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Factors Affecting the Adoption of IFRS

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ABSTRACT

This paper examines a comprehensive set of environmental characteristics based on Choi and Meek's (2008, CM) framework to explain international accounting system development, which we proxy by IFRS adoption. The main finding indicates that CM's framework is fairly descriptive. Factors relating to political and economic ties, reliance on foreign-sourced debt and common law legal systems create contracting incentives for adoption. Similarly, the need for capital investment evidenced by greater economic growth and capital formation, and higher literacy rates creates signaling incentives for adoption. However, other factors relating to size of capital markets, taxation, and inflation produce disincentives for adoption, which point to internal political and practical costs of converting current accounting systems to IFRS.

JEL Classifications: M40, M41, M48

Keywords: logistic regression; accounting system development; international financial reporting

I. INTRODUCTION

Based on a broad compilation of prior theoretical reasoning and empirical research, Choi and Meek (2008, CM) developed a model of accounting system development to explain observed differences in financial reporting worldwide. In CM's framework, eight factors in a country's environment are believed to have a significant influence on the differences found in accounting systems: major source of finance; legal systems; taxation; political and economic ties; inflation; economic development; education; and culture. International Financial Reporting Standards (IFRS) have been touted as high quality accounting standards that will enhance the value of accounting information across international borders. Over 100 countries now require or allow IFRS for domestic reporting[1]. In light of the increasing popularity of IFRS, we attempt to identify how the set of factors in CM's comprehensive framework plays into the decision.

Our sample consists of 73 countries based on survey of listing requirements from the period 2000 to 2007, supplemented and cross-checked with data from IASB and the World Bank Report on Country Observations of Standards and Codes (ROSC). Variables are constructed using data collected from the World Bank and other publicly available sources. These variables are then empirically tested in a general adoption model using random-effects logit regressions. Alternative specifications, including the addition of EU countries, and other analysis are discussed in robust section.

Section II provides a background of IFRS and accounting system development literature. Section III develops hypotheses and Section IV details the methodology and variable constructs. Section V discusses the results and robustness checks. Finally, Section VI concludes the paper.

II. BACKGROUND

A. IFRS Development

Diversity in accounting systems has significant economic consequences for the interpretation of financial reporting on an international level (e.g., Choi et al., 1983; Choi and Levich, 1991; Lainez and Callao, 2000; Bushman and Smith, 2001). As a result, international accounting and securities organizations initiated a process to promote the harmonization of accounting standards as a means to improve financial transparency and comparability. Efforts by the International Accounting Standards Committee (IASC, predecessor of the IASB), the International Organization of Securities Commissions (IOSCO), and other worldwide accounting bodies have led to the development of International Accounting Standards, now described as the International Financial Reporting Standards (IFRS). The adoption of IFRS has increased since the first set of core standards was completed in 1998, most notably by Australia and members of the European Union in 2005. However, there are some notable exceptions to this trend, such as the United States and Japan. It is not fully clear why there remain some prominent countries that have been reluctant to adopt.

Arguments in support of IFRS emphasize the potential benefits such as increased investor confidence and reduced reporting costs for international cross-listed firms[2]. Thus, the prospect of a comparative advantage from higher liquidity and lower cost of

capital may influence national policy setters to adopt internationally recognized accounting standards (e.g., Leuz and Verrecchia, 2000; Daske et al. 2008). Some studies using firm-level data find an increase in investment allocation (Yu, 2009), others find no effect (Beneish et al., 2009) and still others finding only an effect conditional on certain factors (Florou and Pope, 2009; DeFond et al., 2011). Adoption of common accounting standards may enhance business relations between countries by lowering information processing and monitoring costs and increasing the linkages within communication networks (e.g., Meeks and Swann, 2009; Hail et al., 2010). Similarly, improvements in financial disclosure and/or comparability may lead to greater international capital mobility and cross-border investment (e.g., Young and Guenther, 2003; Bradshaw et al., 2004; Aggarwal et al., 2005; Covrig et al., 2007). Finally, countries without resources to develop rigorous domestic accounting standards may "borrow" international accounting standards as a signaling mechanism to attract foreign capital.

On the other hand, there are compelling reasons why countries may not adopt internationally based standards. Accounting systems develop organically within countries in response to unique environmental conditions. As a result, standardization may not produce financial reports that are relevant for all nations because it may obscure those underlying differences in the environment (e.g., Choi and Levich, 1991; Alford et al., 1993; Nobes and Parker, 1995). For example, code law countries are associated with insider oriented systems, i.e. higher ownership concentration and lower investor protection, (e.g., La Porta et al., 1998; Nobes et al., 1998), and have accounting standards that are more dissimilar to IFRS than common law countries (Ding et al. 2007). Although external considerations may motivate a change in financial reporting (e.g., Ding et al., 2005), transition costs may not be trivial (Hail et al., 2010). Countries with weaker investor protection may "bond" to more comparable and comprehensive reporting standards (Hope et al., 2006), yet concerns over weaker enforcement mechanisms may dampen investor interest (Armstrong et al., 2010). In the end, overall reporting practices may still differ due to the persistence of those differences and the interdependencies between reporting rules and institutional structures (Leuz, 2010). Thus, the cost-benefit analysis for changing a reporting regime is tempered by environmental factors. In our paper, we hope to shed light on how those environmental factors play into this decision.

B. International Accounting System Development

Factors influencing international accounting system development have been investigated by accounting researchers since the 1960's (Mueller 1967). It is important to understand how environmental factors shape accounting reporting and disclosure standards in order to predict the progress towards harmonization efforts. Some factors such as culture change very little over time and thus may hinder these efforts (Doupnik and Salter, 1995), while other variables such as economic ties are more dynamic due globalization. The adoption of international accounting standards provides a new venue where these factors may be linked with accounting development. The next section will discuss these factors and develop hypotheses for the general adoption model.

