

IFRS adoption strategies and theories of economic development

Effects on the development of emerging stock markets

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Abstract

Purpose – The purpose of this paper is to explore the underlying assumptions of economic development theories that may support or constrain accounting standard-setting strategies related to IFRS adoption and their potential effects on emerging stock markets (ESMs) development. The authors investigate the country-level association between the extent of IFRS adoption and ESMs development.

Design/methodology/approach – The empirical analysis is based on a dynamic panel model using the generalized method of moments for 50 emerging economies over a period spanning from 2001 to 2007.

Findings – The authors find that a higher level of IFRS adoption affects positively and significantly stock market development (SMD). More specifically, full IFRS adoption for listed firms is substantially associated with SMD. However, the authors find that partial adoption of IFRS might be not only inappropriate and irrelevant, but also significantly harmful to ESMs development. In addition, it is shown that local GAAPs shaped on the basis of IFRS with major changes are at the origin of such counter-intuitive relationships.

Practical implications – This paper has some policy implications for developing countries. In order to enhance ESMs development, it is important to improve financial information quality through full adoption of IFRS. In a global economic system, it is essential to standard-setters as well as market regulators in non-adopter developing countries to require full IFRS adoption.

Originality/value – This paper extends previous work of Larson and Kenny (1996) in establishing relationships between standard-setting strategies faced to IFRS and theories of economic development. The authors investigate the effects of these standard-setting strategies on SMD using a sample of 50 emerging economies.

Keywords Emerging economies, Emerging stock markets development, IFRS adoption, Panel estimation techniques, Theories of economic development

Paper type Research paper

1. Introduction

Accounting and finance literature has largely addressed the issue of the quality of accounting information diffused by listed companies to investors (Boonlert-U-Thai *et al.*, 2006). Financial reporting is increasingly viewed as a vital infrastructure for the growth of emerging stock markets (hereafter, ESMs) (Saudagaran and Diga, 1997). Meanwhile, the globalization of the world's economies has been in favor of complying with IFRS[1] (hereafter, IFRS) basically in emerging and developing countries with market-based economies.

The adoption of IFRS is considered as one of the standard-setting strategies used in many developing countries (e.g. Perera and Baydoun, 2007; Belkaoui, 1988, 2002). IFRS adoption involves a reduction in the cost of accounting standards elaboration, an obtaining of several aids and subsidies from international organizations, a better



financial markets development and finally a better speeding up of economic growth (e.g. Assenso-Okofu *et al.*, 2011; Ramanna and Sletten, 2009; Hassan, 2008; Briston and Wallace, 1992; Belkaoui, 1988).

At a regional level, one year after the founding of International Accounting Standard Board (hereafter, IASB), the European Union issued regulations that require the use of IFRS starting from January 1, 2005 for all listed firms domiciled in its member states. Since then, the IASB is receiving more and more legitimacy, not only in developed countries but also in emerging economies.

Internationally, a number of organizations advocate the adoption of IFRS by both developed and developing countries. For example, the International Organization of Securities Commission recommends the adoption of IFRS for cross-border offerings and initial listings by foreign issuers suggesting that IASB's standards can play an important role in maintaining capital market stability (Ali, 2005). In addition, the World Bank (hereafter, WB) and the International Monetary Fund (hereafter, IMF), in their Reports on the Observance of Standards and Codes (hereafter, ROSC) initiative – accounting and auditing section – have established a program to assist its member countries in implementing international accounting and auditing standards. Moreover, the International Federation of Accountants urged its member countries to incorporate IFRS into their national jurisdictions (Ali, 2005).

A growing number of studies have investigated the relevance of IFRS to emerging economies (e.g. Ghana: Assenso-Okofu *et al.*, 2011; Jordan: Al-Akra *et al.*, 2009; Iran: Mashayekhi and Mashayekh, 2008; Kazakhstan: Tyrrall *et al.*, 2007; Pakistan: Ashraf and Ghani, 2005; Bangladesh: Mir and Rahman, 2005; 27 developing countries: Larson and Kenny, 1995; 35 African developing countries: Larson, 1993). Some of these studies argue that for accounting and reporting systems to be effective they must reflect the context within which they operate (Mir and Rahman, 2005). Thus, the importance of environmental factors make the implementation of any outside accounting system, including international accounting standards, not only inappropriate and irrelevant, but also positively harmful to developing countries (Perera and Baydoun, 2007; Perera, 1989). Conversely, other studies have demonstrated that capital becomes a global commodity and the ability to compete for this commodity requires emerging economies to strengthen the institutions and invigorate the reporting standards that govern their accounting and disclosure practices (Assenso-Okofu *et al.*, 2011). Therefore, IFRS adoption could allow developing nations to benefit from high-quality financial information and prepare a climate in which financial market can operate efficiently (Abd-ElSaleem and Weetman, 2003).

