001). International accounting: A user perspective. South-Western College Publishing.

South Asian Federation of Accountants (SAFA). (1999). *SAFA news and views*. SAFA Bulletin.

Street, D. L., Gray, S. J., & Bryant, S. M. (1999). Acceptance and observance of International Accounting Standards: An empirical study of companies claiming to comply with IASs. *The International Journal of Accounting*, *34*(1), 11–48.

Talwatte, A. D. B. (1998). *Standardisation of accounting and auditing standards in SAARC countries.* 13th SAFA conference on accounting profession's response to the challenge of the new millennium, ICAB and ICMAB. 22–23 August, Dhaka.

Tarca, A. (1997). International harmonization and Australian accounting standards: Should we abandon AASBs for IASs? Unpublished thesis, University of Western Australia.

The Institute of Chartered Accountants of Bangladesh (ICAB). (1995). *International Accounting Standards.* Dhaka: ICAB.

Van der Tas, L. G. (1988). Measuring harmonization of financial reporting practice. *Accounting and Business Research*, *18*(70), 157–169.

Van Der Tas, L. G. (1992). Measuring international harmonization and standardization: A comment. *Abacus*, *28*(2), 211–215.

THE ROLE OF EARNINGS AND BOOK VALUES IN PRICING STOCKS: EVIDENCE FROM TURKEY

Asokan Anandarajan, Iftekhar Hasan, Ihsan Isik and Cornelia McCarthy

ABSTRACT

In this study, we examine factors associated with equity valuation in a newly emerging market, Turkey. In the United States and other developed countries, research indicates that both earnings and book value are important predictors of equity valuation. In Turkey, earnings appears to have information content but earnings, by itself, appears to be declining in importance over time. Book value adjusted for inflation has a stronger association with equity values. In the inflationary and risky environment of Turkey, where future value of earnings is quite uncertain, investors may be paying less attention to earnings and more attention to book values. With respect to the role of book value there are competing explanations. While some researchers conclude that it is only important because it is a control for scale differences, (Barth & Kallapur 1996) others conclude that it is relevant as a proxy for normal earnings (Ohlson, 1995). Still others conclude that it is only relevant in the valuation of loss making and generally unsuccessful firms (Berger, Ofek & Swary 1996; Burgstahler &

Dichev, 1997). The additional contribution of this study is to show that book value is also important as a value proxy for firms operating in environments where there is rampant inflation. Our study also indicates that, overall, earnings and inflation-adjusted book values combined virtually explain almost 75% of the variation in equity prices in Turkey.

INTRODUCTION

In the developed world, empirical research finds that earnings and book value can be used to predict firm value. In particular, researchers have examined the association between earnings, book value, and a combination of both with stock prices and have found it to be significant (Ball & Brown, 1968; Ball, 1972; Kaplan & Roll, 1972; Collins & Kothari, 1989; Burgstahler & Dichev, 1997). In a landmark paper, Ohlson (1995) modeled this association and provided a widely used framework for empirical exploration. Burgstahler and Dichev (1997) [henceforth, BD, (1997)], an important study in this area, suggested that equity value is an option style combination of recursion value (capitalized expected earnings when the firm recursively applies its current business technology to its resources) and adaptation value (the value of the firm's resources adapted to alternative use). They used current earnings as a proxy for recursion value and book value of equity as a proxy for adaptation value. While earnings provide a measure of how the firm's resources are currently used, book value provides a measure of the value of the firm's resources independent of how the resources are currently used. In particular, they note that when the ratio of earnings/book value is high, earnings is the more important determinant of equity value. This is because under such a scenario the firm is likely to continue in its current approach to using resources. When earnings/book value is low, book value becomes the more important determinant of equity value. Under this alternative scenario the firm is more likely to exercise the option to adapt its resources to a superior alternative use.

In this study, we examine the association between earnings and book value with equity prices in the Turkish stock market. Analysis of the Turkish market presents the potential for obtaining insights into stock valuation in a developing (emerging) market. While an argument could be made that certain factors, such as inflation and political and economic consequences of joining the European Union (EU), make the Turkish market unique we note that the Turkish market is still very reflective of developing markets in general. Beim and Calomiris (2001) classify Turkey as an emerging market

because of its low per capita income, chronic inflation, thin and immature capital markets, and concentrated financial and industrial sectors; criteria that they use to characterize emerging markets in general.

Although the Istanbul Stock Exchange (ISE), established in 1986, is considered as one of the fastest growing emerging markets, it is still small relative to the stock markets in developed countries. As Zychowicz, Binbasioglu, and Kazancioglu (1995) note, potential volatility and inefficiency also characterize the Turkish market in which the buying and selling activity of a few large investors can significantly influence stock prices. Turkey is now in a state of transformation and is on the path to becoming a fully fledged member of the EU. Hence, it is interesting to examine if the relationships between earnings, book value and equity values that exist in the larger and presumably more efficient markets will hold in a developing stock market that aspires to join its more developed counterparts. The objective of this study is to examine the association of recursion value (earnings) and adaptation value (book value of equity) with share prices in an emerging stock market. Our results show that when the sample is partitioned based on "success" earnings is significantly associated with equity value for successful and middle-of-the-road firms; inflation adjusted book value is significantly associated with equity value for unsuccessful firms. This may indicate that the "adaptation value" component of a firm's equity value is relatively more important than the "recursion value" component for unsuccessful firms whereas the opposite is true for successful firms. Moreover, we find that in a risky business environment the recursion value generally outweighs the adaptation value in determining the market capitalization of a firm.

This study will try to underline the potential factors causing the variation of stock prices in different settings. It is, therefore, imperative to understand the institutional and economic factors behind such differences.

INSTITUTIONAL AND ECONOMIC CHARACTERISTICS OF TURKEY

In this section, we summarize the history of the Turkish stock market (refer to the appendix for a more detailed discussion of events). In the period after World War I, Turkish government policy was characterized by an orchestrated economic development strategy popularly referred to as Etatism. This strategy followed a similar pattern adopted in a number of developing countries (Okyar, 1965). This "planned development" period was primarily characterized by the introduction of incentive schemes to foster private

enterprise. The private sector flourished with the aid of extensive government protection (e.g., entry barriers and high tariffs for foreign products) and incentive schemes (e.g., subsidized lending and tax exemptions among others). Barth and Hemphill (2000) note that due to such incentive schemes the private sector contributed a little more than half of the value added in manufacturing. Within this closed economic and financial environment, a number of giant industrial holdings emerged. These holdings tended to be predominantly family owned and had close political and financial ties. Owing to entry barriers, scarce internal capital, lack of developed capital markets and open collusion, these groups have continued to dominate in their respective sectors. The two supposedly rival groups, Koc Holding and Sabanci Holding, are said to have an ''understanding and respect'' not to intervene in each other's markets for several decades, which, in reality, could be considered to be an open collusion.

In January 1980, the Turkish government initiated an economic stability program called ''National New Economic Policy'' with the principal goal of integration into the world economy through the establishment of a free market. Under this policy unified accounting principles and a standard reporting system were adopted and firms began to be audited by independent external auditors in accordance with internationally accepted principles of accounting. Isik and Hassan (2002) note that Turkey's determination to be a permanent member of the EU motivated its authorities to ensure that their regulations were in harmony with those of the Union. As a reflection of financial market development policies, the ISE was re-established in 1986 to provide liquidity in the financial system. The ISE is supervised by the Capital Market Board (the regulatory and supervisory authority for the Turkish capital markets), which ensures the proper operation of both the ISE and its members and protects the interests of both the public and the investing community.

There are four sub-markets in the ISE. The ''National Market'' is the largest market, which includes all companies that fulfilled the listing requirements pre-determined by the ISE. The ''Regional Markets'' consist of companies de-listed temporarily or permanently from the ISE's National Market as well as companies that fail to fulfill the listing requirements and lack the necessary qualifications for trading on the ISE's National Market. The ''New Companies Market'' was formed in order to enable young companies with growth potential to offer their stocks to the public via the ISE, which enables trading of such stocks in an organized market. The ''Watch List Companies Market'' consists of the companies under special surveillance and investigation due to extraordinary situations with respect to

stock transactions and/or companies traded on the ISE; disclosure of in-complete, inconsistent and/or untimely information to the public; failure to comply with the existing rules and regulations as well as other situations leading to de-listing of stocks and/or dismissal from the related market temporarily or permanently in order to protect investors' rights and public interest.

The ISE has grown substantially since its inception both in terms of the number of companies listed and total market valuation (please refer Table 1 for details). The number of companies listed in the exchange increased from 350 in 1986 to 1,284 in 1993, but later declined to 262 in 2002. Total market capitalization increased significantly from $938 million in 1986 to approximately $34 billion in 2002. Both the price-earning multiple and dividend yield indicate a decreasing trend for the ISE firms over time, with considerable variation between periods.

Table 1. Number of Listed Firms and Market Valuation in Istanbul Stock Exchange – 1986–2002.

Year	No. of Firms		Total Market	National Market	Regional Market	New Companies Market	Watch List Companies Market	PE Ratios	Div. Yield
1986	350	31	938	938					9.15%
1987	414	51	3,125	3,125					2.82%
1988	556	66	1,128	1,128					10.48%
1989	730	79	6,756	6,756					3.44%
1990	916	88	18,737	18,737					2.62%
1991	1092	95	15,564	15,564					3.95%
1992	1238	107	9,922	9,922					6.43%
1993	1284	124	37,824	37,824				14.86	1.65%
1994	1204	116	21,785	21,785				10.97	2.78%
1995	922	142	20,782	20,565	217			5.48	3.56%
1996	788	165	30,797	30,329	377	61	30	7.71	2.87%
1997	743	186	61,879	61,348	410	73	48	13.28	1.56%
1998	686	340	33,975	33,473	470	9	24	6.36	
1999	319	273	114,271	112,276	1,140	16	839	24.95	
2000	287	239	69,507	68,635	344		529	14.05	
2001	278	208	47,689	47,189	224		276	411.64	
2002	262	219	34,402	33,773	312		317	23.78	

Note: P/E ratio is price-earning ratio denominated in US dollars.
Dividend yield is average annual dividend payment divided by average closing price for the firms traded in the National Market segment of the ISE.
Source: The Istanbul Stock Exchange (ISE), Istanbul, Turkey.

In addition to the ISE, the Interbank Money Market (IMM) for Turkish Lira was founded in March 1986. Subsequently, Open Market Operations were started in 1987 and Foreign Exchange and Foreign Banknote Markets were formed in 1989. The Gold Exchange opened its doors in Istanbul in 1995 taking the place of the Central Bank's Gold Market. In 1989, non-residents were allowed to make purchases on the ISE and Turkish residents were allowed to purchase foreign securities. Despite all these positive changes, financial markets are still incomplete and dominated by banks. Currently, traditional bank loans are still the prevailing source of funds for private firms to finance their short-term working capital needs and long-term projects (Isik & Hassan, 2003).

Money and capital markets in Turkey remain relatively thin and under-developed compared to those in Western Europe and North America (Zychowicz et al., 1995; Kiymaz, 2000; Isik & Hassan, 2002). Evidence of this is shown in Table 2. As an illustration, the market value of Turkey in 2002 was $6.1 billion compared to $1,288 billion for the United States.

The underdevelopment of capital markets in Turkey can be attributed to a variety of factors:

a. The government provides protection from foreign competition.
b. Firms are mostly family owned and relatively small and family controlled firms have no incentives to issue equity to raise capital especially if they own a bank.
c. Bank loans are relatively cheap given the high rate of inflation in the country.

The shares of relatively few firms are traded on the stock exchange and the ownership of stock investment is not as widespread in Turkey as it is in more developed markets. The market is very susceptible to external and internal shocks as reflected by the fact that Turkish shares lost more than 50% of their value during the Russian crisis in 1998. Investor confidence is low due to lack of effective regulations and inefficiencies in their imple-mentations (Zychowicz et al., 1995; Tracy & Schneider, 2001). In essence, there are two reasons for the apparent low participation in equity invest-ment in Turkey:

a. More secure alternative financial investments have performed better in Turkey's high inflation environment. Government debt instruments have been the most lucrative assets in Turkey in recent years.[1]
b. The financial and industrial sectors in Turkey are intertwined. Unlike the U.S. and Europe, most Turkish firms (regardless of size) are family

Table 2. Representative Output Statistics for Individual Stock Exchanges – 1997–2002.

Country	Value of Trading Transactions (US dollar; mil)	Market Value (US dollar; mil)	Number of Listed Companies
Australia	156,271	295,411	1,219
Belgium	34,055	138,938	265
Brazil	191,505	255,478	537
Canada	356,820	996,944	3,406
Denmark	46,886	93,766	249
Finland	36,428	73,322	126
France	415,818	676,311	924
Germany	1,072,935	825,233	2,696
Greece	21,248	33,784	210
Hong Kong	453,900	413,323	658
Hungary	7,039	14,700	49
Indonesia	41,378	29,050	281
Ireland	17,470	49,371	102
Japan	3,122,382	2,160,585	3,140
Luxembourg	1,052	33,892	284
Malaysia	164,482	93,182	703
Netherlands	281,248	468,897	348
New Zealand	9,720	29,889	190
Norway	48,176	66,503	217
Philippine	19,890	31,212	221
Poland	7,981	12,135	143
Spain	139,229	290,383	388
Sweden	176,356	264,711	261
Taiwan	1,254,543	296,808	404
Thailand	25,259	22,792	431
Turkey	59,584	61,095	259
United Kingdom	1,925,809	1,996,225	2,513
USA	1,060,0839	12,884,500	9,091

owned. Large firms prefer traditional bank loans to equity issue as the source of funds because most of the private banks are in one way or another affiliated with these firms under the umbrella of a holding company structure (Isik & Hassan, 2002).

Finally, the point has to be made that pricing of securities in Turkey may not be as efficient relative to more developed markets. Pi and Timme (1993) note that institutional investors (e.g., insurance companies, pension funds, mutual funds, investment companies) in the more developed countries, such

as the U.S., contribute to more efficient pricing of securities due to their accumulated knowledge, experience and more sophisticated investment analyses. Turkish investors, on the other hand, are characterized by a general lack of strong information processing and decision-making systems and techniques. In summary, due to the presence of a relatively greater fluctuating economic environment, high inflation and a less sophisticated and more complicated investor body the asset valuation process and factors used to appraise assets may be different in the Turkish market relative to a more advanced market. Furthermore, because the Turkish market is relatively thin compared to markets in the developed world, one could also expect that share prices in Turkey are more susceptible to external and internal events and thus riskier. These differences in the economic environments could create variations across markets in stock valuation and the emphasis given to different components of valuation, such as earnings and book values.

ACCOUNTING TREATMENT IN TURKEY

There are three significant differences between Turkey and the United States. First, Turkish standards allow assets up to 150 million Turkish Lira (TL) to be directly written off as an expense. In the U.S., decisions to write off are governed by the materiality concept of Generally Accepted Accounting Principles (GAAP). Assets that are "material" must be capitalized and shown as an asset. Second, companies in Turkey can also determine the depreciation rate for fixed assets, excluding buildings, provided that such rates do not exceed 20% on a straight-line basis.[2] Third and most important, Turkish firms are allowed to revalue the cost of depreciable fixed assets and the related accumulated depreciation by adjusting (dividing) these values by the rate that is announced each year by the Ministry of Finance.[3] A revaluation fund is created for the purpose of ensuring a proper evaluation of fixed assets that have been adversely affected by inflation.[4] In the United States, such forms of revaluation for the purpose of valuation for financial reporting are not permissible (and likely not important with the relatively low inflation).

In summary, the main difference between accounting treatments in Turkey and the U.S. relate to valuation. As a result of the revaluation process, the value of fixed assets and accumulated depreciation are increased commensurate with the rate of revaluation (Activefinans Magazine, 2001). At the end of this process, the net revaluation increase of fixed assets is

recorded under the shareholders' equity section of the balance sheet as the revaluation fund.[5]

LITERATURE REVIEW

In this section we initially discuss studies that examine the association of earnings and book values with equity values. We then focus on studies that have examined data from the Turkish stock market. As evidenced in the latter stream of research, this study is the first to examine the relationship of earnings and book values and stock prices in the Turkish environment.

Studies Examining Association of Earnings and Book Values with Equity Values

In general, much of the research in the last 30 years focused on examining the association between certain variables and equity values. Ball and Brown (1968), in a seminal study, found a positive and statistically significant association between earnings and equity value. Beaver, Clark, and Wright (1979) found similar results and corroborated the initial findings of Ball and Brown (1968). Subsequent studies (Barth, Beaver, & Landsman, 1992; Collins & Kothari, 1989) again found similar results. Lipe (1990) found that the relationship between earnings and equity value varies with the persistence of earnings. Other studies refined the earlier studies by decomposing earnings into components and then empirically testing the association between these components and equity values (Lipe, 1986; Wilson, 1986).

A number of studies focus on the balance sheet measures of assets and liabilities. These studies find a statistically significant association between book values and equity values of the firm (Penman, 1992; Barth & Kallapur, 1996; Ohlson, 1995; Berger, Ofek, & Swary, 1996; BD, 1997). These studies use the book values of the firm's assets and liabilities impounding the assumption that measures of assets and liabilities reflect the expected results of future activities. However, the studies arrive at different conclusions regarding the importance of book value. Barth and Kallapur (1996) state that book value is important only because it acts as a control for scale differences. Penman (1992) and Ohlson (1995) conclude that book value is important because it also acts as a proxy for earnings. Still, others offer a competing explanation. Berger et al. (1996) and BD (1997) conclude that book value has relatively more significant association with stock prices when

a firm is unsuccessful and making losses. They argue that this is because book value acts as a proxy for the ''abandonment option.''

Some studies examine the relationship between a combination of earnings and book values and equity values. Bernard (1995) empirically tested several valuation models. He found that book value per share explained 55% of the cross sectional variability in price per share; that book value and the rank of return on equity explained 64% of the variation in equity price; and that estimated earnings and book values explained 68% of the variation in equity prices. Ohlson (1995) rather than focus on earnings alone, theoretically modeled the role of earnings, book value and dividends in the valuation of a firm's equity. He modeled the value of a firm as a linear additive function of both earnings and book value. He concluded that, while current dividends are more important than future earnings in predictive ability, current earnings might have a stronger association with equity values. Ohlson (1995) laid the theoretical framework for further empirical explorations.

BD (1997), in a further refinement of Ohlson (1995), showed that earnings and book values are positively and significantly associated with equity values. However, they found that the relation was non-linear (i.e., moderated by factors such as success of a firm) and not additive as suggested by Ohlson (1995). Specifically, they developed two propositions for the relationship of recursion (proxied by earnings) and adaptation value (proxied by book value of equity) components with market value:

1. Market value is an increasing, convex function of expected earnings, for a given adaptation value.
2. Market value is an increasing, convex function of adaptation value, for given expected earnings.

As mentioned above, BD (1997) found that the extent of association of equity values with earnings and book value was dependent on the level of success of the firm. When the firm is ''successful'' earnings is the more important determinant of equity value and when the firm is less successful book value is the more important determinant of equity value. This finding is further corroborated by Collins, Pincus, and Xie (1999). Specifically, Collins et al. (1999) concluded that book value is an important determinant of stock prices especially for firms making losses. For firms that have a high probability of liquidating due to their financial losses, book value acts as a proxy for what they referred to as the ''abandonment option.'' Our study adds to the literature by concluding that book value is also important for firms operating in high inflation environments.

Studies Examining Turkish Stock Market Data

There are only a limited number of studies in accounting and finance journals using Turkish stock market data. One group of studies investigates the behavior of Turkish stock prices. Yuce (1994), for example, examined the main characteristics of Turkish stock prices in her dissertation and reported that, similar to their U.S. and European counterparts, returns of Turkish stocks were negatively skewed, highly leptokurtic and non-normal. Zychowicz et al. (1995) explored the behavior of Turkish stock prices in the ISE covering the period 1988–1992. They examined whether stocks in the Turkish stock market conformed to the weak form of market efficiency, which maintains that all past information is reflected in the stock price and investors cannot earn excess returns based on historical information. Zychowicz et al. (1995) examined both daily and seasonal patterns in the ISE returns. They found that daily and weekly returns diverge from the random walk. The behavior of monthly returns was found to be inconsistent with the random walk hypothesis, which implies market inefficiency in pricing securities. These findings are consistent with the previous empirical studies on emerging stock markets. Kiymaz (2000) studied the initial and after-market returns for the Turkish IPOs to provide an emerging market case of international evidence. He found that newly issued shares are underpriced by about 14% overall and more specifically, 12% for industrials, 15% for financials and 19% for others; this is consistent with the findings of other international studies on IPOs.

In summary, there is a paucity of research in the international arena using Turkish data. The published research that is available has focused on the behavior of Turkish stocks. There is currently no research that examines the variables that drive equity values in the Turkish environment. Therefore, one of the main goals of this paper is to investigate whether the underlying economic behavior of equity valuation pertains in this new environment. The results of this research contribute to the current literature as they can potentially present evidence of different or similar economic behavior in the environments of developed and developing markets. Overall, we expect to find a higher association between book values and equity values in Turkey relative to the level found in the U.S. due to significantly different levels of inflation and significantly different perceptions of risk in the two countries. In the relatively inflation free environment of the U.S., assets and liabilities are not required to be adjusted for inflation. In that environment, market values may diverge significantly from book values causing book values to be less meaningful. Turkey is characterized by high inflation rates. As already

mentioned, reported asset values in Turkey have to be at inflation adjusted values rather than historical cost. Accordingly, all values are adjusted for inflation prior to incorporation in the balance sheet. In this environment, book values may not diverge significantly from market values. Thus, reported book values may have greater meaning to Turkish investors relative to American investors. Hence, it would be useful to examine how the roles of adaptive and recursive values in the Turkish market differ from their roles in the developed market.

METHODOLOGY

To investigate the value relevance of earnings and book value in Turkey, based on prior literature, we developed the following regression equations:

$$P_{it}/B_{it-1} = \alpha_0 + \beta_1\left(E_{it}/B_{it-1}\right) + \varepsilon_1 \tag{1}$$

$$P_{it}/B_{it-1} = \alpha_1 + \beta_2\left(B_{it}/B_{it-1}\right) + \varepsilon_2 \tag{2}$$

$$P_{it}/B_{it-1} = \alpha_2 + \beta_3\left(E_{it}/B_{it-1}\right) + \beta_4\left(B_{it}/B_{it-1}\right) + \varepsilon_3 \tag{3}$$

$$P_{it}/B_{it-1} = \alpha_3 + \beta_5 M + \beta_6 H + \beta_7\left(E_{it}/B_{it-1}\right) \\ + \beta_8 M\left(E_{it}/B_{it-1}\right)\beta_9 H\left(E_{it}/B_{it-1}\right) + \varepsilon_4 \tag{4}$$

$$P_{it}/E_{it} = \alpha_4 + \beta_{10} M + \beta_{11} H + \beta_{12}\left(B_{it-1}/E_{it}\right) \\ + \beta_{13} M\left(B_{it-1}/E_{it}\right)\beta_{14} H\left(B_{it-1}/E_{it}\right) + \varepsilon_5 \tag{5}$$

where P_{it} is price per share (market value) of equity for firm i at the end of period t; E_{it} the annual earnings per share for firm i in period t; B_{it} the book value per share for firm i at the end of period t; M a dummy variable (1 for firms with medium earnings to book value ratio in Eq. (4) and scaled book value in Eq. (5) firms; 0 otherwise); H a dummy variable (1 for firms with high earnings to book value ratio in Eq. (4) and scaled book value in Eq.(5); 0 otherwise); ε a normally distributed error term.

To be consistent with prior studies, we follow Bowen (1981), BD (1997) and Bao and Bao (1998) and normalize both the dependent and independent variables in Eqs. (1) through (3) by the beginning book value per share. Moreover, we prefer to use B_{it-1} as the measure of book value of equity (adaptation value) for firm i at period t, since by definition B_{it} contains E_{it} as a component. According to BD (1997), empirical tests using B_{it-1} will more

clearly separate the effects of earnings (E) and book value of equity (B).[6] The model in Eq. (1) allows us to test whether price is positively associated with earnings. The model represented by Eq. (2) allows us to test whether price is positively associated with book value. The model in Eq. (3) uses an additive form of earnings and book value based on Ohlson (1995), who postulated that firm value is a linear function of both earnings and book value. This equation is also specified in Amir (1996).

Eqs. (4) and (5) examine how the relationship of earnings and book value to price is moderated by the success level of firms. Dummy variables are included to represent successful (H), unsuccessful (L), and middle of the road firms (M). If the firm is "successful" and is likely to continue in operation, then earnings information will be significantly associated with valuation. However, if a firm is "unsuccessful" then it will attempt to find alternative uses for its resources to survive.[7] For these firms, book value rather than earnings will be a significant variable influencing valuation of stocks (equity). Similarly, for "middle of the road" firms, equity value will be significantly associated with both earnings and book values. Two cut off points are determined for each time period to ensure an equal number of observations in each group using the rankings according to E_{it}/B_{it-1} for Eq. (4) and B_{it-1}/E_{it} for Eq. (5).

We obtained the data used in this study from the data bank of ISE. Following Fama and French (1992), BD (1997) and Bao and Bao (1998), we excluded non-financial firms as well as firms with negative book value of stockholders' equity. In addition, some firms were deleted because of missing share performance information. The frequency of our data is semiannual and extends from the second half of 1992 to the second half of 2001.[8] The firms making up our sample are all traded in the National Market section of the ISE. Our panel data consists of a total of 3,671 observations of Turkish industrial firms for nineteen-time periods.

The samples were classified into successful firms (H), middle of the road firms (M), and unsuccessful firms (L). Unsuccessful firms (L) are excluded from the regressions as the base case. The cut off points for these classifications are determined in a way that there will be an equal number of observations in each group using the rankings according to E_{it}/B_{it-1} and B_{it-1}/E_{it-1}. Accordingly, the unsuccessful firms (L): firms with E_{it}/B_{it-1} and B_{it-1}/E_{it-1} less than Cut off1, middle of the road firms (M): firms with E_{it}/B_{it-1} and B_{it-1}/E_{it-1} between Cut off1 and Cut off2, and successful firms (H): those with E_{it}/B_{it-1} and B_{it-1}/E_{it-1} greater than Cut off2.

We estimate the regressions using least squares. As proposed by White (1980), we compute a consistent estimate of the covariance matrix allowing

for heteroscedasticity. It should be noted that the coefficients themselves do not change, only their standard deviations. Further, in order to control for distorted results due to possible extreme observations, we omitted any observation for which the residual was larger than three standard deviations for each of the five models. This ensures that our results are not driven by outliers.

EMPIRICAL RESULTS

Table 3 provides descriptive statistics for our data. As can be observed, the number of firms generally increases over time from 98 in the first half of 1993 to 208 in the second half of 2001. The market to book value ratio exhibits wide fluctuations across firms and over time as evidenced by high

Table 3. Summary Statistics of Turkish Firms' Market Value (P_t), Earnings (E_t) and Book Value (B_t) Scaled by Book Value (B_{t-1}) between 1992-II and 2001-II.

Period	No. of Firms	Market Value (P_{it}/B_{it-1})		Earnings (E_{it}/B_{it-1})		Book Value (B_{it}/B_{it-1})	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
92-II	107	3.41	3.71	0.46	0.37	1.33	0.59
93-I	98	24.29	137.21	1.14	5.70	4.32	20.17
93-II	124	14.47	30.09	0.92	1.85	2.37	4.18
94-I	103	8.58	17.30	0.70	0.76	1.31	2.69
94-II	116	25.48	59.15	1.19	1.87	3.39	9.16
95-I	137	17.16	67.36	0.86	1.18	3.16	12.95
95-II	142	7.26	7.73	0.65	0.49	1.17	1.06
96-I	153	6.17	7.09	0.74	0.64	1.32	2.05
96-II	165	11.93	15.30	0.70	0.53	2.55	7.71
97-I	176	12.37	43.65	0.74	0.78	2.43	8.95
97-II	186	19.29	33.06	0.69	0.53	2.25	4.30
98-I	352	36.45	43.48	0.58	0.89	2.01	3.84
98-II	340	33.64	27.92	0.62	0.43	3.08	5.15
99-I	286	10.85	16.48	0.75	0.66	2.84	3.26
99-II	273	10.97	19.87	0.82	0.75	2.59	3.27
2000-I	250	8.42	15.98	0.79	0.80	2.93	3.02
2000-II	239	9.25	34.08	0.47	0.63	3.14	4.45
2001-I	216	12.86	17.16	0.66	0.87	2.73	6.19
2001-II	208	14.92	24.57	0.48	0.39	2.60	4.52
Mean	193	15.15	32.69	0.73	1.06	2.51	5.65

standard deviation values and substantial changes in the mean values across periods. The average earnings as a percentage of book value also demonstrate large variations over the sample period. One interesting observation is that in Turkey average earnings scaled by book value is substantially higher than in more advanced countries, such as the U.S. This wide difference in earnings may be a reflection of the degree of business risk associated with the two different environments.[9] Alternatively, this earnings difference may be a result of the degree of competition in the two markets. The environment in the U.S. is more competitive as firms have to compete not only with many domestic rivals but also with many foreign competitors, thus making it difficult for U.S. firms to earn high returns.[10] The business environment in Turkey, however, is closed and less competitive. Turkish firms are protected from internal and external competition with extensive regulation and entry barriers. Moreover, the industrial sectors in Turkey are highly concentrated and control is dominated by a few very large firms, the typical characteristics of an oligopolistic market that yield high profits.[11]

Regression Results

Table 4 contains coefficient estimates for the simple linear form relating P_{it}/B_{it-1} to E_{it}/B_{it-1} (Eq. (1)). Results are presented for regressions conducted for semi-annual periods from 1992 to 2001. As shown in Table 4, the coefficients on earnings are significant for all the years. This suggests that, in Turkey, earnings are important in terms of information content and significantly associated with equity prices. As can be observed in Table 4, as we move to more recent periods the value of the coefficient declines. However, while noting that the estimates show a wide fluctuation about the trend, we attribute the decline to a general decrease in the importance of earnings over the years. An alternate explanation is that the constraint imposed by the simple linear form may have become less appropriate over time.

Turkey experienced an intense economic crisis in 1994 that caused the GNP to shrink by 6%, a record level of annual output loss to that date. The TL lost more than 50% of its value against the U.S. dollar in the first quarter of 1994, which hurt the firms that carried a substantial amount of hard-currency denominated borrowed funds from external and internal financial markets. This crisis was an important early warning signal and the precursor for the subsequent crises that occurred in 1997–1998, and more recently in November 2000 and February 2001. These later crises necessitated an international bailout of the Turkish economy. As Turkish firms

Table 4. Market Value of Turkish Firms as Function of Earnings 1992-II–2001-II.

Model 1: $P_{it}/B_{it-1} = \alpha_0 + \beta_1 E_{it}/B_{it-1} + \varepsilon_1$					
Period	α_0	$t_{\alpha0}$	β_1	t_1	Adj. R^2
92-II	1.800	2.319***	10.156	10.932***	0.842
93-I	1.708	2.659***	13.537	10.460***	0.851
93-II	0.749	0.946	15.571	17.034***	0.847
94-I	1.832	1.468	14.887	3.415***	0.310
94-II	−0.894	−0.302	20.457	4.526***	0.415
95-I	−3.896	−1.206	35.957	3.227***	0.393
95-II	1.635	2.204**	7.544	5.363***	0.334
96-I	1.338	2.683***	10.661	6.926***	0.348
96-II	−1.023	−0.755	16.354	6.621***	0.467
97-I	−3.467	−2.705***	29.851	6.832***	0.603
97-II	1.209	1.971**	14.694	3.484***	0.326
98-I	0.734	0.938*	17.247	4.031***	0.393
98-II	1.052	1.751	14.656	5.252***	0.415
99-I	−0.183	−0.853	18.430	6.183***	0.426
99-II	1.204	2.736***	15.354	4.722***	0.440
2000-I	1.510	0.627	8.809	3.621***	0.391
2000-II	0.843	0.718	19.342	5.821***	0.432
2001-I	1.007	1.392	26.410	4.935***	0.491
2001-II	1.328	1.427	14.352	5.422***	0.426
Mean	0.4466	0.684	17.06	4.998***	0.405

*Indicates statistical significance at 10% level.
**Indicates statistical significance at 5% level.
***Indicates statistical significance at 1% level.

began to operate in an increasingly risky environment, characterized by greater threats to survival, Turkish investors may have focused less on the "recursion value" component of a firm's value (the present value of the future earnings under the assumption that the firm continues to survive) and more to the "adaptation value" component (the liquidation value of the firm's resources when it is adapted to alternative uses). These developments in the Turkish environment during this period give credence to the results.

Table 5 contains estimates of the coefficients for the simple linear form relating P_{it}/B_{it-1} to B_{it}/B_{it-1} (Eq. (2)). The book values are inflation adjusted reported values (this holds for all equations). As shown in Table 5, the coefficient for book value is significant in all periods. This indicates that inflation adjusted book values is significantly associated with equity value

Table 5. Market Value of Turkish Firms as Function of Book Value
1992-II–2001-II.

	Model 2: $P_{it}/B_{it-1} = \alpha_1 + \beta_2 B_{it}/B_{it-1} + \varepsilon_2$				
Period	α_1	$t_{\alpha 1}$	β_2	t_2	Adj. R^2
92-II	3.639	4.565***	2.265	10.375	0.824
93-I	2.053	2.981***	2.087	71.137***	0.903
93-II	−1.777	−1.682*	6.883	11.685***	0.841
94-I	0.288	0.550	5.167	27.459***	0.808
94-II	6.574	2.944***	4.848	3.501***	0.317
95-I	3.050	2.276**	3.991	3.064***	0.325
95-II	2.868	4.893***	3.079	6.868***	0.297
96-I	2.615	6.983***	2.147	8.205***	0.512
96-II	7.571	9.926***	1.122	4.557***	0.449
97-I	3.796	5.202***	2.460	17.117***	0.751
97-II	6.727	6.681***	3.637	12.602***	0.505
98-I	4.239	3.806***	2.826	15.851***	0.616
98-II	2.853	8.312***	1.923	10.362***	0.573
99-I	3.877	4.518***	2.556	18.915***	0.647
99-II	5.102	3.722***	3.821	12.400***	0.628
2000-I	6.736	5.024***	3.605	13.926***	0.537
2000-II	5.182	4.936***	2.981	16.818***	0.506
2001-I	6.084	5.183***	3.725	9.083***	0.618
2001-II	8.922	6.764***	3.102	12.705***	0.637
Mean	4.231	4.876***	3.275	13.380***	0.604

*Indicates statistical significance at 10% level.
**Indicates statistical significance at 5% level.
***Indicates statistical significance at 1% level.

for the time period under study. Interestingly, the estimates in Table 5 indicate that book value adjusted for inflation has a stronger association with equity value than earnings (based on higher adjusted R^2 for two-thirds of the period regressions). In the inflationary environment of Turkey, inflation adjusted book value seems to be more important to investors in assessing equity value. As BD (1997) note, within a volatile business environment the adaptation value (the current value of the firm's resources independent of its business technology) may become more important than the recursion value (how well firms currently apply their current business technology to its resources).[12] Since it is relatively more difficult to determine the market value of an asset by projecting future earnings in an unstable financial environment than in a stable one, it may be that Turkish investors are weighing the inflation adjusted value of the assets more than

their potential value. In a turbulent environment, where firm failures are common, it appears that investors pay less attention to future earnings that may not be realized. Also, to an extent, inflation accounting through re-valuation funds reduces the differences between market value and book value. The average adjusted R^2 for the model in Table 5 (60%) is also greater than that of the model in Table 4 (approximately 40%), indicating a significantly stronger association between inflation adjusted book value and equity values.[13]

Firm value can be considered a function of both earnings and book value. A firm has the option to either continue its present activities or adapt its resources to alternative uses. Table 6 contains estimates of the coefficients

Table 6. Market Value of Turkish firms as Function of Earnings and Book Value 1992-II–2001-II.

Model 3: $P_{it}/B_{it-1} = \alpha_2 + \beta_3 E_{it}/B_{it-1} + \beta_4 B_{it}/B_{it-1} + \varepsilon_3$

Period	α_2	$t_{\alpha2}$	β_3	t_3	β_4	t_4	Adj. R^2	Coeff. of Partial Determination	
								E_{it}/B_{it-1}	B_{it}/B_{it-1}
92-II	1.380	2.218**	6.839	7.613***	−0.967	−1.843*	0.536	0.360	0.032
93-I	1.479	4.103***	16.117	4.378***	−0.217	−0.408	0.916	0.169	0.002
93-II	−1.244	−2.378**	12.700	6.289***	1.853	2.352**	0.884	0.248	0.044
94-I	−1.446	−1.176	6.442	1.469	5.085	17.888***	0.809	0.021	0.764
94-II	−0.944	−0.268	14.284	2.699***	2.039	1.315	0.538	0.061	0.015
95-I	−2.151	−1.854*	18.448	4.914***	2.990	2.760***	0.557	0.154	0.054
95-II	0.480	0.855	5.687	5.328***	2.015	4.834***	0.452	0.171	0.145
96-I	0.319	0.699	7.773	4.876***	1.967	9.054***	0.604	0.138	0.355
96-II	−1.345	−1.172	13.772	6.793***	1.042	12.901***	0.614	0.223	0.508
97-I	−2.653	−2.143**	19.404	4.696***	2.258	21.130***	0.816	0.114	0.722
97-II	−3.778	−1.599	18.964	3.828***	2.868	7.722***	0.585	0.075	0.247
98-I	−0.831	−1.423	14.910	4.082***	1.841	6.346***	0.717	0.046	0.104
98-II	−0.806	−0.897	12.726	4.206***	1.732	6.952***	0.668	0.050	0.126
99-I	0.162	1.153	13.550	3.829***	1.680	8.146***	0.704	0.049	0.190
99-II	0.093	1.940	14.081	3.621***	1.799	9.275***	0.637	0.046	0.242
2000-I	0.045	2.631***	15.224	3.456***	1.425	14.506***	0.608	0.046	0.461
2000-II	−0.021	−1.687*	16.183	3.584***	1.842	18.161***	0.636	0.052	0.584
2001-I	−0.045	−1.422	15.905	3.451***	2.545	14.824***	0.638	0.053	0.509
2001-II	0.324	1.252	16.737	3.737***	2.906	12.452***	0.701	0.064	0.432
Mean	−0.578	−0.079	13.66	3.493***	1.931	9.156***	0.628	0.113	0.291

*Indicates statistical significance at 10% level.
**Indicates statistical significance at 5% level.
***Indicates statistical significance at 1% level.

for the linear form relating $P_{it}/B_{,t-1}$ to E_{it}/B_{it-1} and B_{it}/B_{it-1} (Eq. (3)). In Table 6, the coefficients on both earnings and book value are significant for most years. While both earnings and book values are individually associated with firm value, they are more powerful in explaining value when combined. The adjusted R^2 for all the periods except 1992-II is higher for the regressions that include both variables (Model 3) than for either variable alone (Model 1 and Model 2). The coefficient of partial determination measures the marginal contribution of one independent variable when all the other independent variables are already included in the regression model. The last two columns of Table 6 give the coefficients of partial determination for E_{it}/B_{it-1} and B_{it}/B_{it-1}. For 13 out of the 19 periods the marginal contribution of book value is greater than the marginal contribution of earnings. These estimates also support the argument that the importance of book value as an explanatory variable for equity value has been increasing in recent years.

Table 7 contains estimates of the coefficients for the piece-wise form relating P_{it}/B_{it-1} to E_{it}/B_{it-1} after controlling for firm "success" (Eq. (4)). Table 8 reports estimates of the coefficients for the piece-wise form relating $P_{i,t}/E_{it}$ to B_{it-1}/E_{it} after controlling for firm "success" (Eq. (5)).[14] As mentioned earlier, we divided the domains of E_{it}/B_{it-1} (Table 7) and B_{it-1}/E_{it} (Table 8) into three groups with equal numbers of observations. For example in Table 7, the groups were identified in the 1992-II period as follows: those with E_{it}/B_{it-1} less than 0.243 (Cut off1) to the unsuccessful firms (L), which is excluded from the regressions as the base case, those with E_{it}/B_{it-1} greater than 0.243 (Cut off1) but less than 0.577 (Cut off2) to the middle of the road firms (M) and those with E_{it}/B_{it-1} greater than 0.577 (Cut off2) to the successful firms (H). The same grouping procedure is implemented for B_{it-1}/E_{it} in Table 8.

The intercept and slope coefficients for the middle of the road (β_5 and β_8) and successful firms (β_6 and β_9) were estimated incremental to the intercept and slope coefficients of the unsuccessful firms (α_3 and β_7).[15] In doing so, the objective is to test whether the incremental coefficients are equal to zero. Thus, the t-statistics given in the tables for the middle of the road (M) and successful firms (H) are for tests of incremental significance relative to the unsuccessful firms group (L). It should be noted, however, that the coefficients reported in the tables are the total intercept and slope coefficients for the group M ($\alpha_3 + \beta_5$ for the intercept and $\beta_7 + \beta_8$ for the slope) and the total coefficients for the group H ($\alpha_3 + \beta_6$ for the intercept and $\beta_7 + \beta_9$ for the slope). Therefore, t_8 shown in Table 7 is the relevant t-statistic for testing whether the difference between the slope coefficients of the middle of the road (M) and unsuccessful firms (L) is significant (i.e., whether β_8 is zero); t_9

Table 7. Market Value of Turkish Firms as Function of Earnings with Dummy Variables to Represent Successful and Middle of the Road Firms – 1992-II–2001-II.

Model 4: $P_{it}/B_{it-1} = \alpha_3 + \beta_5 M + \beta_6 H + \beta_7(E_{it}/B_{it-1}) + \beta_8 M(E_{it}/B_{it-1}) + \beta_9 H(E_{it}/B_{it-1}) + \varepsilon_4$

Period	α_3	$t_{\alpha3}$	$\alpha_3+\beta_5$	t_5	$\alpha_3+\beta_6$	t_6	β_7	t_7	$\beta_7+\beta_8$	t_8	$\beta_7+\beta_9$	t_9	Adj. R^2	Cutoff 1	Cutoff 2
92-II	0.824	2.735***	−0.046	−2.013**	−0.011	−1.756*	3.171	2.149**	6.062	2.133**	8.121	2.922***	0.509	0.243	0.577
93-I	0.787	2.543***	0.559	−0.213	0.124	−2.196**	11.191	2.462***	16.073	4.433***	18.481	7.724***	0.914	0.282	0.544
93-II	1.169	2.218**	1.152	−0.486	−1.759	−3.096***	12.896	5.662***	15.428	1.873*	26.897	5.479***	0.838	0.323	0.740
94-I	0.837	2.317**	0.832	−0.002	0.263	−1.678*	8.896	2.238**	11.589	0.293	12.046	0.407	0.254	0.368	0.794
94-II	1.874	1.657*	1.780	−0.834	1.229	−1.241	14.128	3.394***	11.843	−0.183	19.402	0.722	0.214	0.530	0.948
95-I	1.279	3.460***	−1.661	−3.583***	−1.762	−3.799***	29.100	4.030***	39.553	8.023***	42.139	9.559***	0.864	0.428	0.824
95-II	1.287	3.644***	2.532	1.588*	2.735	1.702*	13.611	4.421***	18.034	3.880***	14.711	2.125**	0.336	0.341	0.838
96-I	0.528	1.047	−0.386	−0.233	−0.061	−2.273**	10.910	2.754***	19.031	3.611***	19.458	3.333***	0.328	0.448	0.800
96-II	1.467	4.797***	−0.116	−3.502***	−0.777	−4.470***	13.146	4.705***	21.180	0.575	20.592	1.284	0.406	0.421	0.751
97-I	1.227	2.468**	2.660	2.189**	2.704	2.910***	15.099	3.088***	18.294	2.786***	25.783	4.767***	0.595	0.382	0.782
97-II	1.191	1.981*	1.013	−0.631	−2.268	−6.436***	12.389	0.673	11.056	0.068	40.131	1.171	0.230	0.415	0.863
98-I	1.023	1.85*	0.814	0.994	−0.834	−3.729***	18.741	1.422	14.282	1.905*	20.421	1.825*	0.326	0.463	0.812
98-II	1.453	1.99**	0.732	1.228	1.272	2.456**	16.382	2.731***	15.102	1.842*	18.968	2.937***	0.295	0.438	0.856
99-I	0.981	2.42**	0.681	1.642*	2.186	3.081***	13.162	1.854*	18.756	2.551***	16.722	3.453***	0.326	0.490	0.793
99-II	0.875	2.38***	0.662	2.081**	2.024	3.557***	10.455	1.920*	16.205	2.806***	15.082	2.902***	0.349	0.501	0.804
2000-I	1.056	2.05**	0.697	1.752*	1.811	4.286***	11.360	1.861*	18.186	2.928***	14.521	3.886***	0.372	0.449	0.819
2000-II	1.233	3.61***	0.702	1.996**	−0.235	−2.452**	20.421	0.853	19.234	3.456***	16.256	2.998***	0.356	0.375	0.775
2001-I	1.425	2.92**	0.751	2.134**	−1.062	−1.923*	18.182	1.483	14.582	3.828***	14.824	3.234***	0.327	0.403	0.825
2001-II	1.456	3.04**	0.802	2.456**	4.232	2.884**	16.255	2.082**	15.281	4.258***	14.082	2.606***	0.308	0.424	0.845
Mean	1.156	1.047	0.745	0.848	0.516	2.449**	14.183	1.653	16.830	2.001**	19.930	2.285**	0.342	0.406	0.788

Note: All t-statistics are calculated based on the heteroscedasticity-consistent covariance matrix (White, 1980).

The *t*-statistics for the groups H and M are the *t*-statistics for tests of the hypothesis that the coefficients for the H and M group firms are significantly different from the corresponding coefficient for the L group.

*Indicates statistical significance at 10% level.
**Indicates statistical significance at 5% level.
***Indicates statistical significance at 1% level.

Table 8. Market Value of Turkish Firms as Function of Book Values with Dummy Variables to Represent Successful and Middle of the Road Firms – 1992-II–2001-II.

Model 5: $P_{it}/E_{it} = \alpha_4 + \beta_{10}M + \beta_{11}H + \beta_{12}(B_{it-1}/E_{it}) + \beta_{13}M(B_{it-1}/E_{it}) + \beta_{14}H(B_{it-1}/E_{it}) + \varepsilon_5$

Period	α_3	$t_{\alpha3}$	$\alpha_3+\beta_5$	t_5	$\alpha_3+\beta_6$	t_6	β_7	t_7	$\beta_7+\beta_8$	t_8	$\beta_7+\beta_9$	t_9	Adj. R^2	Cutoff 1	Cutoff 2
92-II	9.015	3.367***	2.765	−1.624*	2.645	−2.123**	−0.945	−1.269	2.012	2.431***	2.628	1.967**	0.482	3.834	8.354
93-I	23.090	4.540***	11.816	−5.614***	13.488	−5.065***	−0.389	−0.267	−0.109	1.283	0.056	1.211	0.601	3.905	7.280
93-II	13.822	5.625***	11.938	0.938	10.694	1.099	−0.621	−0.436	−0.012	1.254	1.248	2.663***	0.427	3.032	6.192
94-I	15.269	1.536	6.940	−2.205**	4.702	−4.867***	−4.105	−3.785***	1.658	2.845***	1.212	1.856**	0.632	2.522	5.444
94-II	19.918	2.379**	8.355	−3.907***	7.626	−3.261***	−2.936	−2.521***	2.051	4.429***	2.433	2.569***	0.726	2.092	3.800
95-I	53.032	2.589**	22.878	−4.262***	29.303	−2.134**	−1.933	−2.641***	−0.772	1.361	−0.251	1.637*	0.642	2.428	4.791
95-II	9.363	1.763*	5.677	−0.632	12.484	0.565	1.436	0.356	3.365	2.101**	2.142	1.329	0.438	2.372	5.852
96-I	19.040	3.994***	18.242	−0.059	13.454	−1.089*	−2.856	−1.942**	−0.056	1.331	0.423	1.601*	0.628	2.454	4.456
96-II	16.185	2.633**	14.924	−0.105	1.853	−5.897***	1.023	0.239	0.083	−0.221	1.446	1.191	0.599	2.612	4.814
97-I	29.478	4.642***	9.542	−2.034**	15.929	−2.083**	−4.328	−3.511***	1.569	1.801*	0.910	1.701*	0.791	2.560	5.229
97-II	45.486	3.079***	32.611	−0.528	30.981	−0.936	−2.524	−1.619*	−0.006	1.949**	0.843	1.982**	0.255	2.318	4.816
98-I	38.452	4.083***	31.582	−0.941	−35.682	−0.854	0.753	2.083**	−0.356	−2.026**	0.751	1.764*	0.303	3.296	4.025
98-II	42.813	3.925***	38.164	−1.806*	−12.516	−2.350**	0.622	1.850*	−0.450	11.82***	0.715	2.820***	0.427	3.001	4.228
99-I	59.527	4.226***	−41.95	−1.271	−30.143	1.040	0.685	1.840*	0.349	1.721*	0.841	2.650***	0.514	3.904	4.109
99-II	41.021	3.616***	−20.21	−1.820*	−28.324	1.150	0.566	1.770*	−0.350	1.630	0.378	2.890***	0.608	2.738	3.904
2000-I	28.151	2.592**	−8.73	−2.040**	−20.955	1.420	0.347	4.103***	0.143	0.855	0.842	0.520	0.563	2.887	4.045
2000-II	24.125	1.893*	−5.402	−3.160***	−15.102	1.690*	0.311	3.730***	0.107	1.890*	0.501	2.010**	0.604	2.904	3.905
2001-I	47.320	3.260***	−11.251	−1.212	−21.821	−3.010***	−8.421	−0.138	2.106	2.450***	1.127	2.810***	0.505	3.002	4.036
2001-II	44.210	3.900***	−10.23	−1.483	−20.432	−2.880***	−8.048	−0.125	2.223	2.670***	1.034	2.900***	0.493	4.103	4.302
Mean	29.728	3.148***	7.105	−1.053	−1.188	−0.019	−1.295	1.375	0.629	1.945*	1.014	1.920*	0.546	2.881	4.962

Note: All *t*-statistics are calculated based on the heteroscedasticity-consistent covariance matrix (White, 1980). The *t*-statistics for the groups H and M are the *t*-statistics for tests of the hypothesis that the coefficients for the H and M group firms are significantly different from the corresponding coefficient for the L group.

*Indicates statistical significance at 10% level.
**Indicates statistical significance at 5% level.
***Indicates statistical significance at 1% level.

is the relevant t-statistic for testing whether the difference between the slope coefficients of the successful (H) and unsuccessful firms (L) is significant (i.e., whether β_9 is zero). We also conducted different cut offs using quartiles and the results were not significantly different. This indicates that the method of cut offs for differentiating between successful and unsuccessful firms did not significantly drive the results.

As the results in Table 7 indicate, there is a significant positive relationship between scaled market value and scaled earnings (β_7 is significantly different from zero and positive). This finding supports the value relevance of earnings. Consistent with the valuation model, the average intercepts of Eq. (4) decrease as earnings scaled by book value increase across groups [$(\alpha_3 + \beta_6 = 0.516) < (\alpha_3 + \beta_5 = 0.745) < (\alpha_3 = 1.156)$]. In addition, the slope coefficients generally increase as we shift from the low earnings group to high earnings group as also predicted by the convexity theory [$((\beta_7 + \beta_9 = 19.930) > (\beta_7 + \beta_8 = 16.830) > (\beta_7 = 14.183)$]. Also, the explanatory power of the Model 4 is greater than that of the Model 1, implying that the piece-wise form fits the data better than the simple linear form.