III. HYPOTHESIS

A prediction model for adoption of IFRS is developed that is derived from CM's eight factors influencing accounting system development.

A. Major Sources of Finance

1. Equity finance

Equity financing is an important element in the development of accounting systems. Strong equity systems are normally dominated by *outsiders* who do not have a privileged relationship with the company (Nobes, 1998). Agency theory (Jensen and Meckling, 1976) suggests that as the relationship between businesses and providers of capital becomes more distant, information asymmetries between contracting parties increase, which stimulates the demand for more financial disclosures. In countries where equity financing is dominant, accounting takes on a more capital market orientation and higher levels of disclosure patterns are observed (e.g. Salter and Niswander, 1995; Salter, 1998). Moreover, Adhikari and Tondkar's (1992) study of international stock exchanges found capital market size to be singularly significant in explaining the extensiveness of disclosure requirements.

However, the process of formulating international standards requires compromises, especially on allowable methods. Countries with well-developed stock markets, such as the United States, generally have accounting standards considered to be more advanced and may be reluctant to adopt alternative ones if the proposed standards are not considered as rigorous as their own (Ramanna et al., 2009). Countries with less advanced capital markets may be more inclined to adopt internationally recognized standards in an effort to signal their intentions to attract foreign capital. An early study of developing countries found that both capital market development and economic growth were negatively related to IAS adoption (Larson and Kenny, 1995), and similarly in the Asian Pacific region (Guan and Lau, 2004). In contrast, other studies show a higher *voluntary* use of international standards, i.e. IAS or US GAAP, in exchange listed firms (e.g., El-Gazzar et al., 1999; Tarca, 2004), and in those with better access to capital markets (Hope et al., 2006). Consistent with earlier country-level studies, we expect a negative relation between equity financing and adoption .

H1a: Greater reliance on equity financing will negatively affect the likelihood of adoption of IFRS.

2. Foreign debt finance

Adoption of IFRS has been linked with equity market benefits, i.e. lower cost of capital and increased liquidity (e.g., Leuz and Verrecchia, 2000; Sengupta, 1998), and may be beneficial for foreign debt financing as well. Accounting practice where bank financing is dominant is more focused on creditor protection (Doupnik and Salter, 1995). Information is communicated more efficiently through private channels, reducing the need for public disclosures. However, private information gathering may be more difficult across national boundaries and foreign debt financing may benefit from greater financial disclosure through the use of IFRS.

H1b: Countries whose companies use higher amounts of foreign sourced debt financing will be more likely to adopt IFRS.

B. Legal Systems

La Porta et al. (1997, 1998) observed a direct relationship between the legal system, level of investor protection and capital market development. More importantly, legal systems have been directly associated with disclosure practices (Doupnik and Salter, 1995; Jaggi and Low, 2000) and variations in reporting incentives and earnings properties (Ball et al. 2000). IFRS adoption may translate into market benefits only where there are greater incentives for better disclosure (Daske et al., 2008; Li, 2009). In common law countries, information asymmetry is likely to be resolved by timely and greater public disclosures to shareholders ("shareholder model"), whereas communication in code law countries is more likely to be conducted more privately between major political groups ("stakeholder model"). As a result, accounting standards in common law countries may be similar to IFRS, thus making adoption of IFRS easier and more enforceable.

H2: Countries with common law legal systems will have a higher likelihood of adoption of IFRS than code law countries.

C. Taxation

Taxation has been asserted to influence accounting system development. Governments that have greater control over managing the resources of a country, i.e., macro-economies, tend to become major players in shaping reporting standards (Alnajjar, 1986; Doupnik and Salter, 1993; Xiao et al., 2004). Greater government oversight of a nation's resources and economic goals is linked with financial accounting rules whose primary purpose is oriented toward satisfying regulatory needs, such as taxation and compliance issues, rather than information needs of investors. Financial and tax reporting conformity has been associated with a decrease in value relevance of accounting earnings (Ali and Hwang, 2000), and a decrease in capital mobility (Young and Guenther, 2003). Adoption of IFRS can increase costs to modify current tax enforcement systems by altering current tax calculations and financial reporting (Hail et al., 2010). Therefore, it is predicted that as the importance of corporate taxation increases, the likelihood that countries will adopt IFRS will decrease.

H3: Countries where corporate taxation is more important for central government financing will have a lower likelihood of adoption of IFRS.

D. Political and Economic Ties

1. Colonialism

Accounting traditions can be transferred to other countries because of historical political and social ties, such as through colonialism (Nobes, 1988; Gernon and Meek, 2001). For example, Great Britain exported both its accounting system and its

accountants to its former colonies. It has been observed that many countries outside Europe may have inherited their accounting systems through this route (Nobes, 1998). Similarly, studies of developing countries in the Asian-Pacific region found evidence of the influence of colonization as well as free market forces on accounting practice (Yang and Lee, 1994; Craig and Diga, 1996; Xiao et al., 2004).

Historic political and social ties of colonialism are expected to affect a country's decision to adopt IFRS. The former colonies of the United Kingdom may have developed similar accounting standards to UK GAAP, which had a strong influence on the development of IFRS (Joshi, 1998). Historically, the United Kingdom has had prominent membership position in the IASB and has made substantial contributions to the standard setting process (Carlson, 1997).

H4a: Countries that were former colonies of the United Kingdom will be more likely to adopt IFRS.

2. Trade alliances

International organizations whose principal objectives are to create greater economic gains through mutual trade and investment have increased with the formation of such groups as the European Union (EU) and others. Membership in these groups creates incentives to minimize differences between members to facilitate cross-border contracting. For example, extending credit across borders involves financial analysis, which is more easily done if accounting rules are familiar. Although politically, socially and culturally diverse, countries within ASEAN have reporting standards that are more harmonized than other neighboring countries (Craig and Diga, 1996; Saudagaran and Diga, 2000). Regional trade organization membership also fosters compliance with international standards (El-Gazzar et al., 1999; Ramanna et al., 2009). Thus, the fact that a trading partner has adopted IFRS may prompt a country to enact similar requirements.