Given the growing reputation of IFRS as a global reference in accounting, several questions arise on the surface of a debate, becoming more and more interesting. For a better stock market development (SMD), should we adopt IFRS without changes as they are considered as providing higher financial transparency and better quality of accounting figures to the stock market? Or would it be better to adapt IFRS to specific environmental characteristics in each country? In case emerging economies are able to identify specific needs of financial information for the different users, would it be better to proceed with a strategy of self-standardization without any reference to IFRS?:

Hopwood (1994, pp. 150-151) wrote the following “our understanding of many key aspects of international accounting is more rudimentary than many people think and than some would want us to believe. The processes of institutionalization in the area are poorly understood. The emergence of interests in international accounting has not been explored. Little is known to outsiders of the complex and shifting politics that pervade the area.”

Nearly two decades later, current studies report mitigated results with respect to the role of accounting in SMD, especially in emerging economies (e.g. Al-Akra *et al.*, 2009; Tyrrall *et al.*, 2007; Chamisa, 2000). To our knowledge, since the pioneer study of Larson and Kenny (1995) no further empirical research addressed the effects of IFRS usage on the ESMs development at a country level. Empirical literature on IFRS has focussed largely on the consequences of IFRS adoption on financial market at the firm level. Ramanna and Sletten (2009) argue that the firm-level studies are conditional on countries' decisions to allow or mandate IFRS, suggesting that studies of IFRS adoption at a country level can only stand to enrich researcher's understanding of the relationship between IFRS adoption strategies and the development of ESMs.

In this study we conducted an empirical analysis based on a dynamic panel data from 50 emerging economies over a period spanning from 2001 to 2007. Estimators are obtained through generalized method of moments (GMM). We find that a higher level of IFRS (LIFRS) adoption affects positively and significantly SMD. More specifically, full IFRS adoption for listed firms is substantially associated with ESMs. However, we find that partial adoption of IFRS might be not only inappropriate and irrelevant, but also significantly harmful to ESMs. In addition, it appears that local GAAPs shaped on the basis of IFRS with major changes are at the origin of such counter-intuitive relationships.

The contributions of this study are twofold. First, we base our predictions on SMD on the relationship established by Larson and Kenny (1996) between theories of economic development and standard-setting strategies. Second we investigate the effects of these standard-setting strategies on SMD using a sample of 50 emerging economies.

This paper is organized as follows. Section 2 outlines the relationship between accounting/IFRS in emerging economies and SMD. Section 3 identifies organic relationships between IFRS adoption strategies and theories of economic development in order to state research hypothesis. Section 4 develops our research design. The findings are reported in Section 5 and the paper concludes with a summary and policy implications.

2. Relationship between IFRS adoption strategies and ESMs development: an overview

It is noteworthy that some developing countries adopt IFRS while others do not. Although particular reasons may vary somewhat from country to country and from time period to time period, there is general agreement that the type of accounting system plays a crucial role in the development of ESMs (Assenso-Okofu *et al.*, 2011; Al-Akra *et al.*, 2009; Tyrrall *et al.*, 2007; Chamisa, 2000; Ndubizu, 1992; Lee, 1987). According to Nobes (1998), IFRS are designed to facilitate a particular financing system, "equity-outsider models." In such systems, commercial pressures give the strongest power over financial reporting, especially, to stock exchanges and equity market regulators. Of this fact, IFRS cannot work satisfactorily within emerging economies with no well-established stock markets (Perera and Baydoun, 2007). The relevance of IASB standards to developing countries has been questioned on the grounds that these countries have no stock market or have badly organized capital markets (Zeghal and Mhedhbi, 2006; Chamisa, 2000).

Previous literature repeatedly shows that accurate accounting information and reliable financial reporting are prerequisites and aids for the development of stock markets (e.g. Daske *et al.*, 2008; Tyrrall *et al.*, 2007; Belkaoui, 2002; Larson and Kenny, 1995; Lee, 1987). The importance of accounting as an essential part in ESMs development is largely highlighted by the previous literature. Sudweeks (1989) develops a comprehensive model based on many factors that could affect the success of

the stock market. Among these factors, accounting and auditing standards are considered. Sudweeks argues that the accounting information should be reliable and available in order to help economic decision makers. This point of view is, currently, shared by a number of recent studies (Perera and Baydoun, 2007; Tyrrall *et al.*, 2007; Chamisa, 2000), as well as the WB and the IMF, and more specifically through their ROSC initiative. In the same vein, Lee (1987, p. 82), suggest that "Good communication makes it possible for the investment of better quality to command a higher price and hence will induce management to seek financing in an organized capital market. When the monitoring cost and signaling cost are zero, information would flow freely among the capital market participants. Consequently, when the accounting infrastructure is well developed, all investment projects would be financed in a centralized and well-organized capital market." Prior theoretical and empirical work show that well-established accounting standards, such as IFRS, might encourage developing countries to improve the quality of financial reporting disclosed by their listed companies. In addition, it contributes to reduce information asymmetry among the different actors in the stock market (Tyrrall *et al.*, 2007; Ashraf and Ghani, 2005).