Table 8 presents the results for the piece-wise function of book value controlling for the level of earnings. As the results suggest, for unsuccessful firms, book value is more relevant for valuation of equity because the intercepts decline as the book value rises. The average intercepts of Eq. (5) increase as book value scaled by earnings increase across groups [$(\alpha_4 + \beta_{11} = -1.188) < (\alpha_3 + \beta_{10} = 7.105) < (\alpha_4 = 29.728)$]. Furthermore, consistent with expectations, the slope coefficients uniformly increase across the groups: -1.295 for unsuccessful firms (low BV/E values); 0.629 for the middle of the road firms (medium BV/E values); and 1.0136 for the successful firms (high BV/E values).

The estimated coefficients on earnings and book values are consistent with their theoretical values and the findings of BD (1997) for U.S. firms. However, while the results are surprisingly similar indicating similar relationships, a significant difference is that the models using Turkish data had much higher adjusted R^2s than the models in the BD (1997) study. In the case of the first linear model incorporating earnings as the dependent variable, the BD (1997) study reported a mean adjusted R^2 of 0.11. In this study, using Turkish data, we found a mean adjusted R^2 of 0.405. The stronger results with Turkish data indicate that, while in the U.S., a large number of variables may be influencing or driving equity values, in a developing market such as Turkey, equity values may be driven by very limited variables. In the relatively smaller and less complex capital market of Turkey, the limited disclosure of information to investors as well as small

number of market participants may be among the plausible reasons under-lying this observation.

Sensitivity Tests

It could be argued that, in the presence of inflation and the revaluation of assets by inflation rates, the association of book value with equity values may be moderated by capital structure. For example, consider a situation where net fixed assets are $60 and liabilities are $1 at the start of the year. Assuming 100 common stocks outstanding, the total stockholder's equity is $59 and book value per share $0.59. If we assume that inflation adjustment (revaluation of fixed assets) is decided at 60%, then at the end of the year, ceteris paribus, the net fixed assets will be $100 resulting in stockholder's equity of $99 giving us a book value per share of $0.99, an increase of 68%. Taking the same situation as above, if everything else is held constant and liabilities are $59 at the start of the year, then book value per share at the start of the year is $0.01 and stockholder's equity assuming the same re-valuation rate is $41 giving a book value per share of $0.41, an increase of 4000%. Similarly, a higher proportion of fixed assets relative to non-fixed (intangible) assets would also magnify the book value per share since only the fixed assets are revalued. The situation described above is unique to Turkey. In order to control this, we add a capital structure variable (debt to equity ratio) in all of our regression estimates to examine whether the capital structured influenced our prior results. The reported results shown in Table 9 are quite similar to the reported results in Table 8. Also, we estimated our tables with time fixed affect controlling for year dummy var-iable for the sample years. Our conclusions do not change materially.

CONCLUSIONS

Earnings have been identified as the predominant determinant of firm value in accounting research for the past three decades. Ohlson (1995) modeled firm value as a linear function of both earnings and book value. BD (1997) showed that firm value is a piece-wise function and not a linear additive function of both earnings and book value. All major studies focused on U.S. firms. The United States is characterized by a strong well-established stock market with a multiplicity of investors, none of who can individually in-fluence stock price. In this study, we examined whether earnings and book

Table 9. Market Value of Turkish Firms as Function of Book Values and Capital Ratios with Dummy Variables to Represent Successful and Middle of the Road Firms – 1992-II–2001-II.

Extension of Model 5: $P_{it}/E_{it} = \alpha_4 + \beta_{10}M + \beta_{11}H + \beta_{12}(B_{it-1}/E_{it}) + \beta_{13}M(B_{it-1}/E_{it}) + \beta_{14}H(B_{it-1}/E_{it}) + \beta_{15}C(D_{it}/E_{it}) + \varepsilon_5$

Period	α_3	$t_{\alpha3}$	$\alpha_3+\beta_5$	t_5	$\alpha_3+\beta_6$	t_6	β_7	t_7	$\beta_7+\beta_8$	t_8	$\beta_7+\beta_9$	t_9	Adj. R^2	Cutoff 1	Cutoff 2
92-II	9.215	3.441***	2.760	−1.608	2.607	−2.173***	−0.937	−1.276	2.018	2.476**	2.615	1.978**	0.527	3.839	8.358
93-I	22.063	4.609***	11.821	−5.706***	13.508	−5.109***	−0.398	−0.268	−0.118	1.254	0.059	1.256	0.652	3.912	7.286
93-II	14.023	5.412***	11.942	0.946	10.654	1.095	−0.644	−0.440	−0.016	1.287	1.250	2.677**	0.463	3.039	6.198
94-I	15.451	1.498	6.980	−2.221**	4.728	−4.875***	−4.108	−3.779***	1.665	2.898***	1.217	1.847*	0.661	2.532	5.449
94-II	19.073	2.187**	8.358	−3.931***	7.676	−3.291***	−2.954	−2.508**	2.074	4.403***	2.428	2.578**	0.752	2.107	3.822
95-I	53.078	2.505**	22.781	−4.238***	29.344	−2.156**	−1.973	−2.694**	−0.781	1.386	−0.259	1.650*	0.684	2.435	4.805
95-II	9.651	1.788*	5.608	−0.644	12.409	0.541	1.498	0.365	3.380	2.154**	2.150	1.338	0.465	2.382	5.867
96-I	18.905	4.061***	18.251	−0.058	13.461	−1.054*	−2.867	−1.960**	−0.058	1.353	0.429	1.621*	0.653	2.459	4.462
96-II	16.231	2.701**	14.920	−0.105	1.887	−5.903***	1.034	0.249	0.087	−0.228	1.432	1.197	0.632	2.620	4.826
97-I	29.120	4.606***	9.548	−2.076**	15.905	−2.123**	−4.331	−3.553***	1.570	1.824*	0.923	1.721*	0.834	2.567	5.232
97-II	44.962	3.216***	32.701	−0.521	30.884	−0.909	−2.520	−1.629*	−0.008	1.963**	0.856	1.997**	0.287	2.323	4.821
98-I	38.904	4.009***	31.608	−0.945	−35.783	−0.892	0.765	2.076**	−0.358	−2.057**	0.758	1.782*	0.336	3.306	4.029
98-II	43.031	3.873***	38.221	−1.852*	−12.545	−2.382**	0.629	1.896*	−0.459	11.89***	0.720	2.845***	0.459	3.013	4.233
99-I	58.903	4.298***	−41.959	−1.308	−30.209	1.127	0.678	1.869*	0.350	1.727*	0.849	2.650**	0.543	3.912	4.113
99-II	41.218	3.721***	−20.263	−1.865*	−28.376	1.180	0.587	1.784*	−0.356	1.632	0.382	2.925***	0.649	2.745	3.912
2000-I	28.655	2.606**	−8.764	−2.092**	−20.872	1.500	0.351	4.125***	0.145	0.854	0.842	0.545	0.585	2.892	4.048
2000-II	24.349	1.907*	−5.423	−3.290***	−15.163	1.754*	0.335	3.707***	0.109	1.901*	0.524	2.145**	0.637	2.916	3.912
2001-I	46.894	3.345***	−11.255	−1.108	−22.098	−3.018***	−8.521	−0.129	2.116	2.428**	1.134	2.849***	0.540	3.014	4.039
2001-II	44.762	4.021***	−10.241	−1.541	−20.521	−2.905***	−8.154	−0.129	2.254	2.693**	1.041	2.916***	0.528	4.110	4.316
Mean	30.264	3.164***	7.134	−1.076	−1.190	−0.024	−1.301	1.389	0.638	1.959**	1.019	1.920*	0.579	2.901	4.984

Note: β_{15} parameter represents the debt/equity ratio.

All *t*-statistics are calculated based on the heteroscedasticity-consistent covariance matrix (White, 1980).

The *t*-statistics for the groups H and M are the *t*-statistics for tests of the hypothesis that the coefficients for the H and M group firms are significantly different from the corresponding coefficient for the L group.

*Indicates statistical significance at 10% level.

**Indicates statistical significance at 5% level.

***Indicates statistical significance at 1% level.

value have a similar relationship in the Turkish stock market that possesses significantly different characteristics. Turkey is currently an emerging market that has adopted liberal policies in the last two decades. The Turkish stock market has fewer firms relative to the United States. It is also relatively inefficient in that a few large investors can, by their buying or selling activity, significantly influence stock prices. Another significant difference between the two markets relate to accounting methods. This is an artifact of the high rates of inflation in Turkey. In particular assets in Turkey are valued at inflation-adjusted book values. This is significantly different from the United States where assets are valued at historical cost.

The purpose of this research is to examine whether the association of book value and earnings with equity value holds in this very different environment. We found that the relationships do hold in Turkey but the degree of the relationships substantially differs. In Turkey, overall, earnings do have information content and are relevant in predicting equity values (after controlling for book values). However, the importance of earnings as a predictor of equity values appears to be declining. Book value adjusted for inflation has a stronger association with equity value. This may be explained by the fact that in the inflationary environment of Turkey it is more difficult to determine market value by projecting future earnings. In an inflationary environment in which book value of earnings is quite uncertain, investors may be paying less attention to earnings. Turkish investors may well be applying this criterion. Alternatively, the adjustment of firms' assets for inflation in Turkey may not have allowed book value of assets to deviate from market value of assets to a great extent. In countries that do not adopt this accounting treatment (U.S., for example), book value information is based on primarily historical cost, which has little association with contemporaneous market prices (BD, 1997). Within this accounting environment, book value becomes largely independent of the success with which the firm currently employs its resources.

Some researchers have negated the importance of book value in equity valuation. For example Barth and Kallapur (1996) concluded that book value was only important because of its importance as a control for scale differences. Others have arrived at different conclusions regarding the role of book value. Ohlson (1995) and Penman (1992) concluded that book value was important because it was a useful proxy for expected future normal earnings. Still, others concluded that it was important but for a different reason. Berger et al. (1996), Barth and Kallapur (1996) and BD (1997) concluded that book value was important as a value proxy for unsuccessful firms. The contribution of this study is to show that book value is a value

proxy for firms operating in international environments where there is rampant inflation.

 Specifically our results indicate that both earnings and inflation-adjusted book values have significant association with equity value. Combined, they have a very strong association with equity values. Finally, as in the U.S., when the sample is partitioned, we found that earnings are more relevant for valuation of equity of successful firms while book value is more relevant for valuation of equity of unsuccessful firms. This is consistent with the findings of BD (1997). In conclusion, the models using Turkish data have a higher adjusted R^2 than for studies conducted with U.S. firms. This may indicate that in this developing market, only a few variables are used to determine equity values.

NOTES

1. To illustrate, the average real interest rate in the 3–6 months, 6–9 months treasury bills and treasury bonds were 9, 27 and 43%, respectively, in 1995 (Banks in Turkey, 1995, Banks Association of Turkey, Istanbul, Turkey).

2. Fixed assets that are subject to depreciation at the rates other than this and the applicable rates are announced in the general communiqués issued by the Ministry of Finance.

3. The Ministry of Finance determines the annual revaluation rate. The rate of revaluation for the year 2000 was 56%.

4. Inflation rate has been more than 50% on average for the past two decades although at times rose above three-digit during crises.

5. All firms in our sample have a revaluation fund in their stockholder's equity section.

6. Like BD (1997), we alternatively used B_{it} for robustness and sensitivity check. We found that the results are qualitatively similar.

7. As mentioned, ''success'' or vice versa is defined in terms of an earnings to book value ratio in Eq. (4) and scaled book value in Eq. (5).

8. We use semi-annual data because that enables us to observe firm or price behavior more frequently. This is critical in an environment that is vulnerable and susceptible to macro-economic fluctuations. However, most of the variables that are used in this study relate to market value and book value of stocks. In addition, the earnings variables are annualized, thus, our data are comparable to the annual figures used in earlier studies.

9. An average earnings as a percentage of book value between 1992 and 1994 for Turkish firms was 69%, while the average earnings for U.S. firms was 4%. On average, the annual variation in earnings in the U.S. was 11% between 1976 and 1994 (BD, 1997), while it was approximately 131% in Turkey between 1992 and 1997.

10. For example, the automotive manufacturing firms in the U.S. face stiff competition from foreign firms in their home market. Evidently, the share of foreign automakers in the U.S. began to level with that of the U.S. automakers in 2001.

11. It can be argued that inflation could be driving the large values presented in Table 3 for E/B and B/B ratios because in each case the numerator is measured in current year TL and the denominator is measured in prior year TL. With high inflation, it is possible to get high values for these ratios, even if there is no change in inflation-adjusted book value and if the earning power of these assets is not great. In the BD (1997) analysis, it is likely that inflation did not play a significant role since their deflator was measured in essentially the same dollars as their numerators. The potential problem here is that with a discrepancy in the unit of measurement between numerator and denominator, it is uncertain whether the results are being driven by economic or econometric issues. In order to investigate this issue, we adjusted everything to a constant TL basis. The results remain the same, thus it is safe to state that underlying real economic valuation differences in the Turkish market might be driving the differences observed vs. the BD (1997) results. We wish to thank Kari Lukka for providing this insight.

12. In fact, BD's (1997) observation related to volatile rather than inflationary environments. However, we find that their observation holds in an inflationary environment as well. As a matter of fact, inflation by itself is a source of a volatile economic environment.

13. Traditional bank loans are the major source of funds for firms as mentioned before. Banks might focus more on firms' debt paying ability (solvency of the business, i.e., positive net-worth) than on profitability, enhancing the relevance of book values in driving equity values. We would like to thank Dr. D.H. Bao for this insight.

14. Because it is hard to reach a conclusion based on casual observation, it is essential to conduct a formal test for the convexity of the relationship using the procedures outlined above for Eqs. (4) and (5). Nevertheless, we depicted the empirical relation between market value and earnings for the entire sample, both scaled by book value lagged by one period. We found that the plot is consistent with the view that market value and earnings are positively associated. It is available upon request from the authors.

15. This procedure closely follows the treatment of BD (1997).

ACKNOWLEDGMENTS

REFERENCES

Activefinans Magazine. (2001). *Arthur Andersen report on doing business in Turkey*, 22, 10–12.

Amir, E. (1996). Effect of accounting aggregation on the value relevance of financial disclosures: The case of SFAS No. 106. *The Accounting Review*, 71(October), 539–556.

Ball, R. (1972). Changes in accounting techniques and stock prices. Empirical Research in Accounting: Selected Studies. *Journal of Accounting Research*, 10(suppl.), 1–38.

Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6(Autumn), 159–178.

Bao, B-H., & Bao, D-H. (1998). Earnings, book values and their association with equity values: An empirical examination. *Indian Accounting Review*, *2*(June), 18–30.

Barth, M., Beaver, W., & Landsman, W. (1992). Market valuation implications of net period pension cost. *Journal of Accounting and Economics*, *14*(March), 26–62.

Barth, R., & Hemphill, W. (2000). *Financial programming and policy: The case of Turkey*. IMF working papers.

Barth, M., & Kallapur, S. (1996). The effects of cross-sectional scale differences on regression results in empirical accounting research. *Contemporary Accounting Research*, *13*, 527–567.

Beaver, W. H., Clark, R., & Wright, W. (1979). The association between unsystematic security returns and the magnitude of earnings forecast errors. *Journal of Accounting Research*, *17*(Autumn), 316–340.

Beim, D. O., & Calomiris, C. W. (2001). *Emerging financial markets*. New York: McGraw-Hill/Irwin.

Berger, P., Ofek, E., & Swary, I. (1996). Investor valuation of the abandonment option. *Journal of Financial Economics*, *42*, 257–287.

Bernard, V. L. (1995). The Feltham–Ohlson framework: Implications for empiricists. *Contemporary Accounting Research*, *11*(Spring), 733–747.

Bowen, R. E. (1981). Valuation of earnings components in the electricity industry. *The Accounting Review*, *56*(January), 1–22.

Burgstahler, D. C., & Dichev, I. D. (1997). Earnings, adaptation and equity value. *The Accounting Review*, *71*(April), 187–215.

Collins, D., & Kothari, S. P. (1989). An analysis of intertemporal and cross-sectional determinants of ERCs. *Journal of Accounting and Economics*, *11*, 143–183.

Collins, D. W., Pincus, M., & Xie, H. (1999). Equity valuation and negative earnings: The role of book value of equity. *The Accounting Review*, *74*(1), 29–62.

Denizer, C. (1997). *The effects of financial liberalization and new bank entry on market structure and competition in Turkey*. World Bank Development Research Group. Working Paper no. 1839 (November).

Fama, E., & French, K. (1992). The cross-section of expected stock returns. *Journal of Finance*, *47*, 427–465.

Isik, I., & Hassan, M. K. (2002). Technical, scale and allocative efficiencies of Turkish banking industry. *Journal of Banking and Finance*, *26*, 719–766.

Isik, I., & Hassan, M. K. (2003). Financial deregulation and total factor productivity change: An empirical study of Turkish commercial banks. *Journal of Banking and Finance*, *27*, 265–279.

Kaplan, R. S., & Roll, R. (1972). Investor evaluation of accounting information: Some empirical evidence. *Journal of Business*, *45*, 225–257.

Kiymaz, H. (2000). The initial and aftermarket performance of IPOs in an emerging market: Evidence from Istanbul Stock Exchange. *Journal of Multinational Financial Management*, *10*, 213–227.

Lipe, R. (1986). The information contained in the components of earnings. *Journal of Accounting Research*, *24*(Suppl.), 37–64.

Lipe, R. (1990). The relation between stock returns and accounting earnings given alternative information. *The Accounting Review*, *65*(January), 49–71.

Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, *11*(Spring), 661–687.

Okyar, O. (1965). The concept of etatism. *The Economic Journal*, *75*, 98–111.

Penman, S. (1992). Return to fundamentals. *Journal of Accounting, Auditing and Finance*, 7, 465–483.

Pi, L., & Timme, S. G. (1993). Corporate control and bank efficiency. *Journal of Banking and Finance*, *17*, 515–530.

Tracy, J., & Schneider, H. (2001). Stocks in the household portfolio: A look back at the 1990s. *Federal Reserve Bank of New York Current Issues in Economics and Finance*, 7, 1–6.

White, H. (1980). A heteroscedasticity consistent covariance matrix estimator and a direct test of heteroscedasticity. *Econometrica*, *48*, 817–818.

Wilson, G. P. (1986). The relative information content of accruals and cash flows: Combined evidence of the earnings announcement and annual report release date. *Journal of Accounting Research*, *24*, 165–200.

Yuce, A. (1994). *The study of an emerging market: Istanbul Stock Exchange*. Dissertation, Louisiana State University, Baton Rouge, LA.

Zychowicz, E. J., Binbasioglu, M., & Kazancioglu, N. (1995). The behavior of prices on the Istanbul Stock Exchange. *Journal of International Financial Markets, Institutions and Money*, *5*(4), 61–71.

APPENDIX: REVIEW OF DEVELOPMENTS IN THE TURKISH MARKET

Period after World War I to the 1930s

Event

First National Economic Congress held in Izmir in 1923. The purpose was to address a large number of economic issues that Turkey would have to overcome.

Result

Congress recommended the specialized banks should be formed to finance the main sectors of the economy. The state established six public banks in the 1930s including the Central bank (Denizer, 1997). This government orchestrated economic development policy (known as Etatism) followed a pattern similar to that adopted in other developing countries (Okyar, 1965).

Period 1930s to the late 1970s

Event

Continuation of the planned development phase (i.e., a protectionist and closed economic environment); strong incentive scheme to foster private enterprise (including directed credit programs, subsidized lending, tax

exemptions, investment credits, entry barriers and high tariffs and customs for foreign firms and products).

Result

- Private sector flourished and contributed a little more that half of value added in manufacturing by the 1970s (Barth & Hemphill, 2000)
- Creation of a number of giant industrial holdings that have seized control in several sectors (Sabanci, Koc, Has Dogus, Cukurova, Yasar, Uzan, Toprak, Colakoglu, Cingilloglu). This is mainly attributed to entry barriers, scarce internal capital, lack of developed money and lack of adequate capital markets.

Event

Implementation of the Glass-Steagal Act.

This act prohibits any equity ownership by U.S. banks.

Result

Lack of foreign penetration and control dominated by local firm management.

Late 1970s to the 1980s

Event

Economic stability program entitled ''National New Economic Policy'' implemented. Principal aim was integration with the world economy by establishing a free market economy.

Result

- New firm entries from inside and outside of the county now encouraged.
- Free trade zones established.
- Liberalization of commodity prices.
- Privatization of state economic enterprises

Event

As a reflection of liberal policies, unified accounting principles and a standard reporting system were adopted.

Result

Firms now audited by independent external auditors in accordance with internationally accepted principles of accounting.

Event

Steps taken to ensure that Turkish regulations are in harmony with those of the EU.

Result
- Formation of a single tariff system.
- Acceptance of EU practices in general (e.g., capital adequacy regulation for banks, among others)

Event
Establishment of the Istanbul Stock Exchange (ISE) (1986).

Result
Greater liquidity in the Turkish financial system.

Event
Interbank Money Market (IMM) for Turkish Lira (TL) founded in 1986. Open market operations commenced in 1987.

Result
Non-residents are allowed to make purchases on the ISE and the Turkish residents are permitted to purchase foreign securities.

This page intentionally left blank

DISCLOSURES OF CODES OF ETHICS ON CORPORATE WEBSITES: A PRE- AND POST-SARBANES-OXLEY LONGITUDINAL STUDY[☆]

Catherine C. LaCross and Richard A. Bernardi

ABSTRACT

Until recently, corporate ethics was not a topic of major concern. In the United States, it changed with the WorldCom scandal and Enron catastrophe. The effects of unethical decision-making took its toll on consumers' confidence and portfolios, resulting in a desire for more transparency and increased ethical conduct. The study uses the top 100 US-based and top 100 Internationally based corporations from the 2001 Fortune Global 500. We examined whether companies had a published corporate code of ethics on their websites in July 2002, January 2003, March 2003, and July 2003. We found that there was not a significant difference between the number of US-based and Internationally based corporations for the first two observation dates. However, there was a significant difference between the number of US-based and Internationally based corporations for

the March 2003 observation date that coincided with the implementation date of the Sarbanes-Oxley Act. Finally, while the rate of change dramatically decreased for Internationally based corporations after the implementation date of the Sarbanes-Oxley, US-based corporations continued to make their codes of ethics more accessible at a higher rate.

INTRODUCTION

The Enron and WorldCom debacles suggest that many codes provide little more than a "thou-shalt-not" type list of unacceptable behaviors (Kleiner & Maury, 1997) rather than acting as a signal of ethical behavior (Adams, Tashchian, & Stone, 2001). From 1987 to 2003, over 100 studies examined a variety of aspects of codes of ethics including their: frequency within Fortune 500 firms (Ruhnka & Boerstler, 1998), foundations (Schwartz, 2002; Backof & Martin, 1991), contents (Gaumnitz & Lere, 2002; Raiborn & Payne, 1990), effectiveness (Schwartz, 2001; Weller, 1988), cultural differences (Giacobbe & Segal, 2000; Cohen, Pant, & Sharp, 1992), and differences among professions (Valentine & Barnett, 2002; Bollom, 1988). None of these studies address the willingness of corporations to subject their codes of ethics to public scrutiny by making them readily available to all stakeholders. Specifically, the Sarbanes-Oxley Act (U.S. Congress, 2002, p. 45) requires that corporations disclose: "whether or not, and if not, the reason therefore, such issuer has adopted a code of ethics for senior financial officers" (underlining added by authors).

Our study is based on the Security and Exchange Commissions (SEC) premise that, "if the code is relegated to the back of a policy manual or a cluttered website, it is of no use" (Campos, 2002). We examine the growing openness of corporations to disclose their codes of ethics by making them "readily available" to stakeholders on their websites beginning after the demise of Arthur Andersen and Enron through July of 2003 (i.e., after the Sarbanes-Oxley Act).[1] Our sample includes the top 100 US-based and top 100 Internationally based corporations from the Global Fortune 500. This research is especially timely as the internet is rapidly replacing printed sources of data.

THEORY DEVELOPMENT

Overview

There are five sections in theory development. We frame our discussion on the research of Arnold, Bernardi, and Neidermeyer (2001) who note that

even if there were perfectly harmonized international accounting standards, there would be differences in their application due to cultural differences. First, we discuss the differences between codes of ethics between the US and other countries. Our second section examines research on Uncertainty Avoidance (Hofstede, 1980) and litigation (Wingate, 1997) that indicates there will be differences in the rate of disclosures. The third section reviews the influence of legitimacy theory using the Exxon Valdiz oil spill (Patten, 1992) as an example. Our fourth section reviews the requirements of the Sarbanes-Oxley Act and the steps in its implementation. Finally, the fifth section reviews Ruhnka and Boerstler's (1998) research that suggests a pattern of adoption, which provides the basis for our hypotheses.

Codes of Ethics: US versus Internationally

Schlegelmilch (1989) notes that British companies view codes of ethics as another round of ''Americanization'' and see little use for them in business. Other European countries simply believe that the codes are too general to be of any benefit (Langlois & Schlegelmilch, 1990, p. 2). In 1990, a survey conducted by these authors found that less than half of the 189 European companies surveyed had introduced codes of ethics, in contrast to the 75 percent of the US Fortune 500 companies surveyed by Centre for Business Ethics in 1986 (Langlois & Schlegelmilch, 1990, p. 4). Consequently, our premise is that, due to the cultural differences, European corporations will be less likely than US corporations to adopt codes of ethics.

History shows that ''businesses in other countries have lagged behind U.S. companies in formalizing ethics practices'' (Schlegelmilch, 1989). A possible explanation for this is that the institution of a code of ethics better suits the culture of the United States. Americans tend to codify social relations in organizations, while other cultures lean more toward implicit forms of guidance (Weaver, 2001, p. 2). Enderle (1996) maintains that, while regulations in the United States are concerned with relatively micro-issues (i.e., a rules-based approach), European legislation focuses on macro-issues (i.e., a concepts-based approach). Compared to individuals in the United States, Europeans are more reluctant to openly discuss ethics. Sacconi, de Colle, and Baldin (2002, p. 11) maintain that, along with the tendency in the US towards social codes, comes: ''the greater awareness of the 'social' role of corporations in the USA, compared to Europe, as well as the different concept of private law between the US and Europe can explain this difference in the spread of codes of ethics.''

European corporations are not the only ones less likely to adopt the codes. Japan fared poorly in the EIU's (2002, p. 15) study: "[o]verall, most firms (two-thirds of the 50 reviewed) offer a separate and easy-to-find section on corporate governance, except in Japan and the US, where such sections were only available on half the websites reviewed". However, unlike the United States, Japan does not have laws or regulations to counteract this trend, nor has it suffered the same setbacks due to the Enron catastrophe. Although the entire business world watched as Enron collapsed and took note of its consequences, only the United States has taken significant steps to ensure that similar instances do not occur.

Culture, Litigation and Disclosure

Wingate (1997) noted that Uncertainty Avoidance and litigation were significantly associated with the willingness of firms in a particular country to make additional disclosures in their annual reports. For instance, when comparing the disclosure of 90 suggested items in annual reports (Bavishi, 1991) between the United States and the 14 European Union countries, only France, Great Britain, Norway, and Sweden have higher disclosure indices than the United States. Fig. 1 shows the Uncertainty Avoidance (Hofstede, 1980) scores and litigation indices (Wingate, 1997) for European countries and for Japan and South Korea, which we included because many internationally based firms are headquartered in these countries.[2]

Wingate notes that disclosures associate with the level of litigation within a country's business environment. The litigation index (Fig. 1) resulted from an international accounting firm's effort to allocate of the insurance for its international operations among its individual country partnerships. Scores on the litigation indices range from 1 to 15 and "represent the risk of doing business as an auditor in a particular country" (Wingate, 1997, p. 140).

Wingate also notes that disclosures associate with Hofstede's (1980) cultural construct of Uncertainty Avoidance. According to Hofstede, uncertainty about the future is a natural human concern. In high Uncertainty Avoidance countries, there is resistance to change; people from these cultures deal with uncertainty by adhering to traditional ideas and standards. Likewise, Hofstede believes that people in low Uncertainty Avoidance cultures are more flexible in their decision-making processes and live day by day. Hofstede maintains that Uncertainty Avoidance is a function of rule orientation, employment stability and stress; for example, people use different coping mechanisms to deal with this uncertainty.

Hofstede's Uncertainty Avoidance Construct and Wingate's Litigation Index

Uncertainty Avoidance (Hofstede, 1980)

			CA	FI			FR		
	SW	UK	US	SZ		IT	SP	BE	GR
	DE	IR	NO	NE	GE	AU	SK	JA	PO
11-20	21 – 30	31 – 40	41 - 50	51 - 60	61 – 70	71 - 80	81 - 90	91-100	101-120

Litigation Index (Wingate, 1997)

		FR			
		GE			
AU	BE	IR			
FI	DE	IT			
GR	JA	NE			
PO	SP	NO			
SK	SW	SZ	CA	UK	US
3.61	4.82	6.22	8.07	10.00	15.00

AU	Austria	FR	France	JA	Japan	SP	Spain
BE	Belgium	GE	Germany	NE	Netherlands	SW	Sweden
CA	Canada	GR	Greece	NO	Norway	SZ	Switzerland
DE	Denmark	IR	Ireland	PO	Portugal	UK	United Kingdom
FI	Finland	IT	Italy	SK	South Korea	US	United States

Fig. 1. Hofstede's Uncertainty Avoidance Construct and Wingate's Litigation Index.

While Hofstede's initial research was done in 1980, his data have been successfully replicated Smith (2002). Smith found that the Uncertainty Avoidance construct derived from the responses of 1,000 staff members working for international accounting firms had a 0.69 correlation with Hofstede's data. The scores for this cultural construct were considerably higher than the range of Hofstede's other construct; to remedy this, Hofstede subtracted the raw scores from 300. As a result, the highest (lowest) scores actually represent the lowest (highest) Uncertainty Avoidance.

Jeurissen and van Luijk's (1998) data indicate that, as Uncertainty Avoidance increased, perceived ethical behavior in European countries decreased. This supports Arnold et al.'s (2001) finding that, as Uncertainty avoidance increases, auditors from European countries with higher Uncertainty Avoidance were less likely to report an error of fixed size compared to countries with lower Uncertainty Avoidance.

Legitimacy Theory

In a social context, if one party believes the other party is not acting in its best interest, it can demand concessions of the other party to continue the contract. These concessions typically involve legislation requiring additional governmental oversight in the United States (Enderle, 1996; Weaver, 2001). The concern about corporations acting in the best interests of society refers to implied social contracts and legitimacy theory, which maintain that: "an institution must constantly meet the twin tests of legitimacy and relevance by demonstrating that society requires its services and that the groups benefiting from its rewards have society's approval" (Shocker & Sethi, 1974, p. 64). Blacconiere and Patten (1994) argue that, when disasters occur, negative reactions by stakeholders and the market serve to motivate fuller disclosure. For example, corporations attempt to influence the public's perceptions and policy-making through social disclosures indicating the corporation is acting in society's interests (Patten, 1992). To test the phenomena, Patten examines the petroleum industry's reaction to the Exxon Valdez incident. If one views the incident as an act involving only Exxon, one would anticipate that Exxon alone would have to justify either their continued contract or the need to avoid additional restrictions by demonstrating their increased awareness for caution in the future.

Lehman (1992) suggests that firms whose legitimacy is challenged must provide evidence that either refutes or mitigates the information causing the challenge. In this regard, Exxon's efforts included substantial coverage (e.g.,

3.5 pages) of the incident and their cleanup efforts in their 1989 annual report. Exxon also included 2.5 pages of environmental disclosures in the same report. Their six pages of coverage in their 1989 annual report was ten times the coverage of environmental issues they provided in their 1988 annual report. Exxon was not the only corporation threatened by the Valdez incident. The spill challenged the legitimacy of the seven oil companies forming the Alyeska consortium. Patten found that there was an increased level of transparency of environmental issues in the 1989 annual reports throughout the industry and especially for those companies forming the Alyeska consortium.

In light of the Enron scandal, which not only shook corporate America but investors from all over the world, one might anticipate that companies would have an increased desire to demonstrate their corporate ethics. Given this crisis occurred in the US, one would anticipate a faster rate of disclosure in the US; however, this does not mean that the fallout from the incident was confined to the US. We believe that corporations will be more likely to make their codes of ethics readily assessable on their corporate websites after Enron, WorldCom, and Global Crossings. For example, in the US, the institution of corporate codes of ethics is not a new phenomenon. During the 1970s and 1980s, companies introduced codes to attest to their ethical awareness and behavior following an array of national and international business scandals (Murphy, 1995).

Impact of the Sarbanes-Oxley Act on Disclosure

Marnburg (2000) believes that corporate codes of ethics serve to challenge individuals to ethical behavior or maintain an environment that fosters superior behavior. This implies that the "tone at the top" set by corporate management is critical to an organization's ethical behavior. Abelson (2000, pp. C1, C8) found that a questionable culture fosters fraudulent reporting:

> [Cedent's] former executives said today that for almost the entire history … its top executives directed a conspiracy to inflate profits … it was a culture that had been developing over many years. It was just … ingrained in us by our superiors over a very long period of time. I just thought I was doing my job.

It is not unusual for the federal government in the United States to intervene when the need arises (i.e., by encouraging corporations to develop codes of ethics). In the United States, the Federal Sentencing Guidelines were instituted to encourage ethics programs and corporate codes of ethics for businesses (Dunfee & Werhane, 1997). If a company is found guilty of

wrongdoing, the guidelines provide for reduced fines for a company that has an active code of ethics (Rafalko, 1994). However, a study conducted by the Economist Intelligence Unit (EIU, 2002) confirmed that disclosure of corporate governance by US firms was low compared to European firms (EIU, 2002). Later in 2002, Congress and the SEC passed the Sarbanes-Oxley Act (U.S. Congress, 2002), which required compliance by March 2003, and mandated that companies:

> [D]isclose whether it has adopted a code of ethics that applies to the company's principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A company disclosing that it has not adopted such a code must disclose this fact and explain why it has not done so. A company also will be required to promptly disclose amendments to, and waivers from, the code of ethics relating to any of those officers. (SEC, 2003)

As part of the implementation of Sarbanes-Oxley, the SEC (2004a) distributed an exposure draft of their proposed disclosure requirements in July of 2002 (i.e., after our first observation point). Part of this draft proposed that firms disclose their codes of ethics; one possible medium for this disclosure was a corporation's website (p. 100). In their revised requirements, which were dated January 24, 2003, the SEC (2004b) confirmed this requirement for public disclosure of their codes of ethics on corporate websites. Since then, the New York Stock Exchange has proposed listing standards that require codes of ethics on corporate websites (Thelen, Reid, & Priest, 2004).

The data in Fig. 1 suggest that, because the United States is at the lower (upper) end of the Uncertainty Avoidance (litigation) spectrum and the Enron/Arthur Andersen failures most directly affected the legitimacy of firms headquartered in the United States, these firms would be more open to additional disclosures. Our first hypothesis is (all hypotheses use alternate form):

> **H1.** US-based corporations will be more likely to post codes of ethics online than Internationally based corporations.

Regulation and Disclosure

Ruhnka and Boerstler (1998, p. 322) provide evidence that government regulations can affect a change in codes of ethics. These authors examined the activity in enacting or updating codes of conduct of the Fortune 500 industrial and service companies from 1960 through 1994. While there was very limited activity prior to 1975, a significant increase in the level of activity occurred in 1976 that coincided with the amnesty offered for

voluntary disclosure of illegal actions and a resulting enactment of codes of ethics as a result of the Foreign Corrupt Practices Act of 1977 (Fig. 2). After the act's effective date, the activity decreased to its earlier rate.

Though only requiring codes of ethics for very senior officers, the Sarbanes-Oxley Act is the first piece of legislation to require a corporate ethics code of any kind and shows a national value of ethical practices. While the number of firms disclosing their codes of ethics is important and thus tested in Hypothesis 1, equally as important is the rate of change in disclosing corporate codes of ethics. The goal should be for corporations to provide a readily available avenue for public scrutiny of their codes as quickly as possible. Owing to past events and recent legislation, we believe that US firms will increase their disclosure of ethics codes. The pattern of disclosures before a regulation is enacted through its implementation date that Ruhnka and Boerstler's note provides the basis for our second hypothesis.

H2. The number of readily available codes of ethics on corporate websites will be higher for the period between January 2003 and March 2003 than between July 2002 and January 2003.

If there is an increase in the rate of having corporate codes of ethics readily available on corporations' websites at the end of March 2003, it is likely that this phenomenon occurred because of the implementation of the Sarbanes-Oxley Act legislation. Our expectation for the rate of change in
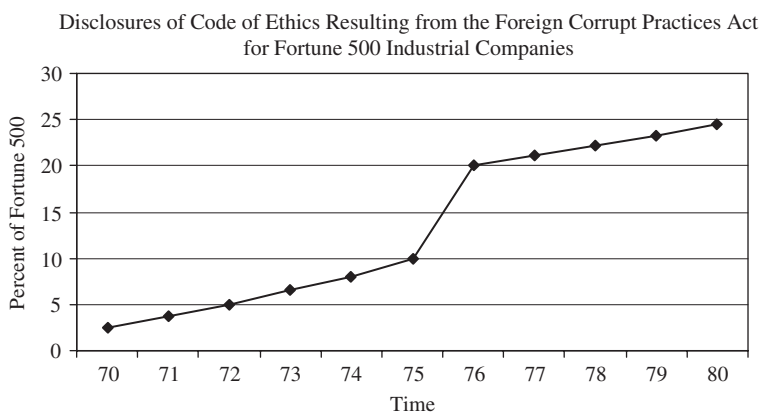
Fig. 2. Disclosures of Code of Ethics Resulting from the Foreign Corrupt Practices Act for Fortune 500 Industrial Companies.

having codes of ethics readily available on corporations' websites for the time period between the end of March and the end of July 2003 is:

H3. The rate of increase in readily available codes of ethics on corporate websites will decrease for the period between March 2003 and July 2003 when compared to the change between January 2003 and March 2003.

METHODOLOGY

Sample

The research examines whether the 97 US-based (see Appendix A) and top 100 Internationally based (see Appendix B) corporations listed in the Fortune Global 500 (2001) provide disclosure of their corporate codes of ethics on their websites. While the initial sample included the top 100 US corporations; three of these corporations merged with other corporations prior to the data gathering. The authors were not aware of this until after the first observation point because their websites were still active. Consequently, the US sample consists of 97 corporations because of the study's longitudinal design.

Table 1 shows the distribution of 197 corporations by the location of their home offices, Uncertainty Avoidance scores, and litigation indices. As anticipated, the majority (e.g., 86 of the 97 with Uncertainty Avoidance constructs) of the internationally based corporations were headquartered in countries with Uncertainty Avoidance scores larger than the United States (i.e., lower Uncertainty Avoidance). Additionally, Fig. 1 already demonstrated that all of the litigation indices for the other countries are lower than the United States.

Data-Gathering Procedures

In our data gathering, we went to the 197 corporations' websites and searched for disclosure of their corporate code of ethics. In this process, we defined emphasizing ethics as whether the corporation disclosed its corporate code of ethics within two levels of the main level of its website (i.e., by the third level if one counts the entry level as one). At each level, there were several available options that did not count as a level until selected. For firms whose direct homepage is commercial, the levels did not begin until the corporate page (i.e., usually by selecting the ''About our Company'' option). For Internationally based firms, we did not start to count levels until reaching an English version of the corporate homepage.

Table 1. Distribution of Corporations by Country, Uncertainty
Avoidance Construct and Litigation Index.

Country	Number of Corporations	Uncertainty Avoidance	Litigation Index
United States	98	46	15.00
United Kingdom	9	35	10.00
Canada	1	48	8.07
France	12	86	6.22
Italy	4	75	6.22
Germany	17	65	6.22
Switzerland	4	58	6.22
Netherlands	7	53	6.22
Norway	1	50	6.22
Japan	29	92	4.82
Spain	3	86	4.82
Mexico	1	82	4.82
Brazil	1	76	4.82
Sweden	1	29	4.82
South Korea	5	85	3.61
Venezuela	1	76	3.61
Finland	1	59	3.61
China	3	na	na

na = China is not part of Hofstede's or Wingate's data set.

Our examination of corporate websites indicated it was almost a standard to go from the 'About US' level to the 'Investor Relations' level to 'Annual Reports' level (i.e., one could call up a specific annual report within two levels of the homepage "About US" level). Typically, one can directly access a pdf file with the desired annual report. Similarly, if this level had a pdf file for the code of ethics, we counted it as a hit. Consequently, the second level gives codes of ethics the same external accessibility as a firm's annual report. The title "code of ethics" was not necessary; instead, the focus was on the content of the document. To be counted, a code must specifically address ethical situations instead of simply stating corporate values (Ferrell, 1999).

We gathered our initial sample at the beginning of July 2002 to establish a baseline for our study. Our second sampling was at the beginning of January 2003 to determine whether any progress had been made toward fuller disclosure of corporate codes of ethics on the web. Our next sample was gathered at the end of March 2003 (hereafter referred to as our April sample) to determine the effect of the Sarbanes-Oxley Act. Finally, we also examined

the corporate websites at the beginning of July 2003 (i.e., one year after our baseline point).

Hypothesis Testing Procedures

For Hypothesis 1, we extracted the data four times – in July 2002 and in January, April, and July 2003. We calculated our expected percentages by assuming that half of the firms, which had a corporate code of ethics on their websites, would be Internationally based and half would be US-based. In Hypothesis 2, we compared the number of readily available corporate codes of ethics on websites between January and April 2003 and between April 2003 and July 2003. We gathered data at the end of March 2003, to determine whether the increase in the number of corporations having their codes of ethics readily available on their websites associated with the implementation date of the Sarbanes-Oxley Act. For Hypothesis 3, we compared the change in readily available corporate codes of ethics on websites between April and July 2003 with the change between January and April 2003.

ANALYSIS

Comparing US with International Disclosure

The data in Tables 2 and 3 indicate that the sample of US-based and Internationally based corporations have their code of ethics within the first two levels of their corporate websites. The bold print in the table delineate each period's the additions to the list of corporations that have their code of ethics readily available online. Over the data-gathering period, five companies stopped making their corporate codes of ethics readily available – three US-based and two Internationally based. While we could not determine why this occurred for all five firms, code of ethics appeared as a current "News" level item for Sprint and Kmart – a temporary interest item.

The data in Fig. 3, Panels A and B show the observed frequencies for firms that included their ethics codes within two levels of their corporate homepage by grouping. Hypothesis 1, which tested whether having a code of ethics on the websites was independent grouping, was not supported by the data for either the July 2002 or the January 2003 observations. However, Hypothesis 1 was supported for the April 2003 observations ($p = 0.0384$) and July 2003 observations ($p < 0.0001$), which are the observations after the implementation of the Sarbanes-Oxley act.

Table 2. Fortune Global 500 Companies Disclosing Ethics on their Corporate Websites Sample Firms Based in the United States.

Corporation	7/02	1/03	3/03	7/03
Bell South	**Yes**	Yes	Yes	Yes
Boeing	**Yes**	Yes	Yes	Yes
Dow Chemical	**Yes**	Yes	Yes	Yes
Duke Energy	**Yes**	Yes	Yes	Yes
Du Pont	**Yes**	Yes	Yes	Yes
Honeywell	**Yes**	Yes	Yes	Yes
Lockhd Martin	**Yes**	Yes	Yes	Yes
Motorola	**Yes**	Yes	Yes	Yes
Sprint	**Yes**	**No**	No	No
United Tech	**Yes**	Yes	Yes	Yes
Verizon	**Yes**	Yes	Yes	Yes
Walt Disney	**Yes**	**Yes**	Yes	Yes
Dell Computer	No	**Yes**	Yes	Yes
Intel	No	**Yes**	Yes	Yes
International Paper	No	**Yes**	Yes	Yes
PepsiCo.	No	**Yes**	Yes	Yes
USX	No	**Yes**	Yes	Yes
Aetna	No	No	**Yes**	Yes
Alcoa	No	No	**Yes**	Yes
Allstate	No	No	**Yes**	Yes
American Express	No	No	**Yes**	Yes
AT&T	No	No	**Yes**	**No**
Chevrontexaco	No	No	**Yes**	Yes
Citigroup	No	No	**Yes**	Yes
Fannie Mae	No	No	**Yes**	Yes
Goldman sacks	No	No	**Yes**	Yes
John & Johnson	No	No	**Yes**	Yes
Kmart	No	No	**Yes**	**No**
Merrill Lynch	No	No	**Yes**	Yes
Procter & Gamble	No	No	**Yes**	Yes
Tyco International	No	No	**Yes**	Yes
Utilicorp/Aquila	No	No	**Yes**	Yes
Autonation	No	No	No	**Yes**
Bristol-Myers Squibb	No	No	No	**Yes**
Conagra	No	No	No	**Yes**
Conoco (Phillips)	No	No	No	**Yes**
Delphi Automotive	No	No	No	**Yes**
El Paso	No	No	No	**Yes**
First Union	No	No	No	**Yes**
Fleet Boston	No	No	No	**Yes**
General Electric	No	No	No	**Yes**
Ingram Micro	No	No	No	**Yes**
Loews	No	No	No	**Yes**

Table 2. (*Continued*)

Corporation	7/02	1/03	3/03	7/03
Philip Morris-Altna	No	No	No	**Yes**
Reliant Energy	No	No	No	**Yes**
Sara Lee	No	No	No	**Yes**
United Health Group	No	No	No	**Yes**

Bold 'Yes' indicates period firm made their code of ethics **more accessible** on their corporate website. Bold 'No' indicates period that firm made their code of ethics **less accessible** on their corporate website.

Table 3. Fortune Global 500 Companies Disclosing Ethics on their Corporate Websites Sample of Internationally Based Firms.

Corporation	7/02	1/03	3/03	7/03
Eni	**Yes**	Yes	Yes	Yes
Marubeni	**Yes**	Yes	Yes	Yes
Nokia	**Yes**	Yes	Yes	Yes
Petrobras	**Yes**	Yes	Yes	Yes
Siemens	**Yes**	Yes	Yes	Yes
Total Fina Elf	**Yes**	Yes	Yes	Yes
Unilever	**Yes**	Yes	Yes	Yes
Vivendi Universal	**Yes**	**No**	No	No
Bank of Tokyo	No	**Yes**	Yes	Yes
BP	No	**Yes**	**No**	No
Ing Group	No	**Yes**	Yes	Yes
Itochu	No	**Yes**	Yes	Yes
Metro	No	**Yes**	Yes	Yes
Alcatel	No	No	**Yes**	Yes
Deutsch Telekom	No	No	**Yes**	Yes
Olivetti	No	No	**Yes**	Yes
Prudential	No	No	**Yes**	Yes
Royal Dutch Shell	No	No	**Yes**	Yes
Royal Philip Electronics	No	No	**Yes**	Yes
Samsung	No	No	**Yes**	Yes
Thyssen Krupp	No	No	**Yes**	Yes
Mitsubishi	No	No	No	**Yes**

Bold 'Yes' indicates period firm made their code of ethics **more accessible** on their corporate website. Bold 'No' indicates period that firm made their code of ethics **less accessible** on their corporate website.

Sarbanes-Oxley Act and Disclosure

The rate of change over the six-month period from July 2002 to January 2003 (Fig. 3) for the US-based group was 33 percent [(16 − 12)/12]. For the

Disclosures of Code of Ethics of the Global Fortune 500 Companies – Full Current Sample

Panel A: Graphic Depiction of Data
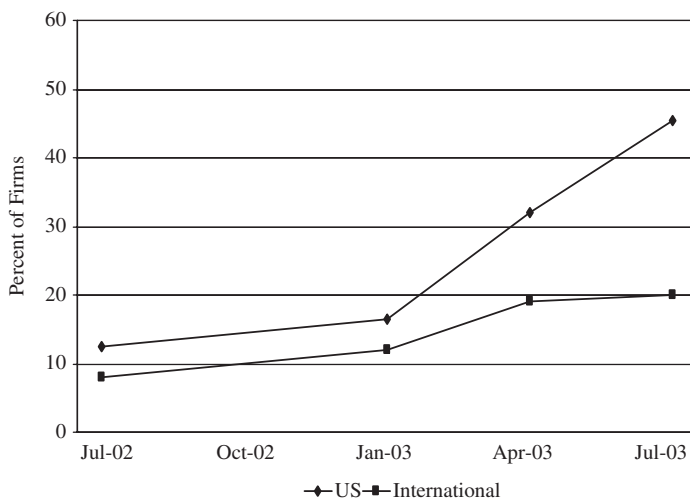
Panel B: Actual Data and Differences

	Observed Frequencies (%)			
	July 2002	January 2003	April 2003	July 2003
US Firms (n=97)	12.4	16.5	32.0	45.4
International (n=100)	8.0	12.0	19.0	20.0
Difference	4.4	4.5	12.0	25.4
Chi-squared statistic	1.02	0.81	4.29	14.83
Probability	0.3133	0.3681	0.0384	0.0001

No data were gathered in October; all other calendar dates indicate data gathering points.

Fig. 3. Disclosures of Code of Ethics of the Global Fortune 500 Companies – Full Current Sample.

Internationally based group, the rate of change was 50 percent [(12 − 8)/8]. If the Sarbanes-Oxley Act did not influence the decision process of corporations to increase their ethical transparency by having their codes of ethics readily available on their websites, one would anticipate an increase of about two firms for the three-month period from early January to the beginning of April 2003 (e.g., about half the six-month rate).

Hypothesis 2 (Table 4, Panel A) was supported for the US-based sample ($p < 0.0058$); the data indicate that, in the three months between January and April 2003, the number of US firms having their codes of ethics readily

Table 4.   Difference between Observation Points by Sample.

Panel A: Difference between January and April 2003 Observations

Sample	Jan 03 (%)	Apr 03 (%)	Diff. (%)	χ^2	Prob.
US firms ($n = 97$)	16.5	32.0	15.5	7.62	0.0058
International ($n = 100$)	12.0	19.0	7.0	2.10	0.1471

Panel B: Difference between April and July 2003 Observations

Sample	Apr 03 (%)	Jul 03 (%)	Diff. (%)	χ^2	Prob.
US firms ($n = 97$)	32.0	45.4	13.4	4.87	0.0273
International ($n = 100$)	19.0	20.0	1.0	0.08	0.7757

available increased by 93.8 percent from 16 to 31. Hypothesis 2 was not supported for the Internationally based sample ($p = 0.1471$) even though the data indicate that the number of Internationally based firms having their codes of ethics readily available increased by 58.3 percent from 12 to 19.

Hypothesis 3 speculates that the rate of change will decrease after the Sarbanes-Oxley Act's implementation date. If this is the case, one would anticipate the rate of change between April 2003 and July 2003 would regress to the earlier rate between July 2002 and January 2003 (i.e., two firms each for the US-based and Internationally based samples or a 6.3 percent [2/32] for the US-based sample and 10.5 percent [2/19] increase for the Internationally based sample). The data (Table 4, Panel B) indicate that, for three months between April and July 2003, the number of US-based corporations having their codes of ethics readily available increased from 31 to 45 firms (i.e., a 41.9 percent increase, $p = 0.0273$). The data also indicate that the number of Internationally based firms having their codes of ethics readily available increased from 19 to 20 firms (i.e., a 5.3 percent increase, $p = 0.7757$). Hypothesis 3 was not supported for the data; the change for the US-based sample is exactly opposite of what we anticipated.