H4b: Countries whose major trading partners have adopted IFRS will have an increased likelihood of adoption of IFRS themselves.

E. Inflation

Inflation presents a challenge to standard setters, especially in countries with high or hyper-inflationary economies. IAS 29 requires a restatement of non-monetary items based on a change in the general price level index at the balance sheet date. However, IFRS may not allow sufficiently suitable alternative reporting methods as compared to local GAAP. Many South American countries with historically high inflation have been reluctant to adopt, e.g., Brazil, Argentina, and Chile. Inflation is an accepted part of doing business in these regions, and as a result standard setters in these economies have adapted by setting up more complex rules and regulations (Choi and Meek, 2008). For example, Brazil has required the preparation of multiple financial statements using different reporting requirements (Doupnik et al., 1995). Therefore, higher inflation levels are expected to decrease likelihood of adoption.

H5: Countries with higher inflation levels will have a decreased likelihood of adoption of IFRS.

F. Economic Development

As business transactions become more numerous and complex, the process of recording and reporting these transactions will necessarily become more sophisticated as well (Choi and Meek, 2008). However, empirical evidence on the relation between accounting and economic development has been mixed. There is some evidence of a positive relation between disclosure requirements and GNP (Cooke and Wallace, 1990) and GNP growth (Belkaoui, 1995) in developed countries. Rajan and Zingales (1998) found that the growth rate of industries with a greater reliance on external financing was significantly higher in countries with more public disclosures. Salter (1998) summarized this relation by observing that economic development positively impacts disclosure regulation, and when combined with enforcement produces greater financial disclosure.

On the other hand, a study by Adhikari and Tondkar (1992) found no association between economic development and the disclosure requirements of international stock markets. Additionally, Larson and Kenny's (1995) study of developing countries showed a relatively small negative relation between economic growth and IAS adoption. A possible explanation is that economies with limited internal resources may use IFRS adoption as a signaling mechanism to attract foreign capital to generate growth. Therefore, level of economic development is expected to influence IFRS adoption, but the direction will be determined by the empirical results.

H6: A country's level of economic development will influence the decision to adopt IFRS, but the direction is unsigned.

G. Education

A more highly educated population will require more sophisticated accounting systems to meet its information needs. As accounting standards and practices become more complex, the ability to apply and interpret those standards and practices will depend on the educational level of the population (Choi and Meek, 2008). Countries with less sophisticated educational systems may find the transition to IFRS more costly to implement compared to other countries with better education systems. Therefore, education should be positively related to adoption.

H7: Countries with a more highly educated population will be more likely to adopt IFRS.

H. Culture

A country's environment influences societal (cultural) values and norms, which are then internalized to shape that society's various institutions (Hofstede, 1980, 1984). Although the construct of culture has been empirically tested in many forms, including religion, language, and patterns of human behavior (e.g., Frank, 1979; Stulz and

Williamson, 2003), Hofstede's cultural dimensions have been the most ubiquitous. Empirical evidence of culture's influence on accounting system development has been mixed, with marketplace and institutional variables surpassing culture in explaining extant disclosure practice (Zarzeski, 1996; Jaggi and Low, 2000).

Uncertainty avoidance (UA) may be the most relevant of Hofstede's cultural values to explain the choice to adopt IFRS. Societies that operate with high UA tend to prefer systems that are relatively more secretive, i.e., certain, and take on a more conservative approach to measurement in order to manage risks. Contracting parties in high UA environments resolve information asymmetries by exchanging information privately, and financial disclosures tend to be lower (e.g., Gray, 1988; Salter, 1998). Gray (1988) formally introduced the construct of culture into theoretical accounting models by linking Hofstede's cultural values with accounting values. Salter and Niswander (1989) empirically tested Gray's model and found that societies with low UA were less likely to have accounting systems that were dictated by prescriptive legal requirements, yet more open in reporting practice (financial disclosure driven by marketplace rather than by rigid accounting rules). It follows that countries with low UA may be more attracted to IFRS for similar reasons. IFRS have been described as more "principle based" rather than "rules based", and proponents claim IFRS creates more efficient markets by making financial reporting that is more transparent and easily comparable (e.g., Zarb, 2006). Therefore, the relationship between adoption of IFRS and UA is expected to be negative.

H8: Countries with lower levels of uncertainty avoidance will be more likely to adopt IFRS.

A general prediction model incorporating these hypotheses is presented in the next section with definition of variable constructs.

IV. METHODOLOGY

A. Data and Descriptive Statistics

Panel A of Table 1 summarizes the sample selection. An initial sample of 129 countries and territories for IFRS adoption was obtained from a Deloitte Touche Tohmatsu survey supplemented and cross-checked with data from the World Bank Report on Observations of Standards and Codes (ROSC) and IASB website for the years 2000 - 2007. The sample was subsequently reduced due to EU membership and limitations on data availability, resulting in a final sample consisting of 527 observations from 73 countries[3]. EU membership mandates adoption of IFRS by countries regardless of environmental factors that may predict otherwise. The number of observations is most limited for the measure for culture (UA), where sample size is only 47 countries.