Studies that have focussed on developed countries are particularly rich and diverse. For example, Daske *et al.* (2008) examined the economic effects of IFRS adoption at firm level and country level, especially the liquidity of financial markets and the cost of capital for a sample of 3,100 firms from 26 countries. Overall, the results show that financial market liquidity has increased significantly after the adoption of IFRS. Similarly, Healy and Palepu (2001) have shown that a good quality of financial disclosure could be an effective way to reduce information asymmetry and improve the efficiency of financial markets. They even considered that low-quality financial information could be harmful for SMD.

Literature focussed on IFRS adoption in emerging economies provides an understanding of the possible reasons for adopting or non-adopting such standards. Most prior work focussed on country-specific studies which have explored the relevance and importance of IFRS within a particular geographic and institutional context due to the unique environment that must be understood in each emerging country (Assenso-Okofu *et al.*, 2011; Mir and Rahman, 2005). Thus, the relevance of IFRS to developing countries depends on the ends or needs where they are expected to serve, and the specific national environment in which the standards are to be applied (Chamisa, 2000). A number of studies recommended IFRS adoption but with modifications to meet local environmental factors (e.g. Perera and Baydoun, 2007; Mir and Rahman, 2005; Hassan, 1998; Larson, 1993). Other studies advocate IFRS adoption for developing countries without modifications (e.g. Assenso-Okofu *et al.*, 2011; Al-Akra *et al.*, 2009; Tyrrall *et al.*, 2007; Chamisa, 2000).

Given that several factors can affect the status of IFRS adoption in emerging economies, a number of studies emphasized the special relationship between the extent of IFRS adoption and the stage of the ESMs development. Chamisa (2000) pointed out that IASB's standards appear to be irrelevant to communistic developing countries. This is because IFRS are designed to serve the needs of capital markets in which the private investor and capital are prominent. He concludes that in capitalistic developing countries (especially like Zimbabwe), which have capital markets, IFRS are considered to be relevant. Likewise, Tyrrall *et al.* (2007) applied the stage of development of the capital market to the case study of Kazakhstan's transition to IFRS. These authors assert that Kazakhstan stock exchange is not well developed. They admit that it is difficult to argue for the relevance of IFRS on the basis of the capital market factor

given the current stage of SMD. In a similar vein, Al-Akra *et al.* (2009) examined the development of accounting regulation in Jordan focussing on some dominant environmental factors (political and economic influences, legal systems, taxation, cultural influence, religion, business ownership and organization, the education system, SMD). Their study highlights the efforts of international bodies in compelling Jordan to adopt IFRS in order to encourage foreign and domestic investors to invest in the Amman stock exchange.

Moreover, Mashayekhi and Mashayekh (2008) as well as Ashraf and Ghani (2005) argue that the process of IFRS adoption is largely affected by the importance of the stock market, respectively, in Iran and Pakistan. HassabElnaby *et al.* (2003) used a longitudinal analysis that covers 37-year Egyptian data (1961-1997). They advocate that well-developed accounting standards are crucial as prerequisite for the development of equity market because investors require reliable accounting information. They found that there is a strong relationship between the SMD and the accounting development (through the move toward IFRS adoption). This relation changes over time reflecting the different stages of democracy and economic reform in Egypt. Using a similar longitudinal analysis, Peng and van der Laan Smith (2010) examined the process of the convergence of Chinese GAAP with IFRS (1992-2006) from the perspective of process theory. They provide evidence that with the establishment of Chinese stock exchanges, foreign investors had difficulties interpreting the financial statements of Chinese listed firms because of the existing socialist accounting model. However, in the period when China shifted to a socialist-market economy, Chinese GAAP has been recognized by the IASB as having achieved substantial convergence with IFRS. According to Peng and van der Laan Smith (2010), the convergence process of Chinese GAAP toward IFRS has greatly contributed to the development of stock market.

To our knowledge, Larson and Kenny (1995) is the unique empirical study that focussed on the country-level effects of IFRS adoption on ESMs development using a sample of 27 developing countries. They found that there was no significant relationship between IFRS and ESMs. At that time, such results document that the adoption of international accounting standards was not only irrelevant to ESMs, but it could be also harmful. Our paper responds to the lack of country-level empirical studies by providing evidence on the effects of different IFRS adoption levels on 50 ESMs development.