Disclosure by New York Stock Exchange Corporations

Because the New York Stock Exchange (NYSE) has additional disclosure requirements relating to Sarbanes-Oxley, we analyzed our data for the 88

US-based and 47 Internationally based corporations listed on the NYSE to determine whether they differed from our full sample of 197. The data for the 135 (88 + 47) corporations listed on the NYSE are shown in Fig. 4, Panels A and B. For Hypothesis 1, the data in Fig. 4 indicate that the readily available rates were nearly identical for both samples for our first two observations. While the difference between the US-based and Internationally based samples was not significant ($p = 0.3728$) for the April observation, it was significant for the July observation ($p = 0.0187$).

Hypothesis 2 (Table 5, Panel A) was supported for the US-based sample ($p = 0.0163$); the data indicate that, in the three months between January and April 2003, the number of US-based firms having their codes of ethics

Disclosures of Code of Ethics of the Global Fortune 500 Companies
Listed on the New York Stock Exchange

Panel A: Graphic Depiction of Data
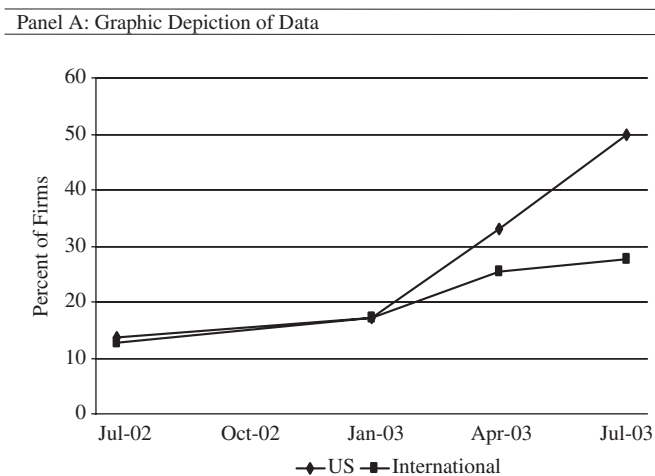
Panel B: Actual Data and Differences

	Observed Frequencies (%)			
	July 2002	January 2003	April 2003	July 2003
US Firms (n = 88)	13.6	17.0	33.0	50.0
International (n = 47)	12.8	17.0	25.5	27.7
Difference	0.8	0.0	7.5	22.3
Chi-squared statistic	0.02	0.00	0.79	5.53
Probability	0.8873	0.9972	0.3728	0.0187

No data were gathered in October; all other calendar dates indicate data gathering points.

Fig. 4. Disclosures of Code of Ethics of the Global Fortune 500 Companies Listed on the New York Stock Exchange (NYSE).

Table 5. Difference between Observation Points by Sample for Firms Listed on the NYSE.

Panel A: Difference between January and April 2003 Observations

Sample	Jan 03 (%)	Apr 03 (%)	Diff. (%)	χ^2	Prob.
US firms ($n = 88$)	17.0	33.0	16.0	5.77	0.0163
International ($n = 47$)	17.0	25.5	8.5	1.01	0.3161

Panel B: Difference between April and July 2003 Observations

Sample	Apr 03 (%)	Jul 03 (%)	Diff. (%)	χ^2	Prob.
US firms ($n = 88$)	33.0	50.0	17.0	5.21	0.0225
International ($n = 47$)	25.5	27.7	2.2	0.05	0.8155

readily available doubled from 15 to 29. Hypothesis 2 was not supported for the Internationally based sample ($p = 0.3161$); the data indicate that the number of Internationally based firms having their codes of ethics readily available increased from 8 to 12. For Hypothesis 3 (Table 5, Panel B), the data indicate that, for three months between April and July 2003, the number of US-based corporations having their codes of ethics readily available increased from 29 to 44 firms (i.e., a 51.7 percent increase, $p = 0.0225$). The data indicate that the number of Internationally based firms having their codes of ethics readily available increased from 12 to 13 firms (i.e., an 8.3 percent increase, $p = 0.8155$).

CONCLUSIONS

Our study examined the openness of corporations to public scrutiny as measured by the placement of their codes of ethics on their websites. We initially argued that one should be able to distinguish between the various levels of commitment to ethical operations of corporations by their emphasis on corporate ethics. This research provides a striking contrast between US-based firms and Internationally based firms after the implementation date of the Sarbanes-Oxley Act at the end of March 2003. The analysis indicates that there is a significant difference between the willingness of Internationally based and US-based firms to subject their codes of ethics to public scrutiny on the web.

In the post Enron, WorldCom, and Global Crossings environment, it is not surprising that firms are more sensitive to the public's growing

expectation that corporations provide a measure of their values. What is not so apparent is why there is such a significant difference between the two groups of firms. One might hypothesize (as we did) that there should exist a closer bond between firms within a given market; however, this reasoning does not support a growing sense of global business. Owing to our research design, we could not determine whether the difference resulted from cultural distinctions, ''Americanization'' perceptions, or a combination of several factors. Future research is needed to determine whether the differences noted in this study indicate a difference in ethical values or associates with area specific circumstances in the US.

The data suggest that the Sarbanes-Oxley Act had a positive effect on both US-based and Internationally based firms' web-based disclosures of their codes of ethics. However, the 58.3 (5.3) percent rate of change for the Internationally based firms was less than the 93.8 (41.9) percent rate of change for the US firms for the April (July) 2003 observation. This suggests that, although there may be a propensity among Internationally based firms not to follow the leadership of the US legislation enacted by the US has a far-reaching effect on actions outside our borders. Contrary to our expectations, the number of corporations making their codes of ethics readily available on their websites did not decrease after the implementation date of the Sarbanes-Oxley Act for US corporations. This suggests that Sarbanes-Oxley has had more than a short-term impact on corporate disclosures; however, its continuing influence can only be demonstrated by further research.

An interesting trend is reflected in the Fig. 4 data. While both groups of firms are governed by SEC reporting requirements, only the US-based firms listed on the NYSE appear to be concerned with the positioning of their codes on their websites. Fig. 4 data show that both groups had essentially the same readily available rate from July 2002 through January 2003. If the current trend continues through the end of 2003 (i.e., from July through the end of December), 83 percent (50 + [50 – 17]) of the US-based firms listed on the NYSE will have their codes readily available on their websites. However, in the same timeframe, we project that only 38.4 percent (27.7 + [27.7 – 17]) of the Internationally based firms listed on the NYSE will have their codes readily available on their websites.

Our research examined the level of making codes ''readily available'' for public scrutiny. In effect, the first two sets of observations, which precede the implementation date of Sarbanes-Oxley Act, document those companies that are ''early adopters'' of the focus of the research. We acknowledge that examining web sites for disclosure changes will not allow one to distinguish whether the Sarbanes-Oxley Act produced substantive (behavioral) or

cosmetic (public relations) responses, which suggests an interesting area for future research.

There are four limitations to this study. First, the sample was made up of corporations from the Fortune Global 500 and may not be generalizable to the overall population. Second, while we examined data at four points in time, our search was only for readily available data that we defined as being within two levels of their corporate homepage. Future research should examine how far into a firm's website one has to search before finding a code of ethics. Finally, our research examined the rates of the top 97 US based and 100 Internationally based firms from the Fortune Global 500. An alternative research design would be to concentrate the 200-firm sample in one geographic location (i.e., the US or Europe) so that the sample would have large enough sub-samples to examine industry effects; this suggests an opportunity for future research.

NOTES

1. We define "readily available" as being within two levels of each corporation's homepage. One definition of stakeholders is "any individual, group, or item that can affect or is affected by an organization's decisions" (Arthur Andersen, 1992, p. 35).

2. We examined the top corporations because large firms feel more political and social pressure than do smaller firms (Cowen, Ferreri, & Parker, 1987 Cowen et al., 1987; Watts & Zimmerman, 1978). For example, Patten (1992) found that firm size was significant in predicting the amount of disclosure after the Exxon Valdez incident.

REFERENCES

Abelson, R. (2000). The road to reviving a reputation. *New York Times*, June 15, C1, C8.

Adams, J. S., Tashchian, A., & Stone, T. H. (2001). Codes of ethics as signals for ethical behavior. *Journal of Business Ethics*, *29*(3), 199–211.

Andersen, A. (1992). *Business ethics program, accounting materials*. St. Charles, IL: Arthur Andersen & Co.

Arnold, D. F., Sr., Bernardi, R. A., & Neidermeyer, P. E. (2001). The effect of client integrity, litigation, and culture on European materiality estimates. *The International Journal of Accounting*, *36*(4), 459–483.

Backof, J. F., & Martin, C. L., Jr. (1991). Historical perspectives: Development of codes of ethics. *Journal of Business Ethics*, *10*(2), 99–110.

Bavishi, V. B. (1991). *International accounting and auditing trends*. Princeton, NJ: Center for International Financial Analysis and Research.

Blacconiere, W. G., & Patten, D. M. (1994). Environmental disclosures, regulatory costs, and changes in firm value. *Journal of Accounting and Economics*, *18*(3), 357–377.

Bollom, W. J. (1988). Ethics and self-regulation for CPAs in the USA. *Journal of Business Ethics*, *7*(1/2), 55–61.

Campos, R. C. (2002). *Speech by SEC commissioner: Remarks at the commission open meeting regarding corporate ethical behavior*, http://www.sec.gov/news/speech.

Cohen, J. R., Pant, L. W., & Sharp, D. J. (1992). Cultural and socioeconomic constraints on international codes of ethics: Lessons from accounting. *Journal of Business Ethics*, *11*(9), 687–695.

Cowen, S. S., Ferreri, L. B., & Parker, L. D. (1987). The impact of characteristics on social responsibility disclosure: A typology and frequency-based analysis. *Accounting Organizations and Society*, *12*(2), 111–122.

Dunfee, T. W., & Werhane, P. (1997). Report on business ethics in North America. *Journal of Business Ethics*, *16*(14), 1589–1595.

Economist Intelligence Unit (EIU). (2002). *Corporate governance: The new strategic imperative*, http://www.us.kpmg.com/microsite/Attachments/corpgovern_newstrat.pdf.

Enderle, G. A. (1996). Comparison of business ethics in North America and Continental Europe. *Business Ethics: A European Review*, *5*(1), 33–46.

Ferrell, O. C. (1999). An assessment of the proposed academy of marketing science code of ethics for marketing educators. *Journal of Business Ethics*, *19*(2), 503–516.

Fortune. (2001). *Fortune Global 500*. New York: Arnold Bernhard & Co.

Gaumnitz, B. R., & Lere, J. C. (2002). Contents of codes of ethics of professional business organizations in the United States. *Journal of Business Ethics*, *35*(1), 35–49.

Giacobbe, R. W., & Segal, M. N. (2000). A comparative analysis of ethical perceptions in marketing research: USA vs. Canada. *Journal of Business Ethics*, *27*(3), 229–245.

Hofstede, G. (1980). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Beverly Hills, CA: Sage.

Jeurissen, R. J. M., & van Luijk, H. J. L. (1998). The ethical reputations of managers in nine EU-countries: A cross-referential survey. *Journal of Business Ethics*, *17*(9/10), 995–1005.

Kleiner, D. S., & Maury, M. D. (1997). Thou shalt and thou shalt not: An alternative to the Ten Commandments approach to developing a code of ethics for schools and business. *Journal of Business Ethics*, *16*(2), 129–146.

Langlois, C. C., & Schlegelmilch, B. B. (1990). Do corporate codes of ethics reflect national character? Evidence from Europe and the United States. *Journal of International Business Studies*, *21*(4), 519–540.

Lehman, C. (1992). *Accounting's changing role in social conflict*. London: Paul Chapman.

Marnburg, E. (2000). The behavioural effects of corporate ethical codes: Empirical findings and discussion. *Business Ethics: A European Review*, *9*(3), 200–210.

Murphy, P. E. (1995). Corporate ethics statements: Current status and future prospects. *Journal of Business Ethics*, *14*(9), 727–741.

Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory. *Accounting Organizations and Society*, *17*(5), 471–475.

Rafalko, R. J. (1994). Remaking the corporation: The 1991 sentencing guidelines. *Journal of Business Ethics*, *13*(8), 625–637.

Raiborn, C. A., & Payne, D. (1990). Corporate codes of conduct: A collective conscience and continuum. *Journal of Business Ethics*, *9*(11), 879–889.

Ruhnka, J., & Boerstler, C. H. (1998). Governmental incentives for corporate self-regulation. *Journal of Business Ethics*, *17*(3), 309–326.

Sacconi, L. S., de Colle, S., & Baldin, E. (2002). *The Q-RES project: The quality of the social and ethical responsibility of corporations*, http://europa.eu.int/comm/employmentsocial/soc-dial/csr/qresguidelines.pdf.

Schlegelmilch, B. B. (1989). The ethics gap between Britain and the United States: A comparison of the state of business ethics in both countries. *European Management Journal*, *7*(1), 57–64.

Schwartz, M. S. (2001). The nature of the relationship between corporate codes of ethics and behavior. *Journal of Business Ethics*, *32*(3), 247–262.

Schwartz, M. S. (2002). A code of ethics for corporate codes of ethics. *Journal of Business Ethics*, *41*(1/2), 27–43.

Securities and Exchange Commission (SEC). (2003). *Final rule: Disclosure required by sections 406 and 407 of the Sarbanes-Oxley Act of 2002*, http://www.sec.gov/rules/final/33-8177.htm.

Securities and Exchange Commission (SEC). (2004a). *Proposed rule: Disclosure required by sections 404, 406 and 407 of the Sarbanes-Oxley Act of 2002*, http://www.sec.bov/rules/proposed/33-8138.htm.

Securities and Exchange Commission (SEC). (2004b). *Final rule: Disclosure required by sections 404, 406 and 407 of the Sarbanes-Oxley Act of 2002*, http://www.sec.bov/rules/proposed/33-8138.htm.

Shocker, A. D., & Sethi, S. P. (1974). Approach to incorporating social preferences in developing corporate action strategies. In: S. P. Sethi (Ed.), *The unstable ground: Corporate social policy in a dynamic society* (pp. 67–80). Los Angeles, CA: Melville.

Smith, A. (2002). Testing the stability of the global concept of culture in an accounting context. *Accounting Enquiries*, *11*(2), 227–248.

Thelen, R., & Priest LLP (2004). *Proposed NYSE listing standards*, http://www.thelenreid.com/articles/article/art_137.htm.

U.S. Congress. (2002). *Sarbanes-Oxley Act (HR 3763),* http://news.findlaw.com/hdocs/docs/gwbush/.

Valentine, S., & Barnett, T. (2002). Ethics codes and sales professionals' perceptions of their organizations; Ethical values. *Journal of Business Ethics*, *40*(3), 191–200.

Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review*, *53*(1), 112–134.

Weaver, G. R. (2001). Ethics programs in global businesses: Cultures role in managing ethics. *Journal of Business Ethics*, *30*(1), 3–16.

Weller, S. (1988). The effectiveness of corporate codes of ethics. *Journal of Business Ethics*, *7*(5), 389–395.

Wingate, M. L. (1997). An examination of cultural influence on audit environment. *Research in Accounting Regulation*, *11*(Suppl.), 115–127.

APPENDIX A

Top 100 U.S.-based Corporations in the Fortune Global 500

Aetna	Dow Chemical	Johnson & Johnson	Sears Roebuck
Albertson's	Duke Energy	Kmart	Southern Company
Alcoa	Dynegy	Kroger	Sprint
Allstate	E.I. Du Pont de Nemours	Lehman Brothers Holdings	State Farm Insurance
American Express	El Paso	Lockheed Martin	Supervalu
American International	Enron	Loews	Target
AMR	ExxonMobil	Lucent Technologies	Tech Data
AT&T	Fannie Mae	McKesson HBOC	TIAA-CREF
Autonation	First Union Corporation	Merck	TXU
Bank of America Corp	FleetBoston Financial	Merrill Lynch	Tyco International
Bank One Corp	Ford Motors	Metlife	U.S. Postal Service
Bell South	Freddie Mac	Microsoft	United Health Group
Berkshire Hathaway	General Electric	Morgan Stanley Dean Witter	United Parcel Service
Boeing	General Motors	Motorola	United Technologies
Bristol-Myers Squibb	Georgia-Pacific	New York Life Insurance	USX
Cardinal Health	Goldman Sachs Group	PepsiCo	Utilicorp United (Aquila)
ChevronTexaco	Hewlett-Packard	Pfizer	Verizon Communications
Citigroup	Home Depot	PG&E Corp	Walgreen
Coca-Cola	Honeywell International	Philip Morris (Altria)	Wal-Mart Stores
Compaq Computer	IBM	Procter & Gamble	Walt Disney
Conagra	Ingram Micro	Prudential Ins. of America	Wells Fargo
ConocoPhillips	Intel	Reliant Energy	WorldCom
Costco Wholesale	International Paper	Safeway	
Dell Computer	J.C. Penny	Sara Lee	
Delphi Automotive	J.P. Morgan Chase & Co	SBC Communications	

APPENDIX B

Top 100 Internationally based Corporations in the Fortune Global 500

ABN Amro Holding	Electricite de France	Mitsubishi Motors	RWE
Aegon	Eni	Mitsui	Saint-Gobain
Alcatel	Fiat	Mizuho Holdings	Samsung
Allianz	Fortis	Munich RE Group	Samsung Electronics
Assicurazioni Generali	France Telecom	NEC	Santander Central Hispano
AXA	Fujitsu	Nestle	Siemens
Bank of Tokyo—Mitsubishi	Glaxosmithkline	Nippon Life Insurance	Sinopec
BASF	Hitachi	Nippon Mitsubishi Oil	SK
Bayer	Honda Motor	Nippon Telegraph/Telephone	Sony
BMW	HSBC Holdings	Nissan Motor	State Power
BNP Paribas	Hypovereinsbank	Nissho Iwai	Suez
BP	Hyundai	Nokia	Sumitomo
BT	Hyundai Motor	Nortel Networks	Sumitomo Life Insurance
Carrefour	Ing Group	Olivetti	Telefonica
CGNU	Itochu	PDVSA	Tesco
China National Petroleum	Ito-yokado	Pemex	Thyssen Krupp
Credit Agricole	Koninklijke Ahold	Petrobras	Tokyo Electric Power
Credit Suisse	L.M. Ericsson	Peugeot	Toshiba
Daiei	Marubeni	Prudential	Total Fina Elf
Dai-ichi Mutual Life Ins	Matsushita Electric Indust	Renault	Toyota Motor
Daimlerchrysler	Meiji Life Insurance	Repsol YPF	UBS
Deutsche Bank	Metro	Robert Bosch	Unilever
Deutsche Post	Mitsubishi	Royal Bank of Scotland	Vivendi Universal
Deutsche Telekom	Mitsubishi Electric	Royal Dutch/Shell Group	Volkswagen
E.ON	Mitsubishi Heavy Industries	Royal Philips Electronics	Zurich Financial Services

ESTIMATING IMPACT OF FORMULA APPORTIONMENT ON ALLOCATION OF WORLDWIDE INCOME AND THE POTENTIAL FOR DOUBLE TAXATION

Kevin Devine, Priscilla O'Clock and
Lloyd "Pat" Seaton

ABSTRACT

The issue of international transfer pricing and the allocation of worldwide income has become increasingly important as the number of multinational corporations (MNCs) has increased. An arm's-length transaction method of transfer pricing is currently the method required to assign worldwide income; however, evidence suggests that MNCs use the transfer-price mechanism to shift income between tax jurisdictions. As a result, a formulary apportionment method, similar to that used by the states, has been suggested as a preferred alternative. This paper develops a simulation model to investigate the impact on U.S. taxable income of MNCs if a formula apportionment model were adopted. Alternative simulation models explore the magnitude of potential for double taxation when two taxing jurisdictions use different formulary models. The results indicate that, in the aggregate, a decrease in U.S. taxable income could be expected.

A relatively modest amount of formulary income is likely to be subject to double taxation when foreign jurisdictions weight the sales factor more heavily and income escapes taxation when the U.S. weights the sales factor more heavily. However, the impact for any single MNC could be significant.

INTRODUCTION

The number of organizations doing business in the global marketplace has been rapidly increasing. Accordingly, the allocation of worldwide income of multinational corporations (MNCs) that operate controlled subsidiaries outside the home country has received increased attention. The allocation and taxation of that income is governed by existing tax treaties that generally apply an arm's-length transaction approach to determine the acceptable transfer price for intra-company cross-border transactions. Changes in U.S. tax law have greatly increased the complexity associated with determining an acceptable arm's-length measurement of the value of transferred goods, intangibles, and services. Commensurate with the increased complexities are the costs of complying with (company perspective) and enforcing (government perspective) such measurements.

When two or more nations tax the business income of a multinational corporation, jurisdictional conflicts can arise. These potential conflicts are virtually identical to the conflicts suggested when two or more states tax the income of a company engaged in interstate commerce. A corporation subject to income taxation in more than one state must apportion its total income among the states in which nexus exists. The simplicity of formulary apportionment utilized by the states to tax income of corporations engaged in interstate commerce has led several authors to suggest the adoption of a formulary apportionment approach to world-wide income (Bucks, 1996; Bucks & Mazerov, 1993; Christensen, 1997; Mazerov, 1994; McLure, 1989; Martinez-Vazquez, McLure, & Wallace, 1995). Others have argued that despite its complexity the arm's-length or comparable uncontrolled price (CUP) method should be used because formulary approaches do not reflect economic reality (Engel, 1998; Organization for Economic Cooperation and Development, 1995; U.S. Treasury Department Regulation, 1.482-1(a)–(f), 1999). Further criticism of the formulary apportionment approach is that it can result in double taxation and/or under taxation (Engel, 1998; Wetzler, 1995). The relative benefits of formula apportionment include the ease of implementation and the reduced ability to shift income across taxing

jurisdictions. However, the theoretical disadvantage is the failure to capture economic reality. These characteristics of formula apportionment motivate the questions investigated in this paper: First, what effect would adopting formulary apportionment instead of the arm's-length transaction approach have on the allocation of worldwide income of multinational corporations? Second, what is the potential magnitude for double taxation and/or income escaping taxation?

BACKGROUND

Current U.S. Tax Law

Transfer pricing, using the mandatory arm's-length transaction approach, has become an increasingly important issue facing MNCs. In a survey of their clients, Ernst and Young (1999) reported that 61 percent of MNC parent entities and 97 percent of MNC subsidiaries indicated that transfer pricing was the most significant international tax issue that they are currently facing (Ernst & Young, 1999, p. 7). In fact, the respondents indicated that transfer pricing is the single most important tax issue facing MNCs around the world. Previous studies have reported that differential tax rates create incentives for MNCs to shift income from high tax to low tax countries by utilizing the transfer-pricing mechanism (Grubert, Goodspeed, & Swenson, 1993; Halperin & Srinidhi, 1996; Harris, 1993; Jacob, 1996; Klassen, Lang, & Wolfson, 1993). In order to mitigate the incentive to shift income, U.S. taxing authorities have revised provisions of the internal revenue code (IRC, 1986) dealing with the transfer price issue. These revisions have specifically delineated the acceptable methods of determining the price assigned to an inter-divisional transfer, as well as the necessary substantiation and documentation, with significant penalties for noncompliance. The rapid expansion of business into worldwide markets has brought an increasing number of companies, of all sizes, within the realm of these complex requirements. The result is that significant resources have been directed to compliance with the regulations (by the MNCs) and to enforcement (by the taxing authority).

The provisions of IRC Section 482 require that a controlled group (related parties) report profits from any controlled (intra-company) transactions in a manner that reasonably reflects the relative economic activity undertaken by each taxpayer. The IRC transfer price standard is the CUP method. The essence of CUP is that where an arm's-length price is available

(a price charged to uncontrolled parties for the identical good or service) that price must be used to allocate profits of the related (or controlled) parties, assuming similar market conditions. It is generally agreed that the implementation of this code section is costly, highly complex, imprecise, and can result in suboptimal allocation of resources (Burge, Kral, & Serota, 1994; Bucks, 1996). A major reason for the failure of the arm's-length principle is that all too often there is no comparable market price. Failure to comply with the Internal Revenue Service interpretation of Section 482 regulations can result in very costly tax penalties (20 or 40% of tax adjustment). The imposition of such penalties has recently been upheld by the courts in the DHL Corporation case (Tax Clinic, 2000).

The arm's-length method has frequently been touted as being superior to a formulary approach in spite of the complexity and high compliance and audit cost because it theoretically is more representative of the true economic nature of the transaction. While the notion of theoretical superiority may be difficult to challenge, the model is not without criticism. Several studies have provided evidence of transfer price manipulation in an effort to reduce overall tax burden (Borkowski, 1997; Harris, 1993; Jacob, 1996; Klassen et al., 1993). More recently, Harris and Sansing (1998) develop an analytical model to demonstrate that use of the CUP method by an MNC, engaged in manufacturing and selling, allocates disproportionately high levels of income to the manufacturer. Similarly, Emmanuel (1999) demonstrates in a three-country example that manipulation of the transfer price can permit an MNC to maximize global after-tax net income, particularly when national jurisdictions do not have consistent forms of taxation. Conover and Nichols (2000) found that large firms are more likely to shift income through the transfer-price mechanism than small or financially distressed firms. Swenson (2001) reported that the combined effects of tax rates and tariffs could create an incentive for a shift in income across borders through manipulation of intra-company transfer prices.

Description of Formula Apportionment

American states and Canadian provinces use some form of formula apportionment to allocate corporate U.S. or Canadian (or worldwide) income to the home state or province and to the host states or provinces. A multi-jurisdictional corporation must apportion its net income for tax purposes among the various host states in which nexus has been established. Nexus describes the degree of business activity that must be present before a host

state has the right to impose a tax on an entity's income. Typically, sufficient nexus occurs when a company derives income from the sale of its product within the state in which it is located, owns or leases property within the state, employs personnel within the state, or has physical or financial capital in use within the particular state. Generally, solicitation of sales is not sufficient to create nexus.

The apportionment of corporate income among states was traditionally based on a formula that consisted of three equally weighted factors: the shares of sales, payroll, and corporate property attributable to each state. States, however, have the discretion to chose any combination of the three factors and how much weight to place on each component. More recently states have begun to use formulas that weight the sales factor more heavily. Note, under formula apportionment, the home state of incorporation is surrendering its right to tax corporate income earned outside the state. In situations in which the apportionment formulas differ from one state (province) to another state (province) the possibility to influence the income subject to taxation exists. However, if the components of the apportionment formula are uniformly weighted and defined, the multijurisdictional corporation, typically, would not be able to shield income from taxation or be subject to double taxation, as it is currently possible with the discretionary alternatives being employed.

Klassen and Shackelford (1998) found evidence consistent with income shifting when they examined firms doing business in Canadian provinces and states within the United States. Their findings indicated that income shifting is accomplished through manipulation of the sales factor. Alternatively, Lightner (1999) found that all three apportionment factors (payroll, property, and sales) combined with tax rate for each state are shown to be negatively related to change in manufacturing employment. Her findings indicate that it is tax rate as opposed to formula factors that drive employment growth in states. Simulation results of Williams, Swenson, and Lease (2001) report that jobs and capital are shifted into unitary states when they lower tax rates, but non-unitary states do not benefit from similar tax rate cuts. However, Goolsbee and Maydew (2000) find that states lowering the weight on the payroll factor increase manufacturing employment within the state. Edmiston (2002) investigated the economic development and regional revenue effects of apportionment policies. The results indicated that a region independently adopting a single factor sales model (with all other regions retaining a three factor apportionment model) will receive economic benefits. If all regions simultaneously adopt a single factor sales model there will be both clear winners and losers. Research related to the adoption of

formula apportionment at the international level has typically been limited to the impact on taxable income.

Apportionment Versus Arm's-Length

Recent studies by Schadewald (1996) and Shackelford and Slemrod (1998) investigated the impact, on a limited number of firms, of making the switch from arm's-length to formula apportionment of cross-border income. A third study (Devine, O'Clock, & Seaton, 1999) developed a simulation model to test the effect of adopting formula apportionment. This model was limited by the assumption that domestic and foreign distributions of the factors were identical.

Schadewald (1996) estimated the impact of formula apportionment on the U.S. tax liability of 38 firms that are included in the 1995 Forbes Super 50. These estimates were derived from the data provided in the income tax and geographic segment footnotes of the firms' 1994 financial statements. Each firm's estimated worldwide taxable income was apportioned based on a single factor (sales or assets) and on a two-factor formula (sales and assets). Worldwide taxable income was estimated as the sum of U.S. and foreign pre-tax accounting income. Results suggested that, for an individual firm, there could be large differences in the amount of U.S. income reported using arm's-length transfer pricing versus formula apportionment. However, the average increase in U.S. income for all firms in the sample was one percent when utilizing a one-factor model based on sales, five percent for a single-factor model based on assets, and three percent for a two-factor model with sales and assets. Integrated petroleum companies and automobile manufacturers represented the industries that would report the largest increases in U.S. income between the two alternative methods of allocating worldwide income.

Shackelford and Slemrod (1998) extend the Schadewald study by examining the financial reports of 46 U.S. based multi-national companies over a five-year period. The authors estimate worldwide taxable income through a "gross up" process by incorporating estimates of foreign tax rates with consideration for U.S. tax credits. In addition, an attempt was made to estimate the payroll factor that is the third factor typically utilized in a formula apportionment allocation. Results indicate that use of formula apportionment would increase the U.S. tax liability of the sample companies by 38 percent. This result assumes no shift in sales, assets, or labor across borders in response to requiring apportionment rather than the separate accounting method used to determine the arm's-length transfer price. As in

the Schadewald (1996) study, the most significant shift in U.S. tax liability occurs for the gas and oil industry (81 percent higher with apportionment). The results do not imply that total corporate tax burden would be higher, but that there would be a shift in foreign versus U.S. tax liability for a given multinational firm. The research suggests that either foreign operations are more profitable than domestic operations or that multinational enterprises are using the transfer-price mechanism to successfully shift income out of the U.S.

In an attempt to generalize the transfer pricing versus apportionment issue to a broader range of firms, Devine et al. (1999) used a simulation model to investigate the difference in world-wide income allocated between two jurisdictions employing an arm's-length versus formula apportionment method. This research developed a distribution of sales, income, payroll, and assets from all firms with available data in the Compustat-all firms file. The study then applied this distribution to two separate jurisdictions, and simulated the difference in apportionment versus arm's-length taxable income. A major limitation of this study is that it assumed the distribution of variables was the same in both jurisdictions. A second limitation of the simulation is that it developed distributions from all firms listed in the Compustat files regardless of whether or not they had operations in a foreign country.

All three of the studies above examined the shift in taxable income or tax liability in or out of the United States. However, they did not examine the magnitude of potential increases or reductions in taxable income (and resulting tax liability) by varying apportionment models across U.S. and non-U.S. jurisdictions.

Potential to Create or Reduce Taxable Income

Critics of the formula apportionment method have argued that utilization of this method can result in an entity being taxed on more than 100% of its income, hence, creating taxable income. In multi-state taxation, the potential for double taxation exists due to a lack of uniform standards with respect to nexus as well as to differences in the weighting of the factors comprising the apportionment model. Each state determines what constitutes nexus within its borders. Once nexus is established, the factors to be employed in the apportionment model, as well as the weighting of those factors, are also determined by the taxing authority in the host's jurisdiction. Although the equally weighted three-factor model is the traditional

approach, several states have adopted a single factor sales formula, others have assigned double-weighting to the sales factor. The latter methods provide a tax break to entities that are domiciled within the state, since they would generally have more property and payroll costs than an out-of-state company. Anand and Sansing (2000) report that when U.S. states utilize the same apportionment model there is no resulting double taxation. However, the apportionment model creates incentives for states to deviate from an equally weighted formula and this can result in double taxation. The particular deviation from the model depends on whether the state is a net importer (weighted toward sales) or net exporter (weighted toward factors of production). This lack of consistency with respect to nexus and the apportionment model can result in the creation of income (double taxation) or in income escaping taxation. An example of this is presented in the appendix.

METHODOLOGY

This study estimates the distribution of differences in the world wide income allocated between the United States and non-U.S. jurisdictions when an apportionment allocation method is used as opposed to an arm's-length transfer pricing model. In order to estimate these differences this research uses data included on the Compustat PC "all firms" file to establish distributions of domestic and worldwide sales, income/sales, payroll/sales, and identifiable assets/sales. The distributions of these variables are then used in a simulation model to estimate the amount of income allocated to U.S. and non-U.S. jurisdictions resulting from both an arm's-length and formulary apportionment approach.

Variable Distributions and Calculations

In order to simulate the differences between arm's-length income (ALI) and formulary apportionment income (FAI) it was necessary to obtain the distributions of all variables to be utilized in the simulation. Data for the distributions were obtained from the Compustat PC "all firms" files. Since both domestic and foreign variable distributions are of interest, only those firms that had both U.S. and foreign income were included in the sample. The distributions of interest were sales, pre-tax income/sales, payroll/sales, and identifiable assets/sales for both foreign and domestic operations. From this information a simulation model was used to compute domestic and

foreign pre-tax income, sales, payroll, and identifiable assets. This information in turn allowed the computation of domestic and foreign ALI and FAI.

The distributions for foreign and domestic sales were obtained directly from the Compustat database. The distributions for domestic (U.S.) and foreign (non-U.S.) pre-tax income/sales and identifiable assets/sales were computed as follows:

$$\text{domestic pre-tax income/sales} = \text{U.S. pre-tax income/U.S. sales} \quad (1)$$

$$\text{domestic identifiable assets/sales} = \text{U.S. identifiable assets/U.S. sales} \quad (2)$$

$$\text{foreign pre-tax income/sales} = \text{non-U.S. pretax income/non-U.S. sales} \quad (3)$$

$$\text{foreign pre-tax identifiable assets/sales} =$$
$$\text{non-U.S. identifiable assets/non-U.S. sales} \quad (4)$$

Data on payroll was limited to total payroll for all operations. Therefore, the distribution for domestic and foreign payroll/sales was the same distribution and was obtained as follows:

$$\text{payroll/sales} = \text{total payroll/total sales} \quad (5)$$

The use of the total payroll/total sales ratio fails to recognize that labor cost as a percent of sales is quite different between U.S. and non-U.S. operations of MNCs. Therefore, an adjustment to this distribution was necessary in order to develop a meaningful payroll figure to be used in the calculation of FAI. This adjustment to the payroll/sales ratio is discussed later in the paper. Table 1 presents the distributions that were used in the simulation of ALI and FAI.

Determination of ALI and FAI

Once distributions were determined, a simulation was run to model the differences between ALI and FAI. ALI for U.S. operations was simulated as follows:

$$\text{ALI}_{\text{dom}} = \text{pre-tax income}_{\text{dom}}/\text{sales}_{\text{dom}} \times \text{sales}_{\text{dom}} \quad (6)$$

Similarly,

$$\text{ALI}_{\text{for}} = \text{pre-tax income}_{\text{for}}/\text{sales}_{\text{for}} \times \text{sales}_{\text{for}} \quad (7)$$

Table 1. Deciles of Distributions for Simulated Variables.

Decile	Sales (Millions of $)		Identifiable Assets/Sales		Payroll/Sales
	Domestic	Foreign	Domestic	Foreign	
10	4.3	3.3	0.47	0.33	0.10
20	15.8	7.8	0.64	0.48	0.14
30	39.5	15.9	0.77	0.57	0.16
40	73.6	27.5	0.92	0.69	0.18
50	121.9	48.2	1.07	0.80	0.20
60	213.8	93.3	1.33	0.97	0.23
70	399.3	173.8	1.69	1.19	0.26
80	829.4	441.6	2.43	1.73	0.32
90	2,630.9	1,426.6	3.52	3.30	0.45

ALI was computed as the product of income/sales and sales in order to insure that the magnitude of income was consistent with the size of the simulated organization. The importance of this relationship will become obvious with the determination of FAI below.

The simulation of FAI for U.S. and foreign operations is considerably more involved. The first step in allocating income using a formulary approach is the determination of the allocation formula. The formulary approach used in this model is based on a formula, which allocates income to each jurisdiction (foreign and domestic) based on an equal weighting of sales, payroll, and identifiable assets. The computation of FAI for domestic operations was computed as follows:

$$
\begin{aligned}
\mathrm{FAI_{dom}} = {} & [\mathrm{ALI_{dom} + ALI_{for}}] \times [\mathrm{sales_{dom}/(sales_{dom} + sales_{for})} \\
& + \mathrm{assets_{dom}/(assets_{dom} + assets_{for})} \\
& + \mathrm{payroll_{dom}/(payroll_{dom} + payroll_{for})]/3}
\end{aligned}
\tag{8}
$$

where
 dom = domestic (U.S.)
 for = foreign (non-U.S.)

The same model was used for the computation of foreign source FAI except that the foreign source variable distributions were used. Determinations of foreign and domestic sales were simulated directly from the domestic and foreign sales distributions. The simulation models run in this study incorporated the historically observed correlation between foreign and domestic sales. This correlation allowed the model to simulate a relationship between foreign and domestic sales more consistent with the actual

relationship than would be obtained if the model ignored these correlations. Similarly, the observed correlations between foreign and domestic payroll/sales and income/sales ratios were included in the model. The correlations, with the exception of payroll/sales, were computed from the Compustat database that was used for determining variable distributions. The correlation of U.S. (domestic) income/sales and foreign income/sales was 0.33. The correlation of U.S. sales and foreign sales was 0.626. There was no significant correlation between domestic and foreign asset/sales ratios, hence, none was incorporated in the resulting simulation model. The correlation of domestic and foreign payroll/sales ratios was 0.94. This correlation was obtained from 1998 Bureau of Economic Analysis (BEA) aggregate industry data reported in Mataloni (2000).

In order to insure the magnitude of assets and payroll were consistent with the size of the firm as represented by sales, these factors were determined as the product of sales and an asset/sales and payroll/sales ratio, respectively.

Domestic assets were computed as follows:

$$\text{assets}_{dom} = \text{identifiable assets}_{dom}/\text{sales}_{dom} \times \text{sales}_{dom} \qquad (9)$$

Foreign assets were determined in the same manner except that the foreign identifiable assets and sales distributions were used. This computation was straightforward for assets; however, the payroll measure required adjustment as separate domestic and foreign payroll distributions were not available.

In addition to the lack of separate distributions for payroll, the mean of the payroll information was skewed toward more labor-intensive organizations. These two factors necessitated that an adjustment be made to the total payroll/sales distribution in order to determine the domestic and foreign payroll to sales ratios. To accomplish this, information regarding U.S. and non-U.S. payroll to sales information was obtained from the 1998 BEA data reported in Mataloni (2000). Payroll/sales of foreign affiliates of U.S. MNCs in the benchmark survey was reported at 11.1 percent. Similarly, the reported payroll/sales of U.S. parents' domestic operations was 18.43 percent. The payroll to sales ratio obtained from the Compustat database for firms with usable payroll information was 25.4 percent. This number is significantly higher than one would suspect given the payroll/sales information contained in the Benchmark Survey. This is likely the result of a different sample of firms included in the Benchmark Survey versus those reporting payroll information in the Compustat data base. An alternative explanation is that the labor and related cost reported in Compustat and the employee

compensation reported in the BEA data includes different assumptions regarding the composition of labor costs. Data related to employee compensation and the calculated total payroll to total sales ratio from the Compustat data base were utilized in determining the simulated observations of payroll/sales for both domestic and foreign operations as follows:

$$\text{domestic payroll/sales} = \text{total payroll/total sales} \times \text{adjustment} \quad (10)$$

where total payroll/total sales was computed from the Compustat "all firms" file.

Similarly,

$$\text{foreign payroll/sales} = \text{total payroll/total sales} \times \text{adjustment} \quad (11)$$

The adjustment factors were obtained as follows:

$$\text{domestic adjustment} = \text{domestic payroll average/total payroll average}$$
$$\text{therefore, domestic adjustment} = 18.43/25.4\% = 0.726$$

$$(12)$$

where domestic payroll average was obtained from the Benchmark Survey data.

Similarly,

$$\text{foreign adjustment} = \text{foreign payroll average/total payroll average}$$
$$\text{therefore, foreign adjustment} = 11.11/25.4\% = 0.437$$

$$(13)$$

where foreign payroll average was obtained from the Benchmark Survey data.

After determination of the domestic and foreign payroll factors it was possible to compute the payroll factor as follows:

$$\text{payroll}_{\text{dom}} = \text{total payroll/total sales} \times \text{domestic adjustment} \times \text{sales}_{\text{dom}}$$
$$(14)$$

$$\text{payroll}_{\text{for}} = \text{total payroll/total sales} \times \text{foreign adjustment} \times \text{sales}_{\text{for}} \quad (15)$$

This approach allows the model to calculate a foreign and domestic payroll factor that recognizes the average premium paid on U.S. labor. It should also be noted that domestic and foreign payroll/sales figures are obtained from separate simulated samples of the total payroll/total sales distributions. Therefore, the model does not assume the same pre-adjusted payroll to sales ratio for domestic and foreign operations. The weakness of

this approach is that both foreign and domestic payroll/sales are obtained from the same limited initial sampling distribution. The magnitude of this limitation is not known with certainty; however, one would expect the mean of this distribution to be the most significant difference in the foreign and domestic distributions. The mean difference in the distribution is controlled through the calculation of the adjustment factors.

RESULTS

A latin hypercube simulation model was run 10 times for 5,000 iterations utilizing the variable distributions presented in Table 1. Latin hypercube was chosen because it stratifies the input probability distribution, thereby insuring that the sample obtained more accurately reflects the input distribution.

Model One

The first series of simulations computed domestic and foreign ALI and FAI using a three-factor model equally weighted for sales, payroll, and assets. Since the formulary model was identical in both foreign and domestic jurisdictions the total amount of ALI will equal the total amount of FAI.

Table 2 provides a summary of the domestic and foreign ALI and FAI as well as the average difference between ALI and FAI for each of the 10 simulation models. Nine of the 10 simulation models projected domestic ALI would exceed domestic FAI. The projected amount that domestic ALI would exceed domestic FAI for the nine models ranged from a low of $5.519 million to a high of $35.848 million. One of the simulation models (simulation 10) did project domestic FAI would actually exceed domestic ALI by a rather modest $6.158 million. The average domestic FAI ($336.094 million) for all ten simulations was $19.879 million lower than domestic ALI ($355.973 million). Therefore, the simulation results indicate that a switch to an equally weighted formulary approach to allocate world wide income would result in approximately a 5.6 percent decrease (19.879/355.973) in U.S. taxable income given the current distribution of sales, assets, and payroll for U.S. firms engaged in international operations. Similarly, these results indicate that taxable income in foreign countries would be increased by approximately 31.3 percent (19.879/63.476).

Closer examination of one of the simulation models will provide insight into differences between ALI and FAI. Consider simulation six from

Table 2. Model One: Ten Simulation Summary of ALI and FAI for
Domestic and Foreign Operations with Equally Weighted
Apportionment Factors (Millions of Dollars).

Simulation	Domestic			Foreign		
	ALI	FAI	Difference	ALI	FAI	Difference
1	291.886	265.352	26.534	42.184	68.718	−26.534
2	267.247	232.363	34.884	54.414	89.298	−34.884
3	308.674	272.826	35.848	67.990	103.838	−35.848
4	407.620	401.298	6.322	39.397	45.719	−6.322
5	235.912	230.393	5.519	47.474	52.993	−5.519
6	483.725	467.485	16.241	83.446	99.687	−16.241
7	366.825	340.200	26.626	98.046	124.672	−26.626
8	423.357	398.630	24.727	46.774	71.501	−24.727
9	478.626	450.376	28.250	78.540	106.790	−28.250
10	295.856	302.013	−6.158	76.493	70.336	6.158
Mean	355.973	336.094	19.879	63.476	83.355	−19.879
Minimum	235.912	230.393	−6.158	39.397	45.719	−35.848
Maximum	483.725	467.485	35.848	98.046	124.672	6.158

Table 2. This simulation is selected because the mean difference between
ALI and FAI in simulation six is close to the average difference between
ALI and FAI for the 10 simulations. Fig. 1 presents the distribution of the
simulated differences between ALI and FAI for domestic operations in the
sixth simulation. Examination of Fig. 1 reveals that, while some simulated
differences between ALI and FAI can be quite large, most observations are
relatively close to zero. As expected, the figure is slightly skewed in a di-
rection consistent with domestic ALI being greater than domestic FAI.

Table 3 provides a decile presentation of the dollar difference between
ALI and FAI (ALI–FAI) for both domestic and foreign operations for
simulation six. The table also shows the resulting ALI, FAI, sales percent-
age, asset percentage, and payroll percentage for each of the decile obser-
vations. Given a simulation with 5,000 iterations, the first decile represents
the 500th simulated observation ordered in terms of the greatest amount by
which domestic FAI exceeded domestic ALI. Similarly, the ninth decile
represents the 4,500th simulated observation in terms of the amount by
which domestic FAI exceeded domestic ALI.

Examination of Table 3 can explain why the differences in ALI and FAI
occurred. For example, the second decile represents an observation in which
the FAI for domestic operations was 5.038 million dollars greater than the
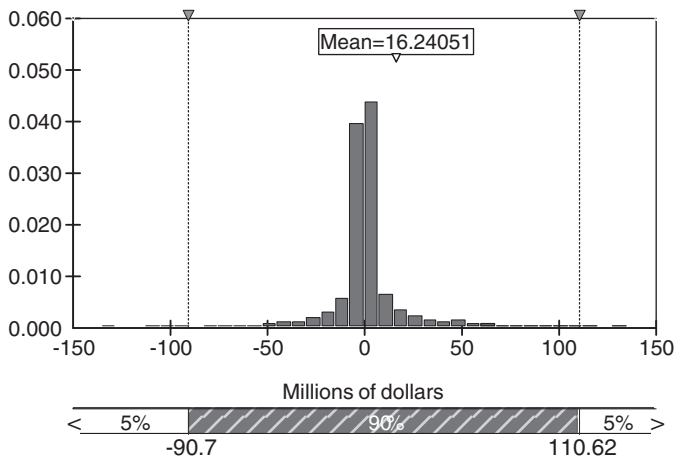
Fig. 1. Model One, Simulation Six Distribution of Differences between ALI and FAI.

Table 3. Deciles of Differences from Model One, Simulation Six.

Decile	Domestic*			Foreign*			Domestic		
	ALI	FAI	ALI–FAI	ALI	FAI	ALI–FAI	Sales %	Payroll %	Asset %
10	−22.017	3.156	−25.173	97.382	72.210	25.173	4.7	7.6	0.2
20	20.473	25.511	−5.038	8.233	3.194	5.038	83.7	88.3	94.6
30	0.443	1.714	−1.270	3.993	2.722	1.270	30.0	49.0	36.9
40	−0.381	−0.137	−0.244	0.183	−0.061	0.244	59.8	72.4	75.2
50	3.320	3.245	0.075	0.041	0.116	−0.075	95.1	96.6	97.9
60	6.213	5.549	0.665	1.369	2.033	−0.665	64.4	70.4	84.7
70	−391.852	−394.125	2.272	−20.425	−18.153	−2.272	95.0	95.4	96.3
80	14.991	7.197	7.794	64.048	71.842	−7.794	5.9	9.2	12.1
90	50.359	14.722	35.587	9.305	44.893	−35.587	32.2	36.9	5.2

*Amounts in millions of dollars.

domestic ALI. This observation is representative of a situation in which the majority of a firm's operations are domestic based (83.7, 88.3, and 94.6% of sales, payroll, and assets, respectively), yet the foreign operations are relatively more profitable from an arm's length perspective, with foreign ALI representing $8.233 million (28.7%) of the total $28.706 million (8.233 + 20.473). However, the apportionment method allocates approximately 88.9 percent ((83.7 + 88.3 + 94.6)/3) of the income to the domestic

operations and only 11.1 percent of the income to the foreign operation since it has a much smaller percentage of the organization's sales, assets, and payroll than its proportion of the organization's ALI. The net effect is that the apportionment method shifts $5.038 million of the $28.706 million in total income (17.6%) from the foreign operations to the domestic operations.

Alternatively, the ninth decile illustrates the opposite phenomena. Domestic ALI is $50.359 million dollars and foreign ALI is $9.305 million, for a total profit of $59.664 million. Notice in this example the organization's U.S. operations are generating 84.4 percent of the profit with a relatively small proportion of the sales, payroll, and assets (32.2, 36.9, and 5.2%, respectively). This example might be typical of a U.S. based company that has exported all of its manufacturing operations and distributes goods world wide, but uses the transfer pricing mechanism to shift income into the U.S. or sells its most profitable products in the U.S. With formula apportionment, however, both jurisdictions will be allocated a portion of that profit on the basis of their sales, assets, and payroll. The net effect is that income of the foreign operations under FAI increases by $35.587 million from $9.305 million ALI to $44.893 million FAI. This represents a 59.6 percent shift (35.587/59.664) in the company's income from the domestic jurisdiction to the foreign jurisdiction. From a different perspective, foreign income is increased by 382.5 percent (35.587/9.305).

The examples above illustrate the potential effect of adopting formula apportionment on an individual organization when the formulary apportionment formula is the same in the home and host countries. While the simulations reported for Model one had an average 5.6 percent shift in income, the shift for any given organization can potentially be quite large. The next models investigate the impact of formula apportionment when home and host countries employ different apportionment models.

Models Two and Three

Critics have argued that a significant negative factor associated with apportionment models is the possibility for income to escape taxation or the potential for double taxation. The potential for these events occurs when the formulary apportionment model used is different across the jurisdictions in which an organization operates. Common formulary models in use at the state level are equally weighted three-factor models, such as that used in Model one above, sales only models, and models that double-weight sales.

When the apportionment models are different across taxing jurisdictions, it is possible for more income to be apportioned among the various jurisdictions than exists (the double taxation scenario) or less income to be apportioned than exists (income escaping taxation scenario).

To evaluate the potential for each of these effects two simulation models were developed that use different apportionment formulas for domestic and foreign operations. The first uses an equally weighted three-factor model for domestic operations and a sales only model for foreign operations (Model two). The next model uses a three-factor equally weighted model for foreign operations and a sales only model for domestic operations (Model three). Income is created when total arm's length income (TALI) is less than total formula apportionment income (TFAI). Similarly income escapes taxation when TALI is greater than TFAI. Each of these models were run 10 times for 5,000 iterations and results are presented in a format similar to that used for Model one.

Table 4 presents a summary of the 10 simulations for Model two that determines domestic and foreign apportionment income utilizing the equally weighted domestic formula and the sales only foreign formula. This table reports the difference between ALI and FAI for both domestic and foreign operations. Column 7 in Table 4, titled TALI–TFAI, reports the average

Table 4. Model Two: Ten Simulation Summary for Domestic and Foreign ALI, FAI, and Double Taxation with a Foreign Sales Factor Only Apportionment Formula (Millions of Dollars).

Simulation	Domestic			Foreign			TALI–TFAI
	ALI	FAI	Difference	ALI	FAI	Difference	
1	376.717	350.385	26.333	98.984	132.082	−33.098	−6.765
2	310.106	307.704	2.403	91.416	99.361	−7.944	−5.542
3	256.533	243.589	12.945	55.304	75.724	−20.420	−7.476
4	302.165	273.169	28.996	62.670	93.601	−30.931	−1.935
5	320.757	299.729	21.028	69.557	93.591	−24.034	−3.006
6	319.453	296.387	23.066	59.085	81.542	−22.457	0.609
7	498.466	474.014	24.452	79.492	106.806	−27.314	−2.862
8	235.526	211.542	23.985	103.297	129.457	−26.249	−2.265
9	321.433	319.958	1.475	39.977	51.921	−11.945	−10.470
10	183.778	188.483	−4.705	35.139	33.029	2.110	−2.595
Mean	312.493	296.496	15.998	69.492	89.720	−20.228	−4.230
Minimum	183.778	188.483	−4.705	35.139	33.029	−33.098	−10.470
Maximum	498.466	474.014	28.996	103.297	132.082	2.110	0.609

amount of income created (or escaping taxation) when these two different apportionment formulas are used. The average result across the 10 simulations was the creation of additional income rather than income escaping taxation. On average, domestic ALI across the 10 simulations was $15.998 million higher than the domestic FAI. Foreign ALI was $20.228 million lower than foreign ALI. Unlike the results reported for Model one, the difference between ALI and FAI does not net across the two jurisdictions due to the use of different formulas in the two jurisdictions. The net result is that average TFAI across the 10 simulation models is $4.230 million higher than TALI (20.228−15.998). This is the average amount of income created and therefore double taxed. Average ALI for domestic operations across the 10 simulations is $312.493 million and average ALI for foreign operations is $69.492 million.