Table 1
Summary statistics of IFRS for years 2000-2007

Panel A: Sample Selection

Observations for which IFRS requirement scores are available	1,032
Less: EU members	208
Observations for which IFRS scores are available, excluding EU members	824
Less: Missing finance (equity and debt) data	111
Observations for which IFRS scores and finance data are available, excluding EU members	713
Less: Missing tax data	186
Number of observations in sample with full data available	527

Sample Year	Number of Countries[4]
2000	66
2001	65
2002	66
2003	66
2004	67
2005	65
2006	66
2007	66
	527

Panel B: Descriptive Statistics for Dependent Variable by Region

Region[5]	Obs.	% IFRS = 0	% IFRS = 1	% IFRS = 2
East Asia and Pacific	112	59.8	19.6	20.5
Europe and Central Asia	81	42.0	25.9	32.1
Latin America and Caribbean	144	39.6	11.1	49.3
Middle East and North Africa	47	29.8	4.3	66.0
North America	16	100.0	0.0	0.0
South Asia	23	82.6	17.4	0.0
Sub-Saharan Africa	104	21.2	47.1	31.7
TOTAL SAMPLE	527	43.4	21.6	34.9

IFRS adoption, the dependent variable, was measured by an ordinal scale from zero to two. At the minimum, zero indicates that IFRS is not permitted for domestic financial reporting. Countries with a score of one allow the use of IFRS or require it for some domestically listed companies[6]. At the maximum, a score of two indicates that IFRS are required for all listed companies. See Table 1 Panel B for a summary of the statistics by region, with country designation by the World Bank. The rate of IFRS adoption for the entire sample is over 56%. These statistics demonstrate that although IFRS has gained acceptance globally, there are still large areas, particularly North America and Asia, which retain local GAAP for domestic listing requirements.

To examine the relationship between IFRS adoption and country-level sources of finance, market capitalization data for prior years was obtained from World Development Indicators (WDI, World Bank) to measure equity sourced financing, *EQUITY*. To measure foreign sourced debt financing, *DEBT*, data from WDI and World Factbook (CIA.gov website) was obtained on the amount of total public and private debt owed to nonresidents.[7] Each of these variables was scaled by GDP.

Legal system, *LEGAL*, was measured by an indicator variable equal to unity if the legal system was based on a common law system, zero otherwise. Data for legal system was obtained from World Factbook.

The relative importance of taxation has been measured using a variety of constructs in prior studies. Similar to Salter and Niswander (1995), this study measured the importance of taxation, *TAX*, as the highest marginal corporate tax rate in prior year, obtained from PwC Corporate Tax Worldwide Summaries and WDI.

The political and economic ties construct was based on two variables: *UKCOL*, an indicator variable equal to unity if the country was a former colony of the United Kingdom (source: *Encyclopedia: British Empire*, Nationmaster.com website); and *ONE*, an indicator variable equal to unity if a major trading partner, top import or export partner, has adopted IFRS in prior year (World Factbook).

Inflation, *INFLAT*, is measured as the average inflation rate of consumer prices estimated for the previous ten year period. Data was obtained from WDI and the International Financial Statistics Yearbook (International Monetary Fund).

The level of economic development construct was measured by two variables: *GROWTH*, the average annual growth of GDP; and *CAPFOR*, the average gross capital formation as a percentage of GDP (both obtained from the World Development Report, World Bank). Both measures are an average rate for the previous ten years period.

The country's education level, *LIT*, was measured as the adult literacy rate, average of men and women aged 15 years of age and above, for prior year (WDI).

Lastly, the measure of culture, *UA*, is the country or regional score for uncertainty avoidance (Hofstede, 2001).

Summary statistics for the independent variables are presented in Table 2. Results of group mean testing reveals significant differences in six of the factors. IFRS adoption was significantly lower in countries where *TAX* and *INFLAT* were higher. While IFRS adoption was higher in former UK colonies (*UKCOL)*, had at least one trading partner using IFRS *(ONE)*, and growing (*CAPFOR*). IFRS adoption was also more prevalent in countries that were less educated (*LIT*). While these univariate results were mostly in line with our expectations, regression analysis will shed more light on these findings.

The correlation matrix presented in Table 3 indicates that most variables have the predicted sign with the dependent variable, *IFRS*. Three of the thirteen measures are significantly and positively correlated with *IFRS*: political and economic ties variables as measured by *UKCOL* and *ONE*, and economic development as measured by *CAPFOR*. Relative importance of tax, inflation and education, as measured by *TAX*, *INFLAT* and *LIT*, were significantly negatively related to IFRS. Most are significant at the .1% level.

Table 2
Descriptive statistics for environmental variables

Factor	Variable	IFRS Category	Obs	Mean	Median	Std. Dev.	25th Percentile	75th Percentile
Source of Finance								
a. Equity	*EQUITY*	(0) Prohibit	229	49.99	33.60	53.15	11.20	70.70
		(1) Permit	114	44.52	17.85	78.96	6.00	37.20
		(2) Require	184	48.95	24.05	81.34	8.70	58.60
		Group F-test		0.24				
b. Foreign Finance	*DEBT*	(0) Prohibit	229	0.46	0.40	0.30	0.26	0.59
		(1) Permit	114	0.53	0.41	0.47	0.19	0.71
		(2) Require	184	1.82	0.39	12.10	0.27	0.64
		Group F-test		2.08				
Legal System	*LEGAL*	(0) Prohibit	229	0.35	0.00	0.48	0.27	0.64
		(1) Permit	114	0.39	0.00	0.49	0.00	1.00
		(2) Require	184	0.40	0.00	0.49	0.00	1.00
		Group F-test		0.60				
Taxation	*TAX*	(0) Prohibit	229	0.02***	32.00	7.95	28.00	35.00
		(1) Permit	114	27.57*	30.00	5.71	25.00	30.00
		(2) Require	184	25.22***	28.00	9.67	20.00	30.00
		Group F-test		17.59***				
Political and Economic Ties								
a. Colonialism	*UKCOL*	(0) Prohibit	229	0.34***	0.00	0.47	0.00	1.00
		(1) Permit	114	0.61***	1.00	0.49	0.00	1.00
		(2) Require	184	0.53***	1.00	0.50	0.00	1.00
		Group F-test		13.95***				
b. Trade Alliances	*ONE*	(0) Prohibit	229	0.19***	0.00	0.39	0.00	0.00
		(1) Permit	114	0.59***	1.00	0.49	0.00	1.00
		(2) Require	184	0.37***	0.00	0.48	0.00	1.00
		Group F-test		30.97***				
Inflation	*INFLAT*	(0) Prohibit	229	34.57***	8.30	76.76	3.10	20.60
		(1) Permit	114	21.56	9.60	21.61	7.30	29.00
		(2) Require	184	14.76***	9.00	18.44	3.60	16.85
		Group F-test		7.48***				
Economic Development	*GROWTH*	(0) Prohibit	229	3.18	3.50	2.82	2.20	4.70
		(1) Permit	114	3.73	3.75	3.51	2.10	5.90
		(2) Require	184	3.67	3.70	2.14	2.80	4.65
		Group F-test		2.25				
	CAPFOR	(0) Prohibit	229	15.08***	19.00	10.52	6.60	22.00
		(1) Permit	114	17.31	17.50	10.48	12.40	23.00
		(2) Require	184	18.71***	19.00	7.40	16.50	23.00
		Group F-test		7.57***				
Education	*LIT*	(0) Prohibit	229	88.11***	93.00	15.47	87.00	98.00
		(1) Permit	114	85.92	86.00	8.77	80.00	93.00
		(2) Require	184	84.55***	86.00	12.31	77.00	94.00
		Group F-test		3.83*				
Culture	*UA*	(0) Prohibit	194	65.37	69.00	22.27	48.00	85.00
		(1) Permit	53	61.57	52.00	24.97	49.00	90.00
		(2) Require	116	62.93	68.00	23.47	52.00	86.00
		Group F-test		0.76				