The average income created represents (4.230/(312.493 + 69.492)) 1.1 percent of TALI. It is worth noting that only one of the 10 simulations (simulation six) predicted that the foreign sales only model would result in average income escaping taxation. In this simulation the estimated income escaping taxation was $0.609 million out of a TALI of $378.598 million, or less than 0.2 percent of TALI would escape taxation. All nine of the other simulation models estimated that, on average, income would be created when an equally weighted domestic apportionment model and a foreign sales only apportionment model were used. While the average impact appears to be the creation of income, results can be quite different for any single observation or for any given firm.

To examine this effect, consider the distribution of ALI and FAI for Simulation 3 from Table 4. Simulation 3 was selected because the mean difference between domestic and foreign ALI and FAI is close to the average for all 10 simulations. Fig. 2 presents the distribution of the income created or the income escaping taxation for this model. The distribution was determined by subtracting TFAI from TALI, therefore negative numbers represent the creation of income and positive numbers represent income escaping taxation. It is important to note that, while on average $7.476 million of income was created across the 5,000 observations in simulation three, approximately 58 percent of the observations were related to the creation of income, while approximately 42 percent of the observations were related to income escaping taxation. Therefore, while the aggregate impact is expected to be the creation of income, the impact experienced by any given firm could be quite different.

A decile breakdown of simulation three is presented in Table 5. The deciles are sorted on the amount of income created or escaping taxation.
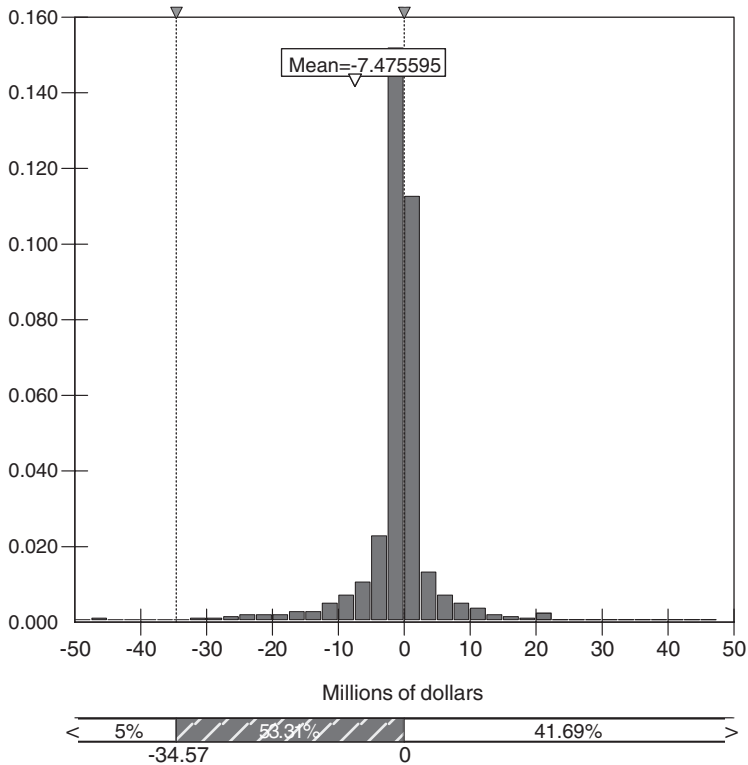
Fig. 2. Model Two, Simulation Three Distribution of Income Created/Escaping Taxation.

Table 5 presents the differences between ALI and FAI for both domestic and foreign operations. An examination of differences at the decile levels provides examples of situations in which an organization would benefit from formula apportionment in the sense that income would escape taxation as well as situations in which income is created resulting in the same income being taxed twice.

The second decile is indicative of a firm that has slightly less than half of its sales (46.3%) in the U.S. jurisdiction and more than half of its payroll (59.9%) and assets (88.8%) in the domestic or U.S. jurisdiction. However, under arm's length income the U.S. operations are considerably more profitable than the foreign operations with $12.456 million domestic ALI

Table 5. Deciles of Differences for Model Two, Simulation Three.

Decile	Domestic*			Foreign*				Domestic		
	ALI	FAI	ALI–FAI	ALI	FAI	ALI–FAI	Double Income	Sales %	Payroll %	Asset %
1	−256.253	−252.502	−3.750	−51.457	−44.961	−6.496	−10.247	85.4	89.2	71.5
2	12.456	9.048	3.408	1.471	7.485	−6.014	−2.606	46.3	59.9	88.8
3	26.236	29.813	−3.577	55.714	52.895	2.819	−0.758	35.5	39.4	34.3
4	0.944	0.730	0.214	0.460	0.892	−0.432	−0.218	36.5	48.4	71.0
5	0.084	0.318	−0.234	0.497	0.312	0.185	−0.049	46.3	60.7	56.9
6	0.134	0.122	0.012	0.003	0.010	−0.007	0.005	92.8	96.9	77.4
7	5.313	4.001	1.311	2.442	3.568	−1.126	0.185	54.0	66.3	34.5
8	4.786	−2.545	7.332	−9.399	−2.993	−6.406	0.926	35.1	47.2	83.3
9	−20.340	−22.753	2.412	−11.619	−14.345	2.726	5.138	55.1	61.9	96.6

*Amounts in millions of dollars.

and $1.471 million foreign ALI for a total of $13.927 million of ALI. Using an equally weighted three-factor model for U.S. operations, 65 percent ((46.3 + 59.9 + 88.8)/3) of the income is allocated to the domestic jurisdiction. The foreign jurisdiction, which apportions income on the basis of a single factor sales model taxes 53.7 percent of the income. The effect is that 118.7 percent of the total income is taxed across the two jurisdictions, creating income of approximately $2.6 million. In addition, the use of a formulary approach significantly shifts income from the domestic to the foreign jurisdiction.

The observation represented by sixth decile is quite different. This observation represents a situation in which a very high proportion of the organization's sales and payroll are in the U.S. (92.8 and 96.9 percent, respectively); however, a smaller proportion of the assets (77.4 percent) are located in the United States. This situation is consistent with a U.S.-based company locating a significant proportion of their manufacturing facilities in a country with a low cost of labor and goods are exported to the United States where sales are generated. The observation indicates that only $0.134 million in arm's length income is reported in the U.S. and only $0.003 million in the foreign operations for a total of $0.137 million in arm's length income. With the three-factor, equally weighted formulary model the domestic jurisdiction receives 89 percent ($.122 million) of the income. With a sales only formulary model the foreign jurisdiction is apportioned 7.2 percent ($0.010 million) of the income. Thus, approximately 3.8 percent ($0.005 million) of the income escapes taxation in either jurisdiction. While the

dollar amounts are relatively small in this example, similar characteristics in a more profitable company could result in a much larger amount of income escaping taxation.

A third series of simulations was run to further examine the potential for creation of income or income escaping taxation. This model (Model three) used an equally weighted three-factor apportionment model of sales, assets, and payroll for foreign operations and a sales only model in the domestic jurisdiction.

Unlike Model Two in which the use of a foreign sales only model and three factor U.S. model resulted in income being created, the use of a sales only formula in the U.S. jurisdiction and an equally weighted foreign model results in income escaping taxation, on average. The results of the 10 simulations related to this model are presented in Table 6.

The average ALI for domestic operations across the 10 simulations was $356.729 million and domestic FAI was $328.064 million. Therefore, the U.S. jurisdiction would expect $28.664 million less income under the apportionment formula. The average ALI and FAI for the foreign jurisdiction was $74.352 million and $94.497 million, respectively. Therefore, the foreign FAI is $20.144 million greater than foreign ALI. However, TFAI for both jurisdictions is $8.520 million less than TALI for both jurisdictions across

Table 6. Model Three: Ten Simulation Summary for Domestic and Foreign ALI, FAI, and Double Taxation with Domestic Sales Factor Only Apportionment Formula (Millions of Dollars).

Simulation	Domestic			Foreign			TALI–TFAI
	ALI	FAI	Difference	ALI	FAI	Difference	
1	416.320	384.667	31.654	78.703	104.084	−25.381	6.273
2	406.604	393.517	13.088	88.432	93.997	−5.565	7.523
3	394.364	354.799	39.565	55.278	89.938	−34.660	4.905
4	398.388	363.152	35.236	69.492	92.282	−22.790	12.446
5	286.575	251.151	35.425	75.978	102.983	−27.005	8.420
6	261.921	243.283	18.638	73.544	90.799	−17.255	1.383
7	339.961	307.576	32.385	75.632	95.357	−19.725	12.660
8	400.910	372.054	28.856	82.860	104.319	−21.459	7.396
9	403.021	369.115	33.906	52.717	74.948	−22.232	11.674
10	259.221	241.329	17.891	90.889	96.263	−5.374	12.518
Mean	356.729	328.064	28.664	74.352	94.497	−20.144	8.520
Minimum	259.221	241.329	13.088	52.717	74.948	−34.660	1.383
Maximum	416.320	393.517	39.565	90.889	104.319	−5.374	12.660

the 10 simulation. This indicates that on average $8.520 million in income would escape taxation out of TALI of (356.729 + 74.352) $431.08 million, or approximately 2 percent of ALI would escape taxation using a sales only formulary model in the U.S. and an equally weighted three factor model in foreign jurisdictions. All 10 of the simulation models reported in Table 6 indicate that, on average, income would escape taxation, ranging from a low estimate of $1.383 million in simulation six and a high of $12.660 million in simulation seven.

While the average impact of a sales only model in the U.S. with a three factor model in foreign operations may be expected to result in a loss of taxable income at the macro level, the effect could be quite different for any given firm. Fig. 3 represents the distribution of income being created or escaping taxation for simulation model 5. Simulation five was selected since it resembles the mean amount of income escaping taxation for all simulations.

The mean income that escapes taxation in simulation five was $8.42 million. However, examination of Fig. 3 reveals that approximately 41 percent of the observations in simulation 5 involved scenarios in which income was created, while 59 percent of the observations were scenarios in which income escaped taxation.

Table 7 provides a decile breakdown for simulation five, Model three. As in Table 5 the deciles are sorted on TALI–TFAI, whereby a negative number represents income created and a positive number represents income that escapes taxation. The ninth decile of Table 7 provides an example of a relatively large amount of income escaping taxation. This observation would be indicative of an organization that earned nearly all of its ALI in the U.S., $163.952 million of $165.403 total ALI. The observation also indicates a greater proportion of assets and payroll in the U.S. than sales (89.6% payroll, 88.4% assets and 79.7% sales). This observation would be consistent with a U.S. based company with most of its operations in the U.S. that is engaged in exporting a significant amount of its product. Since the foreign jurisdiction uses an equally weighted apportionment formula it is allocated 14.43 percent ((21.3 + 10.4 + 11.6)/3) of the total ALI. The U.S. operation would be allocated 79.7 percent of the income using a single factor sales model, resulting in approximately 5.87 percent of income escaping taxation. Reflection on this observation indicates that when one jurisdiction uses a sales only model, while other taxing jurisdictions are using a multi-factor model, a firm may avoid taxation by locating its facilities and employees in the sales only jurisdiction and exporting sales.

The results associated with three simulation models were presented above. The first model was equally weighted for sales, payroll, and assets in both
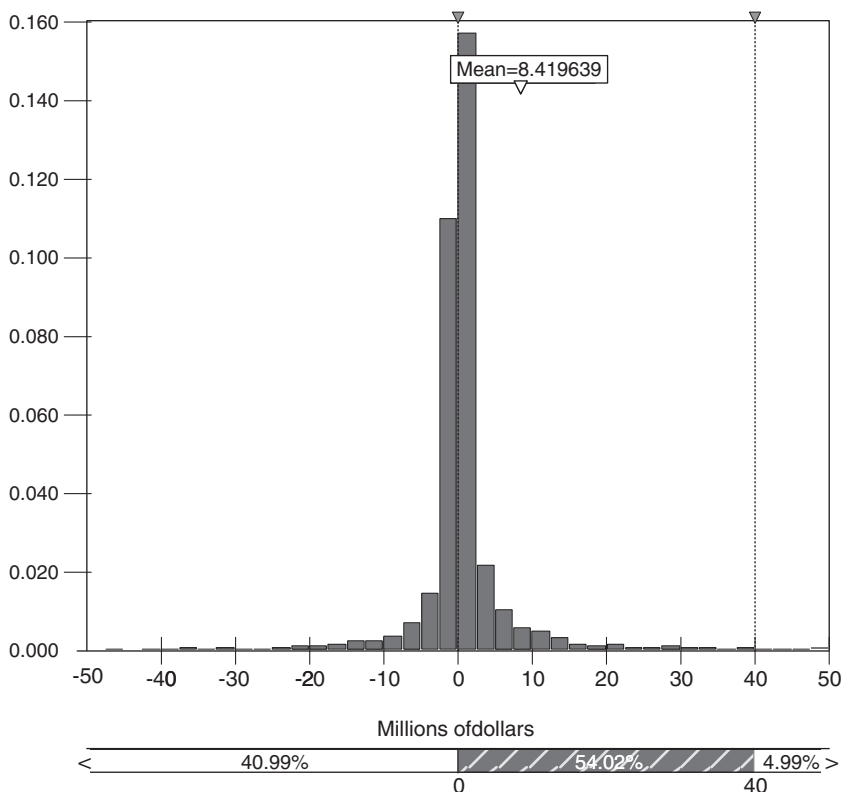
Fig. 3. Model Three, Simulation Five Distribution of Income Created/Escaping Taxation.

domestic and foreign jurisdictions. The second and third models were sales factor only in one jurisdiction and equally weighted across three factors in the second jurisdiction. Obviously, countless other weighting possibilities exist, however, it is not practical to report on all possibilities here. One such possibility is the double-weighting of the sales factor. This practice has been widely employed in states and provinces and is typically achieved by weighting the sales factor 50 percent and payroll and assets factors 25 percent each. A double weighted sales factor model was compared to an equally weighted three-factor model. The results were similar to the sales only versus three factor models above. When the domestic jurisdiction used a double-weighted sales model and the foreign jurisdiction used an equally weighted

Table 7.   Deciles of Differences for Model Three, Simulation Five.

Decile	Domestic*			Foreign*				Domestic		
	ALI	FAI	ALI–FAI	ALI	FAI	ALI–FAI	TALI–TFAI	Sales %	Payroll %	Asset %
1	6.818	−5.688	12.506	−27.785	−10.398	−17.387	−4.881	27.1	32.3	91.8
2	0.461	−0.430	0.891	−4.651	−2.981	−1.671	−0.780	10.3	12.3	64.0
3	−20.686	−4.014	−16.672	16.168	−0.337	16.505	−0.167	88.8	93.0	95.7
4	0.503	1.000	−0.496	0.580	0.087	0.493	−0.003	92.3	95.0	88.6
5	22.541	22.395	0.146	0.112	0.198	−0.086	0.060	98.9	99.4	99.1
6	14.517	8.865	5.653	−4.841	0.549	−5.389	0.263	91.6	94.2	97.2
7	45.833	29.976	15.857	−3.136	11.932	−15.607	0.790	70.2	80.7	65.2
8	26.056	26.425	−0.369	6.623	3.820	2.803	2.434	80.9	89.6	94.5
9	163.592	131.886	31.707	1.811	23.302	−21.491	10.216	79.7	89.6	88.4

*Amounts in millions of dollars.

three-factor model, income escaped taxation. When reversed, with the foreign jurisdiction using a double-weight sales model and the U.S. an equally weighted three-factor model, income was created. The amount of income created or escaping taxation on average was less than that obtained when using a sales factor only model. Complete results for the double weighted sales models are available from the authors on request.

DISCUSSION

The arm's-length approach to international transfer pricing has been challenged based on its complexity, high compliance cost, and high audit cost. These factors, in conjunction with evidence of firms using the transfer-price mechanism to shift income into low-tax jurisdictions, have inspired critics of the arm's-length approach to recommend that a formulary approach be used to allocate world-wide income, similar to that used by states and provinces. The proponents of such an approach cite the ease of calculation as a primary benefit. Skeptics cite the potential for double taxation or income escaping taxation, as well as the failure to portray economic reality. In this paper, the impact of adopting an equally weighted formula apportionment model on the U.S. and foreign taxable income of MNCs operating in the U.S. and foreign markets was investigated. In addition, the potential for income being created and/or escaping taxation was explored when the

elements and the weighting of the factors included in an apportionment formula differ across tax jurisdictions.

The simulation models in this study incorporated data from a wide range of MNCs with both U.S. and foreign income when developing variable distributions. As a result, the study cannot provide firm specific evidence as to the amount of increase or decrease in U.S. taxable income. However, the simulation approach does allow investigation of the likely overall effect of the adoption of a formula apportionment model. The results of the study indicate that, on average, U.S. taxable income would decrease by approximately 5.6 percent if foreign and domestic jurisdictions both used an equally weighted three-factor apportionment formula.

These results are in conflict with that reported in previous studies that had projected the impact of formula apportionment on U.S. taxable income for 38 Forbes Super 50 firms or 46 of the largest U.S.-based MNCs. The sample firms in these previous studies were disproportionately represented by the petroleum and auto industries, which were reported to have the greatest increase in taxable income resulting from a shift to formula apportionment. Previous studies used only the largest U.S.-based MNCs, while the simulation model developed in this study utilized data related to all firms included in the Compustat database that reported results from domestic and foreign operations. Therefore, the conflicting results reported in this study are at least in part associated with approximating the impact of adopting formula apportionment across firms of varying size and with a broader range of domestic and foreign operating characteristics. The findings of this study are also likely to be different from that of Schadewald (1996) because the Schadewald study did not examine differences in taxable income or tax liability using a three factor model. Choice of apportionment model will affect the amount of income subject to taxation in domestic and foreign jurisdictions.

Again, the results reported in this study refer to the estimated impact on U.S. and foreign (non-U.S.) taxable income, in the aggregate, across a wide variety of simulated firm characteristics. Some firms will report higher income, perhaps the larger firms, or those in specific industries, and others will report lower income. Future research might investigate both the size and industry of firms that would be most affected, positively and negatively, by a switch to a formulary approach.

When both U.S. and foreign jurisdictions use identical apportionment formulas (such as that used in Model One of this study) an equal amount of income will be shifted from the domestic to the foreign jurisdiction or from the domestic to the foreign jurisdiction for each firm and in the aggregate.

The tax benefit or loss to an individual firm depends on both differences in tax rates across the jurisdictions and the impact of the formulary model on the allocation of the firm's income. However, if jurisdictions weight the factors differently or include different factors in their formulary models the potential for income to be created or income to escape taxation exists. This study developed two models to examine the potential occurrence of this effect. The first model (Model two) used an equally weighted three-factor model in the U.S. jurisdiction and a sales only model in the foreign jurisdiction. This model resulted in slightly more than a one percent increase in worldwide taxable income. While this increase was rather small it could be quite large for any one firm. The results of this model also indicated that U.S. taxable income, in the aggregate, would be lower under the formulary model even though income was created.

The second simulation model employing different formulary weighting in the two jurisdictions (Model three) used a sales only model in the U.S. and an equally weighted three-factor model in the foreign jurisdiction. This model resulted in approximately two percent of the worldwide taxable income escaping taxation in either jurisdiction. Again, while this is a relatively modest amount of income escaping taxation, the effect on any given firm could be quite large. Consistent with the first two models, U.S. taxable income, in the aggregate, was reduced with the formulary model. These findings provide strong evidence that the adoption of a formulary apportionment method for allocating world-wide income would reduce aggregate U.S. taxable income.

While the average change in taxable income, and the taxable income created or eliminated, may be relatively small on a macro level, it is again important to note that these differences could be quite large for any given firm. This would be particularly true in the case of an organization that has one or more of the factors weighted disproportionately relative to its arm's length income in a given jurisdiction. Situations such as these would no doubt raise interesting yet serious tax policy issues for government taxing authorities if a formula apportionment model were adopted. Government responses might include favorable treatment for one or more of the factors for all or a select group of industries, which the host government wishes to attract. For example, a third world country wanting to attract foreign investment that will also create jobs, may utilize a "sales factor only" apportionment model, expecting that sales within the developing-host country will be negligible and hence creating an incentive for MNCs to locate within their borders. In any case, shifting of the weighting of factors to encourage investment in a host country can result in different formula apportionment

models across jurisdictions, hence, creating the possibilities of double taxation or income escaping taxation, as presented in this study.

Proponents of formula apportionment have cited evidence of income shifting as a reason to abandon the arm's-length approach. Formula apportionment does not eliminate the possibility of income shifting or other means of tax reduction. Instead, reduction of the tax burden is accomplished through location of the apportionment factors in jurisdictions that have low tax rates or favorable formulas. Grubert and Mutti (2000) analyzed data from 500 U.S.-based MNCs and report that average effective tax rates are a significant factor in decisions to locate capital. However, the firm's decisions regarding location of the factors of production (capital and labor) are decisions with long-range impact and as such cannot be easily reversed. Prior research has indicated that key strategic issues such as market penetration, market conditions, labor costs, transportation costs, availability of natural resources, and technology availability are more likely to influence investment and location decisions than tax issues (Anand & Sansing, 2000; Porter, 1990; Rolfe & White, 1992; Wells, 1987). Therefore, it is likely to be easier to reduce an MNC's worldwide income tax by shifting income to low-tax rate jurisdictions using the transfer-price mechanism under the current arm's-length transaction system than it would be to relocate factors of production under an apportionment system. Respondents to the Ernst and Young (1999) Survey (582 parent companies located in 19 countries) indicated that operational and tax effects of transfer price are generally not considered until after strategic business decisions have been made (Ernst & Young, 1999, p. 12).

Critics of the arm's length method claim that the cost of compliance, the complexity of the system, and the ability to shift income across jurisdictions are sufficient reasons to pursue alternative means to allocate worldwide income across multiple tax jurisdictions. Due to its simplicity, formula apportionment is frequently touted as the most viable alternative. This study has estimated the magnitude of shifts in taxable income in or out of the U.S. when different formula apportionment models are utilized. Although previous research estimated the impact on U.S. income using a selected sample of large companies, this study simulated results from data pertaining to a broad cross-section of MNCs and, therefore, these results are more representative of the aggregate impact associated with adopting a formulary approach.

Results of this study would imply that adoption of an apportionment model may create a different set of complexities and could result in double taxation or income totally escaping taxation when apportionment models include different factors or weight the factors differently across jurisdictions.

Finally, the results reported above provide evidence for policy makers that the adoption of a formulary approach that uses conventional three factor or sales only models to allocate world-wide income would reduce aggregate U.S. taxable income.

REFERENCES

Anand, B., & Sansing, R. (2000). The weighting game: Formula apportionment as an instrument of public policy. *National Tax Journal, LIII*(2), 183–199.

Borkowski, S. (1997). Factors affecting transfer pricing and income shifting (?) Between Canadian and U.S. transnational corporations. *The International Journal of Accounting, 32*(4), 391–415.

Bucks, D. (1996). Formula apportionment works, presented to treasury department formula apportionment conference, Dec 12.

Bucks, D., & Mazerov, M. (1993). The state solution to the federal governments international transfer pricing policy. *National Tax Journal, 46*(September), 385–392.

Burge, M., Kral, K., & Serota, J. (1994). Tax matters–international–regulations clarify penalty for transfer pricing valuation adjustments. *Journal of Accountancy, 177*(May), 32.

Christensen, S. (1997). *Formulary apportionment: More simple on balance, Law and Policy in International Business, 28*(Summer), 1133–1164.

Conover, T. L., & Nichols, N. (2000). A further examination of income shifting through transfer pricing considering firm size and/or distress. *The International Journal of Accounting, 35*(3), 189–211.

Devine, K., O'Clock, P., & Seaton, L. P. (1999). A simulation comparing arm's length versus formula apportionment income for multinational corporations. *Advances in International Accounting, 12*, 35–65.

Edmiston, K. D. (2002). Strategic apportionment of the state corporate income tax. *National Tax Journal, LV*(2), 239–262.

Emmanuel, C. R. (1999). Income shifting and international transfer pricing: A three country example. *Abacus, 35*(3), 252–267.

Engel, D. C. (1998). Would formula apportionment for international transactions be a more efficient approach? *The International Tax Journal, 24*(Winter), 23–36.

Ernst & Young International Limited, (1999). *Transfer Pricing–1999 Global Survey.*

Goolsbee, A., & Maydew, E. (2000). Coveting thy neighbors manufacturing: The dilemma of state income tax apportionment. *Journal of Public Economics, 75*(Jan), 125–144.

Grubert, H., Goodspeed, T., & Swenson, D. (1993). Explaining the low taxable income of foreign controlled companies in the U.S.. In: A. Giovannini, R. G. Hubbard & J. Slemrod (Eds), *Studies in International Taxation* (pp. 277–307). Chicago: University of Chicago Press.

Grubert, H., & Mutti, J. (2000). Do taxes influence where U.S. corporations invest? *National Tax Journal, LIII*(4 Part 1), 825–839.

Halperin, R., & Srinidhi, B. (1996). U.S. income tax transfer pricing rules for intangibles as approximations of arm's length pricing. *The Accounting Review, 71*(1), 61–80.

Harris, D. (1993). The impact of U. S. tax law revision on multinational corporations' capital location and income shifting decisions. *Journal of Accounting Research, 31*(Supplement), 111–140.

Harris, D. G., & Sansing, R. (1998). Distortions caused by the use of arm's-length transfer prices. *Journal of the American Taxation Association*, 20(Supplement), 40–50.

Jacob, J. (1996). Taxes and Transfer Pricing: Income Shifting and Volume of Intrafirm Transfers. *Journal of Accounting Research*, 34(Autumn), 301–312.

Internal Revenue Code. (1986). Chicago, IL: Commerce Clearing House.

Klassen, K., Lang, M., & Wolfson, M. (1993). Geographic income shifting by multinational corporations in response to tax rate changes. *Journal of Accounting Research*, (Supplement), 141–173.

Klassen, K., & Shackelford, D. (1998). State and provincial tax planning: Income shifting and sales apportionment factor management. *Journal of Accounting and Economics*, 25(3), 385–406.

Lightner, T. (1999). The effect of formulary apportionment system on state-level economic development and multijurisdictional tax planning. *Journal of the American Taxation Association*, 21(Supplement), 42–57.

Mataloni, R. J. (2000). U.S. multinational companies operations in 1998. United states department of commerce, Bureau of Economic Analysis, *Survey of Current Business*, (July), 26–45.

Martinez-Vazquez, J., McLure, C. E., Jr., & Wallace, S. (1995). Subnational fiscal decentralization in Ukraine. In: R. M. Bird, R. Ebel & C. Wallich (Eds), *Decentralization of the Socialist State: Intergovernmental Finance in Transition Economies* (pp. 291–319). Washington: The World Bank.

Mazerov, M. (1994). Why arm's length falls short. *International Tax Review*, 5(February), 28–37.

McLure, C. E., Jr. (1989). Economic integration and European taxation of corporate income at source: Some lessons from the U.S. experience. In: M. Crammie & B. Robinson (Eds), *Beyond 1992: A European Tax System* (pp. 39–51). London: Institute for Fiscal Studies.

Organization for Economic Cooperation and Development (OECD). (1995). *Transfer pricing guidelines for multinational enterprises and tax administration*. Paris, France: OECD.

Porter, M. E. (1990). *The competitive advantage of nations*. New York: Free Press.

Rolfe, R. J., & White, R. A. (1992). Investors' assessment of the importance of tax incentives in locating foreign export-oriented investment: An exploratory study. *The Journal of the American Taxation Association*, 14(Spring), 39–57.

Schadewald, M. (1996). Global Apportionment: How Would It Affect the Largest U.S. Corporations? *Tax Notes International*. (July 8): 131–139.

Shackelford, D. & Slemrod, J. (1998). The Revenue Consequences of Using Formula Apportionment to Calculate U.S. and Foreign Source Income: A Firm Level Analysis. *International Tax and Public Finance*. (no. 1): 41–59.

Swenson, D. (2001). Tax reforms and evidence of transfer pricing. *National Tax Journal*, LIV(1), 7–25.

U.S. Treasury Department. (1999). *Income tax regulations, 1.482-1(a)–(f)* (Vol 3, pp. 37151–37165). Chicago, IL: Commerce Clearing House.

Wells, L. (1987). Evaluating foreign investment with special reference to southeast Asia. In: R. D. Robinson (Ed.), *Direct Foreign Investment Costs and Benefits* (pp. 17–39). Praeger: New York.

Wetzler, J. W. (1995). Should the U.S. adopt formula apportionment? *National Tax Journal*, 48(September), 357–362.

Williams, M., Swenson, C., & Lease, T. (2001). Effects of unitary vs. nonunitary state income
    taxes on interstate resource allocation: Some analytical and simulation results. *The
    Journal of the American Taxation Association*, *23*(1), 39–60.
Zink, B. (2000). Tax Clinic, DHL – International Transfer Pricing Wake-Up Call. *The Tax
    Adviser*, *31*(February), pp. 88, 90.

APPENDIX

Example of the Impact on Taxable Income with Differing Apportionment
Models

For example, assume XYZ Corp. located in country A, the domestic
country, does business in countries A and B (B is a host country) and
income is apportioned between the countries using formula apportionment.
Income to be apportioned is $1,000,000. The entity has sales of $3,000,000 in
country A and $2,000,000 in country B. country A requires that income be
apportioned using a three factor model, with equal weighting of all factors.
country B apportions income using the sales factor only. The percentages of
XYZ Corp. assets and payroll in countries A and B are as follows: A, 75%
of assets, 75% of payroll; B, 25% of assets, 25% of payroll. The percent of
income apportioned to country A would be 70% [(3,000,000/5,000,000 ×
1/3) + (75/100 × 1/3) + (75/100 × 1/3)]. The apportionment to country B
would be 40% of total income (2,000,000/5,000,000). Thus, total income
taxed in the two jurisdictions is $1,100,000 ($700,000 in A and $400,000 in
B) when total income for XYZ corp. was $1,000,000. Alternatively, if
country A used a sales factor only model and country B used an equally
weighted three factor model the results would be the opposite. Country A
would be allocated 60% of the income (3,000,000/5,000,000) and country B
would be allocated 30 percent of the income [(2,000,000/5,000,000 ×
1/3) + (25/100 × 1/3) + (25/100 × 1/3)]. In this scenario the total income
taxed in the two jurisdictions is $900,000 ($600,000 in A and $300,000 in B)
and $100,000 of XYZ's total income escapes taxation. The potential for
taxable income creation or reduction occurs when there is a difference in the
weighting of factors in the apportionment model between home and host
countries.

AN ANALYSIS OF U.S. AND LATIN AMERICAN FINANCIAL ACCOUNTING RATIOS

Edwin R. Etter, Barbara Lippincott and Jacqueline Reck

ABSTRACT

Financial accounting ratios of non-U.S. companies are subject to misinterpretation by U.S. investors due to differences in accounting principles, institutional practices, and economic environments. The purpose of this study is to compare selected financial accounting ratios of companies from seven Latin American countries with those of a matched sample of U.S. companies, and explain any observed differences in the ratios based on the above three factors. In general, the results indicated that the liquidity, activity, and coverage ratios of the Latin American companies were lower than those of the U.S. companies. The profitability ratios varied, however, with the profit margin on sales generally higher for the Latin American companies, the return on assets mixed, and the return on equity ratios not significantly different between the Latin American and U.S. companies.

INTRODUCTION

Increasingly, many U.S. investors are purchasing the equity securities of non-U.S. companies in order to diversify their investment portfolios, and to

take advantage of investment opportunities in growing foreign economies. In addition, there has been a recent increase in cross-border stock offerings by non-U.S. companies. Non-U.S. companies frequently issue their equity securities in foreign markets, including the United States, because their home market is not large enough to absorb the entire stock issue, they want to expand the geographic base of their stockholders, or they wish to increase the international demand for their equity securities (Hanks, 1997). According to the U.S. Department of Commerce (2002), U.S. direct equity investments abroad have increased from $4.87 billion to $73.33 billion (1,405.75%) during the period from 1987 to 1998.

No matter what the reason(s) for the increase in international equity investment, U.S. investors and analysts need foreign financial accounting information that is understandable, reliable, consistent, and comparable in order to make informed investment decisions. The U.S. Securities and Exchange Commission (SEC) maintains, however, that differences in generally accepted accounting principles (GAAP) between the United States and foreign countries are likely to reduce the understandability and comparability of non-U.S. GAAP financial accounting information (Hanks, 1997). Furthermore, the ratio benchmarks that security analysts use to review U.S. companies may not be appropriate in the comparison and analysis of companies whose financial accounting information is prepared under non-U.S. GAAP. If relied upon, these benchmarks may result in inappropriate or erroneous conclusions being reached (Decker & Brunner, 1997). Also, misinterpretation of a non-U.S. company's financial condition and performance could affect the non-U.S. company's ability to raise capital efficiently and effectively, thus increasing its cost of capital.

Many non-U.S. companies, particularly those listed in the United States, prepare or reconcile their financial statements in accordance with U.S. GAAP. However, even if non-U.S. financial accounting information is prepared using U.S. GAAP, Choi and Levich (1990, p. 8) suggest that its interpretation may still be problematic to U.S. investors due to substantial economic and institutional differences between countries. Therefore, Choi, Harris, Leisenring, and Wyatt (1992) argue that when comparing financial accounting information of non-U.S. companies to that of similar U.S. companies, U.S. investors may have difficulty in determining how much of the difference in reported amounts is due to differences in accounting principles, institutional practices, and economic environments as opposed to real differences in the variables being measured.

One of the fastest growing geographical regions for U.S. direct equity investments is Latin America. During the period from 1987 to 1998, direct

equity investments in Latin America grew from $1.16 billion to $10.77 billion or 828.45% (U.S. Department of Commerce, 2002). Part of this growth has been a result of recent multi-billion dollar, cross-border stock offerings by Latin American companies.[1] This growth is likely to further increase if the proposed Western Hemisphere Free Trade Zone becomes a reality ((The) Associated Press, April 22, 2001).

As a result of the increased investment in Latin America, U.S. investors need to be able to compare, analyze, and interpret the financial accounting information prepared under the various Latin American accounting regimes. However, this is likely to be a significant problem for many U.S. investors. Rueschhoff and Strupeck (1998) document differences between U.S. GAAP and the accounting principles of several Latin American countries (e.g., accounting for deferred income taxes, inflation, and post retirement benefits), and demonstrate that these differences seriously affect reported net income, stockholders' equity, and return on equity.[2] Furthermore, Choi and Levich (1990, p. 43) note that Latin America is one of the regions most frequently mentioned by international investors when asked which non-U.S. accounting principles are sources of concern in assessing their international investments. Plansky (1985) suggests that despite the similarities, there are many differences in accounting principles between countries in Latin America (e.g., accounting for research and development, revaluation of assets, and accounting for inflation). Therefore, although an investor may be familiar with the accounting principles of one or more Latin American countries, this knowledge is not automatically transferable to the accounting principles of other Latin American countries.

As a result of the growth in non-U.S. equity investments and the efforts of non-U.S. companies to raise capital in the United States, international financial statement analysis, including the comparison of financial accounting information between companies in different countries, has become a topic of increasing importance and interest to both academics and professionals (Ball, Kothari, & Robin, 2000). Wallace and Gernon (1991) note that many international studies only provide descriptions of the accounting principles of a particular country or group of countries, and suggest that there is a need for studies focusing on comparative analysis of financial accounting information. Specifically, Choi et al. (1992) and Gray (1989) call for research that examines the effect of international accounting and environmental differences on reported financial results such as earnings, liquidity, and solvency.

The purpose of this study is to examine and compare selected financial accounting ratios of companies from Argentina, Brazil, Chile, Colombia,

Mexico, Peru, and Venezuela with a matched sample of U.S. companies, and to evaluate observed differences in the ratios based on accounting principles, institutional practices, and economic environments. As noted before, U.S. investment in Latin America has increased significantly over the past few years, and has the potential for increasing even more dramatically. Also, Latin American companies are representative of companies in other developing countries. Prather and Rueschhoff (1996) argue that comparative studies, especially those involving developing countries, are particularly useful in developing models and theories concerning accounting harmonization. However, Davis-Friday and Rivera (2000) note that little research exists examining the accounting information from developing countries. Furthermore, Pownall and Schipper (1999) suggest that quantifying the differences in accounting numbers between countries has the advantage of requiring the researcher to consider the implicit and explicit assumptions used in interpreting and applying the accounting information. They believe these studies can assist the SEC in their assessment of the International Accounting Standards Committee's (IASC's) core standards. Therefore, results of this study should be of particular interest to investors, analysts, standard-setters, and regulators in their evaluation and analysis of Latin American financial accounting information, and will contribute to research on the feasibility of international accounting harmonization.

The results of this study indicated that, in general, the current, quick, asset turnover, inventory turnover, receivables turnover, debt to equity, and debt to total assets ratios for the U.S. companies were greater than those for the Latin American companies. On the other hand, profit margin on sales was typically greater for the Latin American companies; the results for the return on assets were mixed; and, for the most part, there was no significant difference between the return on equity ratios between the Latin American and U.S. companies. Furthermore, it was noted that many of the differences in the financial accounting ratios could be explained by differences in accounting principles, institutional practices, and economic environments.

PREVIEW RESEARCH

Financial Accounting Ratios

There have been several previous studies that have examined and compared foreign and U.S. financial accounting ratios. Fuglister (1997), Hagigi and Sponza (1990), and Choi et al. (1983) find differences when comparing

financial accounting ratios between samples of Chinese, Italian, and Japanese and Korean companies, respectively, and matched samples of U.S. companies.

Choi et al., in general, find U.S. liquidity ratios (current and quick ratios) to be larger than Japanese or Korean liquidity ratios. They attribute this to a Japanese preference of short-term debt over long-term debt, and the scarcity of long-term credit in Korea. Fuglister, and Hagigi and Sponza, however, detect either no significant differences or mixed results in their Chinese-U.S. and Italian-U.S. samples, respectively.

For the activity ratios (asset turnover, inventory turnover, and receivables turnover) Fuglister, and Hagigi and Sponza typically find U.S. companies to have larger ratios, although Choi et al. find no significant differences for either of their samples. For the asset turnover ratio, Fuglister notes that current sales in China have not caught up yet with their increased investment, while Hagigi and Sponza attribute their results to more aggressive sales practices and costlier advertising expenditures in Italy. With respect to inventory turnover, Fuglister attributes her results to an underdeveloped transportation system in China that results in a need for higher inventory levels to prevent inventory shortages. Hagigi and Sponza observe that an immobile labor force and high labor costs in Italy caused Italian companies to maintain high inventory levels in order to avoid underutilization of labor. Finally, scarce funds and a goal of full employment in China are cited as the reasons for a lower receivables turnover ratio by Fuglister, while Hagigi and Sponza state that lower interest charges on receivables in Italy cause the receivables collection period in Italy to be longer.

With regard to the profitability ratios (profit margin on sales, return on assets, and return on equity), Choi et al. find that U.S. companies had a higher return on assets ratio than either the Japanese or Korean companies, and a higher profit margin on sales for U.S. companies than for the Korean companies. They attribute these results to the Japanese policy of emphasizing market share over short-run profits, and Korean export policies and government controls which tend to keep prices and the resulting profits relatively low. The comparisons of the remaining profitability ratios were insignificant. Hagigi and Sponza find the return on assets ratio for U.S. companies larger than that for Italian companies, and cite the greater tax burden in Italy as the cause. The differences for the other two profitability ratios were mixed. Fuglister only examines the return on assets ratio in her study, and detects no significant difference between the Chinese and U.S. samples.

Finally, Hagigi and Sponza, and Choi et al. conclude that Italian, Japanese, and Korean companies had larger coverage ratios (debt to equity

and debt to total assets) than U.S. companies. Both studies note the historical preference of debt to equity financing in Japan, Korea, and Italy. Fuglister, on the other hand, finds U.S. companies had larger debt to equity ratios than Chinese companies, and attributes this to the recent shift from debt to equity financing in China as more Chinese companies go public.

Each of the above studies notes significant differences in many of the financial accounting ratios between the foreign and U.S. companies. Although, for most of the ratios there was no consistent pattern as to whether the foreign or U.S. ratio would be greater. Furthermore, the researchers attribute many of the results to differences in institutional practices and economic environments between the United States and the foreign countries. Given the differences in accounting principles, institutional practices, and economic environments between Latin American and U.S. companies, it is anticipated that significant differences should exist between their financial accounting ratios.

Classification of National Accounting Systems

National accounting standards are a function of a country's legal, cultural, political, social, and economic environments. Often they reflect the needs of the perceived end user of the financial statements (e.g., investor, creditor, or governmental agency), and are heavily influenced by the accounting principles of other countries (due to geographic proximity, colonial influence, or economic dependence), sophistication of the local capital markets, local business and tax laws, and the level of influence on the standard-setting process by the accounting profession (Decker & Brunner, 1997).

Several studies have classified national accounting systems based on measurement practices and environmental influences using either a judgmental classification system (Berry, 1987; Mueller, Gernon, & Meek, 1997, p. 12) or an empirical classification system (Nair & Frank, 1980; Nair, 1982; Doupnik & Salter, 1993). The accounting groups into which the various Latin American accounting systems are classified are the Latin American, U.S., Continental European, and the British Commonwealth. Accounting systems in the Latin American accounting group are oriented toward the needs of government planners, are heavily influenced by national tax laws, tend to be highly prescriptive and procedural, and have a strong emphasis on inflation accounting. Accounting systems classified in the U.S. accounting group, however, tend to be more flexible, are oriented toward the needs of creditors and investors, and are characterized by the significant influence

of business practices and U.S. GAAP on their accounting systems. The Continental European accounting group is very similar to the Latin American accounting group with the only major difference being the latter group's emphasis on inflation accounting. Finally, the characteristics of the British Commonwealth accounting group are identical to those of the U.S. accounting group, except that the former group is influenced by British accounting practices not U.S. GAAP.

The accounting systems of the seven countries examined in this study were classified into the various accounting groups in all the studies mentioned above (Table 1), except for Peru and Venezuela that were not examined in Doupnik and Salter (1993). It is interesting to note that Argentina, Chile, and Peru are always classified in the Latin American accounting group. Brazil is classified in the Latin American accounting group in the studies, with the exception of Nair's (1982) study where it is classified in the British Commonwealth accounting group. Mexico and Venezuela are typically classified in the U.S. accounting group, except for Doupnik and Salter (1993) where Mexico is classified in the Latin American accounting group and Nair and Frank (1980) where Venezuela is classified in the Continental European accounting group. Finally, Colombia is usually classified in one of the two macro-uniform accounting groups, with it classified twice in the Latin American accounting group and twice in the Continental European accounting group. However, Mueller et al. (1997, p. 12) classified it in the U.S. accounting group.

Although it is reasonable to expect differences in the financial accounting ratios between the Latin American and U.S. companies, the differences may not be uniform across the sample countries. Since the various Latin American accounting systems are not all classified in the same accounting group, and many are classified in the same accounting group as the United States, it is possible that the direction of the ratio differences and the significance of the differences may be different from one country sample to another.

SAMPLE SELECTION AND DATA SOURCES

Companies from seven Latin American countries were included in the analyses.[3] The countries are Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. During the sample period of 1987 to 1998, these countries averaged 71.86% of the U.S. direct equity investments in Latin America, and 10.04% of all U.S. direct equity investments abroad (U.S. Department of Commerce, 2002).[4] Thus, these countries received a significant percentage

Table 1. Classification of National Accounting Systems.

Studies	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela
Judgmental:							
Berry (1987)	Latin American	Latin American	Latin American	Latin American	U.S.	Latin American	U.S.
Mueller et al. (1997)	Latin American	Latin American	Latin American	U.S.	U.S	Latin American	U.S
Empirical:							
Nair and Frank (1980)	Latin American	Latin American	Latin American	Latin American	U.S.	Latin American	Continental European
Nair (1982)	Latin American	British Commonwealth	Latin American	Continental European	U.S.	Latin American	U.S.
Doupnik and Salter (1993)	Latin American	Latin American	Latin American	Continental European	Latin American	N/A	N/A

N/A = not applicable.

Table 2. Mean Median Sales Revenues for 1987–1998 in millions of $U.S. (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Matched Sample	Sample Size	Latin		U.S.		Z-Statistic
		Mean	Median	Mean	Median	
All	2,012	862.01	345.42	827.55	350.77	−0.31
Argentina	196	726.92	337.40	625.66	349.18	−0.27
Brazil	670	1,129.60	501.31	1,060.04	501.74	−0.07
Chile	353	360.77	192.92	350.24	172.84	0.19
Colombia	143	250.77	147.41	256.72	157.43	−0.65
Mexico	485	908.54	569.28	876.83	509.10	−0.12
Peru	103	167.73	55.13	164.62	60.02	−0.23
Venezuela	62	3,450.43	288.22	3,703.28	251.55	0.12

of the U.S. direct equity investments in Latin America, as well as worldwide, and should be of particular interest to investors, analysts, standard-setters, and regulators.

The sample Latin American companies were matched with similar U.S. companies based on company size (sales revenue) and industry classification (SIC code). There were no significant differences in the Latin American and U.S. sales revenues for the overall (pooled) matched sample or for the matched samples of each of the individual countries. The majority of the companies in the pooled sample (as well as the individual country samples) are manufacturing. However, companies in the mining and construction, transportation and utilities, and wholesale and retail businesses industries are also well represented. Tables 2 and 3 give descriptive data regarding the sizes and industry classifications of the sample companies.

The SIC classification and financial data were collected from *Compact Disclosure's Worldscope Global* (Latin American companies) and *Compustat* (U.S. companies).

METHODOLOGY

After the companies were selected and their financial data gathered, 10 financial accounting ratios were calculated for each firm-year for the Latin American and U.S. samples. Initially there were 2,738 matched firm-year observations in the pooled sample. We deleted 726 matched firm-year

Table 3.   Industry Classifications.

Panel A: Companies by Country and SIC Code

Country	3-digit	2-digit	1-digit	Total
Argentina	12	24	3	39
Brazil	39	95	4	138
Chile	11	48	3	62
Colombia	5	14	2	21
Mexico	23	63	2	88
Peru	7	22	1	30
Venezuela	3	8	1	12
Total	100	274	16	390

Panel B: Companies by 1–digit SIC Code and Country

Industry Classification	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	Total
Agriculture and forestry	2	2	4	0	0	0	0	8
Mining and construction	5	7	5	1	10	6	1	35
Manufacturing (food, fabric, wood and paper, chemicals)	12	40	21	8	35	9	5	130
Manufacturing (metals, machinery and electrical)	12	56	14	7	20	9	4	122
Transportation and utilities	5	19	14	1	5	4	2	50
Wholesale and retail business	3	13	4	3	14	2	0	39
Services	0	1	0	2	3	0	0	6
Total	39	138	62	22	87	30	12	390

observations due to missing data for either the Latin American or U.S. companies, resulting in a final pooled sample of 2,012 matched firm-year observations. The financial ratios calculated and their definitions are listed in the appendix.

Using the two-tailed, nonparametric, Wilcoxon Sign-Rank Test, the ratios from the pooled Latin American sample and the individual Latin American country samples were compared to their respective matched U.S. samples to determine if there were any significant differences in the ratios.[5]

EMPIRICAL RESULTS

Tables 4–11 report the results of the comparisons of the Latin American and U.S. financial accounting ratios.

Table 4. Median (Mean) Financial Accounting Ratios for All Latin Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990 ($n = 191$)			1991–1994 ($n = 681$)			1995–1998 ($n = 1,140$)			1987–1998 ($n = 2,012$)		
	Latin	U.S.	Z-Stat	Latin	U.S.	Z-Stat	Latin	U.S.	Z-Stat	Latin	U.S.	Z-Stat
Current ratio	1.66	2.05	−3.26*	1.38	1.99	−11.21*	1.30	1.95	−15.95*	1.36	1.98	−19.52*
	(1.83)	(2.42)		(1.65)	(2.41)		(1.58)	(2.38)		(1.63)	(2.39)	
Quick ratio	1.12	1.10	−0.81	0.89	1.13	−8.34*	0.88	1.15	−11.00*	0.90	1.14	−13.47*
	(1.22)	(1.55)		(1.09)	(1.51)		(1.08)	(1.51)		(1.10)	(1.52)	
Asset turnover	0.84	1.35	−7.53*	0.76	1.18	−10.08*	0.67	1.21	−19.22*	0.72	1.22	−23.49*
	(0.91)	(1.53)		(0.97)	(1.38)		(0.81)	(1.38)		(0.88)	(1.39)	
Inventory turnover	4.96	6.49	−3.53*	5.49	5.71	−1.19	5.12	5.77	−4.17*	5.18	5.82	−4.83*
	(7.26)	(11.16)		(14.41)	(12.17)		(10.86)	(13.31)		(11.72)	(12.72)	
Receivables turnover[a]	7.33	8.95	−4.02*	7.25	8.19	−4.88*	5.93	8.12	−15.81*	6.43	8.19	−15.86*
	(10.52)	(11.12)		(10.42)	(13.17)		(8.63)	(17.82)		(9.43)	(15.57)	
Profit margin on sales	0.10	0.04	6.98*	0.06	0.03	6.89*	0.06	0.04	5.36*	0.06	0.04	10.16*
	(0.13)	(0.05)		(0.06)	(0.02)		(0.04)	(0.00)		(0.06)	(0.01)	
Return on assets	0.08	0.05	4.04*	0.05	0.04	3.06*	0.04	0.05	−2.47**	0.05	0.05	1.14
	(0.10)	(0.06)		(0.04)	(0.03)		(0.03)	(0.03)		(0.04)	(0.04)	
Return on equity	0.13	0.12	1.27	0.08	0.09	−0.28	0.07	0.11	−6.70*	0.08	0.11	−4.83*
	(0.13)	(0.06)		(0.13)	(0.11)		(0.03)	(0.06)		(0.07)	(0.08)	
Debt to equity ratio	0.53	1.25	−8.28*	0.60	1.08	−11.21*	0.76	1.15	−8.86*	0.66	1.14	−15.64*
	(0.82)	(1.44)		(0.75)	(1.47)		(1.30)	(1.63)		(1.07)	(1.56)	
Debt to total assets	0.35	0.58	−9.52*	0.38	0.54	−13.18*	0.44	0.56	−11.33*	0.40	0.56	−19.03*
	(0.38)	(0.58)		(0.39)	(0.56)		(0.46)	(0.57)		(0.43)	(0.57)	

[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 188 for 1987–1990, 666 for 1991–1994, 1,079 for 1995–1998, and 1,993 for 1987–1998.
*Significant at the 1% level.
**Significant at the 5% level.