EQUITY is market capitalization as a percentage of GDP; LEGAL is dummy variable equal to unity if legal system is based on a common law system; TAX is highest marginal corporate tax rate; UKcol is a dummy equal to unity if the country was a former colony of the United Kingdom; DEBT is the amount of total public and private debt owed to nonresidents repayable in foreign currency, goods, or services calculated on an exchange rate basis; ONE is equal to unity if a major trading partner has adopted IFRS; INFLAT is the average inflation rate of consumer prices for prior ten year period; GROWTH is average annual growth of GDP for prior ten year period; CAPFOR is gross capital formation as a percentage of GDP; LIT is adult literacy rate or percentage of people 15 years of age and above that are literate; UA is the country or region score for uncertainty avoidance (Hofstede, 1984). All variables are based on prior year data or nearest estimated year, except for INFLAT and GDP growth rate that are for prior ten year period as noted above.
*, **, *** Significant at 0.05, 0.01, and 0.001, respectively

Table 3
Pair-wise correlation matrix

	IFRS	*EQUITY*	*DEBT*	*LEGAL*	*TAX*	*UKCOL*
IFRS	1.000					
EQUITY	-0.008	1.000				
DEBT	0.082	-0.046	1.000			
LEGAL	0.044	0.363***	-0.036	1.000		
TAX	-0.251***	-0.212***	0.064	0.305***	1.000	
UKCOL	0.177***	0.301***	0.067	0.769***	0.092*	1.000
ONE	0.183***	0.041	0.098*	0.109*	-0.067	0.211***
INFLAT	-0.165***	-0.192***	-0.020	-0.197***	-0.081	-0.243***
GROWTH	0.080	0.076	0.013	0.062	-0.080	0.166***
CAPFOR	0.167***	0.074	0.041	-0.030	-0.117**	-0.006
LIT	-0.119**	0.159***	-0.023	-0.243***	-0.126**	-0.326***
UA	-0.052	-0.413***	0.037	-0.541***	-0.035	-0.566***

	ONE	*INFLAT*	*GROWTH*	*CAPFOR*	*LIT*	*UA*
ONE	1.000					
INFLAT	0.041	1.000				
GROWTH	-0.034	-0.343***	1.000			
CAPFOR	0.035	-0.224***	0.353***	1.000		
LIT	-0.088*	0.173***	-0.155***	0.060	1.000	
UA	-0.093	0.280***	-0.325***	-0.215***	0.067	1.000

IFRS is level of IFRS adoption (0 to 2); EQUITY is market capitalization as a percentage of GDP; LEGAL is dummy variable equal to unity if legal system is based on a common law system; TAX is highest marginal corporate tax rate; UKCOL is a dummy equal to unity if the country was a former colony of the United Kingdom; DEBT is the amount of total public and private debt owed to nonresidents repayable in foreign currency, goods, or services calculated on an exchange rate basis; ONE is equal to unity if a major trading partner has adopted IFRS; INFLAT is the average inflation rate of consumer prices for prior ten year period; GROWTH is average annual growth of GDP for prior ten year period; CAPFOR is gross capital formation as a percentage of GDP; LIT is adult literacy rate or percentage of people 15 years of age and above that are literate; UA is the country or region score for uncertainty avoidance (Hofstede, 1984).
*, **, *** Significant at 0.05, 0.01, and 0.001, respectively

B. Regression Model

Based on the previous discussion, the final prediction model is presented below.

$$Z_{it} = \beta_0 + \beta_1 EQUITY_{it} + \beta_2 DEBT_{it} + \beta_3 LEGAL_{it} + \beta_4 TAX_{it} + \beta_5 UKCOL_{it} + \beta_6 ONE_{it} + \beta_7 INFLAT_{it} + \beta_8 GROWTH_{it} + \beta_9 CAPFOR_{it} + \beta_{10} LIT_{it} + \beta_{11} UA_{it}$$

where Z is the ordinal response of country i in year t to IFRS adoption .

The extremely high correlation between *LEGAL* and *UKCOL* ($r \approx .769$, $p<.001$ and VIF score of 7.19 and 6.37, respectively) precluded including both variables in the same regression. Although both exhibited positive coefficients, and *UKCOL* was chosen for inclusion in the analyses based on its higher significance level. Similarly, separate regressions were run without the measure of culture (*UA*) due to the significant correlation with other variables and the reduced sample size. [8]

V. RESULTS

A. Panel Analysis: Random Effects Logit Results

Table 4 presents results of logit random-effects regressions testing variations of the basic prediction model. Hausman testing with fixed effects regression of the full model indicated that random effects can be appropriately used for analysis. Year indicator variables were added to the full and reduced model to control for possible temporal autocorrelation of the residuals. The year variables were increasingly positive and significant at the 1% level beginning in 2004, which is an indication of the growing popularity of IFRS. The regression results showed that most coefficients had the predicted sign, with the exception of *UA*. Although the univariate results indicated a negative relation between UA and IFRS adoption, the multivariate results may be as a result of the high correlation of UA with other variables. Overall, results indicate that all variables were significant at least at the 5% level in most of the models.

The factor measuring equity source of finance (*EQUITY)* was consistently negatively related to IFRS adoption and significant at least at the 5% level in all models. Similarly, measures of the importance of taxation and inflation, *TAX* and *INFLAT*, were negatively related to IFRS adoption and significant in most models. The negative coefficients for these variables may reflect a concern by standard setters for internal issues that hinder adoption, such as political costs involved with negation between interest groups or reservations policy makers have about the standards and potential conversion costs.

The political and social ties variable, *UKCOL*, indicates that adoption is significantly increased if a country was a former UK colony. Similarly, a country having at least one top import or export partner that has adopted IFRS (*ONE*) is associated with greater likelihood of adoption. Higher levels of foreign sourced debt were positively related to adoption. These results may suggest that political and economic relations with other countries, i.e., "globalization", provide a strong incentive for country policy setters to adopt IFRS.

GNP average growth over the previous ten year period (*GROWTH*), a proxy for economic development, was moderately related to IFRS adoption. These results are in contrast to earlier studies by Larson et al. (1995) and Guan et al. (2004) that show a

Table 4
Results of panel analysis random effect Logit regressions
(t-statistics in parentheses)

	Predicted sign	Model (1) w/o *LEGAL*	Model (2) w/o *UKCOL*	Model (3) w/o *LEGAL* w *Year dummy*	Model (4) w/o *LEGAL*, *UA* *w Year dummy*
EQUITY	-	-0.0211**	-0.020**	-0.061**	-0.033**
		(-2.92)	(-2.66)	(-2.80)	(-2.65)
DEBT	+	5.118***	5.162***	11.084**	6.470*
		(3.27)	(3.33)	(2.51)	(2.17)
TAX	-	-0.285***	-0.267**	-0.741**	-1.106***
		(-3.48)	(-3.48)	(-2.97)	(-3.41)
UKCOL	+	10.248***	dropped	25.592***	4.263**
		(4.57)		(3.50)	(2.33)
LEGAL	+	Dropped	10.127***	dropped	dropped
			(4.48)		
ONE	+	1.780*	1.769*	2.726	8.395***
		(2.17)	(2.16)	(1.27)	(3.10)
INFLAT	-	-0.119***	-0.118***	-0.172***	-0.306***
		(-4.46)	(-4.48)	(-2.81)	(-3.31)
GROWTH	?	0.022	0.043	0.575	0.853**
		(0.09)	(0.18)	(1.60)	(2.76)
CAPFOR	?	0.347***	0.352***	0.290	0.124
		(3.80)	(3.82)	(1.68)	(0.85)
LIT	+	0.116*	0.117*	0.336**	0.489**
		(2.28)	(2.31)	(2.91)	(3.01)
UA	-	0.146***	0.146***	0.336**	dropped
		(4.24)	(4.21)	(3.47)	
Intercept		included	included	included	included
Year dummy		dropped	dropped	included	included
N		363	363	363	527
Wald χ^2		26.03	25.85	13.75	16.80
Prob> χ^2		.0037	.0039	.6844	.3985

Variables are as defined in Section 4.2. Random-effect logit regression of the adoption model:
$Z_{it} = \beta_0 + \beta_1 EQUITY_{it} + \beta_2 DEBT_{it} + \beta_3 TAX_{it} + \beta_4 UKCOL_{it} + \beta_6 ONE_{it} + \beta_7 INFLAT_{it} + \beta_8 GROWTH_{it} + \beta_9 CAPFOR_{it} + \beta_{10} LIT_{it} + \beta_{11} UA_{it} + e$
*, **, *** Significant at 0.05, 0.01, and 0.001 (all one-tail except when the sign is not predicted), respectively

negative relation with adoption and may be an indication of the popularity of IFRS. Similarly, average capital formation (*CAPFOR*) moderately increased the likelihood of adoption. Considering both, these results suggest that countries whose economies are expanding and increasing capital are more willing to adopt IFRS. This observation is consistent with the findings for foreign debt, *DEBT*, which emphasizes the draw of foreign capital as a major "selling point" for IFRS. Finally, a more highly educated population, *LIT*, is associated with a higher likelihood of adoption.

B. Robustness Checks

In this section, the previous findings are subjected to various robustness checks. First, regressions were re-run including EU countries[9] and presented in Table 5. Results reveal that although signage is predominately similar to the previous results, only *DEBT*, *TAX*, *UKCOL* and *INFLAT* remain significant. These results may reflect the success of the EU in their efforts to harmonize accounting policy to the exclusion of all other environmental factors.