Table 5. Median (Mean) Financial Accounting Ratios for Argentinean Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990[b] (n = 17)			1991–1994 (n = 65)			1995–1998 (n = 114)			1987–1998 (n = 196)		
	Argentina	U.S.	Z-Stat	Argentina	U.S.	Z-Stat	Argentina	U.S.	Z-Stat	Argentina	U.S.	Z-Stat
Current ratio	N/A	N/A	N/A	1.58	1.58	−0.54	1.19	1.83	−3.94*	1.31	1.77	−3.59*
				(1.93)	(2.06)		(1.80)	(2.03)		(1.83)	(2.04)	
Quick ratio	N/A	N/A	N/A	0.96	1.05	−0.86	0.78	1.01	−3.24*	0.84	1.03	−3.36*
				(1.15)	(1.28)		(1.17)	(1.20)		(1.15)	(1.22)	
Asset turnover	N/A	N/A	N/A	0.56	1.13	−3.42*	0.56	1.09	−6.96*	0.57	1.11	−7.24*
				(0.79)	(1.28)		(0.72)	(1.28)		(0.78)	(1.28)	
Inventory turnover	N/A	N/A	N/A	4.07	6.66	−2.25**	4.52	6.50	−2.61*	4.67	6.65	−3.46*
				(21.80)	(24.53)		(14.57)	(27.68)		(16.32)	(26.30)	
Receivables turnover[a]	N/A	N/A	N/A	5.73	7.34	−4.33*	4.74	7.54	−8.11*	5.32	7.37	−8.64*
				(6.47)	(9.04)		(5.45)	(16.77)		(6.60)	(13.34)	
Profit margin on sales	N/A	N/A	N/A	0.07	0.04	2.38**	0.09	0.05	3.35*	0.08	0.05	3.51*
				(0.06)	(0.02)		(0.14)	(0.03)		(0.10)	(0.03)	
Return on assets	N/A	N/A	N/A	0.06	0.04	1.76***	0.05	0.05	0.11	0.05	0.05	1.03
				(0.05)	(0.03)		(0.03)	(0.04)		(0.04)	(0.04)	
Return on equity	N/A	N/A	N/A	0.10	0.08	1.49	0.10	0.12	−1.88***	0.10	0.11	−0.80
				(0.09)	(0.02)		(0.06)	(0.13)		(0.07)	(0.09)	
Debt to equity ratio	N/A	N/A	N/A	0.63	0.96	−3.68*	0.72	1.35	−5.22*	0.67	1.23	−7.18*
				(0.69)	(1.37)		(0.91)	(3.28)		(0.81)	(2.50)	
Debt to total assets	N/A	N/A	N/A	0.39	0.54	−4.59*	0.43	0.59	−5.45*	0.41	0.57	−7.88*
				(0.37)	(0.65)		(0.45)	(0.66)		(0.42)	(0.64)	

N/A = not applicable.
[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 65 for 1991–1994, 107 for 1995–1998, and 189 for 1987–1998.
[b]Did not perform tests for 1987–1990 period since there were only 17 matched firms.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Table 6. Median (Mean) Financial Accounting Ratios for Brazilian Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990[b] (n = 8)			1991–1994 (n = 226)			1995–1998 (n = 436)			1987–1998 (n = 670)		
	Brazil	U.S.	Z-Stat	Brazil	U.S.	Z-Stat	Brazil	U.S.	Z-Stat	Brazil	U.S.	Z-Stat
Current ratio	N/A	N/A	N/A	1.16	2.07	−10.83*	1.15	1.94	−13.43*	1.15	2.00	−17.36*
				(1.25)	(2.54)		(1.26)	(2.27)		(1.25)	(2.36)	
Quick ratio	N/A	N/A	N/A	0.73	1.14	−8.40*	0.84	1.09	−7.78*	0.81	1.12	−11.31*
				(0.86)	(1.56)		(0.92)	(1.45)		(0.90)	(1.49)	
Asset turnover	N/A	N/A	N/A	0.99	1.06	−0.34	0.71	1.13	−10.24*	0.77	1.11	−8.49*
				(1.31)	(1.32)		(0.87)	(1.33)		(1.02)	(1.33)	
Inventory turnover	N/A	N/A	N/A	9.95	4.55	7.22*	5.76	4.96	2.69*	6.75	4.85	6.60*
				(22.97)	(10.10)		(12.53)	(9.92)		(16.07)	(9.99)	
Receivables turnover[a]	N/A	N/A	N/A	12.98	7.21	8.09*	6.49	7.28	−5.78*	7.75	7.25	−0.06
				(15.65)	(10.16)		(10.15)	(17.97)		(12.02)	(15.16)	
Profit margin on sales	N/A	N/A	N/A	0.03	0.03	−0.61	0.02	0.04	−3.50*	0.02	0.04	−3.13*
				(0.00)	(0.02)		(−0.01)	(0.03)		(0.00)	(0.03)	
Return on assets	N/A	N/A	N/A	0.03	0.03	−0.72	0.02	0.05	−7.04*	0.02	0.04	−6.01*
				(0.01)	(0.03)		(0.00)	(0.04)		(0.00)	(0.04)	
Return on equity	N/A	N/A	N/A	0.05	0.08	−2.46**	0.04	0.11	−8.35*	0.04	0.10	−8.16*
				(0.00)	(0.27)		(−0.03)	(0.10)		(−0.01)	(0.16)	
Debt to equity ratio	N/A	N/A	N/A	0.58	1.06	−6.19*	0.9	1.11	−1.10	0.78	1.10	−4.55*
				(0.59)	(2.87)		(2.31)	(1.45)		(1.72)	(1.92)	
Debt to total assets	N/A	N/A	N/A	0.37	0.54	−7.65*	0.49	0.58	−3.68*	0.44	0.57	−7.57*
				(0.38)	(0.57)		(0.53)	(0.59)		(0.48)	(0.58)	

N/A = not applicable.
[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 222 for 1991–1994, 410 for 1995–1998, and 640 for 1987–1998.
[b]Did not perform tests for 1987–1990 period since there were only 8 matched firms.
*Significant at the 1% level.
**Significant at the 5% level.

Table 7. Median (Mean) Financial Accounting Ratios for Chilean Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990 ($n = 43$)			1991–1994 ($n = 120$)			1995–1998 ($n = 190$)			1987–1998 ($n = 353$)		
	Chile	U.S.	Z-Stat	Chile	U.S.	Z-Stat	Chile	U.S.	Z-Stat	Chile	U.S.	Z-Stat
Current ratio	1.66	1.95	−0.11	1.73	1.93	−0.78	1.54	2.03	−3.94*	1.59	1.96	−3.43*
	(2.09)	(3.14)		(2.16)	(2.41)		(1.89)	(2.39)		(2.01)	(2.49)	
Quick ratio	1.32	1.09	1.17	1.16	1.16	0.15	1.09	1.30	−2.58*	1.13	1.22	−1.42
	(1.50)	(2.22)		(1.50)	(1.56)		(1.37)	(1.53)		(1.43)	(1.62)	
Asset turnover	0.83	1.42	−3.55*	0.65	1.16	−5.36*	0.56	1.20	−8.78*	0.62	1.20	−10.55*
	(0.77)	(1.83)		(0.69)	(1.36)		(0.66)	(1.39)		(0.68)	(1.43)	
Inventory turnover	4.74	8.42	−2.48**	3.81	7.74	−5.16*	4.13	7.52	−4.87*	4.01	7.61	−7.42*
	(9.03)	(14.78)		(13.32)	(14.94)		(13.28)	(16.61)		(12.78)	(15.82)	
Receivables turnover[a]	6.95	14.03	−4.55*	5.79	10.04	−8.93*	4.74	8.25	−10.99*	5.46	9.37	−14.57*
	(7.46)	(16.21)		(6.24)	(13.54)		(5.38)	(16.77)		(5.94)	(15.58)	
Profit margin on sales	0.20	0.04	6.95*	0.16	0.04	9.48*	0.10	0.05	6.95*	0.13	0.05	13.10*
	(0.24)	(0.03)		(0.17)	(0.03)		(0.11)	(−0.07)		(0.15)	(−0.02)	
Return on assets	0.16	0.05	5.49*	0.09	0.05	6.60*	0.06	0.05	0.87	0.07	0.05	6.63*
	(0.18)	(0.05)		(0.10)	(0.04)		(0.06)	(0.02)		(0.09)	(0.03)	
Return on equity	0.24	0.12	4.10*	0.13	0.11	3.75*	0.09	0.12	−2.50**	0.11	0.12	1.90***
	(0.21)	(0.09)		(0.16)	(0.09)		(0.10)	(0.03)		(0.13)	(0.06)	
Debt to equity ratio	0.53	1.35	−3.84*	0.54	1.20	−7.47*	0.64	1.14	−5.64*	0.58	1.17	−9.98*
	(0.85)	(1.51)		(0.58)	(1.43)		(0.77)	(1.31)		(0.72)	(1.38)	
Debt to total assets	0.35	0.57	−3.47*	0.35	0.55	−7.47*	0.39	0.53	−6.00*	0.37	0.54	−10.12*
	(0.40)	(0.52)		(0.34)	(0.52)		(0.39)	(0.52)		(0.37)	(0.52)	

[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 43 for 1987–1990, 120 for 1991–1994, 181 for 1995–1998, and 344 for 1987–1998.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Table 8. Median (Mean) Financial Accounting Ratios for Colombian Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990 (n = 24)			1991–1994 (n = 53)			1995–1998 (n = 66)			1987–1998 (n = 143)		
	Colombia	U.S.	Z-Stat	Colombia	U.S.	Z-Stat	Colombia	U.S.	Z-Stat	Colombia	U.S.	Z-Stat
Current ratio	1.85	2.26	−1.19	1.53	2.15	−3.64*	1.39	2.18	−3.75*	1.56	2.18	−5.19*
	(2.01)	(2.45)		(1.60)	(2.68)		(1.50)	(2.42)		(1.62)	(2.52)	
Quick ratio	1.20	1.22	−0.51	0.87	1.31	−3.49*	0.82	1.33	−3.93*	0.91	1.30	−4.99*
	(1.24)	(1.57)		(0.90)	(1.75)		(0.91)	(1.52)		(0.96)	(1.61)	
Asset turnover	0.73	1.36	−3.78*	0.66	1.44	−4.67*	0.48	1.50	−7.78*	0.55	1.46	−9.72*
	(1.00)	(1.65)		(0.96)	(1.56)		(0.61)	(1.62)		(0.81)	(1.61)	
Inventory turnover	4.06	6.40	−3.35*	3.77	6.36	−3.14*	4.92	6.80	−3.44*	4.60	6.58	−5.64*
	(4.98)	(8.53)		(5.81)	(8.71)		(5.91)	(16.25)		(5.72)	(12.16)	
Receivables turnover[a]	4.87	9.46	−3.45*	5.15	7.78	−4.53*	5.32	7.64	−4.79*	5.16	7.83	−7.46*
	(6.19)	(10.24)		(6.29)	(10.47)		(7.48)	(12.32)		(6.84)	(11.31)	
Profit margin on sales	0.11	0.05	4.22*	0.07	0.02	4.03*	0.05	0.01	2.95*	0.07	0.02	6.10*
	(0.16)	(0.04)		(0.14)	(−0.02)		(0.02)	(−0.02)		(0.09)	(−0.01)	
Return on assets	0.08	0.07	1.68***	0.05	0.03	1.79***	0.03	0.02	0.41	0.05	0.03	1.90***
	(0.11)	(0.06)		(0.06)	(−0.02)		(0.01)	(−0.02)		(0.05)	(−0.01)	
Return on equity	0.14	0.13	0.94	0.08	0.06	1.85***	0.04	0.06	−1.38	0.07	0.07	0.39
	(0.20)	(0.16)		(0.11)	(−0.10)		(0.00)	(0.03)		(0.07)	(0.00)	
Debt to equity ratio	0.67	1.26	−2.05**	0.62	0.79	−1.00	0.36	0.78	−3.28*	0.49	0.84	−3.66*
	(0.96)	(2.92)		(1.45)	(1.62)		(0.87)	(1.36)		(1.10)	(1.72)	
Debt to total assets	0.40	0.56	−2.05**	0.38	0.44	−1.00	0.26	0.51	−4.78*	0.33	0.48	−4.69*
	(0.42)	(0.56)		(0.41)	(0.47)		(0.33)	(0.55)		(0.38)	(0.52)	

[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 21 for 1987–1990, 46 for 1991–1994, 61 for 1995–1998, and 128 for 1987–1998.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Table 9. Median (Mean) Financial Accounting Ratios for Mexican Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990 ($n = 90$)			1991–1994 ($n = 160$)			1995–1998 ($n = 235$)			1987–1998 ($n = 485$)		
	Mexico	U.S.	Z-Stat	Mexico	U.S.	Z-Stat	Mexico	U.S.	Z-Stat	Mexico	U.S.	Z-Stat
Current ratio	1.69	2.16	−2.97*	1.41	1.99	−5.63*	1.37	1.93	−7.02*	1.42	2.00	−9.33*
	(1.81)	(2.24)		(1.73)	(2.38)		(1.75)	(2.52)		(1.76)	(2.42)	
Quick ratio	1.07	1.17	−1.07	0.90	1.11	−3.29*	0.83	1.08	−4.95*	0.89	1.10	−5.89*
	(1.20)	(1.38)		(1.15)	(1.43)		(1.14)	(1.60)		(1.16)	(1.51)	
Asset turnover	0.88	1.35	−6.25*	0.76	1.42	−9.13*	0.82	1.40	−9.19*	0.80	1.40	−14.28*
	(0.90)	(1.50)		(0.85)	(1.51)		(0.94)	(1.56)		(0.90)	(1.53)	
Inventory turnover	4.92	4.89	−0.87	4.62	4.88	−1.34	5.29	5.79	−0.90	5.07	5.30	−1.74***
	(6.58)	(7.53)		(6.47)	(9.74)		(8.26)	(10.49)		(7.36)	(9.69)	
Receivables turnover[a]	7.52	8.62	−1.12	6.38	8.58	−4.98*	6.93	9.46	−6.33*	6.97	9.05	−7.72*
	(12.95)	(9.87)		(10.12)	(19.67)		(10.43)	(23.78)		(10.81)	(19.73)	
Profit margin on sales	0.09	0.04	4.33*	0.05	0.03	2.53**	0.07	0.03	4.83*	0.07	0.03	6.73*
	(0.09)	(0.06)		(0.03)	(0.03)		(0.01)	(0.00)		(0.03)	(0.02)	
Return on assets	0.08	0.06	1.21	0.05	0.05	−1.03	0.07	0.05	2.13**	0.06	0.05	1.54
	(0.08)	(0.07)		(0.03)	(0.05)		(0.05)	(0.04)		(0.05)	(0.05)	
Return on equity	0.11	0.13	−1.01	0.07	0.10	−2.63*	0.12	0.11	0.48	0.10	0.11	−1.48
	(0.10)	(0.01)		(0.32)	(0.05)		(0.07)	(0.11)		(0.16)	(0.07)	
Debt to equity ratio	0.45	1.36	−7.03*	0.65	1.41	−5.89*	0.80	1.64	−6.45*	0.67	1.47	−10.59*
	(0.78)	(1.12)		(0.89)	(−0.09)		(0.40)	(1.88)		(0.63)	(1.09)	
Debt to total assets	0.31	0.60	−8.83*	0.40	0.60	−7.24*	0.45	0.64	−6.29*	0.41	0.61	−12.03*
	(0.34)	(0.64)		(0.42)	**(0.61)**		(0.47)	(0.58)		(0.43)	(0.60)	

[a]The matched sample size for the receivables turnover ratio was smaller since accounts receivable was not disclosed for all companies. The samples sizes were as follows: 90 for 1987–1990, 156 for 1991–1994, 221 for 1995–1998, and 467 for 1987–1998.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Table 10. Median (Mean) Financial Accounting Ratios for Peruvian Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990[a] (*n* = 4)			1991–1994 (*n* = 31)			1995–1998 (*n* = 68)			1987–1998 (*n* = 103)		
	Peru	U.S.	Z-Stat	Peru	U.S.	Z-Stat	Peru	U.S.	Z-Stat	Peru	U.S.	Z-Stat
Current ratio	N/A	N/A	N/A	1.34	2.19	−1.34	1.51	2.40	−2.87*	1.43	2.26	−2.92*
				(1.69)	(2.04)		(1.99)	(3.18)		(1.87)	(2.75)	
Quick ratio	N/A	N/A	N/A	0.74	1.09	−1.53	0.84	1.31	−2.92*	0.84	1.29	−3.03*
				(1.05)	(1.42)		(1.24)	(2.15)		(1.17)	(1.88)	
Asset turnover	N/A	N/A	N/A	0.82	0.83	−0.21	0.81	1.00	−1.59	0.82	0.98	−1.07
				(0.94)	(1.25)		(0.84)	(1.03)		(0.87)	(1.07)	
Inventory turnover	N/A	N/A	N/A	3.74	8.15	−3.60*	3.17	5.31	−4.51*	3.40	6.63	−5.85*
				(4.34)	(13.44)		(3.72)	(10.39)		(4.02)	(11.71)	
Receivables turnover	N/A	N/A	N/A	6.52	10.46	−2.82*	6.23	8.62	−3.34*	6.24	9.19	−4.68*
				(8.85)	(18.10)		(8.76)	(11.19)		(8.62)	(13.23)	
Profit margin on sales	N/A	N/A	N/A	0.05	0.03	0.80	0.09	0.04	2.84*	0.07	0.04	2.55**
				(0.04)	(0.03)		(0.11)	(0.00)		(0.08)	(0.00)	
Return on assets	N/A	N/A	N/A	0.03	0.03	1.04	0.05	0.04	1.91***	0.05	0.04	2.07**
				(0.06)	(0.02)		(0.07)	(0.02)		(0.06)	(0.02)	
Return on equity	N/A	N/A	N/A	0.08	0.06	0.58	0.11	0.09	0.99	0.09	0.08	1.01
				(0.08)	(0.00)		(0.09)	(−0.32)		(0.08)	(−0.21)	
Debt to equity ratio	N/A	N/A	N/A	0.58	0.74	−0.42	0.45	0.74	−2.06**	0.52	0.74	−1.83***
				(0.82)	(−0.28)		(0.71)	(0.82)		(0.78)	(0.50)	
Debt to total assets	N/A	N/A	N/A	0.37	0.45	−1.30	0.31	0.45	−2.65*	0.34	0.45	−2.79*
				(0.40)	(0.48)		(0.36)	(0.45)		(0.38)	(0.46)	

N/A = not applicable.
[a]Did not perform tests for 1987–1990 period since there were only 4 matched firms.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Table 11. Median (Mean) Financial Accounting Ratios for Venezuelan Firms (Wilcoxon Sign-Rank Test, Two-Tailed Test).

Ratio	1987–1990[a] (n = 5)			1991–1994 (n = 26)			1995–1998 (n = 31)			1987–1998 (n = 62)		
	Venezuela	U.S.	Z-Stat	Venezuela	U.S.	Z-Stat	Venezuela	U.S.	Z-Stat	Venezuela	U.S.	Z-Stat
Current ratio	N/A	N/A	N/A	1.38 (1.59)	2.04 (2.28)	−2.50**	1.47 (1.48)	1.75 (2.16)	−2.52**	1.43 (1.53)	1.76 (2.19)	−3.36*
Quick ratio	N/A	N/A	N/A	0.98 (1.06)	1.39 (1.45)	−2.02**	0.94 (0.92)	1.22 (1.30)	−2.90*	0.97 (0.99)	1.25 (1.36)	−3.36*
Asset turnover	N/A	N/A	N/A	0.67 (0.70)	1.34 (1.26)	−4.20*	0.70 (0.72)	1.21 (1.19)	−4.24*	0.68 (0.74)	1.25 (1.21)	−5.78*
Inventory turnover	N/A	N/A	N/A	3.57 (4.93)	3.87 (6.98)	−0.76	4.12 (4.86)	4.39 (9.38)	−1.07	3.85 (4.92)	3.95 (8.32)	−1.44
Receivables turnover	N/A	N/A	N/A	5.37 (5.96)	8.55 (7.50)	−1.47	7.21 (7.77)	8.26 (8.30)	−0.39	6.06 (7.09)	8.34 (7.83)	−0.95
Profit margin on sales	N/A	N/A	N/A	0.05 (0.07)	0.04 (0.03)	0.78	0.08 (0.07)	0.06 (0.05)	1.97***	0.06 (0.07)	0.05 (0.04)	1.97**
Return on assets	N/A	N/A	N/A	0.03 (0.03)	0.05 (0.04)	−1.24	0.05 (0.05)	0.07 (0.05)	0.25	0.03 (0.05)	0.06 (0.05)	−0.75
Return on equity	N/A	N/A	N/A	0.05 (0.05)	0.09 (0.05)	−1.38	0.08 (0.04)	0.10 (0.06)	−0.24	0.06 (0.06)	0.10 (0.06)	−0.95
Debt to equity ratio	N/A	N/A	N/A	0.82 (0.80)	0.81 (1.21)	−0.47	0.43 (0.59)	0.99 (0.60)	−3.03*	0.54 (0.69)	0.84 (0.87)	−3.15*
Debt to total assets	N/A	N/A	N/A	0.45 (0.42)	0.45 (0.47)	−0.47	0.30 (0.32)	0.53 (0.57)	−4.34*	0.35 (0.37)	0.46 (0.51)	−4.08*

N/A = not applicable.
[a]Did not perform tests for 1987–1990 period since there were only 5 matched firms.
*Significant at the 1% level.
**Significant at the 5% level.
***Significant at the 10% level.

Liquidity Ratios

For the pooled and each individual country sample, except Chile, the current and quick ratios were generally greater for the U.S. companies. For Chile, the current and quick ratios were either greater for the U.S. companies or the difference was insignificant. The lower liquidity on the part of the Latin American companies is likely due to the presence of significant short-term debt. One explanation for the existence of more relative short-term debt in Latin American companies relates to the high inflation rates Latin American countries have experienced over the past several years. During the sample period of 1987–1998, the average yearly inflation rates for the Latin American countries in the sample were as follows: Argentina, 506.77; Brazil, 890.47; Chile, 13.86; Colombia, 24.22; Mexico, 37.79; Peru, 1,016.93; and Venezuela, 49.41%. The average yearly inflation rate in the United States during this period was only 3.36%.[6] Owing to the high rates of inflation in Latin America, short-term debt was preferable to lenders because it allowed them to adjust their interest rates more frequently. Second, during this period many Latin American governments borrowed heavily to repay foreign loans, there was a low rate of domestic savings in Latin America, and many Latin American governments required banks in their countries to maintain high levels of reserves. As a result, there was a shortage of long-term funds that necessitated the use of short-term debt. The higher relative short-term debt, however, is somewhat misleading. Debtors were able to utilize their short-term debt more like long-term debt since they were typically allowed to rollover their short-term debt. Finally, due to the high inflation rates many Latin American companies minimized their cash holdings in order to avoid the inherent loss of purchasing power.

There were several factors that would tend to increase the relative liquidity ratios for the Latin American companies. First, most Latin American countries do not allow capital lease accounting for lessees. Thus, lessees generally do not have any current lease obligation. Also, as will be discussed later, Latin American companies typically have relatively larger accounts receivable and inventory balances than their American counterparts. However, it appears that these factors are more than offset by the Latin American companies' relatively higher short-term debt.

Finally, the mixed results with respect to Chile may be due to a couple of factors. First, during the period studied Chile had a much lower average yearly inflation rate than many of the other Latin American countries. As noted before, the average yearly inflation rate for Chile was 13.86%, where some of the other Latin American countries had average inflation rates in

the triple or quadruple digits. Second, during this time period, the Chilean government was providing long-term financing to Chilean companies. Thus, it is likely that Chilean companies were less reliant upon short-term debt as were companies in other Latin American countries.

Activity Ratios

In general, the activity ratios for the U.S. companies were higher than those for the Latin American companies. Specifically, the asset turnover ratio was higher for U.S. companies than for the Latin American companies in the pooled and individual country samples, except for Peru where the difference was insignificant for all periods tested.[7] One likely reason for the results is that Latin American companies, except those in Brazil, Peru, and Venezuela, are allowed to revalue all nonmonetary assets.[8] Given the severe inflation during the sample period, nonmonetary assets in the Latin American countries were written up, putting downward pressure on the asset turnover ratio. In addition, the recent expansion of businesses in Latin America is liable to have contributed to the difference in asset turnover. As a result of the considerable expansion of businesses in Latin America, a significant amount of the investment in fixed assets is relatively new and current sales have not yet responded to the increased investment. Also, as will be discussed shortly, Latin American companies tend to have relatively larger inventory and accounts receivable balances. Furthermore, complete or partial capitalization of research and development expenditures is allowed in all of the Latin American countries except for Mexico. However, as previously mentioned, most Latin American lessees are not permitted to capitalize leased assets, but it appears that this was not enough to alter the direction of the relative magnitudes of the asset turnover ratios between the Latin American and U.S. companies.

With respect to the insignificant results detected for Peru, it is probable that much of this can be attributed to the lack of significant business expansion. In fact, the GNP for Peru was either flat or decreasing for much of the time period studied. Therefore, there was not the significant investment in new fixed assets and the resultant revaluation of these new assets due to inflation that was present in the other Latin American countries.

The results for the inventory turnover ratio were somewhat similar. Except for Brazil, Mexico, and Venezuela, the U.S. companies had significantly higher inventory turnover ratios than the Latin American companies in the pooled and individual country samples. Thus, it would appear from casual

observation that the inventory of U.S. companies is more liquid than the inventory of the Latin American companies. One possible explanation, however, is that the Latin American companies may have carried extra inventory due to potential problems in obtaining raw materials as a result of import and currency restrictions. In addition, many Latin American companies overstock inventory in order to avoid shortages due to problems in the distribution of goods from an underdeveloped transportation system and infrastructure. Also, as noted previously, all of the Latin American countries examined, except for Brazil, Peru, and Venezuela, are allowed to revalue their inventory and as such are likely to have revalued their inventory upward due to inflation. Finally, except for Mexican and Venezuelan companies, Latin American companies are not permitted to use the LIFO cost flow assumption. With rising prices, LIFO results in a relative higher cost of goods sold and lower average inventory than FIFO, that causes an upward pressure on the inventory turnover ratio for the U.S. companies.

The inventory turnover ratio for Brazilian companies was greater than that of the U.S. companies, while the difference in the ratio between the Mexican and U.S. samples, and the Venezuelan and U.S. samples were generally insignificant. As previously mentioned, Brazilian and Venezuelan companies are not allowed to revalue ending inventory for the effects of inflation. If the ending inventory is acquired at a level of general purchasing power different from that at the balance sheet date, non-revaluation causes ending inventory to be understated and cost of goods sold to be overstated. In addition, it was noted above that unlike other Latin American companies Mexican and Venezuelan companies are permitted to use the LIFO cost flow assumption. Finally, the transportation system and infrastructure in Mexico is not as underdeveloped as it is in the other Latin American countries, making overstocking of inventory less likely.

Except for the Brazilian and Venezuelan samples, the receivables turnover ratio was higher for the U.S. companies in the pooled and individual country results.[9] Several reasons are likely to explain this result. First, because of their business practices many Latin American companies are not as efficient in collecting receivables as U.S. companies. Second, due to their governments' emphasis on exports in order to generate foreign exchange, Latin American companies typically have a higher percentage of foreign customers than U.S. companies. This results in a significantly longer collection period. Third, as a result of currency restrictions on both local and foreign funds, collection of receivables is impeded causing an increase in the average collection period. Finally, in Argentina, finance charges are included in the receivables balance, increasing their average accounts receivable.

For the Brazilian sample, the results were mixed, while the results for the Venezuelan sample were insignificant. Brazil has the largest domestic economy in Latin America, and although they have many of the same characteristics with respect to receivables as the other Latin American countries, they do not rely as heavily on exports. Many of the Venezuelan companies in the sample were in oil-related industries, and were not subject to the currency restrictions or collection inefficiencies that hindered the other Latin American companies.

Profitability Ratios

Except for Brazil, the profit margin on sales was higher for the Latin American pooled and individual country samples.[10] One explanation for these results is the high inflation rates in Latin America. Inflation tends to distort profits and gives them an optimistic bias. This is even true, although to a lesser extent, when inflation adjusted financial accounting information is prepared as it is in many Latin American countries. In addition, inflation may cause sales prices in Latin America to be inflated in order to cover anticipated increases in inventory purchase prices, and decreases in purchasing power when the accounts receivable are eventually collected. Since recent inflation rates in Latin America have been considerably higher than the recent inflation rate in the United States, it is likely that inflated sales prices have caused net income for Latin American companies to be overstated relative to U.S. companies, causing higher profitability ratios in Latin American companies. Also, Latin American markets are generally more protected and less competitive than the U.S. market. Therefore, at least locally, Latin American companies can sell their goods at relatively higher prices than similar U.S. companies. Furthermore, labor costs in Latin America tend to be lower due to reduced employee wages, benefits, and pensions. Finally, differences in certain accounting practices tend to generate larger Latin American profit margins by reducing expenses. As previously noted, most Latin American corporations are allowed to capitalize research and development expenditures, and are not permitted to use LIFO in valuing their cost of goods sold. In addition, most Latin American companies do not account for deferred income tax liabilities or are permitted to use the partial liability method in computing them. Both practices result in lower income tax expense when compared to the liability approach used to account for deferred income tax liabilities in the United States. Depreciation expense, however, is relatively higher for most Latin American companies since depreciation is taken as a percentage of the revalued fixed assets.

The profit margin for the Brazilian companies was generally less than that of the U.S. companies. One possible explanation is that Brazilian companies use the same accounting measurement practices for financial and income tax accounting. This leads to a more conservative net income figure. Also, as previously mentioned, Brazilian companies are not allowed to revalue inventory for the effects of inflation, which results in the understatement of cost of goods sold.

For the return on assets ratio, there generally was no significant difference in the results for the Argentinean, Mexican, and Venezuelan samples. The return on assets ratio was significantly higher for the pooled sample of Latin American companies and for the Latin American companies in the Chilean, Colombian, and Peruvian samples. It was, however, significantly higher for the U.S. companies in the Brazilian sample. These results can be explained by breaking the return on assets ratio into its two components: asset turnover and profit margin on sales. As previously noted, the asset turnover ratio was generally higher for the U.S. companies, while, except for Brazil, the profit margin on sales was higher for the Latin American companies. Therefore, it is not surprising that the results for the return on assets ratio are mixed.

Finally, the return on equity ratio was significantly larger for the U.S. companies in the pooled sample, but this result appears to be driven by the Brazilian sample that was the only other sample where the ratio was significantly greater for the U.S. companies. The results were insignificant for the Argentinean, Colombian, Mexican, Peruvian, and Venezuelan samples. For the Chilean sample, the return on equity ratio was larger for the Chilean companies. Historically, many Latin American companies were family or state owned. The recent increase in direct local and foreign equity investments has significantly increased the relative stockholders' equity of the Latin American companies. In addition, due to the shortage of long-term debt, a significant portion of the retained earnings is reinvested into the company instead of being paid to the investors in the form of dividends. Also increasing their stockholders' equity is the use of reserves in the revaluation of fixed assets and the adjustment of capital accounts for the effects of inflation that are both permitted in most Latin American countries. However, it appears that these upward pressures on the stockholders' equity for the Latin American companies are offset by their relatively larger net income that was observed when analyzing the profit margin on sales.

The greater return on equity for the U.S. versus Brazilian companies is likely to be a combination of the greater relative net income for the U.S. companies, noted in the profit margin on sales analysis, and the greater

relative stockholders' equity for the Brazilian companies based on the factors discussed in the preceding paragraph.

The greater return on equity for the Chilean companies can be explained by several factors. First, like most of the other Latin American countries Chilean companies had a relatively larger net income than their matched U.S. companies. In addition, as noted before, Chile had a lower inflation rate during the time period studied than the other Latin American countries in the sample. As a result, Chilean companies most likely did not adjust upward their capital accounts for the effects of inflation as much as the other Latin American companies. Finally, as previously discussed in the section on liquidity ratios, Chilean companies were able to secure a larger proportion of long-term debt than other Latin American companies. Therefore, they were not as reliant on equity investments or reinvestment of retained earnings as were the other Latin American companies, and subsequently had a lower relative stockholders' equity.

Coverage Ratios

Except for a few periods within selected country samples, the U.S. companies had higher equity and debt to total assets ratios than the Latin American companies. It appears that lower relative debt is a primary reason. As noted previously, many Latin American countries borrowed heavily to repay foreign loans and had low domestic saving rates, causing a shortage of long-term funds. As a result of this and high interest rates due to inflation, many Latin American companies financed their expansion through the use of retained earnings instead of debt. In addition, the increase in direct foreign equity investments has had an impact on the coverage ratios. In order to attract direct foreign equity investments, Latin American companies reduced their debt financing, thus decreasing their financial risk and making their companies look more attractive. This had the anticipated result of increasing direct foreign equity investment, which further reduced the need for debt financing in Latin America. Also, most of the Latin countries in the sample do little to no reporting of pension/post-retirement liabilities and deferred tax liabilities, and do not permit capital lease accounting for lessees, which further decreases the debt reported. Finally, as noted before, the upward revaluation of nonmonetary assets, recent expansion of business, relatively larger accounts receivable and inventory balances, and capitalization of research and development expenditures have had an increasing effect on the Latin American companies' total assets; while the use of

reserves in revaluation of fixed assets and the adjustment of capital accounts for the effects of inflation, along with the influx of local and foreign equity investment have had an increasing effect on the Latin American companies' stockholders' equity.

SUMMARY AND CONCLUSIONS

This study examined matched pairs of Latin American and U.S. companies to determine if there were differences in their financial accounting ratios. In general, it was found that the liquidity, activity, and coverage ratios were higher for the U.S. companies, while the profitability ratios were either higher for the Latin American companies or there were no significant differences between the Latin American and U.S. companies. The documentation of differences in financial accounting ratios between U.S. and Latin American companies is similar to that of previous comparative ratio analysis studies (Fuglister, 1997; Hagigi & Sponza, 1990; Choi et al., 1983). However, the results of this study are mixed with respect to the previous literature dealing with classification of national accounting systems. Although Mexico and Venezuela were classified in the U.S. accounting group in the overwhelming majority of the accounting system classification studies, Mexico only varied twice (inventory turnover and return on assets) in the direction and significance of their matched ratio differences from the majority of the other Latin American countries, while Venezuela differed only on three ratios (inventory turnover, receivables turnover, and return on assets). The other Latin American countries, which were primarily classified in the Latin American accounting group, were relatively consistent in the direction and significance of their matched ratio differences; except for Brazil which differed from the majority of the Latin American countries on five (one-half) of the accounting ratios (inventory turnover, receivables turnover, profit margin on sales, return on assets, and return on equity).

Inflation rates and the subsequent accounting for inflation appear to have had a significant effect on many of these ratios for the Latin American companies, and as a result cause serious impediments to the comparison of U.S. and Latin American financial accounting ratios. However, other economic conditions, institutional features, and accounting practices in Latin America such as business expansion, relative market competition, increase in equity investments, currency restrictions, inventory and receivables management practices, and accounting for leases, research and development,

deferred taxes, and inventory also contributed to differences in the ratios. Finally, because of the time lag between the end of the accounting period and the publication of the financial statements, the amounts reported in the Latin American financial statements are likely to be less relevant than those of U.S. companies due to a further erosion of their currency's purchasing power as a result of inflation.

With the growth of financial markets and businesses in Latin America there are tremendous investment opportunities for U.S. investors. The results and subsequent discussion in this study suggest that a successful and comprehensive analysis of Latin American financial accounting ratios can only be conducted with an understanding of the underlying accounting principles, institutional practices, and economic environments which influence them.

NOTES

1. For example, Telmex, a Mexican telephone company, made a $2.17 billion cross-border stock offering in 1991, and Telefonica Peru made a similar cross-border stock offering of $1.1 billion in 1996 (Hanks, 1997).

2. The Latin American countries studied by Rueschhoff and Strupeck (1998) are Argentina, Chile, Colombia, Mexico, Peru, and Venezuela, which are six of the seven Latin American countries examined in this study.

3. Financial institutions (2-digit SIC codes 60–67) were not included in the sample due to the nature of their financial accounting information.

4. The average yearly direct equity investment by U.S. investors in the seven Latin American countries, from 1987 to 1998, was $2.73 billion.

5. Given the skewness of the ratio distributions, we used a nonparametric test since it makes no assumption as to the characteristics of the ratio distributions.

6. The inflation rates are based on consumer prices, and were obtained from the *International Financial Statistics Yearbook*, published by the International Monetary Fund.

7. The difference in magnitude for the asset turnover ratio is a result of differences in the denominator (average total assets), since the numerator (net sales) was one of the variables used in matching the samples.

8. Brazilian and Peruvian companies are allowed to revalue all nonmonetary assets except inventory, while Venezuelan companies are not permitted to revalue any nonmonetary assets.

9. The difference in magnitude for the receivables turnover ratio is primarily a result of differences in the denominator (average net trade receivables), since the numerator (net sales) was one of the variables used in matching the samples.

10. The difference in magnitude for the profit margin on sales is primarily a result of differences in the numerator (net income), since the denominator (net sales) was one of the variables used in matching the samples.

ACKNOWLEDGMENTS

REFERENCES

(The) Associated Press (April 22, 2001). Latin American countries wary of talk about free trade. *Associated Press*.

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting & Economics*, *29*(1), 1–51.

Berry, I. (1987). The need to classify worldwide practices. *Accountancy*, *100*(October), 90–91.

Choi, F. D. S., Harris, T., Leisenring, J., & Wyatt, A. (1992). International financial reporting. AAA/FASB Annual financial reporting research conference.

Choi, F. D. S., Hino, H., Min, S., Nam, S., Ujiie, J., & Stonehill, A. (1983). Analyzing foreign financial statements: The use and misuse of international ratio analysis. *Journal of International Business Studies*, *14*(Spring/Summer), 113–131.

Choi, F. D. S., & Levich, R. (1990). *The capital market effects of international accounting diversity*. Homewood, IL: Dow Jones-Irwin.

Davis-Friday, P., & Rivera, J. (2000). Inflation accounting and 20-F disclosures: Evidence from Mexico. *Accounting Horizons*, *14*(2), 113–135.

Decker, W., & Brunner, P. (1997). A summary of accounting principle differences around the world. In: F. D. S. Choi (Ed.), *International accounting and finance handbook, second edition* (pp. 3.1–3.33). New York: Wiley.

Doupnik, T., & Salter, S. (1993). An empirical test of a judgmental international classification of financial reporting practices. *Journal of International Business Studies*, *24*, 41–60.

Fuglister, J. (1997). A comparative ratio analysis between Chinese and U.S. firms. *Advances in International Accounting*, *10*, 185–206.

Gray, S. (1989). International accounting research: The global challenge. *The International Journal of Accounting*, *24*(4), 291–307.

Hagigi, M., & Sponza, A. (1990). Financial statement analysis of Italian companies: Accounting practices, environmental factors, and international corporate performance comparisons. *The International Journal of Accounting*, *25*(4), 234–251.

Hanks, S. (1997). Globalization of world financial markets: Perspective of the U.S. Securities and Exchange Commission. In: F. D. S. Choi (Ed.), *International accounting and finance handbook, 2nd edition* (pp. 2.1–2.20). New York: Wiley.

Mueller, G., Gernon, H., & Meek, G. (1997). *Accounting: An international perspective* (4th ed.). Chicago: Irwin.

Nair, R. (1982). Empirical guidelines for comparing international accounting data. *Journal of International Business Studies*, *13*, 85–98.

Nair, R., & Frank, W. (1980). The impact of disclosure and measurement practices on international accounting classification. *The Accounting Review*, *55*(3), 426–450.

Plansky, M. (1985). Accounting practice in five Latin American countries. *FE: The Magazine for Financial Executives*, *1*(4), 10–13.

Pownall, G., & Schipper, K. (1999). Implications of accounting research for the SEC's consideration of International Accounting Standards for U.S. securities offerings. *Accounting Horizons*, *13*(3), 259–280.

Prather, J., & Rueschhoff, N. (1996). An analysis of international accounting research in U.S. academic accounting journals, 1980–1993. *Accounting Horizons*, *10*(1), 1–17.

Rueschhoff, N., & Strupeck, C. D. (1998). Equity returns: Local GAAP versus U.S. GAAP for foreign issuers from developing countries. *The International Journal of Accounting*, *33*(3), 377–389.

U.S. Department of Commerce, (2002). *Bureau of economic analysis*, http://www.bea.doc.gov.

Wallace, R. S. O., & Gernon, H. (1991). Frameworks for international comparative financial accounting. *Journal of Accounting Literature*, *10*, 209–263.

APPENDIX: FINANCIAL ACCOUNTING RATIOS

Liquidity Ratios

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Quick ratio} = \frac{\text{Cash} + \text{trade receivables (net)} + \text{short-term marketable securities}}{\text{Current liabilities}}$$

Activity Ratios

$$\text{Asset turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Receivables turnover} = \frac{\text{Net sales}}{\text{Average trade receivables (net)}}$$

Profitability Ratios

$$\text{Profit margin on sales} = \frac{\text{Net income}}{\text{Net sales}}$$

$$\text{Return on assets} = \frac{\text{Net income}}{\text{Average total assets}}$$

$$\text{Return on equity} = \frac{\text{Net income}}{\text{Average stockholders' equity}}$$

Coverage Ratios

$$\text{Debt to equity ratio} = \frac{\text{Total liabilities}}{\text{Total stockholders' equity}}$$

$$\text{Debt to total assets} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

This page intentionally left blank

PERCEPTIONS OF EARNINGS MANAGEMENT: THE EFFECTS OF NATIONAL CULTURE

Marshall A. Geiger, Brendan T. O'Connell,
Paul M. Clikeman, Elena Ochoa, Kristen Witkowski
and Ilias Basioudis

ABSTRACT

Manipulating, or "managing," reported earnings is a temptation faced by every accountant and corporation around the world. This study investigates whether national culture influences perceptions of the acceptability of earnings management. Participants from eight countries evaluated 13 vignettes describing various earnings management practices (Merchant & Rockness, 1994). Our results demonstrate considerable variation in perceptions across nations to the earnings management scenarios, providing strong evidence that the practice of earnings management was not perceived similarly in all countries. Using Hofstede's (1991) cultural indices, we find that the differences in aggregate perceptions across countries were not closely associated with any of the cultural dimensions examined. We do, however, find that perceptions of earnings manipulations involving the timing of operating decisions were associated with both the Power Distance Index and the Masculinity Index.

INTRODUCTION

Hardly a month goes by without the announcement of someone, or some company, acting unethically in the broad context of financial reporting (Jubak, 2002; Grimsley, 2002; Main, 2002; Edmondson & Cohn, 2004). In this environment, the evaluation of ethical behavior, with respect to financial reporting, continues to be an important issue in business practice and in the preparation and evaluation of financial information. The examination of individual ethical perceptions is especially germane to the assessment of the overall ethical climate in our growing international business community. With the continued expansion of companies into the global marketplace, it is increasingly important to examine the ethical perceptions of individuals from various national cultures in an attempt to evaluate the perceptions that may exist, and therefore the potential tendency to present misleading financial information in this burgeoning financial marketplace. For example, differences among national culture are evident in a recent study by Farrell and Cobbin (2001) who report that cultural conflicts were cited as the most common reason for countries' lack of full acceptance of the International Federation of Accountants model code of ethics.

The purpose of this study is to increase our understanding of differences in perceptions regarding the practice of "earnings management" (i.e., income smoothing, or manipulating income toward a desired goal) by different national cultures. We contribute to the existing literature by examining multiple national cultures, multiple earnings management scenarios, and multiple dimensions of culture. Specifically, we use a previously developed instrument (i.e., Merchant & Rockness, 1994) that includes multiple earnings management vignettes to assess perceptions of individuals from eight countries regarding the practice of earnings management, and then use Hofstede's (1991, 2001) cultural dimensions to examine whether national cultural factors are associated with these perceptions.

We find significant differences in perceptions of the earnings management scenarios across cultures, but that these general perceptions were not consistently related to Hofstede's (2001) cultural dimensions. While we find no relationship of any of the cultural dimensions with overall average perception scores, we do find that perceptions of operating manipulations (timing operating decisions as opposed to breaking basic accounting rules) were significantly associated with Power Distance Index and Masculinity Index scores. These results evidence the importance of assessing different types of management decisions in the broader context of earnings management.

BACKGROUND

Earnings Management

Manipulating, or "managing," one's earnings takes a variety of forms and includes the practices of selectively choosing accounting estimates and timing operating or investment decisions to move reported earnings either upward or downward toward a desired goal (Schipper, 1989; Merchant & Rockness, 1994; Healy & Wahlen, 2000). Examples of earnings management include delaying the recognition of expenses to avoid violating debt covenants, or intentionally postponing the signing of a profitable contract in order to smooth quarterly earnings patterns. Other motives for earnings management include maximizing bonus compensation (Healy, 1985), meeting analysts' earnings forecasts (Burgstahler & Eames, 1998), and trying to win protection from foreign competitors (Jones, 1991).

A large body of anecdotal and empirical evidence suggests that companies adopt several forms of earnings management (Burgstahler & Dichev, 1997; Burgstahler & Eames, 1998; Healy & Wahlen, 2000; Brown, 2001). Healy (1985) offered the first empirical evidence that suggests managers manipulate reported earnings to maximize their compensation. Cahan (1992) found that companies use discretionary accruals to reduce their reported earnings during antitrust investigations. DeFond and Jiambalvo (1994) concluded that financially troubled companies appear to use accruals to increase their earnings to avoid violating debt covenants. Perry and Williams (1994) found evidence of income reducing accruals just prior to management buyout offers, while Erickson and Wang (1999) found evidence of income increasing accruals just prior to stock-for-stock mergers.

In the United States, regulators have also long expressed concern regarding the practice of earnings management. Former Securities and Exchange Commission (SEC) Chairman Arthur Levitt repeatedly warned that a growing number of corporations had eroded the quality of their financial reports by managing their reported earnings, and presented a skewed portrayal of their financial condition (Levitt, 1998, 2000). Recent examples of abusive earnings management in the US include Xerox, Tyco, WorldCom, and HealthSouth.

Earnings management and financial misreporting are not unique to the United States, however. Recent accounting scandals at HIH Insurance in Australia, Parmalat in Italy, Ahold Company and Lernout & Hauspie in The Netherlands, and Comroad and EM.TV in Germany have caused

financial onlookers to question the integrity of corporate financial reporting around the globe. In fact, Leuz, Nanda, and Wysocki (2002) conclude that earnings management is even more of a problem in continental Europe than in the US. Further, Hermann, Inoue, and Thomas (2003) report evidence that Japanese companies also actively manage their reported earnings through the sale of fixed assets and securities.

Armstrong (1993) has argued that earnings management is one of the most important ethical financial reporting issues that accountants face in everyday practice around the world. Investors and creditors in every nation depend on accountants to provide fair and reliable financial information regardless of national culture or orientation. Financial statement users must be certain that company-reported information, on which they base decisions, is accurate. Companies that engage in earnings management may mislead the public regarding the true economic profitability and/or variability and sustainability of their operations. This is also harmful because public confidence and faith in the reliability of accounting information is crucial to a smoothly functioning global market. Former SEC Chairman Richard Breeden has stated ''I don't care if you are trying to overstate or understate income; when companies get into the business of manipulating earnings, it's fraud'' (Stern, 2003).

Prior research reveals considerable disagreement regarding the ethical acceptability of earnings management (Bruns & Merchant, 1990; Merchant & Rockness, 1994; Fischer & Rosenzweig, 1995). Some individuals view earnings management decisions as part of the typical set of financial reporting decisions and responsibilities. Others view them as attempts to intentionally mislead the financial community (Mintz, 1997). Barboza (2002) notes that business managers often realize that they engage in the blatant management of earnings, but refer to the practice by some other innocuous sounding business term or phrase to psychologically shelter themselves from the underlying truth. In this study, we investigate whether perceptions of the acceptability of earnings management vary across different national cultures.

Culture

Hofstede (1991, 2001) has suggested that the ways in which people around the world think, feel, and act toward issues they face and decisions they make are structured, in large part, by their social environments (family, school, living community, etc.) and that these ''programs'' or ''cultures'' differ among nations and have important deep-rooted consequences for the

functioning of those societies. Thus, Hofstede (1991, p. 260) has defined culture as "… the collective programming of the mind which distinguishes the members of one group or category of people from another."

Several prior studies have demonstrated how cultural settings are an important individual decision-making conditioning factor (French, Israel, & As, 1960; Hofstede, 1980, 1984, 1991; Triandis, 1985, 1989; Poortinga, 1989; Wines & Napier, 1992). According to Hofstede (1980, 1991, 2001), perceptions and actions of individuals will be influenced by beliefs and fundamental attitudes, which depend not only on individual personalities, but also on the cultural influences to which individuals have been exposed throughout their lives. In fact, these national cultural influences are argued to be profound and enduring, and have often been cited as a major cause of conflicting results of studies that are replicated across different countries (Triandis, 1980, 1995; Hui & Triandis, 1986).

Hofstede's (1980, 1991, 2001) work in differentiating national cultural groups is predicated on the idea that cultures are different across countries, and that these differences can be assessed by evaluating differences in several basic dimensions of all national cultures. Through theoretical reasoning and statistical analysis of the responses of over 110,000 individuals from 50 countries, Hofstede has identified several dimensions on which each country can be evaluated and positioned. Accordingly, Hofstede's work has identified the following dimensions of national culture:

(1) *Individualism/Collectivism* – "I, we, they" – This is the degree to which individuals are to look after themselves or remain integrated into groups. High individualism cultures have individuals with higher self-consciousness and value individual contributions more highly than group contributions.
(2) *Power Distance* – "More equal than others" – The extent to which individuals accept and expect that power is distributed unequally within organizations, institutions, and society. High power distance societies have lesser needs for individual independence and have greater conformity.
(3) *Masculinity/Femininity* – "He, she (s)he" – The extent to which a culture puts assertive "masculine" values like performance and success before more nurturing "feminine" values like quality of life and personal relationships. High masculine societies are related to high goal-setting behavior and output assessments.
(4) *Uncertainty Avoidance* – "What is different is dangerous." – The degree to which individuals feel uncomfortable with uncertainty or ambiguity.

> High uncertainty avoidance societies tend to be related to higher anxiety, stress, and expressivity of emotions.[1]

These cultural dimensions are believed to have a profound and lasting impact on the perceptions and decisions on the individuals of their respective countries, and have been used by several accounting researchers in the assessment of ethical perceptions and actions (Cohen, Pant, & Sharp, 1996; Roxas & Stoneback, 1997). While the precise impact of culture on individual perception and decision-making is not fully resolved in the literature (Poortinga & Malpass, 1986; Gernon, 1993), and individual differences certainly exist, it is likely that the forces collectively influencing individual perceptions and actions generally will differ across national cultures.

Culture and Perceptions of Earnings Management

Although professional standards in all countries require accountants to present unbiased information (Choi, Frost, & Meek, 1999), prior research reveals wide disagreement regarding the acceptability of earnings management (Bruns & Merchant, 1990; Merchant & Rockness, 1994; Fischer & Rosenzweig, 1995; Clikeman, Geiger, & O'Connell, 2001). However, notwithstanding these prohibitions against earnings management, practices such as income smoothing are well documented in countries around the world (Choi & Bavishi, 1983; Wallace, Olusegun, & Gernon, 1991; Choi et al., 1999; Meirovich & Reichel, 2000; Hermann et al., 2003).

With respect to decision-making in accounting, Cohen et al. (1993, 1995, 1996) have argued that decisions regarding these types of ethical dilemmas are deeply rooted in national cultural values. Cultural norms concerning what is right and wrong, acceptable and unacceptable, good and bad, and important and unimportant shape one's beliefs regarding the surrounding world, including the business and financial reporting environment. These beliefs then guide perceptions of specific business and non-business decisions, including the practice of earnings management.

Differing national perceptions are clearly illustrated in a study by Meirovich and Reichel (2000), who find that Russian executives believe it is not possible to operate in a completely legal manner given the existing conditions in their country. Accordingly, these managers have utilized some extremely creative manipulation techniques that they describe as "perpetually being improved." Meirovich and Reichel (2000) argue that these perceptions are an outgrowth of the nation's culture and history, suggesting

that national culture has a significant impact on the perceived acceptability of earnings management.

Several prior studies (e.g., Becker & Fritsche, 1987; Karnes, Sterner, Welker, & Wu, 1989; Schultz, Johnson, Morris, & Dynes, 1993) also suggest that ethical judgments in business are influenced by national culture. For example, Becker and Fritsche (1987) compared the ethical beliefs of marketing managers from the US, France, and Germany, and found significant differences related to nationality. Karnes et al. (1989) studied the ethical perceptions of accountants from the US and Taiwan. The American accountants were found to be more concerned with the legal consequences of their actions, while the Taiwanese accountants were more concerned about how their group would be affected. Cohen et al. (1993, 1995) concluded that national cultural factors influence auditor's decision making and their perspectives of acceptable client behavior. Roxas and Stoneback (1997) found that the ethical decision-making processes and the perceptions of accountants' responsibilities also varied across different national cultures. Further, Whipple and Swords (1992) and Okleshen and Hoyt (1996) found that business students in the US have different ethical beliefs than business students in the United Kingdom and New Zealand.

Roxas and Stoneback (1997) note, however, that most of the business research to date has typically assessed individuals from Western cultures or cultures similar to Western cultures, or has compared individuals from the US to only one or a few other countries (e.g., Beltramini, Peterson, & Kozmetsky, 1984; Fulmer & Cargile, 1987; Davis & Welton, 1991; Giacomino, 1992; Fischer & Rosenzweig, 1995; Clikeman et al., 2001). In this study, we extend these works by examining perceptions of individuals from multiple Western and non-Western cultures. Prior studies have also analyzed broad differences in perceptions of general business ethical dilemmas across cultures but have generally not examined perceptions toward the specific practice of earnings management. This study investigates whether national culture may influence individual perceptions and judgments regarding the practice of earnings management.

HYPOTHESES

Based on the preceding discussion of Hofstede's (1980, 1991, 2001) national cultural dimensions, and the limited prior research, we expect to find significant variation regarding the perceptions of the practice of earnings management from individuals of different national cultures. Specifically, we

expect that individuals from different countries vary in their perceptions of the acceptability of earnings management and that these differences would be captured in the national cultural index scores.

Goodwin, Goodwin, and Fiedler (2000) have argued that Hofstede's dimensions of Individualism/Collectivism and Power Distance would be most closely associated with ethical decision-making in business. These researchers found significant cultural differences to ethical business dilemmas involving Individualism and Power Distance issues, but not to scenarios dealing with some of the other dimensions of culture. For example, individuals from high Power Distance countries are more likely to see power as something that is more appropriately evenly distributed, and thus may be less likely to engage in the practice of earnings management that would present an unrealistic portrayal of the company in an attempt to seem better than others. Accordingly, we would expect individuals from high Power Distance cultures to perceive earnings management as less acceptable than individuals from low Power Distance cultures.

Cohen et al. (1995) also provide evidence that the cultural dimension of Individualism/Collectivism is related to auditors' ethical judgments. That is, a person with an individualistic outlook can be expected to reach different ethical conclusions than a person with a collectivistic outlook. If individuals act more in self-interest, we would expect individuals from a high Individualism culture to perceive earnings management as a way for individual gain and, therefore, view the practice more favorably. Thus, we would expect individuals from high Individualism/Collectivism cultures to perceive earnings management as more acceptable than individuals from low Individualism/Collectivism cultures.

If earnings management techniques are viewed as a way to meet established goals or achievement objectives, we would expect that individuals from countries scoring high on the Masculinity dimension to perceive earnings management more favorably than individuals from low-Masculinity countries. The dimension of Masculinity has also been argued to be more closely related to the dimension of Individualism than other dimensions (Roxas & Stoneback, 1997). Therefore, we would expect perceptions of earnings management to be similar for these two national cultural dimensions.

The relationship between Uncertainty Avoidance and the practice of earnings management is less clear. If individuals view the practice of earnings management as a way to manage uncertainty (i.e., the ability of attaining a certain level of reported earnings), then high Uncertainty Avoidance cultures may be associated with more favorable views of earnings management. This may be particularly true if the practice is perceived

as a tool at the accountant's disposal that could enable them to report desired numbers and reduce overall uncertainty. However, if the practice is viewed as something that minimizes future opportunities (i.e., choosing to do something today limits future options), then high Uncertainty Avoidance cultures may be associated with less favorable views of earnings management. Accordingly, we have no a priori expectations of the relationship between earnings management and Uncertainty Avoidance.

Thus, our hypotheses with respect to cultural dimensions and the perception of earnings management are as follows:

H$_1$. Higher Individualism cultures perceive the practice of earnings management more favorably than lower Individualism cultures.

H$_2$. Higher Power Distance cultures perceive the practice of earnings management less favorably than lower Power Distance cultures.

H$_3$. Higher Masculinity cultures perceive the practice of earnings management more favorably than lower Masculinity cultures.

H$_4$. Higher Uncertainty Avoidance cultures perceive the practice of earnings management no differently than lower Uncertainty Avoidance cultures.

Unlike most prior research that examine only a few of Hofstede's cultural dimensions (i.e., Cohen et al., 1996; Roxas & Stoneback, 1997; Goodwin et al., 2000), we separately evaluate the four Hofstede cultural dimensions for which we have each country's index scores. We also analyze more than one vignette regarding the broad issue of earnings management. The use of multiple situations has been argued to better capture an individual's ethical orientation than the use of a single, or just a few, ethical scenarios (Cavanagh & Fritzsche, 1985).

METHODOLOGY

Earnings Management Questionnaire

The participants answered a questionnaire that asked them to evaluate the ethical acceptability of 13 earnings management activities. The scenarios were originally developed by Bruns and Merchant (1990) and subsequently used by Merchant and Rockness (1994) and Fischer and Rosenzweig (1995) to study perceptions regarding the practice of earnings management. The

scenarios address relatively straightforward practices such as delaying or accelerating discretionary expenses or intentionally manipulating inventory reserves. A copy of the questionnaire is included in the appendix.

Earnings can be manipulated either by altering the recording of existing transactions – an accounting manipulation (ACC) – or by timing operating activities near year-end to move revenues and expenses into desired periods – an operating manipulation (OPER). Merchant and Rockness (1994) categorized the 13 scenarios according to whether they were accounting or operating manipulations.[2] For example, scenario number 6, in which the manager manipulates his division's inventory reserve, is an example of an accounting manipulation. Scenario number 2, in which a manager orders his employees to defer discretionary expenditures until the next accounting period, is an example of an operating manipulation. Merchant and Rockness (1994) reported that individuals judge accounting manipulations as more serious ethical violations than operating manipulations.

Further, the scenarios presented to the subjects were Generally Accepted Accounting Principles (GAAP) context-free. Meaning, we did not specify that the respondent apply any national or international GAAP rules when completing the instrument. We simply asked them how ethical they believed the actions were. Accordingly, we have attempted to assess whether perceptions regarding the acceptability of earnings management techniques in general, and with respect to ACC and OPER manipulations, are influenced by national culture and not whether the actions in the scenarios are acceptable GAAP.

As in Merchant and Rockness (1994), our subjects responded to each scenario using a 5-point scale ranging from 1 for "ethical practice" to 5 for "totally unethical practice." Thus, *higher scores* indicate that individuals perceived the action proposed in the scenario as *less ethical* than action perceptions represented by lower scores.

Subjects

The participants in this study were 898 accounting students at several public and private universities with locations in Australia, Hong Kong, Malaysia, Singapore, Spain, Indonesia, United Kingdom, and the United States.[3] Participation was voluntary and the responses to the questionnaire were anonymous. In order to ensure that the students understood the nature of

the accounting scenarios, participation was limited to upper-level students, and data was collected toward the end of the semester in all courses.[4] Eighty-nine students either did not provide all demographic data or did not answer all the questions, and 44 participants were eliminated because there were not at least 20 respondents from their country of origin. These data requirements resulted in 745 usable responses across eight different countries.[5]

The use of students as surrogates for employed adults has long been an issue in business research (Dickhaut, Livingston, Watson, & D.J.H., 1972). However, several studies have suggested that the use of business students to proxy for professionals is appropriate when assessing basic traits or perceptions, but not for higher-order decision-making skills (Campbell, 1986; Ward, 1993). For example, Remus (1986) and Greenberg (1987) specifically addressed this student surrogate issue by studying both business students and employed adults simultaneously. Both these studies conclude that there were no differences between the business students and the employed adults. Therefore, Remus (1986) argues that the use of mature business students as surrogates for employed professionals is appropriate. Our study examines the perceptions of more mature, upper-level accounting students – thus, meeting Remus' criteria.

Further, numerous prior researchers have utilized accounting and business students in the assessment of ethical issues (Stanga & Turpen, 1991; Morris & McDonald, 1995; Snodgrass & Behling, 1996; Roxas & Stoneback, 1997). We also assess perceptions regarding simple earnings management techniques, and differences across national cultures. Since national culture is reinforced and well engrained at an early age, and is argued to be relatively stable in an individual over time (Hofstede, 1991, 2001), our use of upper-level students and cultural index scores does not appear to be problematic to our study or conclusions.

Table 1 indicates the number of participants from each country included in the study, as well as the country's cultural index scores from Hofstede (2001). The participants ranged in age from 18 to 46 years with an overall median age of 21.9 years for all participants – reinforcing that we have included relatively mature participants in our study. This average age of the students is also reflective of our attempt to utilize upper-level students that would most likely be familiar with the accounting and business issues presented in the instrument, and also likely to fully reflect the national cultures to which they belong. The table also indicates a fairly wide dispersion of cultural index scores across the eight countries included in the study.

Table 1. Study Participants and Cultural Index Scores.

Country	Sample Size	Mean Age	Cultural Index Scores (Hofstede, 2001)			
			IND	POW	MAS	UA
Australia	97	24.0	90	36	61	51
Hong Kong	39	22.7	25	68	57	29
Indonesia	28	21.0	14	78	46	48
Malaysia	22	20.9	26	104	50	36
Singapore	20	22.7	20	74	48	8
Spain	122	20.7	51	57	42	86
United Kingdom	51	21.6	89	35	66	35
United States	366	22.2	91	40	62	46
Total	745	21.9				

IND = Individualism Index; POW = Power Distance Index; MAS = Masculinity Index; UA = Uncertainty Avoidance Index.

RESULTS AND DISCUSSION

Table 2 indicates the mean response to each of the 13 earnings management scenarios by country and in the aggregate. Mean responses varied considerably across the scenarios. Overall, the action regarding painting a building early was perceived most favorably (mean of 1.26), followed by using overtime at year-end (mean of 1.88) and selling unused assets to meet budget (mean of 1.92). Intentionally delaying the recording of a $500,000 invoice was perceived as the most unacceptable action (mean of 3.72), followed by deferring expenditures until the next year (mean of 3.35) and failing to record supply purchases until the following year (mean 3.21).

In order to assess differences between countries regarding responses to the individual questions and the average overall response, we ran univariate unbalanced ANCOVAs, with the individual's response as the dependent variable and country as the grouping variable.[6] We also include age and whether the student was an accounting major (0/1) as covariates in our analyses. These covariates help control for any differences in perceptions due to age of the individual or the possible extent and type of formal training.[7] As indicated in the last column of Panel A in Table 2, individual's responses to 10 of the 13 scenarios, as well as average responses, were

Table 2. Mean Responses to Earnings Management Scenarios: Differences Across Countries.

	All	Australia	Hong Kong	Indonesia	Malaysia	Singapore	Spain	United Kingdom	United States	Diff.* (*p*-values)
Sample Size	745	97	39	28	22	20	122	51	366	
Panel A: Scenarios										
1. Paint building early	1.26	1.26	1.36	1.61	1.64	1.20	1.48	1.20	1.14	0.0002
2a. Defer expenditures for quarter	2.82	2.69	2.51	2.82	2.95	3.05	2.80	2.75	2.88	0.3791
2b. Defer expenditures for year	3.35	3.06	3.00	3.18	3.27	3.50	3.39	3.16	3.49	0.0516
3. Record supplies next year	3.21	3.10	2.85	3.32	3.14	3.15	3.48	2.86	3.24	0.0033
4a. End of year sales program	2.09	1.89	2.08	2.96	2.00	2.65	2.17	1.88	2.05	0.0001
4b. Overtime in December	1.88	1.78	1.95	2.21	1.86	1.75	2.25	1.94	1.74	0.0179
4c. Sell unused assets	1.92	1.84	2.00	2.18	1.95	2.20	2.68	1.53	1.70	<0.0001
5a. Prepay $60 K travel expenses	2.71	2.71	2.85	2.86	2.77	3.25	2.79	2.41	2.66	0.0241
5b. Write-down $700 K inventory	3.17	3.07	2.92	2.64	2.82	3.25	3.30	3.17	3.24	0.0278
6a. Write-up inventory-product develop.	2.63	2.61	2.46	2.43	2.50	2.45	2.85	2.27	2.66	0.0019
6b. Write-up inventory-meet budget	3.05	2.84	2.54	2.79	2.50	2.70	3.15	2.76	3.25	<0.0001
7a. Delay recording $30 K invoice	2.80	2.54	2.87	2.75	2.68	2.65	2.97	2.57	2.86	0.0953
7b. Delay recording $500 K invoice	3.72	3.42	3.44	3.79	3.41	3.80	3.93	3.39	3.83	0.0009
Average	2.66	2.52	2.52	2.73	2.58	2.74	2.87	2.45	2.67	<0.0001
Panel B: Situation Factors										
ACC (3 + 5a + 5b + 6a + 6b + 7a + 7b)/7	3.04	2.90	2.85	2.94	2.83	3.04	3.21	2.78	3.10	<0.0001
OPER (1 + 2a + 2b + 4a + 4b + 4c)/6	2.22	2.09	2.15	2.49	2.28	2.39	2.46	2.08	2.17	<0.0001

ACC = Accounting manipulations; OPER = Operating manipulations.
*Type III sum of squares results from unbalanced ANCOVA using country as the grouping variable and age and accounting major (0/1) as covariates.

significantly different across countries at $p < 0.05$, with another two scenarios being significantly different at $p < 0.10$. These results on the individual scenarios, as well as the overall average responses, indicate considerable variation among the countries regarding the acceptability of the practice of earnings management.

Panel B of Table 2 presents the mean responses and results of the unbalanced ANCOVAs for the overall scores and the two manipulation types across countries. Of particular import are the ACC and OPER aggregate scenario results. Participants from different countries varied significantly regarding both their perceptions of the ACC and OPER manipulations ($p < 0.0001$). Consistent with their practitioner counterparts (Merchant & Rockness, 1994), the participants in our study, from all countries, also found violations of accounting rules (ACC) more ethically troubling than operating manipulations (OPER) of income. Together these results indicate considerable differences among the countries regarding the overall acceptability of the practice of earnings management, as well as differences regarding the type of manipulations, across the eight countries in our study.

Comparison of Earnings Management Perceptions and Culture

While finding differences across countries is informative, our study sought to explain the differences in earnings management perceptions by using Hofstede's Cultural Index scores. Accordingly, in order to assess our hypotheses, we grouped countries according to their relative positioning on the cultural indices. We grouped countries into "High," "Middle," and "Low" on each of the cultural indices. Table 3 indicates the four groupings of companies used for testing H_1–H_4.

Since high scores on our research instrument indicate *unacceptability* of the earnings management practice, positive relationships indicate that individuals from countries with high-index scores view the practice as more unacceptable (i.e., less acceptable) than individuals from countries with lower-index scores. Table 4 presents the results of testing H_1–H_4 by using unbalanced ANCOVAs similar to those reported in Table 2.[8]

Based on H_1, we would expect a negative relationship between the perception scores and the IND index scores which would be indicative of individuals from high-IND score countries viewing the practices as more acceptable (i.e., less unacceptable) than individuals from low-IND score countries. The ANCOVA results in Panel A of Table 4 indicate that for

Table 3. Country Groupings for Hofstede's (2001) Cultural
Index Scores.

Index	High	Middle	Low
Individualism	Australia UK US	Spain	Hong Kong Indonesia Malaysia Singapore
Power Distance	Malaysia	Hong Kong Indonesia Singapore Spain	Australia UK US
Masculinity	Australia UK US	Hong Kong Malaysia	Indonesia Singapore Spain
Uncertainty Avoidance	Australia Indonesia Spain US	Hong Kong Malaysia UK	Singapore

the IND index, there were significant differences between the three groups of countries on all three summary measures ($p < 0.01$), but not in the direction predicted by H_1. Participants from middle IND countries objected to earnings management more strongly than did participants from either low or high IND countries. Differences in perceptions of ACC, OPER and the overall average score were not well explained by the IND index.

These results are generally not consistent with Cohen et al. (1995), Roxas and Stoneback (1997), and Goodwin et al. (2000) who found Hofstede's Individualism Index scores to be significantly related to ethical perceptions in business. Our results do not find a significant association between individual's country IND score and their perceptions of earnings management.

Based on H_2, we would expect a positive relationship between perception scores and the POW index scores. The ANCOVA results in Panel B indicate that for the POW index, while the ACC and overall average score models are not supportive of H_2, the OPER analysis does support H_2. We find a positive relationship between perceptions of the OPER manipulations and the POW index country groups. High-POW cultures had higher average perception scores, indicating that individuals from these countries viewed OPER manipulations less favorably than individuals from low-POW cultures. Separate Scheffe multiple-comparison tests indicate that the low-POW group is significantly ($p < 0.05$) different than the high or middle POW groups.

Table 4. Mean Responses and Differences across Country Groupings.

Panel A: Individualism Index

Manipulation Type	High Group (means)	Middle Group (means)	Low Group (means)	Diff. across groups* (*p*-values)	H$_1$ Supported?
ACC	3.04	3.20	2.90	<0.0001	No
OPER	2.14	2.44	2.31	<0.0001	No
Overall Average	2.62	2.85	2.63	<0.0001	No

Panel B: Power Distance Index

Manipulation Type	High Group (means)	Middle Group (means)	Low Group (means)	Diff. across groups* (*p*-Values)	H$_2$ Supported?
ACC	2.93	3.11	3.04	0.0177	No
OPER	2.40	2.37	2.14	<0.0001	Yes
Overall Average	2.69	2.76	2.62	0.0011	No

Panel C: Masculinity Index

Manipulation Type	High Group (means)	Middle Group (means)	Low Group (means)	Diff. across groups* (*p*-Values)	H$_3$ Supported?
ACC	3.04	2.89	3.15	0.0001	No
OPER	2.14	2.24	2.45	<0.0001	Yes
Overall Average	2.63	2.62	2.83	<0.0001	No

Panel D: Uncertainty Avoidance Index

Manipulation Type	High Group (means)	Middle Group (means)	Low Group (means)	Diff. across groups* (*p*-Values)	H$_4$ Supported?
ACC	3.08	2.82	3.04	0.0041	No
OPER	2.22	2.12	2.39	0.0759	No
Overall Average	2.69	2.50	2.74	0.0061	No

*Type III sum of squares results using country as the grouping variable and age and accounting major (0/1) as covariates.

These OPER results are consistent with those of Roxas and Stoneback (1997) and Goodwin et al. (2000) who find significant associations between Hofstede's Power Distance Index scores and ethical decision-making in business. We find a significant association with OPER manipulations, but not with ACC manipulations or the overall average scores, which provides only partial support for H$_2$.

Based on H_3, we expected a negative relationship between the perception scores and the individual's MAS index score. The ANCOVA results in Panel C for the MAS analyses indicate that only the OPER model results are consistent with H_3. Individuals from high-MAS countries had lower mean perception scores than individuals from low-MAS countries. Separate Scheffe multiple-comparison tests indicate that the high-MAS group is significantly different ($p < 0.05$) than the low and middle MAS groups on this measure. These MAS results are consistent with the findings of Roxas and Stoneback (1997). Thus, we also find partial support for H_3 in that only the OPER analysis supports our hypothesis.[9]

Based on our earlier discussion of H_4, we had no a priori directional prediction for the UA index based on prior literature in an accounting context. The results in Panel D present a fairly consistent result that individual's perceptions of the earnings management scenarios were not significantly related to their country's UA index scores. Accordingly, perceptions regarding the acceptability of earnings management do not appear to be significantly positively or negatively associated with Hofstede's Uncertainty Avoidance Index scores. Thus, we do not find support for any strong relationship (positive or negative) between the UA index and individual's perceptions of earnings management. These results are in contrast to those of Cohen et al. (1995) and Roxas and Stoneback (1997) who find a significant association between UA and ethical decision-making.

Sensitivity Analyses

To ensure that results of our hypotheses tests were not overly sensitive to the categorizations of countries into the three "High," "Middle," and "Low" groupings, we performed sensitivity tests by reclassifying borderline countries in alternative groupings. In essence, we re-ran the analyses with alternative country groupings for countries that arguably could have been classified into alternative "High," "Middle," and "Low" groups. For example, we reclassified in the POW analyses Indonesia and Singapore from the "Middle" to the "High" group; for the MAS analyses, Hong Kong from the "Middle" to the "High" group; for the UA analyses, Australia, Indonesia, and the US from the "High" to the "Middle" group; and for the MAS analyses, Malaysia from the "Middle" to the "Low" group, etc. Results from the revised ANCOVA models using these and other reclassifications were not substantively different from the results presented. Accordingly, our

results do not appear to be overly sensitive to the country classifications used for analyses and reported in the paper.

CONCLUSION

Earnings management is one of the most important practical issues faced by accountants around the world. Although prior research reveals wide disagreement among accountants regarding the acceptability of earnings management (Bruns & Merchant, 1990; Merchant & Rockness, 1994), little information exists as to whether national cultural differences significantly and consistently impact these perceptions.

A key finding of our study is that individuals from different countries varied significantly in their general perceptions regarding earnings management. However, when we assessed perceptions of earnings management in the context of Hofstede's national cultural index scores, we find only minimal associations between perceptions and the four cultural dimensions assessed. However, our analyses do provide some evidence that the Power Distance and Masculinity dimensions are associated with perceptions of operating manipulation decisions. Individuals in high Power Distance, or low Masculinity countries perceived operating manipulations less favorably than individuals in low Power Distance or high Masculinity countries.

Our findings of different results based on the type of manipulation present evidence for the necessity of controlling for, or separately assessing, various types of earnings management techniques. For example, participants from countries such as Australia and the United States objected much more strongly to accounting manipulations than to operating manipulations, while participants from Indonesia and Malaysia perceived relatively little difference between the two types of manipulations. In general, perceptions regarding accounting manipulations were not significantly related with the measures of culture, but differences in perceptions of operating and accounting manipulations were related to the Power Distance and Masculinity dimensions identified by Hofstede (2001).

While our findings were robust to different country classifications within our sample, we did not assess all nations or cultural groups. Future research should endeavor to ensure that our findings are robust to other national cultures not included in our study. Additionally, as noted earlier, future research should attempt to identify the specific types of operating or accounting ethical situations where the national socialization of individuals leads to different perceptions and actions regarding the acceptability of

earnings management. Future research should also assess whether differences in perceptions of earnings management are more closely associated with institutional factors (e.g., different legal and governmental systems) and different accounting systems than with national cultural dimensions (Doupnik & Salter, 1995). Further, future research should also assess whether an individual's value system is systematically associated with national culture and with perceptions of earnings management (Bartlett & Ogilby, 1996). While we find significant differences across countries, we do not assess individual's value systems and how they might differ across cultures and relate to these important aspects of corporate financial reporting. Notwithstanding these limitations and extensions, our findings should be of interest to financial market participants and regulators when assessing financial statements and the reliability of financial reporting across multiple country contexts.

NOTES

1. Hofstede (2001) also identified a fifth dimension, Long-term Orientation. However, there has been significant concern regarding the efficacy of this more recently added dimension. For example, Yeh and Lawrence (1995) demonstrate that Long-term Orientation may be indistinguishable from the Individualism dimension once an outlier problem is corrected for. Additionally, only six countries used in our study have Long-term Orientation Index scores. Assessing these countries produce insignificant relationships with our earnings management measures and their Long-term Orientation scores. Accordingly, we focus the remainder of the paper on Hofstede's four widely used cultural dimensions.

2. The questionnaire also includes scenarios that vary the direction (income increasing versus decreasing), and dollar amount (materiality) of the manipulation, as well as the intentions of the manager committing the manipulation. However, since the focus of our study is on national cultural differences, we focus our analyses on the overall types of manipulations and separately assess only the ACC and OPER measures.

3. Where multiple sites in the same country were used to collect data (e.g., Australia and the United States), or where participants were used from both the home country and those studying abroad for the semester (e.g., Hong Kong, Indonesia, Malaysia, and Singapore), an examination of differences between locations on all the variables of interest to the study were performed. These analyses indicate no significant differences owing to location of the participant. Accordingly, all country locations have been combined for analysis.

4. The instrument was translated into Spanish for administration in Spain. All other courses were taught in English.

5. Data were collected in the US from several universities during 1998–2000. Data collection in the other countries was performed in 2001 through 2003. The timing of data collection in the US minimizes the chance that subjects were overly sensitive to fraudulent reporting in the US at the time of data collection.

6. Countries were randomly assigned country codes from 1 to 8.

7. If we do not include age and accounting major (0/1) as covariates, our results are substantively the same as those reported.

8. Eliminating age and accounting major as covariates in the models does not significantly affect the results.

9. To assess whether the MAS results are gender driven, we re-ran the analyses separately on males and females. Results of these analyses are substantively the same as those presented for the entire sample, indicating no significant gender effect on our results.

REFERENCES

Armstrong, M. B. (1993). *Ethics and professionalism for CPAs*. Cincinnati, OH: South-Western.

Barboza, D. (2002). Enron offered management aid to companies. *The New York Times*, April 10, p. B1.

Bartlett, R. W., & Ogilby, S. M. (1996). Business versus personal values: Does a double standard exist. *Business and Professional Ethics Journal*, *15*(fall), 37–63.

Becker, H., & Fritsche, D. J. (1987). A comparison of the ethical behavior of American, French, and German managers. *Columbia Journal of World Business*, *22*(winter), 87–95.

Beltramini, R., Peterson, R., & Kozmetsky, G. (1984). Concerns of college students regarding business ethics. *Journal of Business Ethics*, *3*(3), 195–200.

Brown, L. (2001). A temporal analysis of earnings surprises: Profits vs losses. *Journal of Accounting Research*, *39*(2), 221–241.

Bruns, W. J., Jr., & Merchant, K. A. (1990). The dangerous morality of managing earnings. *Management Accounting*, *53*(August), 22–25.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99–126.

Burgstahler, D., & Eames, M. (1998). *Management of earnings and analyst forecasts*. Working Paper, University of Washington and Santa Clara University.

Cahan, S. F. (1992). The effect of antitrust investigations on discretionary accruals: A refined test of the political-cost hypothesis. *The Accounting Review*, *47*(1), 77–95.

Campbell, J. P. (1986). Labs, fields, and straw issues. In: E. A. Locke (Ed.), *Generalizing from laboratory to field settings* (pp. 269–279). Lexington, MA: Lexington Books.

Cavanagh, G. F., & Fritzsche, D. J. (1985). Using vignettes in business ethics research. *Research in Corporate Social Performance and Policy*, *8*, 279–293.

Choi, F. D., & Bavishi, V. B. (1983). International accounting standards: Issues needing attention. *Journal of Accountancy*, *155*(3), 62–68.

Choi, F. D., Frost, C. A., & Meek, G. K. (1999). *International accounting* (3rd ed.). Upper Saddle River: Prentice-Hall.

Clikeman, P. M., Geiger, M. A., & O'Connell, B. T. (2001). Student perceptions of earnings management: The effects of national origin and gender. *Teaching Business Ethics*, (5), 389–410

Cohen, J. R., Pant, L. W., & Sharp, D. J. (1993). Culture-based ethical conflicts confronting multinational accounting firms. *Accounting Horizons*, *8*(September), 1–13.

Cohen, J. R., Pant, L. W., & Sharp, D. J. (1995). An international comparison of moral constructs underlying auditor's ethical judgments. *Research in Accounting Ethics*, *1*, 97–126.

Cohen, J. R., Pant, L. W., & Sharp, D. J. (1996). A methodological note on cross cultural accounting ethics research. *The International Journal of Accounting*, *31*(1), 55–66.

Davis, J. F., & Welton, R. (1991). Professional ethics: Business students' perception. *Journal of Business Ethics*, *10*(6), 451–463.

DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, *17*(1), 145–176.

Dickhaut, J. W., Livingston, J. L., & Watson, D. J. H. (1972). On the use of surrogates in behavioral experimentation. *The Accounting Review*, *47*(Supplement), 455–470.

Doupnik, T. S., & Salter, S. B. (1995). External environment, culture and accounting practice. *International Journal of Accounting*, *30*(1), 189–207.

Edmondson, G., & Cohn, L. (2004). How Parmalat went sour: Here's the skinny on Europe's enormous financial scandal. *Business Week*, (January 12), 46–48.

Erickson, M., & Wang, S. (1999). Earnings management by acquiring firms in stock for stock mergers. *Journal of Accounting and Economics*, *27*(2), 149–176.

Farrell, B. J., & Cobbin, D. (2001). Global harmonisation of the professional behaviour of accountants. *Business Ethics Quarterly*, *10*(3), 257–266.

Fischer, M., & Rosenzweig, K. (1995). Attitudes of students and accounting practitioners concerning the ethical acceptability of earnings management. *Journal of Business Ethics*, *14*(6), 433–444.

French, J. R. P., Israel, J., & As, D. (1960). An experiment on participation in a Norwegian factory interpersonal dimensions or decision-making. *Human Relations*, *14*(February), 3–19.

Fulmer, W. E., & Cargile, B. R. (1987). Ethical perceptions of accounting students: Does exposure to a code of professional ethics help? *Issues in Accounting Education*, *2*(2), 207–219.

Gernon, H. (1993). Discussion of an investigation of the reporting of questionable acts in an international setting. *Journal of Accounting Research*, *31*(Suppl.), 104–110.

Giacomino, D. E. (1992). Ethical perceptions of accounting majors and other business majors: An empirical study. *Accounting Educators' Journal*, *5*(1), 1–26.

Goodwin, J., Goodwin, D., & Fiedler, B. (2000). The influence of culture on accountants' ethical decision making in Singapore and Australia. *Accounting Research Journal*, *13*(2), 22–36.

Greenberg, J. (1987). The college sophomore as guinea pig: Setting the record straight. *Academy of Management Review*, *12*(1), 157–159.

Grimsley, K. D. (2002). Auditors pushed into revolving door. *The Washington Post*, February 19, p. A01.

Healy, P. (1985). The effects of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, *7*(1), 85–107.

Healy, P., & Wahlen, J. M. (2000). *A review of the earnings management literature and its implications for standard setting, Accounting Horizons*, *13*(4), 365–383.

Hermann, D., Inoue, T., & Thomas, W. (2003). The sale of assets to manage earnings in Japan. *Journal of Accounting Research*, *41*(1), 89–109.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills: Sage.

Hofstede, G. (1984). National cultures revisited. *Asia and Pacific Journal of Management*, *2*(1), 22–28.

Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. London: McGraw-Hill Book Company.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Hills: Sage.

Hui, H. C., & Triandis, H. C. (1986). Individualism-collectivism: A study of cross-cultural researchers. *Journal of Cross-Cultural Psychology*, *17*(4), 225–248.

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193–228.

Jubak, J. (2002). Companies whose boards need a scare. *MSN Money Markets Personal* Finance Editor at http://www.thestreet.com/funds/jubak/10015517.html (April 3).

Karnes, A., Sterner, J., Welker, R., & Wu, F. (1989). A bicultural study of independent auditors' perceptions of unethical business practices. *The International Journal of Accounting*, *24*(1), 29–41.

Leuz, C., Nanda, D., & Wysocki, P. (2002). Earnings management and investor protection: An international comparison. *Journal of Financial Economics*, *69*(3), 505–527.

Levitt, A., Jr. (1998). The numbers game. *The CPA Journal*, *68*(December), 15–19.

Levitt Jr., A. (2000). Renewing the Covenant with Investors. Remarks before the New York University Center for Law and Business, May 10.

Main, A. (2002). HIH cut corners from start: Inquiry. *The Australian Financial Review*, (August 18), 1.

Meirovich, G., & Reichel, A. (2000). Illegal but ethical: An inquiry into the roots of illegal corporate behaviour in Russia. *Business Ethics*, *9*(3), 126–135.

Merchant, K. A., & Rockness, J. (1994). The ethics of managing earnings: An empirical investigation. *Journal of Accounting and Public Policy*, *13*(1), 79–94.

Mintz, S. (1997). *Cases in accounting ethics and professionalism* (3rd ed.). New York, NY: McGraw-Hill.

Morris, S. A., & McDonald, R. A. (1995). The role of moral intensity in moral judgments: An empirical investigation. *Journal of Business Ethics*, *14*(6), 715–726.

Okleshen, M., & Hoyt, R. (1996). A cross cultural comparison of ethical perspectives and decision approaches of business students: United States of America versus New Zealand. *Journal of Business Ethics*, *15*(5), 537–549.

Perry, S. E., & Williams, T. H. (1994). Earnings management preceding management buyout offers. *Journal of Accounting and Economics*, *18*(1), 157–179.

Poortinga, Y. H. (1989). Equivalence of cross-cultural data: An overview of basic issues. *International Journal of Psychology*, *2*(4), 737–756.

Poortinga, Y. H., & Malpass, R. S. (1986). Making inferences from cross-cultural data. In: W. J. Lonner & J. W. Berry (Eds), *Field methods in cross-cultural research* (pp. 17–46). Beverly Hills: Sage.

Remus, W. (1986). Graduate students as surrogates for managers in experiments on business decision making. *Journal of Business Research*, *14*(1), 19–25.

Roxas, M. L., & Stoneback, J. Y. (1997). An investigation of the ethical decision-making process across varying cultures. *The International Journal of Accounting*, *32*(4), 503–535.

Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons*, *3*(4), 91–102.

Schultz, J. J., Johnson, D. A., Morris, D., & Dynes, S. (1993). An investigation of the reporting of questionable acts in an international setting. *Journal of Accounting Research*, *31* (Suppl.), 75–103.

Snodgrass, J., & Behling, R. (1996). Differences in moral reasoning between college and university business and on-business majors. *Business and Professional Ethics Journal*, *15*(1), 79–84.

Stanga, K. G., & Turpen, R. A. (1991). Ethical judgments on selected accounting issues: An empirical study. *Journal of Business Ethics*, *10*(6), 739–747.

Stern, C. (2003). Hoping to shed a scandal. *Washington Post*, September 8, p. E1.

Triandis, H. (1980). Reflections on trends in cross-cultural psychology. *Journal of Cross-Cultural Psychology*, *11*(March), 35–58.

Triandis, H. (1985). Collectivism vs. individualism: A reconceptualization of a basic concept in cross-cultural psychology. In: C. Bagley & G. K. Verma (Eds), *Personality, cognition and values: Cross-cultural perspectives of childhood and adolescence* (pp. 60–95). London: McMillan.

Triandis, H. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*(4), 506–520.

Triandis, H. (1995). *Individualism and collectivism*. Boulder: Westview.

Wallace, R., Olusegun, S., & Gernon, H. (1991). Frameworks for international comparative financial accounting. *Journal of Accounting Literature*, (10), 209–264.

Ward, E. (1993). Generalizability of psychological research from undergraduates to employed adults. *The Journal of Social Psychology*, *133*(4), 513–519.

Whipple, T., & Swords, D. F. (1992). Business ethics judgments: A cross cultural comparison. *Journal of Business Ethics*, *11*(6), 671–678.

Wines, W. A., & Napier, N. K. (1992). Towards an understanding of cross-cultural ethics: A tentative model. *Journal of Business Ethics*, *11*(10), 831–884.

Yeh, R., & Lawrence, J. J. (1995). Individualism and Confucian dynamism: A note on Hofstede's cultural root to economic growth. *Journal of International Business Studies*, *26*(3), 655–662.

APPENDIX

Instructions:

The following questions reflect everyday ethical choices. Please evaluate the practices as they apply to a major division (annual revenues of, say, $100 million) of a billion dollar public company. Use the following scale to indicate how you judge their acceptability.

1. Ethical practice.
2. Questionable practice. I would not say anything to the manager, but it makes me uncomfortable.
3. Minor infraction. The manager should be warned not to do it again.
4. Serious infraction. The manager should be severely reprimanded.
5. Totally unethical. The manager should be fired.

Questions:

1. The division's headquarters building was scheduled to be painted in 1999. But since profit performance was way ahead of budget in 1998, the division general manager (GM) decided to have the work done in 1998. Amount: $150,000.

2. The GM ordered his employees to defer all discretionary expenditures (e.g., travel, advertising, hiring, maintenance) into the next accounting period, so his division could make its budgeted profit targets. Expected amount of deferrals: $150,000.
   (a) The expenses were postponed from February and March until April in order to make the first quarter target.
   (b) The expenses were postponed from November to December until January in order to make the annual target.
3. On December 15, a clerk ordered $3,000 of office supplies, and the supplies were delivered on December 29. This order was a mistake because the GM had ordered that no discretionary expenses be incurred for the remainder of the fiscal year, and the supplies were not urgently needed. The company's accounting policy manual states that office supplies are to be recorded as an expense when delivered. The GM learned what had happened, and to correct the mistake, he asked the accounting department not to record the invoice until February.
4. In September, the GM realized the division would need strong performance in the fourth quarter to reach its budget targets.
   (a) He decided to implement a sales program offering liberal payment terms to pull some sales that would normally occur next year into the current year; customers accepting delivery in the fourth quarter would not have to pay the invoice for 120 days.
   (b) He ordered manufacturing to work overtime in December so that everything possible could be shipped by the end of the year.
   (c) He sold some excess assets and realized profit of $40,000.
5. At the beginning of December 1987, the GM realized that the division would exceed its budgeted profit targets for the year.
   (a) He ordered his controller to prepay some expenses (e.g., hotel rooms, exhibit expense) for a major trade show to be held in March 1988 and to book them as 1987 expenses. Amount: $60,000.
   (b) He ordered his controller to develop the rationale for increasing the reserve for inventory obsolescence. By taking a pessimistic view of future market prospects, the controller was able to identify $700,000 worth of finished goods that conservative accounting would say should be fully reserved (i.e., written off), even though the GM was fairly confident that the inventory would still be sold at a later date at close to full price.
6. The next year, the division sold 70% of the written-off inventory, and a customer had indicated some interest in buying the rest of that inventory the following year. The GM ordered his controller to prepare the

rationale for reducing the reserve for obsolescence by $210,000 (i.e., writing up the previously written-off goods to full cost). The GM's motivation for recapturing the profit was
(a) delayed due to budget constraints;
(b) to make budgeted profit targets.
7. In November 1988, the division was straining to meet budget. The GM called the engagement partner of a consulting firm that was doing some work for the division and asked that the firm not send an invoice until next year. The partner agreed. Estimated work done but not invoiced:
(a) $30,000.
(b) $500,000.

This page intentionally left blank

THE DEGREE OF INTERNATIONALIZATION AND THE STOCK MARKET VALUATION OF EARNINGS

John Y. Lee, Charles Tang and Surinder Tikoo

ABSTRACT

In this paper, we examine the impact of the degree of internationalization on a firm's ability to reduce risk and increase profits. Our study seeks to overcome three limitations of many previous studies on the value of internationalization: use of a single measure of internationalization, accrual-basis accounting measures of firm performance, and a small sample size. We use a multi-measure index, stock market assessment, and a large sample size of various firms. Our findings indicate that (1) a firm's degree of internationalization has a positive impact on the investor response to the earnings changes and (2) the market's positive response to the value of internationalization is confined to a high level of internationalization. Our results do not support the argument that, at high levels of internationalization, the costs of internationalization exceed the benefits.

INTRODUCTION

Whether international diversification produces net economic value has been an interesting research question international accounting and management scholars have tried to answer for some time. Researchers have addressed the issue by examining a possible connection between management's decision regarding the degree of internationalization and the firm's risk, profitability, or market value (e.g., Buhner, 1987; Daniels & Bracker, 1989; Errunza & Senbet, 1984; Geringer, Beamish, & daCosta, 1989; Grant, 1987; Shaked, 1986; Hitt, Hoskisson, & Kim, 1997; Morck & Yeung, 1991; Qian & Li, 2002; Reeb, Kwok, & Baek, 1998; Reuer & Leiblein, 2000).

In this article, we contribute to the international accounting and management literature by examining the impact of the degree of internationalization on a firm's ability to reduce risk and increase profits using a perspective that has not been widely used so far. Today's real-world perspective of top management is such that it must constantly watch how the stock market views its strategic initiatives and operational activities. International diversification is one of the key strategic initiatives a firm undertakes. Accordingly, whether stock market assigns economic value to any reduced cash flow volatility and greater growth potential derived from international diversification is of a great concern to top management. We seek to determine whether investors see a link between a firm's degree of internationalization and its ability to reduce risk and increase profits by examining investors' reaction to the earnings announcements of firms with different degrees of internationalization.

For the examination we use the coefficient that relates stock price response to the earnings changes reported by firms. Called the earnings response coefficient (ERC), this coefficient indicates the extent to which investors revise their expectations on a firm's future earnings, and hence stock price, based on the information conveyed by the changes in current earnings (Beaver, 1968; Collins & Kothari, 1989). A study focusing on the ERCs of firms with different degrees of internationalization can reveal whether stock investors recognize the economic value of the reduced cash flow volatility and greater growth potential found in internationalized firms.

The magnitude of ERCs differs among firms. A firm's ERC is determined by the perceived risk, earnings persistence, and growth. A firm's general business risk is measured by the volatility in a firm's cash flows. A high volatility in cash flows entails a high degree of uncertainty that increases the risk for investors. Investors will discount the earnings more heavily for firms with a high uncertainty in the earnings and hence a smaller ERC.

Earnings persistence represents the extent of how permanent a current earnings change can be. A firm's current earnings change could be a permanent change, a one-time event, or anything in between the two extremes. A permanent earnings change would lead to a significant revision in investors' perception of future earnings while a one-time event would have little impact. This is because investors are more concerned with future earnings of the firm than with the current earnings.

The earnings growth as revealed in the current earnings is the most important factor influencing the investors' expectation of future earnings. Investors like the stocks with a high growth momentum. An increase in the current earnings would be translated into a higher stock price when the current earnings increase signals a future earnings growth. Thus, the ERC is larger (smaller) when the risk is low (high) and the earnings persistence and growth are high (low). These relationships are well documented in the finance and accounting literature (e.g., Collins & Kothari, 1989; Kormendi & Lipe, 1987).

In addition to the use of a new methodology linking a firm's internationalization to its ability to reduce risk and increase profits, our study seeks to address three significant problems found in many previous studies on the value of internationalization. First, most previous studies used a single measure as a proxy for a firm's degree of internationalization: the foreign subsidiaries' sales as a percentage of total sales. Single-measure scales, while convenient, are less likely to capture the total construct being investigated, and, in general, suffer from low reliability and less validity (Bagozzi, Yi, & Phillips, 1991). We deal with this problem by using a three-measure index to represent the degree of internationalization. The need to use a composite, multi-measure representation of the degree of internationalization has been emphasized in the international business literature (Sullivan, 1994), and we attempt to investigate if we can make a general claim on the value of international diversification based on empirical results.

Second, the ERC that we use in this study overcomes the weaknesses of accrual-basis accounting measures of firm performance. Most previous studies used accounting measures to examine the relationship between internationalization and firm performance. Return on sales, return on assets, and return on equity employ accrual-basis accounting numbers that can be distorted by accounting rules and conventions. They are not adjusted for risk. They reflect past performance. They do not represent forward-based measures. The ERC is a forward-based measure that reflects the reaction of stock market to the performance results of top management and it commands the attention of management constantly.

Last, our study uses a sample of 1,278 publicly traded firms of varying sizes including firms that are not internationalized. Past studies on the value of internationalization usually used limited-size (50–150 firms) samples of large firms. Our sample provides a significantly higher level of statistical validity to the conclusions drawn from the test results.

INTERNATIONALIZATION

A firm's participation in international markets provides sales and operation opportunities that are not available to domestic firms, thus allowing the firm to reduce the volatility and increase the growth potential of its earnings. These opportunities arise from having access to global markets, economies of scale, market learning, and operational flexibility.

Market Diversification and Volatility of Cash Flows

As far as the risk of a multinational corporation (MNC) is concerned, executives and scholars cannot rely on a general claim that internationalization will lead to the reduction or increase in the firm's risk. An MNC can decrease its business and market risks by generating cash flows in different countries. When the cash flows generated in different countries are less than perfectly correlated, their combined volatility tends to be smaller than the sum of the individual ones if counted separately. Given the different business environments of different countries, a firm whose sales are diversified across multi-country markets is less likely to be affected by a downturn in a particular market.

Hughes, Logue, and Sweeney (1975) found that MNCs achieve higher returns, lower systematic risks, and higher risk-adjusted returns compared to domestic firms. Fatemi (1984) compared the returns, systematic risks, and abnormal returns of 84 MNCs and 52 uni-national corporations in the same industry for the period between 1971 and 1980. The study found a significantly lower beta and abnormal returns for MNCs. Michel and Shaked (1986) found that MNCs showed a lower systemic risk, higher capitalization ratio, lower total risk, and lower risk-adjusted performance measures than domestics firms. These findings all confirm that international diversification reduces risks.

The study of Reeb et al. (1998), however, casts doubts on the value of international diversification in reducing an MNC's risk. Their research

implies that the issue of systematic risk in MNCs is incomplete. The idea that internationalization reduces risk for the firm is based on the following premise: the MNC's operations are in multiple countries, increasing the diversity of its cash flows. Relative to a similar domestic firm, the MNC's returns would be less correlated with the market and thus its systematic risk may decrease. Internationalization, nevertheless, may also increase exposure to other pervasive economic factors that would increase the MNC's risk. Foreign exchange risk, political risk, and other economic factors may increase the standard deviation of cash flows from internationalization, which offset the lower correlation associated with diversification. This study found that a positive relationship exists between the level of systematic risk in an MNC and the degree of that firm's internationalization.

Reuer and Leiblein (2000) also tested if investments in dispersed foreign subsidiaries enhance corporate flexibility and thereby reduce risk. Using the number of countries where MNCs have subsidiaries as the measure of internationalization, the study found that U.S. manufacturing firms with higher levels of internationalization do not generally obtain lower levels of downside risk. Downside risk represents the risk decision makers consider in terms of negative outcomes or hazards rather than as variance in outcomes (returns).

Foreign Markets and Earnings Growth

International markets provide a firm with growth opportunities (Buhner, 1987). Typically, a firm first establishes itself in its home country before it enters international markets. By the time the firm enters international markets, it has already exploited the growth potential of the domestic market. Foreign markets are new and their potential has been untapped, thus providing the firm with a greater opportunity for growth in future earnings than the domestic market.

On the basis of this argument, Bodnar and Weintrop (1997) examined the association between changes in domestic and foreign earnings and cumulative abnormal stock returns of U.S. multinational firms. The study found the ERC for both domestic and foreign operations to be significant, with the ERC for foreign operations being significantly greater than the ERC for domestic operations. The findings suggest investors' recognition that, compared to the domestic market, foreign markets provide greater opportunities for earnings growth.

Economy of Scale, Exposure and Market Learning

By exploiting growth opportunities that foreign markets provide, a firm can standardize its marketing programs and spread its investments in new product development and brand equity over a larger sales volume. This provides an economy of scale. Internationalization also allows a firm to exploit differences in inter-country costs that arise from the different factor endowments of different countries, thus lowering overall costs. A firm can establish or locate different activities of its value chain in countries that allow the lowest costs for the firm (Kogut, 1985a). Lower costs contribute to earnings growth.

A participation in international markets exposes a firm to different ideas and diverse market perspectives (Kotabe, 1990). This exposure fosters innovation that leads the firm to offer superior products and increase sales and earnings.

Operational Flexibility

Internationalization usually entails a firm's establishment of subsidiaries in different countries. A firm operating subsidiaries in multiple countries can mitigate the negative effects from adverse changes in one country's interest rate, wage rate, and raw material costs by shifting production and sourcing sites to other favorable markets across the border (Kogut, 1985b). The firm would also acquire the ability to deal with institutional restrictions, such as tax codes, and transfer profits or losses to locations that promise tax advantages. This allows the firm to shift the production possibility frontier outward, generating higher future cash flows and overall growth (Mello, Parsons, & Triantis, 1995).

Regarding the value of operational flexibility, Tang and Tikoo (1999) empirically tested the relationship between ERC and the structure of the network of foreign subsidiaries of MNCs. The study found that investors respond more positively to the earnings of firms that have subsidiaries in more countries (breadth) and limit their concentration of subsidiaries in a single foreign country (depth). Investors recognize the value of operational flexibility a firm derives from a broad network of foreign subsidiaries in maintaining and increasing earnings.

A participation in foreign markets also allows a firm to reduce the uncertainty surrounding its future levels of revenues and earnings. Given the different business environments of different countries, a firm whose sales

are diversified across multi-country markets is less likely to be affected by a downturn in a particular market. Diversification across different country markets also allows a firm to reduce the uncertainty surrounding future earnings that arises from economic exposure, representing the long-term effect of the fluctuations in exchange rates on future prices, sales, and costs. A firm that has subsidiaries in multiple countries can hedge against economic exposure by shifting its production and sourcing to countries based on the exchange rate consideration.

Costs and Benefits

There are costs associated with internationalization, nevertheless. Internationalization requires significant managerial efforts involving people, materials, and facilities spread across geographically dispersed and culturally distant countries. Internationalization can create economic value only when its benefits exceed the associated transaction and agency costs.

The benefits of internationalization and the associated costs vary with the extent of internationalization. Hitt et al. (1997) found that, beyond moderate levels of internationalization, the costs of managing international operations outweigh the benefits. In today's global economy many firms have developed organizational capabilities that allow them to efficiently manage multinational operations spread across diverse geographic and cultural regions. These management capabilities should help firms derive a positive net benefit even at high levels of internationalization. At the same time, a firm may not be able to realize a positive net benefit at a low level of internationalization, because it fails to attain the critical mass required for international operations.

HYPOTHESES TESTING

Hypothesis Formulation

Our hypotheses on the relationships between ERC and internationalization are based on the premises that internationalization allows a firm to reduce its cash flow volatility and increase the potential for persistence and growth of its future earnings. Formally, we formulate the following null hypothesis:

H_0. Internationalization has no impact on a firm's ability to reduce risk and increase profits.

We seek to determine whether investors recognize the benefits of a firm's internationalization and evaluate the firm's earnings accordingly. For the purpose of testing the null hypothesis, we formulate the following three working hypotheses:

H$_1$. There is no difference in the variance of cash flows between internationalized firms and domestic firms.

H$_2$. There is no difference in the ERC between internationalized firms with varying degrees of internationalization and domestic firms.

H$_3$. If there is an assumed effect of internationalization, the effect materializes for any degree of internationalization.

The first two working hypotheses are self-explanatory. The third working hypothesis will allow us to examine if the market differentiates between highly internationalized firms and those with a low degree of internationalization, provided that there does exist a link.

METHODOLOGY

In order to capture the differences in the ERC of firms with varying degrees of internationalization, we compare the ERCs of three groups of firms: firms that are not internationalized (domestic firms), firms that show low-to-moderate degrees of internationalization, and firms that are highly internationalized.