Table 5
Results of panel analysis random effect Logit regressions with EU countries
(t-statistics in parentheses)

	Predicted sign	Model (3) w/o *LEGAL* w *Year dummy*	Model (3a) w/o *UKCOL* w *Year dummy*	Model (4) w/o *LEGAL, UA* w *Year dummy*	Model (4a) w/o *UKCOL, UA* w *Year dummy*
EQUITY	-	-0.011	-0.008	-0.028	-0.022
		(-0.61)	(-0.75)	(-1.51)	(-1.28)
DEBT	+	6.90	8.672*	6.125**	5.615
		(1.25)	(2.08)	(2.79)	(1.77)
TAX	-	-0.336**	-0.398**	-0.556***	-0.390**
		(-2.68)	(-3.02)	(-2.83)	(-3.05)
UKCOL	+	0.983	dropped	6.147**	dropped
		(0.35)		(2.57)	
LEGAL	+	dropped	-4.040	dropped	0.911
			(-0.98)		(0.36)
ONE	+	3.391	2.789	2.340	1.811
		(1.55)	(1.00)	(1.21)	(1.16)
INFLAT	-	-0.074	-0.098	-0.079	-0.069**
		(-0.97)	(-1.21)	(-2.67)	(-3.18)
GROWTH	?	-0.431	-0.473	-0.400	-0.311
		(-0.73)	(-0.72)	(-0.89)	(-0.87)
CAPFOR	?	0.174	0.160	0.208	0.176
		(1.48)	(1.14)	(1.80)	(1.73)
LIT	+	-0.122	-0.108	0.011	-0.028
		(-1.23)	(-0.93)	(0.11)	(-0.44)
UA	-	-0.021	-0.042	dropped	dropped
		(-0.34)	(-0.61)		
Intercept		included	included	included	included
Year dummy		included	included	included	included
N		508	508	697	697
Wald χ^2		76.13	73.96	145.49	83.32
Prob> χ^2		.000	.000	.000	.000

Variables are as defined in Section 4.2. Random-effect logit regression of the adoption model:
$Z_{it} = \beta_0 + \beta_1 EQUITY_{it} + \beta_2 DEBT_{it} + \beta_3 TAX_{it} + \beta_4 UKCOL_{it} + \beta_6 ONE_{it} + \beta_7 INFLAT_{it} + \beta_8 GROWTH_{it} + \beta_9 CAPFOR_{it} + \beta_{10} LIT_{it} + \beta_{11} UA_{it} + e$
*, **, *** Significant at 0.05, 0.01, and 0.001 (all one-tail except when the sign is not predicted), respectively

Next, 2SLS was used to control for possible endogeniety of *LEGAL,* using *UKCOL* as the exogenous variable with similar results. A Hausman test of the coefficients confirms that regular regressions are sufficient for our tests. Regressions were also rerun using a binary dependent variable, where one indicates that the country allows or requires the use of IFRS and zero otherwise, and a truncated model eliminating outliers at the 5% level show similar signage but an overall drop in significance levels (results untabulated).

Alternative proxies for some constructs were tested. Regressions substituting lnGDP for average GDP growth (*GROWTH)* found a significantly negative association with IFRS adoption. These findings may not necessarily be a contradiction of the previous results, but rather a confirmation of the neoclassical prediction of an inverse relation between level of economic development and rate of growth[10]. A variable indicating whether the country came into existence since 1990 (NEW) was not significant (results untabulated).

The relative importance of taxation was alternatively proxied by two variables. The first was a variable based on the proportion of tax revenues to GDP. The other, Ali and Hwang's (2000) measure based on financial and tax alignment developed by Alford et al. (1993). The results confirmed a negative but less significant relation with IFRS adoption (results untabulated).

Finally, it is not totally clear why a negative relation exits between the relative importance of equity financing (*EQUITY*) and IFRS adoption. To further investigate, the sample was separated into terciles based on relative size of equity markets with the results of ordered logit regressions reported in Table 6. The results indicate that the previous findings are driven by countries with smaller equity markets adopting IFRS, and to a lesser extent countries with larger capital markets not adopting IFRS. This

Table 6
Results of ordered Logit regressions - sample based on relative size of equity markets
(t-statistics in parentheses)

		Size of Equity Market		
	Predicted sign	Lower Tercile (*EQUITY <8.7*)	Middle Tercile (*8.7<EQUITY<38. 3*)	Upper Tercile (*38.3<EQUITY*)
EQUITY	-	0.520*	-0.032	-0.005*
		(2.07)	(-1.36)	(-1.77)
Other Variables		included	included	included
Intercept		included	included	included
N		60	131	172
LR χ^2		52.54	61.78	50.30
Prob> χ^2		.000	.000	.000
Psuedo R^2		44.54	22.91	15.75

Variables are as defined in Section 4.2. Random-effect logit regression of the adoption model:
$Z_{it} = \beta_0 + \beta_1 EQUITY_{it} + \beta_2 DEBT_{it} + \beta_3 TAX_{it} + \beta_4 UKCOL_{it} + \beta_6 ONE_{it} + \beta_7 INFLAT_{it} + \beta_8 GROWTH_{it} + \beta_9 CAPFOR_{it} + \beta_{10} LIT_{it} + \beta_{11} UA_{it}$
* Significant at 0.05 (one-tail)

supports the argument that smaller countries may be using IFRS adoption as a signal to global markets that their financial reporting may provide more open financial disclosure, while large capital market countries are more hesitant.

VI. CONCLUSION

Prior comparative accounting literature focused on explaining the differences found in accounting development using variables found in the environment. Choi and Meek (2008) suggested that eight factors based on differences found in a country's economic, historical, institutional and cultural background can be used to explain the these differences. The choice by countries to adopt IFRS creates a natural experiment to test these environmental variables that are linked with accounting development and explain why some countries choose to adopt while others have not.