We first examine the hypothesized internationalization-ERC link treating the degree of internationalization (DOI) as a dichotomous variable (high DOI versus low DOI). We compare the ERCs of the two internationalized groups to the ERCs of domestic firms. The following model is used:

$$C\tilde{A}R_{it} = \alpha_0 + \sum_{p=1}^{2} \alpha_p D_p + \beta_0 \Delta E_{it} + \sum_{p=1}^{2} \beta_p D_p \Delta E_{it} + \tilde{\xi}_{it} \qquad (1)$$

where:

$C\tilde{A}R_{it} = $ unexpected stock returns for firm i for year t cumulative from two days after prior-year earnings announcement to two days after current-year earnings announcement;

$\Delta E_{it} = $ changes in annual earnings from year t -1 to year t for firm i;

$p = $ the index for an internationalized firm P takes value 1 for low-DOI firms and 2 for high-DOI firms;

D_1 = dummy variable, 1 (internationalized with low DOI) or 0 (others);
D_2 = dummy variable, 1 (internationalized with high DOI) or 0 (others);
$\tilde{\xi}_{it}$ = a mean-zero disturbance term;
β_0 = the ERC of domestic firms; and
β_p = the difference in ERC between group P internationalized firms and domestic firms.
In this model, the ERC of "group P" internationalized firms is represented by $\beta_0 + \beta_p$.

To test the direct link between DOI and ERC, we use the following model:

$$C\tilde{A}R_{it} = \alpha_0 + \alpha_1 DOI + \beta_0 \Delta E_{it} + \beta_1 DOI \Delta E_{it} + \tilde{\xi}_{it} \qquad (2)$$

where DOI is measured as the average score of the three ratios: foreign revenue to total revenue (FSTS), foreign assets to total assets (FATA), and the number of foreign countries to the total number of countries (FCTC).

The measure β_1 in Eq. (2) shows the direct impact DOI has on ERC when DOI changes from 0 to 1. A domestic firm's ERC is β_0. The ERC of a firm is in the range of β_0 and $\beta_0 + \beta_1$, according to its DOI. The ERC of an internationalized firm with the highest DOI (DOI approaching 1) is $\beta_0 + \beta_1$.

Measurement of Variables

The dependent variable used in our regression models is the cumulative abnormal return (CAR) for the period from two days after the previous year's earnings announcement date through two days after the current year's earnings announcement date, and is measured as follows:

$$\tilde{CAR}_{it} = \sum_{t=a-1+2}^{a+2} (\mathrm{Ret}_{it} - \hat{\gamma}_{io} - \hat{\gamma}_{i1} \times \mathrm{Ret}_{mt}) \qquad (3)$$

where:

a = the current year's earnings announcement date;
$a\text{-}1$ = the previous year's earnings announcement date;
Ret_{it} = the rate of return of firm i for day t;
Ret_{mt} = the value-weighted index rate of return for date t; and $\hat{\gamma}_{io}$ and $\hat{\gamma}_{i1}$ = the regression estimates of CAPM parameters.

The independent variable ΔE_{it} is computed as follows:

$$\Delta E_{it} = (EPS_{it} - EPS_{it}EPS_{-1})/P_{it-1} \tag{4a}$$

where EPS_{it} and EPS_{it-1} = the actual earnings per share for the current/ prior fiscal year, respectively; and

P_{it-1} = the per-share stock price for firm i at the beginning of the current fiscal year.

Our computation is consistent with the measures used in prior research where changes in earnings were deflated by the beginning stock price (Dhaliwal & Reynolds, 1994; Easton & Zmijewski, 1989). We classify a firm as an internationalized one if it has at least one majority-owned foreign subsidiary. A firm's foreign operation is a subsidiary if the firm has an ownership stake of 50% or more. We have eliminated minority-owned subsidiaries from consideration because a minority ownership limits the parent firm's influence on the subsidiary's operating and financial policies. We classify firms into either a ''high DOI'' or a ''low DOI'' group based on a median split of the DOI index. To examine the volatility of a firm's cash flow, we compute the coefficient of variations using 12 quarterly numbers in the three-year (1994–1996) period. To eliminate the effect of the trend in the time-series, we first run time series regression in the following form:

$$Y_{it} = \lambda_{i0} + \lambda_{i1}T + r_{it} \tag{4b}$$

where:

Y_{it} = the time series to compute time-adjusted coefficients of variations;
T = an index representing the quarter, 1 for the first quarter of 1994 and 12 for the last quarter of 1996;
r_{it} = time-adjusted residuals for time series Y_{it};
$\lambda_{i0}, \lambda_{i1}$ = the intercept and slope coefficients of the time series regression for firm i.

We then compute coefficients of variations of quarterly cash flows on the time-adjusted residuals as follows:

$$CV(Y_{it}) = STD(r_{it})/Mean(Y_{it}) \tag{5}$$

where:

CV = Coefficient of variation for time series Y_{it};
STD and Mean = Standard deviation and mean operators.

Sample and Data

The initial sample of firms was drawn from the National Register's *Directory of Corporate Affiliations* (1996). The directory provides information on foreign subsidiaries that a firm owns. Data on foreign sales, foreign assets, and earnings were gathered from Standard & Poor's 1998 *COMPUSTAT* files. To be included in our sample, a firm had to be domiciled in the U.S. and have three consecutive earnings announcement dates before June 30, 1996. A total of 1,478 firms qualified for the sample.

Daily stock returns and the value-weighted index rates of return were obtained from the *Center for Research in Security Prices* (CRSP) returns file (1998). The CAPM estimation period is from two days after the earnings announcement of the two years before (t-2) to two days after the earnings announcement of the year before (t-1). We require that at least 80 non-missing daily returns be available during this estimation period. We compute cumulative abnormal returns (CARs) for an estimation period starting from the third day after the previous earnings announcement date (t-1) and ending two days after the current earnings announcement date (t). Again, we require that at least 80 daily returns be available during the testing period. A total of 1,378 firms met the requirements. Ninety-eight non-manufacturing firms were then deleted, leaving a final sample of 1,280 firms, of which 589 are international firms.

RESULTS

Sample Characteristics

Table 1 provides information on key business and market indices for the entire sample of firms and separately for domestic firms, international firms (denoted MNCs), and low and high DOI groups. Significance tests (t-test for means and signed-test for median) indicate that, except for the median "operating income" of domestic firms, all mean and median values for the various business and market indices are significant. Table 1 also shows that the firm size increases as the degree of internationalization goes up. The mean firm size (sales revenue) for domestic firms is $249 million versus $627 million for MNCs. On an average, MNCs are more than twice as large as the domestic firms. The highly internationalized firms have a median sales revenue of $1,224 million that represents twice the size of the median sales revenue for all MNCs taken together. On the basis of the measures of

Table 1. Descriptive Statistics of Sample Firms.

		All Firms	Domestic Firms	MNCs	MNCs	
					DOIR < = Median	DOIR > Median
Number of firms		1,280	691	589	295	294
sales ($ millions)	Median	249	136	627	390	1,224
	Mean	1,988	443	4,111	2,537	5,690
Total cash flow from operating ($millions)	Median	18	8	43	24	90
	Mean	251	70	444	223	665
Total assets						
($ millions)	Median	202	103	598	285	985
	Mean	2,139	407	4,760	3012	6,514
Market value of stocks ($ millions)	Median	175	88	626	294	1,309
	Mean	1,718	326	4,346	2,330	6,368
Operating income on assets (ROA)	Median	0.1009	0.0884	0.1117	0.1118	0.1106
	Mean	0.0978	0.0821	0.1146	0.1130	0.1162
Operating income on sales (GPM)	Median	0.0804	0.0638	0.0943	0.0903	0.1004
	Mean	0.0544	0.0209*	0.0963	0.0933	0.0994
Total debt on total assets (DTA)	Median	0.2169	0.2208	0.2009	0.1928	0.2026
	Mean	0.2286	0.2356	0.2117	0.2085	0.2149

Note: All numbers are statistically significant at the 5% confidence level, except those marked with "*".
The significance tests for the means and medians represent t- and signed-rank tests, respectively.

the return on assets and the gross profit on sales, the MNCs, with a median ROA of 11.17% and a GPM of 9.43% are more profitable than the domestic firms, with a median ROA of 8.84% and a GPM of 6.38%. These findings indicate that the MNCs in general are larger in size and more profitable than domestic firms.

Table 2 shows the industrial classifications of the firms in the sample. Major manufacturing industries are well represented in the sample with no obvious industry concentration that might lead to the bias in our tests.

The mean and median coefficients of variations for sales, cash flow, operating income, and earnings per share are presented in Table 3. We computed coefficients of variations for each firm using its 12-quarter time-series. We then computed the medians and means of these coefficients for each group of sample firms. We found significant differences in the coefficients between MNCs and domestic firms, and between high- and low-DOI firms. For every index presented in the table, MNCs show significantly smaller coefficients of variations. For example, the mean and median coefficients of variations in the cash flow for MNCs are 23.02 and 62.99% versus 72.49 and 149.65% for domestic firms. Tests of differences are based on two-sample *t*-tests for means and nonparametric signed-rank tests for medians. The test results indicate that the differences in means and medians are highly significant between the MNCs and domestic firms. The findings reject the null hypothesis and suggest that internationalization reduces volatility, and thus risk, for firms.

Table 3 shows interesting differences in coefficients of variations between MNCs with different degrees of internationalization. The median coefficients of variations for high-DOI firms are about half the size of those for low-DOI firms. For example, the median coefficient of variations in cash flow is 15.85% for high-DOI firms versus 32.25% for low-DOI firms. This again confirms that the risk reduction through internationalization is closely related to the degree of internationalization.

Impact of the Degree of Internationalization on ERC

Table 4 displays the regression estimates for Eq. (1), computed from the entire sample of firms. We use Eq. (1) to test for any differences in the ERC of high-DOI and low-DOI international firms and domestic firms. The results show that the estimate of β_0, the ERC of domestic firms, is positive and significant (0.4846, $p < 0.05$) in each of the three models. The estimate of β_1, the difference in ERC between domestic firms and low-DOI international

Table 2. Industrial Classification of Sample Firms.

Two-Digit SIC	Industry Description	All Firms	Domestic Firms	MNCs	MNCs	
					DOIR < = Median	DOIR < = Median
01–09	Agriculture product	10	8	2	0	2
10–14	Mining, oil & gas, minerals	69	46	23	11	12
15–17	Construction	23	16	7	4	3
20	Food products	60	38	22	12	10
21	Tobacco products	3	1	2	1	1
22–23	Textile mill products	61	44	17	10	7
24–25	Lumber & furniture	46	26	20	15	5
26–27	Paper, printing, publishing and allied	62	34	28	18	10
28	Chemicals & allied products	132	55	77	19	58
29	Petroleum refine & related products	23	7	16	6	10
30	Rubber & plastic products	47	30	17	6	11
31	Leather & products	13	10	3	2	1
32	Stone, clay, glass, & concrete	21	14	7	3	4
33–34	Primary & fabricated metals, machinery	105	67	38	26	12
35	Industrial & commercial machinery	184	75	109	43	66
36–37	Electric & transportation equipment	254	135	119	79	40
38–39	Photo, watch, jewelry & sporting products	167	85	82	40	42
	Total	1,280	691	589	295	294

Table 3. Coefficients of Variations of Sales, Cash Flow, Operating Income and Earnings Per Share.

		Domestics	MNCs	MNCs DOIR $<=$ Median	DOIR $>$ Median	Test of Differences			
		(1)	(2)	(3)	(4)	1–2	1–3	1–4	3–4
Sales revenue	Median	24.38	7.78	11.41	4.96	16.60	12.97	19.42	6.45
	Mean	64.96	27.20	32.08	22.35	37.76	32.88	42.61	9.73
Cash flow from operation	Median	72.49	23.02	32.25	15.85	49.47	40.24	56.64	16.4
	Mean	149.65	62.99	69.60	56.84	86.66	80.05	92.81	12.76
Operating income before interest and taxes	Median	65.79	18.83	27.77	13.24	46.96	38.02	52.55	14.53
	Mean	144.84	58.19	65.33	51.98	86.65	79.51	92.86	13.35
Earnings per share – basic	Median	211.95	133.46	159.68	108.46	78.49	52.27	103.49	51.22
	Mean	319.60	197.13	217.87	176.24	122.47	101.73	143.36	41.63

Note: Coefficients of variations for all time-series are computed based on the 12 quarterly time-series data for each firm.
All medians and means are significant at the 5% probability level based on one-sample *t*- and signed-rank tests.
The test of differences for mean is based on two-sample *t*- and median nonparametric signed-rank tests. All tests of differences are significant at the 5% probability level.

Table 4. Regression Estimates: Differences in ERC between Domestic
Firms and MNCs – Dummy Variable Tests.

$$C\tilde{A}R_{it} = \alpha_0 + \alpha_1 DOI + \beta_0 \Delta E_{it} + \beta_1 DOI\Delta E_{it} + \tilde{\xi}_{it}$$

Parameter (*t*-score)	Predicted Sign	MNCs and Domestics	Each MNC Group & Domestics	
			Low DOI (DOI $<$ = Median)	High DOI (DOI $>$ Median)
α_0		−0.0787	−0.0787	−0.0787
		(−1.22)	(−1.96)	(−1.18)
α_1	?	0.0356	0.0356	
		(1.22)	(1.17)	
α_2	?	0.0694		0.0694
		(2.35)*		(2.34)*
β_0	+	0.4846	0.4846	0.4846
		(4.92)*	(4.74)*	(4.89)*
β_1	+	0.1872	0.1872	
		(1.09)	(1.04)	
β_2	+	0.4294		0.4294
		(2.02)*		(2.01)*
N		1,225	926	927
Adj. R^2		0.0477	0.0376	0.0497

*Significant at the conventional 5% level for the one-tailed test and 2.5% level for the two-tailed test.

firms, is not significant (0.1872, n. s.), whereas the estimate of β_2, the difference in ERC between domestic firms and high-DOI international firms is significant (0.4294, p $<$ 0.05). Accordingly, the second and third working hypotheses are rejected and we state that high-DOI international firms have a significantly greater ERC than domestic firms do and low-DOI international firms have an ERC that is not significantly different from that of domestic firms.

We report the results of the test we performed on the direct link between DOI and ERC in Table 5. The results reported in Panel A are based on the internationalized firms. The results reported in Panel B are based on the entire sample of firms. In both models we find that β_1 is positive and statistically significant (1.1624, p $<$ 0.0362; 1.1175, p $<$ 0.0053). The parameter is large in magnitude because it represents the impact on ERC when the DOI is 1. It shows the maximum impact of DOI on ERC (the maximum value of DOI is 1). The results indicate that the degree of internationalization has a

Table 5. Regression Estimates: Impact of Degree of
Internationalization on ERCContinuous Variable.

$$C\tilde{A}R_{it} = \alpha_0 + \alpha_1 DOI + \beta_0 \Delta E_{it} + \beta_1 DOI\Delta E_{it} + \tilde{\xi}_{it}$$

Parameter	Predicted Sign	Estimate	t-Value	Probability
Panel A: MNC Firms				
α_0		−0.1299	−2.84	0.0047
α_1		0.1355	1.37	0.1702
β_0	+	0.4468	3.34	0.0009
β_1	+	1.1624	2.10	0.0362
Number of observations = 589				
Adjusted $R^2 = 0.0687$				
Panel B: All Firms				
α_0		−0.1184	−7.64	0.0001
α_1		0.1262	2.47	0.0137
β_0	+	0.4394	4.99	0.0001
β_1	+	1.1175	2.80	0.0053
Number of observations = 1,225				
Adjusted $R^2 = 0.0502$				

significantly positive impact on ERC. The results reject the second working
hypothesis again: there is a positive link between the degree of internation-
alization and the earnings valuations the capital market assesses through
the ERC. The finding is consistent whether we look only at the internation-
alized firms or all firms, including domestic firms, in the sample.

SUMMARY AND CONCLUSIONS

In this paper, we examine the relationship between internationalization and
the response of investors to earnings changes. The three-measure index we
use for the degree of internationalization takes into account the percentages
of a firm's sales, assets, and number of subsidiaries that are foreign based.

Our findings indicate that a firm's degree of internationalization has a
positive impact on investor response to the earnings changes. We find that
the stock market responds more positively to the earnings changes of in-
ternationalized firms that have a high degree of internationalization than it
does to the earnings changes of firms that have a low degree of interna-
tionalization or domestic firms. We find that the market's response to the

earnings of firms with a low degree of internationalization does not differ from that of domestic firms. In a direct test of the link between the degree of internationalization and the ERC, we find a positive, direct impact. We attribute the impact to the reduction in risk and the enhancement in earnings persistence and growth that were realized by internationalization.

Our results show that the market's positive response to the value of internationalization is confined to a high level of internationalization. The stock market is responsive to a firm's internationalization only when it is practiced at a high level. This finding suggests that investors do not see the low degree of internationalization to be much different from the domestic firms. Our results do not support the argument that at high levels of internationalization the costs of internationalization exceed the benefits.

The empirical findings reported in the previous studies are mixed about the effect of internationalization on a firm's performance. Most studies, however, recognize the benefits that accrue from internationalization. Our findings support the view that internationalization creates economic value. Internationalization provides a firm with opportunities to reduce risk, achieve the benefits of scale, operational flexibility, and learning by operating in international markets.

REFERENCES

Bagozzi, R. P., Yi, Y., & Phillips, L. (1991). Assessing validity in organizational research. *Administrative Science Quarterly*, *36*, 421–458.

Beaver, W. (1968). The information content of annual earnings announcements. *Journal of Accounting Research*, *19*(Suppl.), 67–92.

Bodnar, G. M., & Weintrop, J. (1997). The valuation of the foreign income of U.S. multinational firms: A growth opportunities perspective. *Journal of Accounting and Economics*, *24*, 69–98.

Buhner, R. (1987). Assessing international diversification of West German corporations. *Strategic Management Journal*, *8*, 25–37.

Collins, D., & Kothari, S. (1989). An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics*, *11*, 143–181.

Daniels, J. D., & Bracker, J. (1989). Profit performance: Do foreign operations make a difference? *Management International Review*, *29*, 46–56.

Dhaliwal, D. S., & Reynolds, S. S. (1994). The effect of the default risk of debt on the earnings response coefficient. *The Accounting Review*, *69*, 412–419.

Easton, P., & Zmijewski, M. (1989). Cross-sectional variation in the stock market response to accounting earnings announcements. *Journal of Accounting and Economics*, *11*, 117–141.

Errunza, V., & Senbet, L. (1984). International corporate diversification, market valuation and size-adjusted evidence. *Journal of Finance*, *34*, 727–745.

Fatemi, A. M. (1984). Shareholder benefits from international diversification. *Journal of Finance*, *39*, 1325–1344.

Geringer, J. M., Beamish, P. W., & daCosta, R. C. (1989). Diversification strategy and internationalization: Implications for MNE performance. *Strategic Management Journal*, *10*, 109–119.

Grant, R. M. (1987). Multinationality and performance among British manufacturing companies. *Journal of International Business Studies*, *18*, 79–89.

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of Management Journal*, *40*, 767–798.

Hughes, J., Logue, D., & Sweeney, R. (1975). Corporate international diversification and market assigned measures of risk and diversification. *Journal of Financial and Quantitative Analysis*, *10*, 627–637.

Kogut, B. (1985a). Designing global strategies: Comparative and competitive value added chains. *Sloan Management Review*, *26*(4), 15–28.

Kogut, B. (1985b). Designing global strategies: Profiting from operating flexibility. *Sloan Management Review*, *26*(5), 27–38.

Kormendi, R., & Lipe, R. (1987). Earnings innovations, earnings persistence, and stock returns. *Journal of Business*, *60*, 323–345.

Kotabe, M. (1990). The relationship between offshore sourcing and innovativeness of U.S. multinational firms: An empirical investigation. *Journal of International Business Studies*, *21*, 623–638.

Mello, A., Parsons, J., & Triantis, A. (1995). An integrated model of multinational flexibility and financial hedging. *Journal of Industrial Economics*, *39*, 27–51.

Michel, A., & Shaked, I. (1986). Multinational corporations vs. domestic corporations: Financial performance and characteristics. *Journal of International Business Studies*, *17*, 89–101.

Morck, R., & Yeung, B. (1991). Why investors value multinationality? *Journal of Business*, *64*, 165–187.

Qian, G., & Li, J. (2002). Multinationality, global market diversification and profitability among the largest firms. *Journal of Business Research*, *55*, 325–335.

Reeb, D., Kwok, C., & Baek, H. (1998). Systematic risk of the multinational corporation. *Journal of International Business Studies*, *29*, 263–279.

Reuer, J., & Leiblein, M. (2000). Downside risk implications of multinationality and international joint ventures. *Academy of Management Journal*, *43*, 203–214.

Shaked, I. (1986). Are multinational corporations safer? *Journal of International Business Studies*, *17*, 83–118.

Sullivan, D. (1994). Measuring the degree of internationalization of a firm. *Journal of International Business Studies*, *25*, 325–342.

Tang, C., & Tikoo, S. (1999). Operational flexibility and market valuation of earnings. *Strategic Management Journal*, *20*, 749–761.

This page intentionally left blank

EUROPE AND AMERICA – TOGETHER OR APART: AN EMPIRICAL TEST OF DIFFERENCES IN ACTUAL REPORTED RESULTS

Philip A. Lewis and Stephen B. Salter

ABSTRACT

The accounting convergence debate has assumed an Anglo-American vs. Continental European dichotomy. Alexander and Archer (2000) using logical analysis and d'Arcy (2001) using regulations suggest a different truth, an EU group including the U.K. vs. an American-led group. This view has been debated without result in Nobes (2003, 2004), Alexander and Archer (2003), and d'Arcy (2004). This study brings some closure by using actual reported results from recent 20-F filings. It finds the Anglo-American accounting model vs. Continental European dichotomy unsustainable.

INTRODUCTION

Empirical evidence has shown that while accounting diversity exists between countries (Nobes, 1984; Doupnik & Salter, 1993), there is enough

commonality of measurement and reporting among certain countries to identify groups or clusters of similar countries. The result of many of these proposed classifications has been the presumption of an Anglo-American accounting model that is distinctly different from a European accounting model (Flower, 1997; Epps & Oh, 1997). Both, those that oppose accounting convergence (e.g., Hoarau, 1995) and those that favor convergence (e.g., Epps & Oh, 1997) have accepted this difference as fact, built their arguments on this presumption and presented this difference as one of the great divides that must be crossed in order to bring global accounting convergence to fruition. Two recent articles, d'Arcy (2001) and Alexander and Archer (2000), have questioned whether there exists an Anglo-American group of financial reporting practices that is distinct from those of Continental Europe. Neither study is perfect, and both have been roundly criticized in commentaries by Professor Christopher Nobes for poor logic and methodology (Nobes, 2003, 2004). D'Arcy (2004) and Alexander and Archer (2003) present good counterpoints and are interesting, but the net effect is, at best, a standoff. This paper does not attempt to enter the fray directly. Instead this study evaluates one of the proposed classifications (d'Arcy, 2001) using ratios of net income numbers from 20-F reconciliations filed with the U.S. Securities and Exchange Commission for firms from nine of the countries in the d'Arcy (2001) classification. Further, it tests, indirectly, whether a U.K. firm's net income is statistically different from the U.S. average. In addition, this study expands on the work of d'Arcy (2001) by including additional European countries in the sample that were not in the d'Arcy (2001) study. The results of this study suggest that the proposed d'Arcy (2001) grouping is a surprisingly good predictor of the outcomes from actual data. There is a distinct EU group that includes the U.K. There is also a U.S.-influenced group that, interestingly, includes not only Canada but also Australia and Sweden. Further, in a test of firms that reported under International Financial Reporting Standards (IFRS), we find that IFRS outcomes are closer to the U.S. than they are to those of the U.K. or any EU group country. Finally, there appears to be clear statistical evidence that the U.S. and U.K. are not the same in terms of reporting outcomes.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Accounting diversity refers to the differences that exist between countries' financial reporting practices. These practices include both the measurement

of financial statement items and disclosure notes. For individuals to be able to use information reported under diverse accounting systems requires that they possess an understanding of those accounting systems. Choi and Levich (1991) find that half of the institutional investors they surveyed believe that the lack of comparable information affected their capital markets decisions. The problems of diversity are made somewhat more manageable by the apparent grouping of countries in terms of financial reporting. Salter (1991), for example, identifies 50 countries whose financial reporting practices differ in some manner, but is able to reduce those differences to between two and nine groups of countries that are similar. Nobes (1983) suggests an a priori theoretical model or classification of countries. Gray (1988) and Salter and Niswander (1995) provide several possible explanations for these differences including culture, stock market values, and taxes. One troubling facet of these classifications has been the position of the U.S. and U.K. The U.K. has a long history of independent standard setting but has in the last twenty years been torn by three forces. These are the

1. U.K.'s own independence;
2. need for British firms to list in the U.S.; and
3. reluctance of the U.S. FASB/Securities and Exchange Commission (SEC) to move from their accounting rules.

The potential conflict of these forces may well be seen in the debate on whether there is still an Anglo-American set of rules and practices or, in fact, whether the U.K. has become part of a European group of reporters. This debate has played out since 2000 in two articles and commentaries (Alexander & Archer, 2000; Nobes, 2003, 2004; Alexander & Archer, 2003; d'Arcy, 2004).

Alexander and Archer (2000) take a conceptual approach to redefining the classification and explanation of the financial reporting space occupied by the U.K. and U.S. They argue that four factors separate the two great sources of accounting regulation and are sufficient to falsify the myth of Anglo-Saxon Accounting. These factors are

1. differences in the importance of the true and fair view and how it is interpreted;
2. the propensity to develop a conceptual framework;
3. a common vs. code law approach; and
4. the use of private vs. public regulation.

Based on their views of these differences, Alexander and Archer (2000) make some predictions on the potential outcomes of the International Accounting Standards Board (IASB) process.

Nobes (2003, 2004) and Alexander and Archer (2003) continue the debate in a comment, and comment on a comment. The outcome of this debate appears to be that Nobes and Alexander and Archer disagree whether the U.S. and U.K. really have differences on the true and fair view and how it is interpreted. They all agree that there are significant U.S./U.K. differences in the impact of the legal system and that the differences on the propensity to develop a conceptual framework and the use of private vs. public regulation are insufficient to make these core issues. Nobes (2003) and Alexander and Archer (2003) agree that there is a great need to

1. Look at a larger group of countries. This would provide evidence of whether differences between the U.S. and U.K. are natural inter member intra-group differences or signs that the U.S. and U.K. are members of different groups.
2. Test further hypotheses on the relationship of the conceptual approach and accounting practice.

One model which attempts to develop and test a larger model of U.S. and European accounting rules is developed by D'Arcy (2001). D'Arcy (2001) begins with an examination of previous classification studies and concludes that:

1. The groupings of the studies are contradictory.
2. There is no study that statistically proves the existence of an Anglo-American model that is separate from a Continental European model.
3. No attempt had been made to classify national accounting systems based on financial reporting requirements.

D'Arcy (2001) empirically derives possible groups using accounting regulations from the TRANSACC (1995) examination of accounting rules as her database. She also attempts to ascertain whether the U.K. does indeed form part of an Anglo-Saxon group. D'Arcy's (2001) results do not support the existence of a traditional Anglo-American vs. Continental European Accounting model. Instead d'Arcy (2001) finds a group of countries that form a Continental European model (with subsets) and a group of countries that form a North American model. The Continental European group consists of

1. Austria, Germany, Belgium, and France, which form the core subset.

2. Switzerland, Denmark, the Netherlands, and the U.K. – which form in a different cluster, but using Euclidean distance, appear closer to the Continental European model than the U.S.

3. Spain and Sweden – which cluster further away from the core Continental European subset than the U.K., but are closer to the Continental European model than the North American model.

The North American group has no subsets and includes the U.S., Canada, Australia, and the IASB rules.

The results of d'Arcy (2001) have been strongly criticized by Nobes (2004). The data source used by d'Arcy (2001) is based on the TRANSACC (Transnational Accounting project, 1995) Reference Matrix. TRANSACC is a detailed examination of accounting rules for group and individual accounting items by country but does not provide actual financial reporting outcomes. Nobes' (2004) criticism of d'Arcy (2001) is based on the validity of that TRANSACC database. After pointing out several flaws, Nobes (2004) concludes that the database contains many inaccuracies and, therefore, the results of d'Arcy (2001) are suspect. However, Nobes (2004) does not actually test his supposition. D'Arcy (2004) provides a conceptual (non numeric) defense of her methodology and concludes that her results are still valid. As noted in the introduction, we do not propose adding to this debate by examining the minutiae of the two comments. Rather, whichever version of the debate one believes, d'Arcy's (2001) clusters and other results remain potentially viable as a structure for evaluating global financial reporting, obstacles to accounting convergence and the existence of an Anglo-American group. Therefore, a test of the viability of d'Arcy's (2001) clusters using actual results is needed.

Other potential limitations of d'Arcy (2001) not contained in Nobes (2004) are as follows:

1. Even if d'Arcy's (2001) findings represent rules, the findings may not represent practice. As Ball, Robin, and Wu (2003) demonstrate, there can be significant differences between prescribed accounting procedures (rules) and actual accounting practices. TRANSACC is based on rules, not actual outcomes and therefore d'Arcy's (2001) clusters are developed using differences in accounting rules.

2. The d'Arcy (2001) database was at least six years old at the time of its publication. Thus, the TRANSACC database may be out of date even if the model remains potentially viable. This study improves on the work of d'Arcy (2001) by using actual reported results for 1999, 2001, and 2003 as its database, therefore the validity and age of the database should not be an issue.

Table 1.   Capital Markets in Countries Reviewed in 2001.

	Capital Raised in $MM 2001	Percentage of Global Total	Cumulative Percentage
Australia	6,650	1.99	1.99
Canada	13,591	4.06	6.05
Finland	1,495	0.45	6.49
EuroNext[a]	98,253	29.35	35.84
Germany	2,573	0.77	36.61
Ireland	4,012	1.20	37.80
Italy	13,035	3.89	41.70
Japan	16,918	5.05	46.75
Norway	3,161	0.94	47.69
Sweden	741	0.22	47.92
U.K.	29,611	8.84	56.76
USA	114,455	34.18	90.95
Global Total	334,812		

Source: FIBV

3. Finally, d'Arcy (2001) is constrained by the number of countries in the TRANSACC database. This study includes countries that meet the inclusion criteria of d'Arcy's (2001) model, i.e., they are either European, Anglo or North American, but broadens the sample as suggested in Nobes (2003) to include countries that account for 85% of the global equity market (see Table 1).

RESEARCH QUESTIONS

Based on the literature, two research questions arise:

R1. Is d'Arcy's (2001) classification of the countries by financial regulations an accurate predictor of actual financial accounting practices?

R2. Is the U.K. a part of a distinct Anglo-American group of countries?

These questions are evaluated using more recent data and through a surrogate for actual practice rather than regulation or perceptions of reality.

METHODOLOGY

Dependent Variable

The dependent variable is the median national Gray (1980) Index of Conservatism value for a country. The Gray (1980) Index measures the conservatism/optimism of one country's financial reporting practices relative to that of another country. Gray (1980) calculated conservatism as follows:

$$1 - \frac{(RA - RD)}{|RA|} \tag{1}$$

where RA = Income adjusted to U.S. GAAP; RD = Domestic Income; |RA| = Absolute value of income adjusted to U.S. GAAP.

An index value less than one means foreign Generally Accepted Accounting Principles (GAAP) reported earnings are more conservative than the U.S. GAAP adjusted earnings. An index value greater than one means the opposite is true.

One potential problem in using Gray's (1988) Index of Conservatism involves the scaling variable |RA| (the denominator in Gray's Index of Conservatism shown above). The values obtained using Gray's (1980) Index of Conservatism become abnormally large as RA approaches the value of zero. In order to prevent a single point from causing the mean to shift dramatically, we measure the main tendency using the median Gray value per country.[1]

Independent Variables

The research questions were evaluated by a comparison of clusters that emerged from median national Gray (1980) indices and those predicted by d'Arcy's (2001) model of a Continental European group or a North American group.

Sample/Data

The U.S. SEC requires foreign companies that wish to list on a U.S. stock exchange to either convert their financial statements to U.S. GAAP or reconcile their foreign GAAP reported earnings to U.S. GAAP using a Form 20-F filing. Each of the reconciliations provides two pieces of information

that are used in this study. The first piece of information is the profit for the financial year under the company's home country (non-U.S.) GAAP. The second is the profit for the financial year under U.S. GAAP. These two pieces are used to calculate a Gray (1980) value of relative conservatism for each firm and the median Gray (1980) ratio is in turn obtained for each country. These Gray (1980) median country values are then used to cluster countries, with the outcomes of the clusters becoming measures of the dependent variable. In order to ensure that the Gray (1980) value of each country is representative of the conservatism/optimism of that country relative to the U.S., to be included in this study a country had to have the following:

1. five or more firms filing a 20-F reconciliation; and
2. the total number of firms filing a reconciliation represent at minimum one third of all firms from that country filing a Form 20-F.

As noted earlier, U.S. GAAP is used as the base in this study. Thus, a Gray (1980) value of one is included for the U.S. Table 2 presents a list of countries with multiple firms filing a 20-F and the number of firms filing a 20-F reconciliation for the years 1999, 2001, and 2003.[2] Firms filing under International Accounting Standards (IAS)/IFRS were considered to be part of a single and unique IAS country.

To test and expand d'Arcy's (2001) findings, two separate samples of countries were analyzed:

- Sample A consisted of those countries that were included in the d'Arcy (2001) sample which had both five or more firms from the country filing a 20-F reconciliation and a minimum of 1/3 of all firms filing a 20-F also filing a 20-F reconciliation. Countries in the d'Arcy (2001) study that are not represented in this study are Belgium, Austria, Denmark, Germany, and Switzerland. These countries are not in the database because there were not enough firms from the country filing a 20-F reconciliation.
- Sample B included all of the countries in the first data set plus additional European countries not in the original d'Arcy (2001) study, but that met the number of reconciliation/percentage criteria. Those additional countries are Ireland and Italy for 1999, 2001, and 2003; Finland for 1999 and 2001; and Portugal and Norway for 1999 only.

Data for the years 1999, 2001, and 2003 are analyzed separately for both groups. This was done to add to the reliability of the findings. One interesting issue may be the changing role of goodwill because U.S. rules for accounting for goodwill changed effective 2001. The combined effect of

Table 2. Number of Firms Filing a 20-F and Reconciliation by Country.

Country	2003			2001			1999		
	Number of Firms Filing		% Filing Form 20-F	Number of Firms Filing		% Filing Form 20-F	Number of Firms Filing		% Filing Form 20-F
	Form 20-F	Reconciliation		Form 20-F	Reconciliation		Form 20-F	Reconciliation	
Australia	9	14	64	23	34	68	24	26	92
Canada	334	357	94	150	170	88	106	120	88
Denmark	2	4	50	3	3	100	4	4	100
Finland	4	4	100	4	5	80	5	9	56
France	15	30	50	14	32	44	26	35	74
Ireland	9	15	60	9	14	64	8	15	53
Italy	9	12	75	13	14	93	12	15	80
Netherlands	15	32	47	13	37	35	17	37	46
Norway	5	7	71	5	8	63	6	8	75
Portugal	2	2	100	5	5	100	4	4	100
Spain	7	8	88	13	13	100	6	6	100
Sweden	12	12	100	14	15	93	17	18	94
U.K.	68	104	65	63	118	53	94	120	78

SFAS 142/IFRS 10 was to reverse the U.S./U.K. differences with the same base data resulting in greater amortization in the U.K. than the U.S.[3] Therefore we examined our 2001 clusters both with and without goodwill.

Statistical Methods

For consistency, the clustering method average linkage between groups, used in d'Arcy (2001), was used in this study.[4] Press' Q statistic is calculated and used to test whether d'Arcy's (2001) classification of the countries by financial regulations is an accurate predictor of actual financial reporting practices. Press' Q provides "a statistical test for the discriminatory power of the classification matrix when compared with a chance model … " Hair, Anderson, Tatham, and Black (1998, p. 270). Essentially, in this study Press' Q compares the number of countries that are classified the same by d'Arcy's (2001) model and the results of our classifications.

RESULTS

Sample A (Original d'Arcy Sample)

The first analysis examines only those countries in the d'Arcy (2001) study. Figs. 1, 2, and 3 are the cluster dendrograms for Sample A countries (d'Arcy study countries only) for 1999, 2001, and 2003 respectively. All three years show fairly similar results. Each year shows a core U.S.-influenced group that includes the U.S., Canada, the IAS, and Australia. In 1999 and 2001, Sweden is included in the U.S.-influenced group. Each year shows a core European group that includes the U.K. and the Netherlands, with Spain and France as part of this group for two of the three years. In 1999 (Fig. 1), in a two-cluster solution Spain is a cluster by itself. It is the three-cluster solution that yields a European group and a U.S.-influenced group with Spain as an outlier country. However, examining the squared Euclidean distance in the proximity matrix reveals that Spain is closest to the U.K., and closer to any of the European countries than any country in the U.S.-influenced group by more than a multiple of two.

To see if the inclusion of Spain in the database affects the placement of any countries in the 1999 sample, the Sample A data were rerun excluding Spain.[5] The results are presented in Fig. 4. The only change is that there is now a clear two-cluster solution, with a U.S.-influenced group and a Continental European group.

```
Dendrogram using Average Linkage (Between Groups)

                              Rescaled Distance Cluster Combine

        C A S E        0         5        10        15        20        25
     Label         Num  +---------+---------+---------+---------+---------+

     Australia       1    ┐
     IAS             4    ┤
     US              8    ┘
     Canada          2
     Sweden          6
     France          3
     Netherlands     5
     UK              7
     Spain           9
```

Fig. 1.   Sample A – 1999.

```
Dendrogram using Average Linkage (Between Groups)

                              Rescaled Distance Cluster Combine

        C A S E        0         5        10        15        20        25
     Label         Num  +---------+---------+---------+---------+---------+

     Canada          2
     US              8
     Sweden          6
     IAS             9
     Australia       1
     Netherlands     4
     UK              7
     Spain           5
     France          3
```
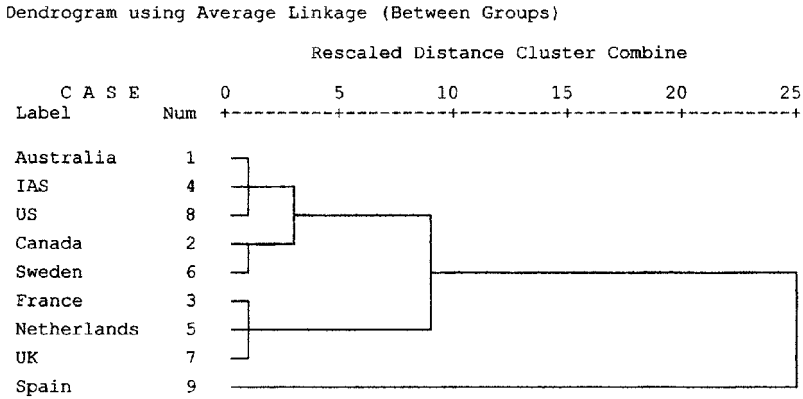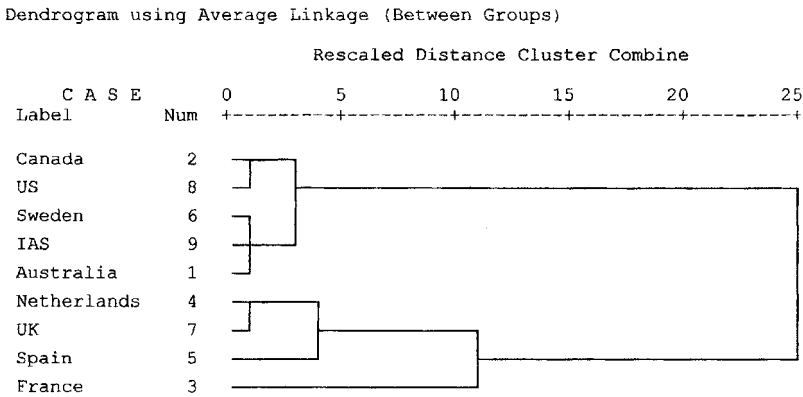
Fig. 2.   Sample A – 2001.

Similarly in 2003 (Fig. 3), France and Sweden form an outlier cluster with both countries being more conservative in their financial reporting practices than the countries in the U.S.-influenced group. Sweden's position is not surprising and will be explained in the next paragraph. However, we have no explanation for the placement of France, which clustered with the Continental European group in 1999 and 2001.

The biggest difference between d'Arcy's (2001) study and this study is the placement of Sweden. Surprisingly, in this study Sweden is in the

```
Dendrogram using Average Linkage (Between Groups)

                      Rescaled Distance Cluster Combine

      C A S E        0         5        10        15        20        25
   Label       Num   +---------+---------+---------+---------+---------+

   Canada        2      ─┐
   US            8      ─┤
   Australia     1      ─┤
   IAS           9      ─┤
   Netherlands   4      ─┤
   Spain         5      ─┤
   UK            7      ─┘
   France        3      ─┐
   Sweden        6      ─┘
```

Fig. 3.   Sample A – 2003.

```
Dendrogram using Average Linkage (Between Groups)

                      Rescaled Distance Cluster Combine

      C A S E        0         5        10        15        20        25
   Label       Num   +---------+---------+---------+---------+---------+

   Australia     1      ─┐
   IAS           4      ─┤
   US            8      ─┤
   Canada        2      ─┤
   Sweden        6      ─┤
   France        3      ─┤
   Netherlands   5      ─┤
   UK            7      ─┘
```
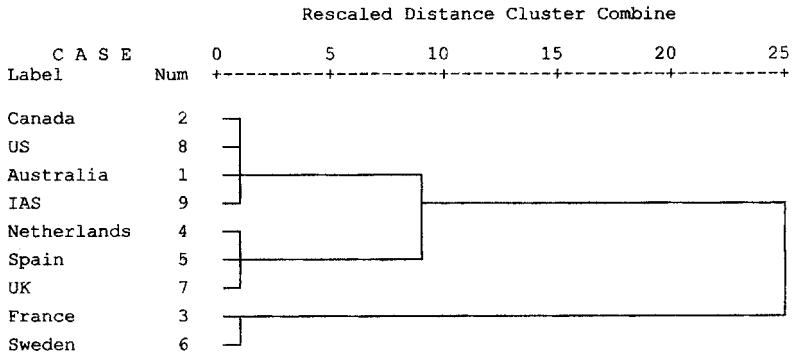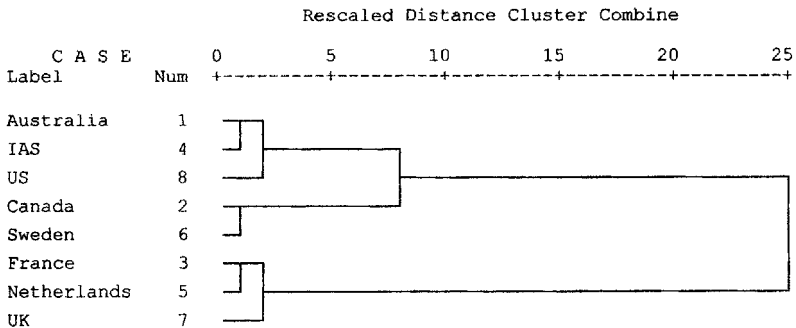
Fig. 4.   Sample A 1999 – Spain Omitted.

conservative U.S.-influenced group in 1999 and 2001, and even more con-
servative than the U.S.-influenced group in 2003. In d'Arcy's (2001) study,
Sweden is part of the European group. A study by Blake, Fortes,
Gowthorpe, and Paananen (1999) provides an explanation for this finding.
Blake et al. (1999) found that Sweden's 1995 accounting legislation lessened
the Germanic influence and increased the U.S. and IASB influence on Swe-
den's accounting practices. The TRANSACC database used by d'Arcy (2001)
was published in 1995. The database for this study uses actual results from

1999, 2001, and 2003. It is interesting that d'Arcy's (2001) multi-dimensional scaling analysis using the TRANSACC data from 1995 reveals Sweden as being the closest European country to the U.S. Thus, it seems possible that the findings of d'Arcy (2001) and this study are both accurate, but at different points in time and that Sweden in 1995 was a country in transition.

As noted earlier, to be included in the database a country had to have at least five firms filing a 20-F reconciliation. Denmark, a country in the d'Arcy (2001) study, had four firms filing a reconciliation for 2001 and 2003 (see Table 2). At the request of a reviewer, the Sample A data was rerun for both 2001 and 2003 with the database including Denmark in the sample. For 2001, Denmark was included in the European group. But for 2003, Denmark clustered with the U.S.-influenced group.

Sample A allows us to formally test Research Question 1, "Is d'Arcy's (2001) classification of the countries by financial regulations an accurate predictor of actual financial accounting practices?" For this test we use only the countries that are common to both studies – the U.S., U.K., Spain, Sweden, the Netherlands, France, Australia, Canada, and the IAS/IFRS. For both the 1999 and 2001 samples, the Press' Q value is 5.44, which is significant with a $p < 0.02$. For 2003, because Sweden and France form an outlier cluster, we treat them as misclassified. The other seven countries form two separate clusters and are grouped as found in d'Arcy's (2001) study. The Press' Q value for 2003 is 2.778 and is weakly significant with a $p < 0.10$. Thus, the results of actual practices support d'Arcy's (2001) findings that the assumed Anglo-American model does not exist and that there is a fairly cohesive European group which pre dates the full implementation in 2005 of the IFRS/IAS standards.

Sample B (Expanded European Group)

The expanded European group includes the original sample (the U.S., U.K., France, the Netherlands, Germany, Canada, Sweden, Australia, Spain, and IAS/IFRS practices) plus additional European countries not found in d'Arcy's (2001) study (see Table 2 for details of number of firms per country). These additional countries are as follows:

1. 1999 – Ireland, Italy, Portugal, Finland, and Norway.
2. 2001 – Ireland, Italy, and Finland.
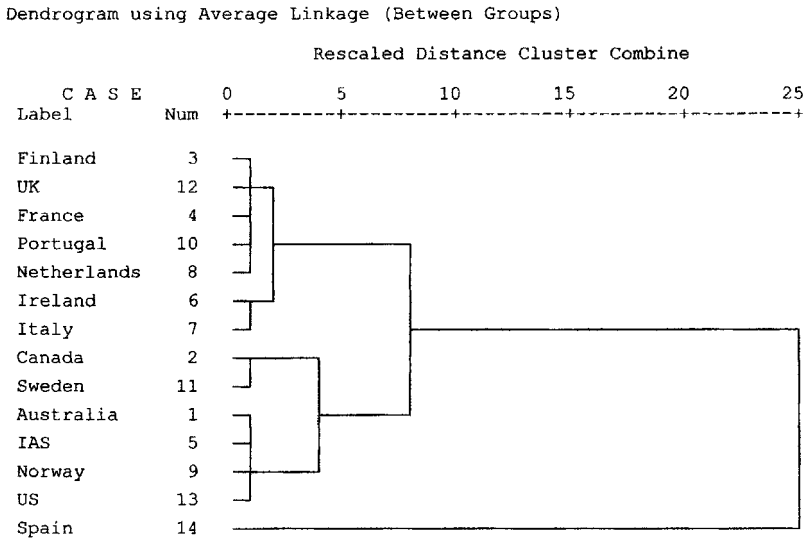3. 2003 – Ireland and Italy.

```
Dendrogram using Average Linkage (Between Groups)

                         Rescaled Distance Cluster Combine

        C A S E        0         5        10        15        20        25
      Label      Num   +---------+---------+---------+---------+---------+

      Finland      3   ─┐
      UK          12   ─┤
      France       4   ─┤
      Portugal    10   ─┤
      Netherlands  8   ─┤
      Ireland      6   ─┤
      Italy        7   ─┘
      Canada       2   ─┐
      Sweden      11   ─┤
      Australia    1   ─┤
      IAS          5   ─┤
      Norway       9   ─┤
      US          13   ─┘
      Spain       14   ─
```

Fig. 5. Sample B – 1999.

[Fig. 5](#) presents the dendrogram for the 1999 Sample B results. In a two-cluster solution, Spain is an outlier cluster by itself. In a three-cluster solution, there emerges

1. a European cluster consisting of Ireland, Italy, Finland, U.K., France, Portugal, and the Netherlands;
2. a U.S.-influenced cluster consisting of the U.S., Norway, Australia, Sweden, the IAS, and Canada; and
3. An outlier third cluster with Spain as the only member.

As noted earlier, Sweden has enacted new laws that have pushed their accounting practices away from traditional Germanic influences and toward U.S. practices ([Blake et al., 1999](#)). Examining the squared Euclidean distance in the proximity matrix reveals that Spain is closer to Finland and the U.K. than to any other country. Further, Spain is closer to any of the countries in the European group than it is to any single country in the North American group.

The results of the 2001 Sample B data set are similar to those of the 1999 Sample B data set. From [Fig. 6](#) we find the following:

1. As in 1999 there is a core European cluster that includes Italy, Spain, the Netherlands, the U.K., and Ireland.

```
Dendrogram using Average Linkage (Between Groups)

                              Rescaled Distance Cluster Combine

     C A S E        0        5        10       15       20       25
   Label        Num  +---------+---------+---------+---------+---------+

   Canada        2
   US           12
   Norway        8
   Sweden       10
   IAS          13
   Australia     1
   Finland       3
   France        4
   Italy         6
   Spain         9
   Netherlands   7
   UK           11
   Ireland       5
```
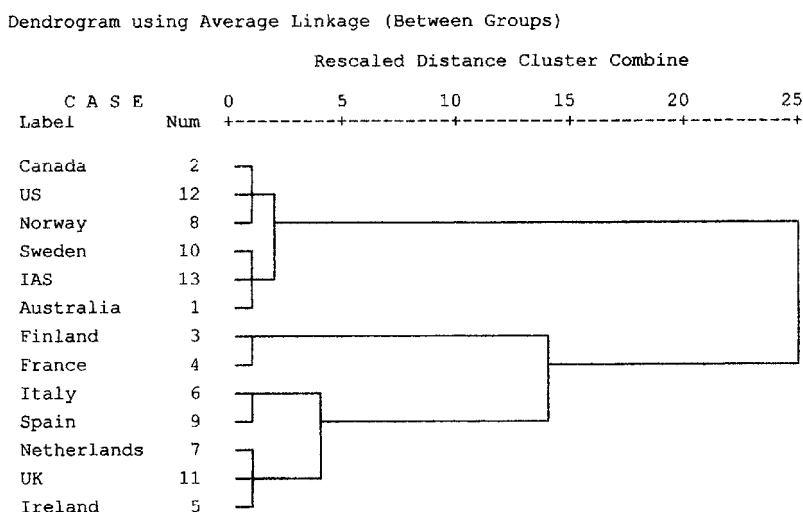
Fig. 6. Sample B – 2001.

2. As in 1999 there is also a core U.S.-influenced cluster that includes Canada, the U.S., Norway, Sweden, Australia, and the IAS/IFRS practices.
3. Finland and France join the core European cluster late in the process. Examining squared Euclidean distance, both Finland and France are closer to any European country than to any individual country in the U.S.-influenced group.

The results of the 2003 data set are similar to the results from 1999 and 2001, but with two exceptions that are noted in point 3. From Fig. 7 we find that

1. as in 1999 and 2001, there is a core European cluster that includes Italy, U.K., Ireland, Spain, and the Netherlands;
2. as in 1999 and 2001, there is also a core U.S.-influenced cluster that includes the U.S., Australia, Norway, Canada, and the IAS/IFRS practices;
3. unlike 1999 and 2001, France and Sweden are not in their expected group. Instead they form an outlier cluster that is closer to the U.S.-influenced group than the European group.

As noted previously, Sweden has enacted new laws that have made their accounting practices more conservative. So that Sweden has become even more conservative is not too surprising. What is surprising is that France has
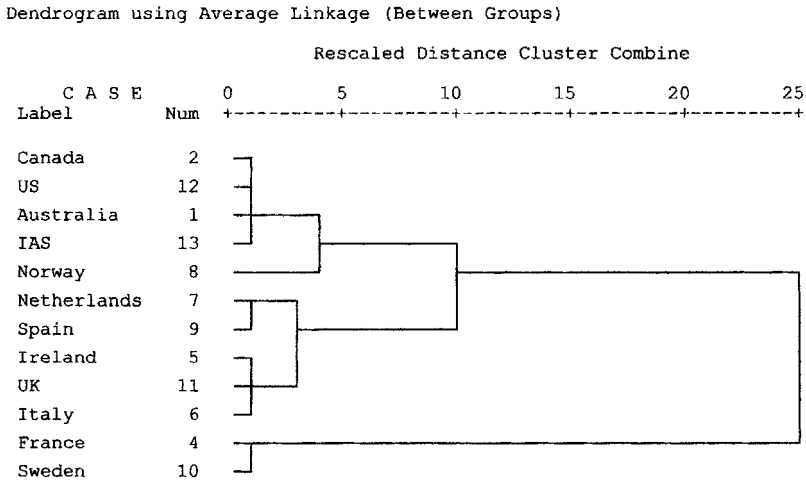
```
Dendrogram using Average Linkage (Between Groups)

                          Rescaled Distance Cluster Combine

      C A S E        0         5        10        15        20        25
   Label        Num  +---------+---------+---------+---------+---------+

   Canada         2  ─┐
   US            12  ─┤
   Australia      1  ─┤
   IAS           13  ─┤
   Norway         8  ─┤
   Netherlands    7  ─┐
   Spain          9  ─┤
   Ireland        5  ─┤
   UK            11  ─┤
   Italy          6  ─┘
   France         4  ─┐
   Sweden        10  ─┘
```

Fig. 7.   Sample B – 2003.

joined Sweden to form a conservative outlier cluster. Examining the individual firm reconciliations of France, there does not appear to be any large reconciling item that is common among firms that would cause this finding.

The Effect of Goodwill

As was noted earlier, goodwill has been cited as one of the biggest differences between U.S. GAAP and U.K. GAAP. Thus, an additional Gray value was calculated for each firm for the year 2001 after removing the effect of goodwill from the reconciliation value. Figs. 8 and 9 present the results.

Fig. 8 is the dendrogram for the countries that are common to the two studies (Sample A), while Fig. 9 is the dendrogram for the expanded European sample (Sample B). The results for Sample A demonstrate that the removal of goodwill as a reconciling item does not affect where a country is clustered. There remains a core European cluster that includes Spain, the U.K. and the Netherlands, with Italy and France joining the European cluster later. And there is a core U.S.-influenced cluster that includes Canada, the U.S., Sweden, the IAS, and Australia.

The results for Sample B, the expanded European sample, are also similar to the results that include goodwill as a reconciling item, but with one exception. When goodwill is removed as a reconciling item, Ireland switches clusters, from the European cluster to the U.S.-influenced cluster.
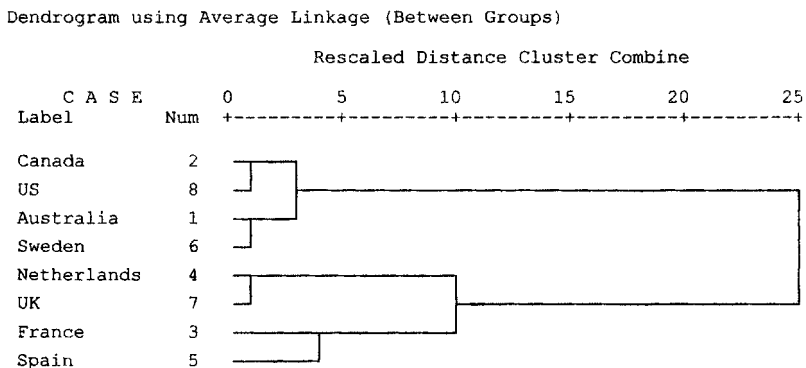
```
Dendrogram using Average Linkage (Between Groups)

                          Rescaled Distance Cluster Combine

        C A S E        0         5        10        15        20        25
      Label       Num  +---------+---------+---------+---------+---------+

      Canada        2  ┐
      US            8  ┤
      Australia     1  ┤
      Sweden        6  ┘
      Netherlands   4  ┐
      UK            7  ┘
      France        3
      Spain         5
```

Fig. 8.   Sample – 2001: No Goodwill Amortization.

```
Dendrogram using Average Linkage (Between Groups)

                          Rescaled Distance Cluster Combine

        C A S E        0         5        10        15        20        25
      Label       Num  +---------+---------+---------+---------+---------+

      Canada        2  ┐
      US            8  ┤
      Ireland      10  ┤
      Norway       12  ┤
      Sweden        6  ┤
      IAS           9  ┤
      Australia     1  ┘
      Spain         5  ┐
      UK            7  ┤
      Netherlands   4  ┘
      Italy        11
      France        3
```
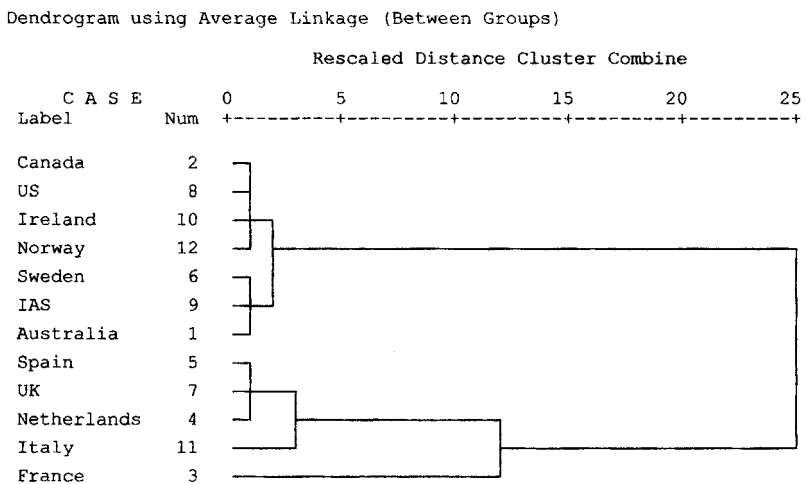
Fig. 9.   Sample B – 2001: No Goodwill Amortization.

Combined Data Sets 1999, 2001, and 2003

The data from 1999, 2001, and 2003 were combined and run once more to see if the results were consistent with the individual years. Figs. 10 and 11 show the results.

Fig. 10 is the dendrogram for all years and the countries that are common to the two studies (Sample A), while Fig. 11 is the dendrogram for the expanded European sample (Sample B) for the three combined years. The
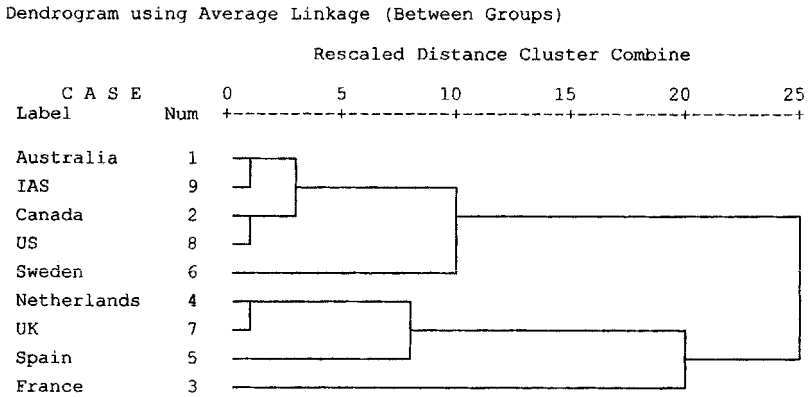
```
Dendrogram using Average Linkage (Between Groups)

                    Rescaled Distance Cluster Combine

       C A S E       0       5      10      15      20      25
     Label      Num  +---------+---------+---------+---------+---------+

     Australia    1    ┐
     IAS          9    ┤
     Canada       2    ┤
     US           8    ┘
     Sweden       6    ────────────────────────────────
     Netherlands  4    ┐
     UK           7    ┘
     Spain        5
     France       3    ────────────────────────────────
```

Fig. 10.   Sample A – Consolidated Data 1999–2001–2003.


```
Dendrogram using Average Linkage (Between Groups)

                    Rescaled Distance Cluster Combine

       C A S E       0       5      10      15      20      25
     Label      Num  +---------+---------+---------+---------+---------+

     Australia    1    ┐
     IAS          9    ┤
     Canada       2    ┤
     US           8    ┘
     Sweden       6    ────────
     Netherlands  4    ┐
     UK           7    ┘
     Ireland     11
     Italy       10
     Spain        5
     France       3
```
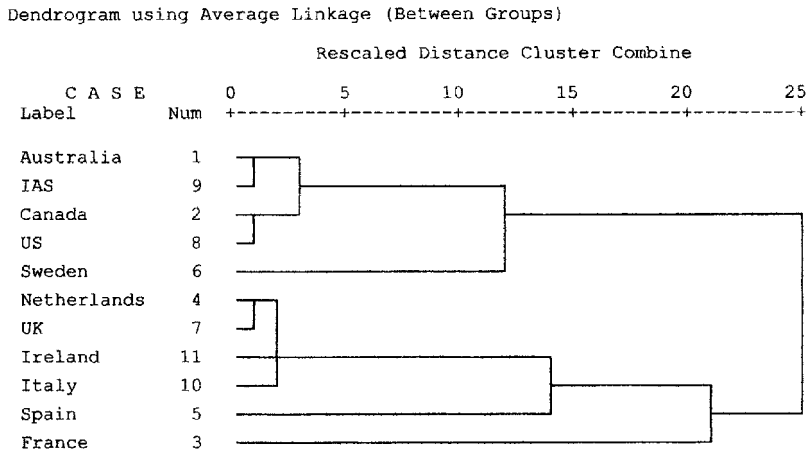
Fig. 11.   Sample B – Consolidated Data 1999–2001–2003.

results of the combined years are consistent with the individual years, showing a European cluster and a U.S.-influenced cluster. Note that France still clusters with the European group and Sweden with the U.S.-influenced group. Research question 1 was examined again using the data from the combined years of 1999, 2001, and 2003. A Press' Q value of 5.44 was statistically significant at $p < 0.02$. This provides additional evidence that d'Arcy's classification represents actual practices and is robust over time.

Examining Research Question 2

The cluster groups in this study and the related dendrograms are all consistent. The U.S. and the U.K. are never in the same cluster. In addition, the squared Euclidean distance indicates that the reporting outcomes of the U.K. are much closer to other European cluster countries than the U.S. This provides strong evidence that there is no Anglo-American group of countries.[6]

CONCLUSIONS, LIMITATIONS AND FUTURE STUDIES

The results of this study support the findings of d'Arcy (2001) and the theoretical arguments and observations of Alexander and Archer (2000). There is no evidence to support an Anglo-American model of accounting that is separate from a European model. The results of this study find a European model of accounting that clearly includes the U.K., which is consistent with the findings of d'Arcy (2001). As in d'Arcy (2001), this study also finds a U.S.-influenced model that includes Australia and Canada, and those companies reporting under IAS/IFRS. The only consistent inconsistency between this study and d'Arcy's (2001) is on the placement of Sweden. As previously noted, a study by Blake et al. (1999) suggests that new laws enacted by Sweden have pushed their accounting practices closer to the practices of U.S. accounting. Thus, Sweden may have belonged in the European group at the time of d'Arcy's (2001) data in 1995, but now belongs in the U.S.-influenced group.

Overall the results provide a new perspective for the IASB that it may not be just dealing with an Anglo-American vs. Continental European split, but rather a European vs. North American split. This provides some evidence that the European fourth and seventh directives may have had some effect after all. It may also imply that as European companies begin compulsory group accounts under IFRS, it will not only be just France and Germany but also the U.K. that has to make significant adjustments.[7] IFRS GAAP may well result in the Americanization of not only Continental European GAAP but also U.K. GAAP. Perhaps a more interesting possibility is that as European countries continue to negotiate a modus vivendi with the IASB, the IASB may be faced with a no win situation where it must either have to shift significantly toward standards driven by European Union countries thereby abandoning its multi-period dream of convergence with U.S. GAAP or try to force an unwilling Europe into a U.S. mold.[8]

The greatest limitation and yet the greatest strength to this study are the data source. The data in this study is from 20-F reconciliations filed with the U.S. SEC. Only the foreign companies wanting to list on U.S. capital markets file 20-F reconciliations. Thus, there is a self-selection bias. It is possible that these companies, in their effort to attract capital, prepare their financial statements in a manner that is closer to U.S. financial reporting practices, and therefore, may not be representative of normal accounting practices of their country. However, if anything this would bias the results to finding more countries in the North American Group or a single group containing all countries. We do not find this among countries in the original d'Arcy (2001) sample. This could explain the positioning of Norway in the U.S.-influenced group. Unfortunately, Norway was not in d'Arcy's (2001) sample so we have no basis for comparison.

A second limitation of this study concerns the data itself. Some might argue that the net profit/income reconciliation is simply a summation of the overall differences and, therefore, does not have any value and should not be used to classify national accounting systems. We disagree. As an example, one large reconciling item might be offset by several small reconciling items in the other direction. Those examining the individual differences (the inputs) might conclude that the accounting systems are very different. However, by examining the net effect (the outputs) we are inherently weighting the reconciling items and would conclude that overall the systems are not so different.

There are several areas of potential future research. A study that examines multi-year data to examine the stability of the clusters would be interesting. Another possibility is that this issue could be examined using an alternative data source in order to triangulate the results.

Triangulation would also be possible by expanding the scope of measurements. While this study focuses on the reconciliation of income to U.S. GAAP, Form 20-F also requires a reconciliation of the equity section from foreign GAAP to U.S. GAAP. A study that focused on differences in the equity section may provide evidence if the clusters determined in this study are valid for other measurement items. Finally, much research and knowledge would be added by examining details on particular net income reconciliation items and how they impact clusters (an inputs approach).

NOTES

1. Because the median firm value by country was used to represent the dependent variable, the normality of the distribution of Gray (1980) scores for each country and

year was tested. Using the Kolmogorov–Smirnov test, no country sample for any year was found to violate normality.

2. One potential drawback of the data is that it allows for only one variable per country. Ideally, the data in Form 20-F could be disaggregated into specific areas where there are differences between U.S. GAAP and the firm's foreign GAAP. Unfortunately, there is no clear disaggregation of the data. Therefore, aggregate numbers may be the best predictors.

3. Our thanks to Professor Christopher Nobes for pointing this out in his comments on an earlier version of this manuscript.

4. Average linkage within groups and Ward's method were also used to classify the data. The results using these two methods are nearly identical to those using average linkage between groups.

5. We would like to thank an anonymous reviewer for this suggestion.

6. We also conducted a narrow test at the firm level of U.K.–U.S. differences. Using a non-parametric *t*-test, we determined that there is a significant difference in financial outcomes between the U.S. and the U.K. For the 1999, 2001, and 2003 data sets, the *t*-test is significant with a *p* value of 0.00.

7. This is in line with the conclusions of Cairns and Nobes (2000).

8. There is already an indication in the popular press that this is happening. See, for example, "Convergence comes into conflict with global realities" *Financial Times* London (U.K.): Oct 17, 2005: 19.

REFERENCES

Alexander, D., & Archer, S. (2000). On the myth of "Anglo-Saxon" financial accounting. *The International Journal of Accounting*, *35*(4), 539–557.

Alexander, D., & Archer, S. (2003). On the myth of "Anglo-Saxon" financial accounting: A response to Nobes. *The International Journal of Accounting*, *38*(4), 503–504.

Ball, R., Robin, A., & Wu, J. (2003). Incentives versus standards: Properties of accounting income in four East Asian countries, and implications for acceptance of IAS. *Journal of Accounting and Economics*, *36*(1–3), 235–270.

Blake, J., Fortes, H., Gowthorpe, C., & Paananen, M. (1999). Implementing the EU accounting directives in Sweden – practitioners' views. *The International Journal of Accounting*, *34*(3), 421–438.

Cairns, D., & Nobes, C. (2000). *The convergence handbook – a comparison between international accounting standards and U.K. financial reporting requirements*. Centre for Business Performance, Institute of Chartered Accountants in England and Wales.

Choi, F., & Levich, R. (1991). Behavioral effects of international accounting diversity. *Accounting Horizons*, *5*(2), 1–13.

d'Arcy, A. (2001). Accounting classification and the international harmonisation debate – an empirical investigation. *Accounting, Organization and Society*, *26*, 327–349.

d'Arcy, A. (2004). Accounting classification and the international harmonisation debate: A reply to a comment. *Accounting, Organization and Society*, *29*, 201–206.

Doupnik, T., & Salter, S. (1993). An empirical test of a judgmental international classification of financial reporting practices. *Journal of International Business Studies*, *24*(1), 41–60.

Epps, R., & Oh, J. (1997). Market perception of foreign financial reports: Differential earnings response coefficients between U.S. and foreign GAAP. *Journal of International Accounting, Auditing and Taxation*, 6(1), 49–74.

Flower, J. (1997). The future shape of harmonization: The EU versus the IASC versus the SEC. *European Accounting Review*, 6, 281–303.

Gray, S. (1980). The impact of international accounting differences from a security-analysis perspective: Some European evidence. *Journal of Accounting Research*, 18(1), 64–76.

Gray, S. (1988). Towards a theory of cultural on the development of accounting influence systems internationally. *Abacus*, 24(1), 1–15.

Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). *Multivariate data analysis*. New York: MacMillan Publishing Company.

Hoarau, C. (1995). International accounting harmonization: American hegemony or mutual recognition with benchmarks. *European Accounting Review*, 4(2), 217–233.

Nobes, C. (1983). A judgmental international classification of financial reporting practices. *Journal of Business, Finance, and Accounting*, 10(1), 1–19.

Nobes, C. (1984). *International classification of financial reporting*. London: Croom Helm.

Nobes, C. (2003). On the myth of "Anglo-Saxon" financial accounting: A comment. *The International Journal of Accounting*, 38(1), 95–104.

Nobes, C. (2004). On accounting classification and the international harmonization debate. *Accounting, Organizations and Society*, 29, 189–200.

Salter, S. (1991). *Classification of financial reporting systems and a test of their environmental determinants*. Ph.D. Dissertation, University of South Carolina.

Salter, S., & Niswander, F. (1995). Cultural influence on the development of accounting systems internationally: A test of Gray's (1988) theory. *Journal of International Business Studies*, 26(2), 379–397.

DIVIDEND IMPUTATION SYSTEMS IN INDUSTRIALIZED COUNTRIES: AN EXAMINATION OF RELATIVE TAX BURDENS

Mahendra Gujarathi and Dorothy Feldmann

ABSTRACT

Dividend taxation has been a controversial issue especially since the enactment of the 2003 U.S. legislation entitled "Jobs and Growth Tax Relief Reconciliation Act" (JGTRRA). This paper presents taxonomy of dividend tax systems and illustrates dividend relief practices in the OECD (Organization for Economic Cooperation and Development) countries. None of the OECD countries follow the conduit (i.e., full imputation) system, and the classical system (where double taxation of dividends occurs) prevailed only in one country (Ireland) other than U.S. in 2003. Dividend imputation in most of the OECD countries is only partial and takes place at the shareholder level in the form of tax credit or split rate. The paper also demonstrates a method to compute the effective tax rates (corporate plus individual taxes) on dividends, and presents such rates for the OECD countries. In comparison with the average dividends tax rate of 39.6% in other OECD countries, the U.S. had a rate of 60.7%, which JGTRRA has brought down to 44.8%.

INTRODUCTION

This paper presents taxonomy of dividend tax systems and illustrates dividend relief practices in the OECD (Organization for Economic Cooperation and Development) countries. It demonstrates a method to compute the effective tax rates (corporate plus individual taxes) on dividends, presents such rates for the OECD countries, and examines the claim whether double taxation has less severe consequences in the non-U.S. countries because of their lower tax rates.

Dividend taxation has been a controversial issue in the U.S. especially since the enactment of the 2003 U.S. legislation entitled ''Jobs and Growth Tax Relief Reconciliation Act'' (JGTRRA). JGTRRA was introduced by President Bush to stimulate the flagging economy and to address the issue of double taxation of corporate income – a phenomenon where income is taxed at the corporate level and then again at the individual taxpayer's level when distributed as dividends.[1] Dividend taxation has been a controversial issue internationally also (for example, McLure, 1980; Helminen, 2001). An understanding of the taxonomy of dividend tax relief systems, and of the practices followed by different countries, is instructive for individual countries to evaluate their approach to dividend taxation and to consider alternatives. In the U.S., for instance, an examination of how dividend taxation is handled in other countries would be helpful when evaluating the appropriateness of dividend tax reduction in JGTRRA. Moreover, such exposition would be useful for lawmakers since the controversy over dividend taxation will likely to resurface when JGTRRA's sunset tax reductions expire in 2008. The taxonomy in the paper would also be useful to the international accounting and taxation educators for presenting an updated classification of taxation systems.

The effective tax burden computations would be helpful to researchers and policy-makers to examine the association between the dividend tax burden and other variables such as corporate dividend and buyback behavior, stock market volatility, and revenue collections. The study bridges an important gap in the academic literature because with the possible exception of Cnossen (1996), who presented effective tax rates only for the EU countries, no academic studies have presented the computations of effective dividend tax burdens for a large sample of industrialized countries. The need for studies in cross-country comparative taxation is regarded as an area deserving more attention (Bailey, 1999).

EVOLUTION

Internationally, dividend taxation relief has evolved into a common phenomenon. While some countries introduced imputation systems in their tax code a long time ago (Austria in 1968, for example), others have adopted such measures recently (Taiwan in 1998, for example). In a sample of 24 industrialized and developing countries, 62.5% of the countries were found to offset double taxation of corporate income (ACCF, 1998).

Dividend tax relief is not new to the U.S. either. In 1954, there was a $100 exemption per couple that doubled to $200 in 1964, and doubled again to $400 in 1980. The 1986 Tax Reform Act, however, repealed this exemption. Since the exemption did not substantively alleviate the problem of double taxation, several presidents including Kennedy, Ford, Carter, and Reagan advocated the elimination of double taxation of dividends. It was President George W. Bush, however, who submitted a formal proposal to the Congress in 2002 that shareholders be permitted to exclude dividends from income tax. The president's proposal was backed by a 1992 Treasury Department study that alluded to the benefits of ending the double taxation for the corporations and the U.S. economy (U.S. Department of the Treasury, 1992). The repeal of double taxation on dividends is also expected to improve corporate governance since firms will start or increase dividend payments and will no longer feel as much pressure to boost share prices by making unwarranted claims about the future.

The Bush administration's original proposal was to permit public and private corporations to distribute tax-free dividends to the extent that they are paid out of previously taxed income. Thus, shareholders would be able to exclude dividends from their taxable income completely. The economic effects of the proposal were debated extensively in Congressional deliberations, as were its implementation difficulties and revenue implications. The controversy surrounding the dividend tax relief provisions in JGTRRA is reflected in the heated debates in Congress over its desirability and financial impact, its approval by the thinnest possible majority (51–50) in the Senate, and in the significant difference between the conference version that President Bush signed and the one that his administration had originally proposed. The revised proposal signed by the president reduced the tax rate on dividends rather than allow stockholders a 100% exclusion in the computation of their taxable income.

While the original Bush proposal of dividend exemption would have resulted in higher tax benefits for richer taxpayers, it commensurates with

their marginal tax rate, the enacted proposal entails the same tax rate on dividend income for all taxpayers except lower-income individuals. Dividends received by an individual shareholder will be taxed at a maximum rate of 15% except for lower-income individuals who will be taxed at a five percent rate. The sunset provisions of JGTTRA are likely to result in another round of debate. The special tax treatment is retroactive for dividends received in tax years beginning after 2002 and it terminates on December 31, 2008 for the 15% rate, and on December 31, 2007 for the five percent rate (Commerce Clearing House, 2003).

LITERATURE REVIEW

There are several articles explaining the adverse economic effects of double taxation (Poterba, 1987; Sorensen, 1995; Poterba & Summers, 1984), and demonstrating the reasons why a company would declare dividends in the presence of double taxation (Brickley, 1983). There are also some studies (Carey & Tchilinguirian, 2000, for instance) that explore macroeconomic effects of dividend taxation. However, there are no studies in the academic literature that document the type and extent of dividend imputation for industrialized countries with the possible exception of Cnossen (1996), who presented effective tax rates for countries in the European Union countries.

The taxonomy presented in several textbooks is outdated or incorrect or both. Choi, Frost, and Meet (2002), for instance, note that the classical system is followed by Belgium, Japan, Luxembourg, the Netherlands, and U.S. However, in 2002, the classical system was followed by none of these countries except the U.S. Similarly, their assertion that Italy belongs to the tax-credit system is incorrect because it follows a split-rate system. Nobes and Parker (2002) similarly classify the Netherlands and Sweden as classical systems when neither of the countries belong to that category. Their classification of Finland as a full imputation system is also incorrect. Indeed, none of the OECD countries (Sweden included) follow the full imputation system.

Popular business press and newsletters of public policy institutes have frequently voiced the need for relief from double taxation of dividends (Edwards, 2003; Coggan & Parker, 2003; and Mitchell, Michel, & John, 2003, for example). However, the methods and data sources used in such literature are seldom explained. Edwards (2003) and Chen, Lee, and Mintz (2002) both used the OECD data, but derived significantly different results. While the method of calculating the effective tax rate is not explained in

either one, it is possible that the difference is partly attributable to the fact that Chen et al. (2002) calculated the total dividend tax for small firms only. Edwards (2003) computed effective tax rate using tax data for the largest city in each country and included federal, state, and local taxes in the computation. However, the state and local taxes within a country can and do vary significantly. Generalizing to an entire country based on the state and local taxes of one city might not be appropriate. Moreover, the policy implications of dividend imputation are more relevant for the federal government because state taxing authorities have a choice of piggybacking on the income reported on the federal tax return, or having separate rules. In addition, Edwards (2003) presented effective tax rates for only 23 of the 30 OECD countries.[2] Some claims in the popular press are unsubstantiated and could be suspect. For instance, Coggan and Parker (2003) note that Luxembourg, the Netherlands, and Switzerland are the OECD countries other than the U.S., using the pure classical system. However, it counters the reality that Luxembourg has a dividend exemption, and Switzerland a system of tax credits.

TAXONOMY OF DIVIDEND IMPUTATION SYSTEMS

The extent to which corporate taxes on profits and individual taxes on distribution of those profits varies in different countries. Fig. 1 represents different possibilities of dividend tax relief on a continuum of none to all. At one extreme is the classical system based on the separation principle in which the company and the shareholder are treated as separate entities (Lymer & Hasseldine, 2002). It results in double taxation because profits are taxed at the corporate level, and once again, at the shareholder level when distributed as dividends. In the classical system, there is no integration between corporate and individual taxes at all. Of the OECD countries, only Ireland and the U.S. (pre-2003) employed the classical system.

At the other extreme is the conduit system (also known as the full imputation system) in which the company is treated simply as a conduit of the profits – whether distributed as dividends or not. In other words, corporate taxes are simply treated as a prepayment of personal taxes, much like a withholding. Although such a system has been proposed in the past in Canada, the U.S., and Australia, none of the 30 OECD countries currently employ the full imputation system.

Partial integration systems provide dividend tax relief either at the company level, or at the shareholder level. At the company level, this can take
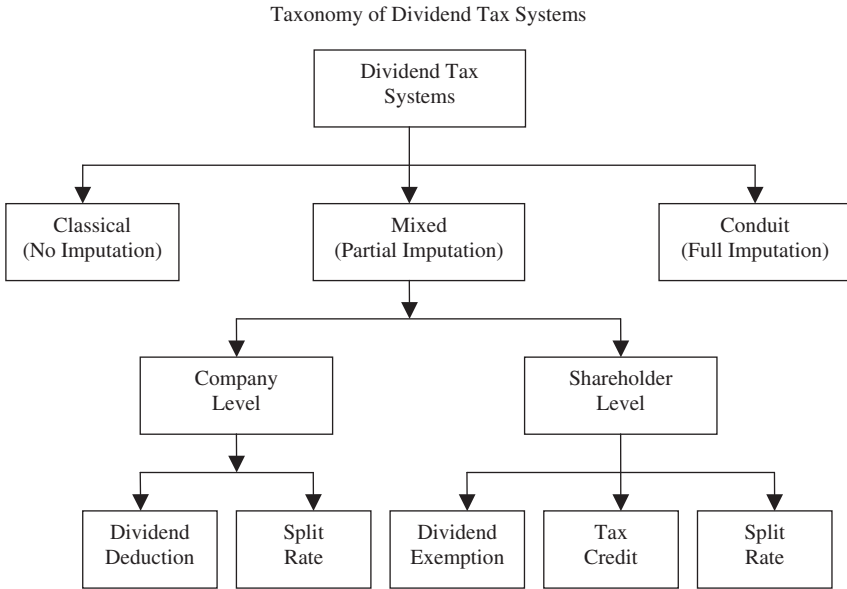
Taxonomy of Dividend Tax Systems

Fig. 1.   Taxonomy of Dividend Tax Systems.

the form of a dividend-deduction system, in which a deduction from taxable profits is allowed for dividends paid, or a split-rate system, in which dividends are taxed at a lower rate than retained profits. Although some countries in the past used partial integration at the company level (Germany, for example), none of the OECD countries currently use that approach.[3]

Thus, in practice, partial (or mixed) integration takes place only at the shareholder level. This can take one of three forms: a dividend exemption, a tax credit, or a split rate. The dividend exemption method is where the shareholders are allowed to exclude – partly or fully – dividend income in the computation of their individual tax liability. Under the tax-credit method, a full or partial tax credit can be granted at the personal level for the profits that have been taxed at the corporate level. Finally, the split-rate method provides dividend relief at the shareholder level by taxing dividend income at a lower rate.[4] The Bush administration's original proposal envisaged the full dividend exemption method, whereas the proposal that was finally passed uses the split-rate method. Table 1 presents the distribution of the OECD countries in these categories of partial integration at the shareholder level. It can be observed that the dividend relief practices in the

Table 1. OECD Countries Using Partial Integration at Shareholder Level.

Dividend Exclusion	Tax Credit	Split Rate
Germany[a]	Australia	Austria
Luxembourg	Canada	Belgium
U.S. (original proposal)	France	Czech. Republic
	Greece	Denmark
	Korea	Finland
	Mexico	Germany[a]
	New Zealand	Hungary
	Norway	Iceland
	Spain	Italy
	Sweden	Japan
	Switzerland[b]	Poland
	Turkey	Portugal
	U.K.	Slovak Republic
		Switzerland[b]
		U.S. (JGTRRA proposal)

[a]Germany appears in two categories because it allows dividend exemption and split rate.
[b]Switzerland appears in two categories because it allows a split rate, and grants tax credit also.

OECD countries fall into either the classical system (no relief at all), or in one of the three partial integration systems at the shareholder level.

METHOD FOR CALCULATING EFFECTIVE TAX RATE

The effective tax rate on dividends will equal the sum of the corporate tax rate and the personal tax rate for taxable dividend income received by shareholders. While determining the corporate tax rate is straightforward, calculating the personal tax rate on dividends is complicated by the varied methods used to provide relief from double taxation of dividends.

In the classical system, with no tax relief, the total tax burden equals

$$(t \times i) + p(\text{amount of dividends distributed}) \tag{1}$$

where t is the corporate tax rate; i the corporate income before taxes; and p the personal tax rate for dividend income.

Further, assuming that the entire amount of after-tax corporate profit is distributed to shareholders as dividend income, then the amount of dividends

distributed equals $i(1–t)$ and the total tax burden can be represented by the
following equation

$$[t \times i] + [p \times i(1 - t)] \tag{2}$$

Tax regulations in many countries require companies to withhold tax at
the source. However, such withholding has no effect on eventual tax burdens
since withholding the tax can be set off against tax liabilities or reclaimed by
the dividend recipients.

In some tax systems, the amount of taxable dividend income is "grossed
up" to eliminate the amount of tax that was paid at the corporate level.
Thus the individual is taxed on the gross (i.e., before tax) corporate income
instead of the amount of the dividend received. This increases the amount of
dividend income to be taxed at the shareholder level.[5] Under this practice,
the shareholder's tax would be determined based on the full amount of
the corporate income (i) rather than on the after-tax amount of [$i(1–t)$]. An
adjustment to the amount of dividends distributed is needed only for coun-
tries in which dividends are grossed up. The taxable dividend can be rep-
resented as $i(1–t)(g)$, where g will take on the value of $1/(1–t)$ for countries
that require the dividends to be taxed at the gross amount and will equal 1
for all countries that do not require dividends to be grossed up. Thus the
taxable dividend remains at [$i(1–t)$] for most countries, but takes on the
value of (i) for countries that require grossing up. The total tax burden can
now be represented as

$$[t \times i] + [p \times i(1 - t)g] \tag{3}$$

The tax code in many countries allows for a full or partial tax credit,
which further reduces an individual's tax burden. If (c) is the percentage of
the tax credit, the total tax credit can be computed as [$c \times i(1–t)g$]. Sub-
tracting the tax credit from the total tax burden shown in Eq. (3) above, we
can compute the net tax burden, after tax credits, to be

$$[t \times i] + [p \times i(1 - t)g] - [c \times i(1 - t)g] \tag{4}$$

Another common method for providing dividend tax relief is to exempt or
exclude a certain percentage of the dividend income received. Assume that a
specified percentage of the dividend income, say (e), is exempt from taxation
at the stockholder level. Then, an individual's taxable dividend income can
be represented as $i(1–t)g(1–e)$ and the total tax burden becomes

$$[t \times i] + [p \times i(1 - t)g(1 - e)] - [c \times i(1 - t)g] \tag{4a}$$

Rearranging the terms that represent personal tax burden and the tax credit, we get the following simplified equation

$$[t \times i] + i(1 - t)g(p(1 - e) - c) \tag{4b}$$

We can compute the effective total tax burden as a percentage of total corporate income as follows:

$$[(t \times i) + i(1 - t)g(p(1 - e) - c)]/i \tag{5a}$$

In simplified form, the measure of total tax burden as a percentage of total corporate income would thus be

$$[t] + (1 - t)g(p(1 - e) - c) \tag{5b}$$

We now present numerical examples to illustrate the differential impact of dividend relief practices of the OECD countries. Panel A of Table 2 presents the dividend tax provisions and Panel B shows the computation of corporate, individual, and total taxes for an assumed corporate income of $1,000. In each case, we have assumed that all of the corporate income after taxes is distributed as dividends to shareholders.

The classical system is illustrated with the system that prevailed in the U.S. before the dividend relief proposal of the Bush administration. The U.S. corporate tax rate is 35%, the individual tax rate for dividends is 40%, grossing up is not required, there is no dividend exemption and there is no tax credit. Using Eq. (5b) we can compute the total tax burden as

$$[t] + (1 - t)g(p(1 - e) - c) = 0.35 + (1 - 0.35)1(0.40(1 - 0) - 0) = 0.61$$

For the split-rate system, we use Austria as our example, where dividends are taxed only at 25% although the highest marginal tax rate is 50%. The corporate rate in Austria is 34%, the tax rate on dividends is 25%, grossing up is not required, and there is no dividend exemption and no dividend credit. Substituting this information into Eq. (5b) we compute the tax burden for Austria to be

$$0.34 + (1 - 0.34)1(0.25(1 - 0) - 0) = 0.505$$

The tax-credit method is illustrated with two countries; Greece, where no grossing up of dividends is required for the computation of individual's taxable dividend income, and Australia, where such a grossing up is required.

Table 2. Illustration of Tax Rates under Different Dividend Relief Practices.

	Classical System U.S. (pre-2003)	Partial Integration Method (Shareholder Level)			
		Dividend exemption	Tax credit		Split rate
			No gross up	Gross up	
		Luxembourg	Greece	Australia	Austria
Panel A: Dividend Tax Provisions					
Corporate tax rate (%)	35.0	30.0	35.0	30.0	34.0
Dividend withholding rate (%)	0.0	25.0	0.0	0.0	0.0
Individual tax rate for general income (%)	40.0	46.0	42.5	47.0	50.0
Individual tax rate for dividends, if different (%)	40.0	46.0	42.5	47.0	25.0
Dividend exemption from income	None	50%	None	None	None
Dividends credit	None	None	42.50%	30%	None
Dividends gross up (No Gross up = 1)	1	1	1	1.4286	1
Panel B: Computation of Corporate, Individual, and Total Taxes					
Corporate income	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Corporate taxes	350.00	300.00	350.00	300.00	340.00
Net income (= dividends)	650.00	700.00	650.00	700.00	660.00
Dividend tax withheld	—	175.00	—	—	—
Dividend received by the individual	650.00	525.00	650.00	700.00	660.00
Dividend income (grossed up, if applicable)	650.00	700.00	650.00	1,000.00	660.00
Dividend exemption	—	350.00	—	—	—
Taxable dividends	650.00	350.00	650.00	1,000.00	660.00
Individual tax on dividends	260.00	161.00	276.25	470.00	165.00
Dividend tax credit	—	—	276.25	300.00	—
Individual tax payable after adjusting for tax credits and withholdings	260.00	(14.00)	—	170.00	165.00
Total (corporate + individual) taxes	610.00	461.00	350.00	470.00	505.00
Total taxes/Corporate income (%)	61	46	35	47	50.5

The calculations for Greece and Australia are as follows, respectively:

$$0.35 + (1 - 0.35)1(0.425(1 - 0) - 0.425) = 0.35$$

$$0.30 + (1 - 0.30)1.4286(0.47(1 - 0) - 0.30) = 0.47$$

The dividend-exemption method is illustrated with Luxembourg where 50% of dividend income is tax-exempt. The Luxembourg illustration is also reflective of the effect of dividend tax withholdings, a phenomenon prevalent in many OECD countries. Companies are required to withhold individual income tax at prescribed rates (25%, for example, in Luxembourg) but that does not have an effect on the total tax burden and is therefore not reflected in the calculation that follows:

$$0.30 + (1 - 0.30)1(0.46(1 - 0.5) - 0) = 0.46$$

DIVIDEND TAX BURDENS IN THE OECD COUNTRIES

Using the methods described above, and the dividend tax provisions in the individual countries, we calculated the effective tax rate (corporate and individual taxes as a percentage of corporate income before dividends) for each of the OECD countries. Data on dividend tax provisions and on corporate and individual tax rates were obtained from the 2002 international tax summaries (corporate and individual) published by PriceWaterhouse-Coopers (PWC, 2002a, b).[6] In cases where the dividend provisions in PWC were missing or unclear, we used additional print and web resources to ensure correctness of the data.[7]

In countries with a graduated tax rate system, we needed to choose a tax rate to compute the effective tax rate. We used the highest tax bracket under the assumption that dividends are largely received by individuals in higher tax brackets.[8] Except for the Netherlands, the unique dividend tax provisions of which did not lend to the computation of an effective tax rate; the results for the 30 OECD countries are presented in Panel A of Table 3. It can be noted that the Bush administration's claim that the U.S. had a high-dividend tax rate is correct. Indeed, it had the highest tax rate (60.7%), followed by Belgium (whose effective tax rate of 55.1% is a full 5.6% less than the U.S.). Norway and Switzerland have the lowest effective tax rates at 4.4 and 8.5%, respectively. The average effective tax rate for the

Table 3. Effective Dividend Tax Rates in OECD Countries.

Country	Imputation System	Panel A (%)	Panel B (%)
Australia	Tax credit	47.0	43.9
Austria	Split rate	50.5	51.3
Belgium	Split rate	55.1	51.3
Canada	Tax credit	42.4	58.4
Czech Republic	Split rate	41.4	44.8
Denmark	Split rate	49.6	53.2
Finland	Split rate	49.6	53.9
France	Tax credit	41.0	28.2
Germany	Split rate	44.2	47.9
Greece	Tax credit	35.0	33.1
Hungary	Split rate	34.4	48.0
Iceland	Split rate	26.2	41.5
Ireland	Classical	49.3	60.7
Italy	Split rate	44.0	43.1
Japan	Split rate	37.0	41.5
Korea	Tax credit	43.1	48.4
Luxembourg	Dividend exclusion	46.1	47.9
Mexico	Tax credit	35.0	34.6
New Zealand	Tax credit	39.0	41.0
Norway	Tax credit	4.4	13.7
Poland	Split rate	38.8	44.8
Portugal	Split rate	50.5	51.3
Slovak Rep	Split rate	39.7	44.8
Spain	Tax credit	27.7	25.9
Sweden	Tax credit	24.4	35.0
Switzerland	Tax credit	8.5	35.0
Turkey	Tax credit	41.6	45.7
U.K.	Tax credit	37.8	42.2
USA (post-2003)	Split rate	44.8	44.8
USA (pre-2003)	Classical	60.7	60.7
High		55.1	60.7
Low		4.4	13.7
Average		38.9	43.3
Median		41.4	44.8

Note: Panel A presents the effective tax rate using each country's own income tax rate. The highest tax bracket is used in countries with a graduated tax rate system.

Panel B computes the effective tax rate by replacing the country's tax rate with the U.S. rates for comparison.

29 countries is 39.6% with a median of 41.4%. Only four countries (Austria, Belgium, Portugal, and the U.S.) have effective tax rates above 50%. There are five countries whose rates are between 45 and 50%, while 14 countries have a rate between 35 and 45%. Calculations presented in Table 3 indicate that the JGTRRA enactment dramatically reduces the effective U.S. dividend tax rate. The tax rate reduction from 60.7 to 44.8% takes the U.S. from the highest dividend tax rate to a rate that is comparable to many other industrialized countries.

As indicated in Table 1, most of our sample countries used either the tax-credit approach (13 countries), or the split-rate approach (15 countries) to dividend tax relief. Eliminating Germany from the split-rate approach (since it provides a dividend exclusion also) and Switzerland from both the approaches (since it has the tax credit as well as a split-rate system), the sample is reduced to 12 for the tax-credit approach and 13 for the split-rate approach. We examined whether the effective tax rates are different between these two groups. The average effective tax rate for the countries using the tax-credit approach (32.8%) was statistically lower ($p = 0.03$) from the countries using the split-rate approach (43.3%).

An interesting question is what would be the change in the effective tax rate if the non-U.S. countries in the OECD sample had the same corporate and individual tax rates as the U.S. Indeed, some writers have claimed that double taxation does not have severe consequences in some other countries because of their lower corporate and individual tax rates (Mitchell et al., 2003). In other words, a country with double taxation of dividends does not necessarily have high-dividend tax burden if its corporate and/or individual tax rates are low. To examine the effect of different tax relief systems in different countries – but assuming uniform corporate and individual tax rate across all the countries – we calculated the effective tax rates for the sample 29 OECD countries by substituting the U.S. rates for the individual country's tax rates.[9] The results are presented in Panel B of Table 3. They indicate that the effective tax rate for Ireland, the only non-U.S. country in the sample following the classical system, becomes 60.7% (instead of 49.3%) if one assumes the same individual and corporate tax rates as in the U.S.

Another way of addressing the question of whether the differences in effective tax rates result from different tax rates or differential dividend tax provisions is to examine effective tax rates by holding the individual and corporate tax rates constant. As can be seen in Panel B of Table 3, although the average tax rate now goes up to 43.9%, and there are more countries (eight) having effective tax rate in excess of 51%, the U.S. still had the highest effective tax rate of all the OECD countries. In other words, it is not

only the lower individual and corporate tax rates but also the dividend imputation in the non-U.S. countries that brings down their effective tax rates.

To examine if the effective tax rates under the assumption of uniform (i.e., the U.S.) tax rates are different from the original scenario, we conducted a matched-pair t-test. Results of the t-test indicate that the two means are statistically different ($p = 0.004$), validating the claim in the literature that higher tax rates have exasperated the dividend tax burden in the U.S.

We split our sample into 12 countries using only the tax-credit approach, and 13 countries using only the split-rate approach and examined their effective tax rates under the assumption of uniform tax rates. The average effective tax rate for the split-rate countries (47.3%) is significantly higher ($p = 0.009$) than the tax-credit countries (37.3%). These results are similar to the ones performed on the data in Panel A (of Table 3) indicating that countries with tax-credit approach to dividend imputation would have lower effective tax rates, even if their tax rates are the same as the U.S.

SUMMARY, CONCLUSIONS, AND AVENUES FOR FURTHER RESEARCH

JGTRRA represents a significant attempt by the Bush administration to bring dividend taxation in the U.S. in line with other industrialized countries. In this paper, we provided a framework that categorizes international dividend taxation systems along a continuum from full double taxation to full imputation. Our analyses indicate that almost all industrialized countries use a partial imputation method to provide tax relief on dividends at the shareholder level. The classical system (providing no relief from double taxation of dividends) was used in the U.S. prior to passage of the JGTRRA and is currently used only in one other OECD country (Ireland).

We demonstrated a method for calculating the effective tax rate on dividends. Using the dividend tax provisions in the individual countries and the method described for calculating effective tax rates above, we calculated the effective tax rate (corporate and individual taxes as a percentage of corporate income before dividends) for the OECD countries. The results indicate that the passage of JGTRRA has clearly moved the U.S. closer to the dividend tax practices of other industrialized countries. In comparison with the average dividends tax rate of 39.6% in other OECD countries, U.S. had a rate of 60.7%, which JGTRRA has brought down to 44.8%. If the aim of the Bush tax proposals was to bring the U.S. more into line with practices of other countries, JGTTRA was a step in the right direction.

In interpreting the results of the study, its limitations need to be kept in mind. Our computations, like those of other studies, assume that all the after-tax profits are distributed as dividends. If only a small portion of income is distributed as dividends, or if the dividend amount depends on some other variable (say, balance in retained earnings), the effective tax rates would be different. Our computations also use the highest marginal tax bracket because dividends are largely received by individuals in higher tax bracket. It would be interesting to examine the effective tax rates for the individuals in lower tax brackets in the sample countries, if such data can be obtained. Also interesting to study would be the association in the international context between dividend taxation and dividend behavior of firms, and between dividend taxation and stock market volatility. Finally, share repurchases, an alternative to dividends as a means of transferring wealth to stockholders, have grown dramatically in the past two decades. An examination of how share repurchase behavior differs under various systems of taxation would be informative to future tax policy debates.

NOTES

1. More recently, in the 2004 presidential election campaign, George W. Bush vowed to make the dividend tax cuts of JGTRRA permanent in contrast to his Democratic Party challenger's promise to roll back the dividend relief provisions especially for those with annual incomes above $200,000.

2. In addition, it is difficult to interpret computations for some countries. The Netherlands, for example, requires individuals to include as dividends 4% of the value of the investments regardless of the amount of dividends declared. Therefore, method used to compute effective tax rates for other countries cannot be employed for the Netherlands. Yet, both Edwards (2003) and Chen et al. (2002) have presented such a number.

3. Prior to 2001, Germany taxed distributed profits at a lower rate (30%) than retained profits (40%). Some non-OECD countries have different tax rate on profits distributed as dividends. India, for instance, introduced in 2003 an additional 12.5% tax on profits distributed as dividends.

4. If the rate at which dividend income is taxed is zero, it results in full imputation of tax on distributed profits at the shareholder level.

5. For example, if corporate income before taxes is $100, and if the corporate tax rate is 30%, an individual will receive a dividend check for $70, assuming that all of the corporate net income is distributed as dividends. In the gross-up method, the amount of dividend included in the individual's income is not the net amount ($70), but the amount of dividends before corporate taxes ($100).

6. If the PWC publications indicated that some tax law changes have already been enacted, we used those new provisions for our computations. For example, starting 2003, Japan lowered its personal tax rate on dividends to 10%t for a period of five years.

7. Typically, these were publications from the finance ministries of those countries such as *Taxation in the Netherlands* (2002), *The advantages of the Swiss tax system*, or other sources such as Ernst and Young's publication, *Taxation in France*.

8. In the U.S., for instance, of returns filed in 2000, only one taxpayer in seven with income under $20,000 reported any dividends, whereas 87% of returns with $200,000 or more in income reported dividends (Commerce Cleaning House (CCH), 2003). Although many people hold stock in their retirement accounts, the dividends on them are not taxed currently and hence are unaffected by the plan.

9. However, if the specific tax rate for dividends in a given country was lower than the highest marginal tax rate in the U.S., we used the lower rate for the calculation of individual taxes.

ACKNOWLEDGMENTS

REFERENCES

American Council for Capital Formation. (ACCF). (1998). *Small saver incentives: An international comparison of the taxation of interest, dividends, and capital gains.* http://www.accf.org/smallsave1098.htm.

Bailey Jr., A. D. (1999). Headlines. Center for International Education and Research in Accounting (CIERA), News, pp. 1–3.

Brickley, J. A. (1983). Shareholder wealth, information signaling and the specially designated dividend: An empirical study. *Journal of Financial Economics*, *12*(2), 187–209.

Carey, D., & Tachilinguirian, H. (2000). *Average effective tax rates on capital, labour and consumption.* Economics Department Working Paper (2000)31, Organization for Economic Co-operation and Development, Paris, France.

Chen, D., Lee F. C., & Mintz, J. (2002). *Taxation, SME's and entrepreneurship.* Science, Working Paper 2002/9, Technology and Industry, Organization for Economic Co-operation and Development, Paris, France.

Choi, F. D. S., Frost, C. A., & Meet, G. K. (2002). *International Accounting* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Cnossen, S. (1996). Company taxes in the European Union: Criteria and options for reform. *Fiscal Studies*, *17*(4), 67–97.

Coggan, P., & Parker, A. (2003). Dividend reform bring U.S. closer to competitors: International comparison. *Financial Times* (London), January 8, p.10.

Commerce Clearing House. (2003). *President Bush signs $350 billion tax-cut package; immediate relief available*. http://www.cch.com/Tax2003/taxbrief_05-03_electronic.pdf

Edwards, C. (2003). *Dividend taxation: U.S. has the second highest rate*. Cato Institute. http://www.cato.org/dailys/01-17-03-2.html

Helminen, M. (2001). Finland's imputation system under the pressure of globalization. *Bulletin for International Fiscal Documentation*, *55*(1), 17–21.

Lymer, A., & Hasseldine, J. (2002). *The international taxation system*. Netherlands: Kluwer Academic Publishers.

McLure, C. E. (1980). International aspects of dividend relief. *Journal of Corporate Taxation*, *7*(2), 137.

Mitchell, D. J., Michel, N. J., & John, D. C. (2003). *Pathway to economic growth and tax reform: Eliminating the double tax on dividends. The Heritage Foundation Backgrounder*, No. 1640. http://www.heritage.org/research/taxes/bg1640.cfm

Nobes, C., & Parker, R. (2002). *Comparative international accounting* (7th ed.). New York: FT-Prentice Hall.

Poterba, J. M. (1987). Tax policy and corporate savings. *Brookings Papers on Economic Activity*, *2*, 455–515.

Poterba, J. M., & Summers, L. H. (1984). New evidence that taxes affect the value of dividends. *Journal of Finance*, *39*(5), 1397–1415.

PriceWaterhouseCoopers. (2002a). *Individual taxes 2001–2002, worldwide summaries*. New York: Wiley.

PriceWaterhouseCoopers. (2002b). *Corporate taxes 2001–2002, worldwide summaries.* New York: Wiley.

Sorenson, P. B. (1995). Changing views of the corporate income tax. *National Tax Journal*, *48*(2), 279–294.

U.S. Department of the Treasury. (1992). *Integration of the individual and corporate tax systems: Taxing business income once*. http://www.treasury.gov/offices/tax-policy/library/integration-paper/index.html#summary

This page intentionally left blank