In this study, CM's model proved fairly descriptive, with all eight factors statistically significant in most of the models: source of finance (equity and foreign debt financing); taxation; legal system; political and economic ties (colonialism and trade alliances); inflation; economic development, education and culture. Specifically, the variables measuring equity sourced financing (*EQUITY*), the importance of taxation (*TAX*) and inflation (*INFLAT*) were shown to be negative and significant in relation to the adoption of IFRS. The political and social ties variables for colonization by the UK (*UKCOL*) and the presence of the top import or export partner that has adopted IFRS (*ONE*) were positive and significant in relation to the adoption of IFRS. Additionally, variables measuring the relative level of foreign-sourced debt financing (*DEBT*), the growth rate of the economy (*GROWTH*), and the gross capital formation (*CAPFOR*) positively influenced adoption. Finally, a common law legal system (LEGAL), literacy (*LIT*) and uncertainty avoidance (*UA*) were shown to have a positive and significant relation to IFRS adoption. Although the variable measuring culture (UA) was negatively correlated with IFRS adoption in univariate analysis, multicollinearity with other independent variables may explain the positive relation in multivariate results.

The negative relation between IFRS adoption and importance of equity financing, as measured by the relative size of equity markets (EQUITY), may have been surprising given that IFRS were intended to benefit capital market participants. Additional analysis finds that these results were mainly driven by countries with smaller capital markets adopting IFRS and to a smaller extent the hesitancy of some countries with larger capital markets to forgo their national standards in place of IFRS.

This study's findings reveal three themes influencing the decision for adoption of IFRS. First, the worldwide trend in "globalization" has produced contracting incentives for countries to consider. Memberships in certain international trade organizations, like the EU, and increased trade with IFRS countries promote adoption as a means to foster easier cross border information and capital flows. Similarly, colonial ties to the United Kingdom, whose own accounting practices were influential to IFRS development, may lessen transition costs for adoption. Negotiations of foreign-sourced debt contract may be more easily facilitated using an internationally recognized accounting standard such as IFRS.

Second, the need for foreign investment and financing creates "signaling" incentives for countries to adopt IFRS. Countries with growing economies may

willingly adopt international standards in an effort to make financial reporting of higher quality. In an effort to attract foreign capital, these countries may anticipate that adopting international standards will bring greater inflows of investment and international loans.

Lastly, there are some environmental dimensions that hinder adoption. Factors that concern more domestic issues, such as the greater importance of taxation, may increase the political costs and transitional costs of adoption. Similarly, countries with higher levels of inflation and larger capital markets are more hesitant to adopt IFRS, which may relate to concerns about replacing existing standards. The contribution of CM's model is that it identifies those motivational factors that force national accounting policy makers to adopt IFRS, while also highlighting national concerns that should be addressed before transitioning to IFRS. While we limit this paper to CM's model, future research may include alternative models and revisiting these results as the IASB continues their efforts at formulating and revising IFRS.

ENDNOTES

1. Deloitte Touche Tohmatsu survey, IFRS in Your Pocket.
2. Testimony of Sir David Tweedie before the US Senate Committee on Banking, Housing and Urban Affairs, February 14, 2002.
3. Inclusion of EU countries is included in robustness section with similar but less significant results.
4. Missing observations for: Albania; Armenia; Georgia; Mali; Moldova; Romania; Switzerland; Turkey; UAE; and Yugoslavia.
5. As designated by the World Bank.
6. Scores for countries that "allowed the use of IFRS" were combined with those for countries that "required it for some listed companies" for brevity. In sample of 73 countries, two countries were originally coded as "required for some" for at least some of the years. Regression using original coding resulted in similar patterns and p-values for significant variables, but slightly lower adjusted R^2 values.
7. Data on external obligations of private debtors that are not guaranteed for repayment by a public entity was available for 421 observations. Models substituting this measure became unstable for analysis. The proxy variable using combined public and private debt, although it is admittedly a nosier measure, was available for a larger sample of countries and therefore was used for analysis. The correlation between external private debt and combined debt is 5.27%.
8. The two factors may not be unrelated since it is likely that many institutions, including legal systems and accounting systems, may be transferred through colonization. Factor analysis indicated a single factor can explain both, with less than 15% uniqueness in explanatory power. Similarly, uncertainty avoidance (UA) exhibited only 50% uniqueness.
9. Regression using change in IFRS adoption was also tested. However, due to the small number of changes outside of EU, results were similar but at greater loss of significance and stability of the regression.
10. Neo-classical growth model (Solow 1956) assumes diminishing returns to capital and labor where economies converge to steady-state growth, i.e., less developed economies show a higher growth rate compared to more developed economies.

11. Data Availability: Data used in this study are available from public sources.
12. This paper benefited from the comments from participants at the 2010 meeting of 11th World Congress of the International Association for Accounting Education and Research and reviewers. We also thank Paul Pacter Director of Standards for Small and Medium-Sized Entities (SMEs) at the International Accounting Standards Board and Director in the Global IFRS office of Deloitte Touche and Tohmatsu for providing access to IFRS adoption data.
13. IFRS Requirements for domestic listing for sample counties:

Not Permitted	Permitted or Required for Some	Required for All
Albania, Argentina, Brazil, Canada, Chile, Colombia, Cote D'Ivoire, India Indonesia, Japan, Korea (South), Malaysia, Mali, Mexico, Moldova, Pakistan, Saudi Arabia, Thailand, United States, Uruguay, Uzbekistan, Vietnam, Zambia	Bolivia, Botswana,China, El Salvador, Israel, Myanmar (Burma), Romania, Russian Federation, Sri Lanka, Swaziland, Switzerland, Turkey, Uganda, Zimbabwe	Armenia, Mauritius, Australia, Namibia, Bulgaria, New Zealand, Costa Rica, Norway, Dominican Republic, Oman, Ecuador, Panama, Egypt, Papua New Guinea, Georgia, Peru, Ghana, Philippines, Guatemala, Singapore, Hong Kong, South Africa, Honduras, Tanzania, Jamaica, Trinidad and Tobago, Kazakhstan, Ukraine, Kenya, United Arab Emirates, Kuwait, Venezuela, Kyrgyzstan, Yugoslavia (Serbia & Montenegro), Macedonia, Malawi
31.50%	19.20%	49.30%

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