Prior studies showed that accounting is a major factor of SMD. Indeed, the best accounting standard-setting strategy to be adopted by an emerging economy is not easy to determine. In the next section, we attempt to identify relationships between IFRS adoption strategies and theories of economic development in order to make predictions on ESMs development.

3. Relationships between IFRS adoption strategies and theories of economic development: research hypotheses

International accounting literature is rarely based on theoretical grounding (Perera and Baydoun, 2007). Indeed, a number of studies in international accounting relied on the theoretical background. Schweikart (1985) suggests contingency theory as a basis to establish a theory of international accounting. Adhikari and Tondkar (1992) sought to extend and complement previous research findings in the area of international accounting disclosure by using a theoretical framework of disclosure-index. Doupnik and Salter (1995) attempt to present a general model of international accounting development using Gray's (1988) thesis on the cultural influence. Perera and Baydoun (2007) employed a theoretical perspective, introduced by Gernon and Wallace (1995),

based on the concept of accounting ecology in order to provide an understanding of the prospects for the implementation of IFRS in Indonesia. Peng and van der Laan Smith (2010) examined the process of the convergence of Chinese GAAP with IFRS (1992-2006) from the perspective of process theory. Larson and Kenny (1996) explored the relationship between economic development theories and accounting standard-setting strategies in order to theoretically predict possible impacts on economic growth and equity market development. Our paper adopts the taxonomy proposed by Larson and Kenny (1996) and extends it by stating assumptions on the expected effects of IFRS adoption strategies faced to IFRS on ESMS development. In addition, we empirically test such effects on 50 emerging economies.

Three different accounting standard-setting strategies are commonly found in the academic and professional literature (Tyrrall *et al.*, 2007; Belkaoui, 2002; Larson and Kenny, 1995, 1996; Briston and Wallace, 1992; Belkaoui, 1988). The first one is the strategy of harmonization (often equated with the adoption of IFRS) where the relationships among transactions, events and systems are universal in their application without regard to geographic, temporal or systematic differences (Larson and Kenny, 1996; Briston and Wallace, 1992; Belkaoui, 1988). Belkaoui (2002) argues for two pathways leading to IFRS adoption: first, the “quick fix” where IFRS are adopted as national standards; and second, the slower “transfer of technology” where international accounting firms, multinational enterprises and academicians operating in emerging economies disseminate international accounting techniques. The second strategy is naturalistic where many transactions may be universal but there are always a number of important environment-based differences that should be addressed (Larson and Kenny, 1996; Briston and Wallace, 1992; Belkaoui, 1988). Belkaoui (2002) develops the “situationist” path where emerging economies adapt accounting techniques from a variety of sources, including IFRS. The third standard-setting strategy is particularistic where accounting is inherently affected by a specific environment and, therefore, unique accounting practices are needed in each emerging economy (Larson and Kenny, 1996; Briston and Wallace, 1992; Belkaoui, 1988). Belkaoui (2002) expands the “evolutionary” path where emerging economies develop their own standards without reference to outside influence. According to Tyrrall *et al.* (2007), each strategy or pathway selected will depend on the relative advantages and disadvantages of IFRS vs nationally specific accounting systems that may apply at standard-setting, national and company levels.

Table I aims to summarize the predictions put forward by Larson and Kenny (1996) regarding the effect of each accounting standard-setting strategy with respect to IFRS adoption on the development of ESMS. However, more details about linkages that may exist between accounting standard-setting strategies and theories of economic development, on one hand, and their predictions on the development of ESMS, in other hand, will be shown in the next subsections.

3.1 IFRS adoption strategy and modernization theory support

The strict form of modernization theory, also known as the uniform evolutionary theory of development, is rooted in the works of Durkheim, Parsons, Weber and Rostow (Larson and Kenny, 1996; Wilber and Jameson; 1979; Rostow, 1960). Larson and Kenny (1996) believe that Justman and Teubal’s (1991) structuralist perspective is consistent with modernization theory. They consider that structuralists view structural changes in the economy as necessary conditions for growth in general. Therefore, structural changes often involve skill-specific infrastructures, which may encompass accounting systems (Larson and Kenny, 1996).

With respect to the strict form of modernization theory, harmonization accounting standard-setting strategy, operationalized through IFRS adoption, is based on two assumptions. The first dictates that harmonization implies that economic events, transactions and systems are universal in their application in accounting (Tyrrall *et al.*, 2007; Larson and Kenny, 1996). The second assumes that the accounting, considered as “the language of business,” should be internationalized to serve the international community (Assenso-Okofu *et al.*, 2011; Peng and van der Laan Smith, 2010; Al-Akra *et al.*, 2009; Ali, 2005; Samuels and Piper, 1985).

Larson and Kenny (1995, p. 136) stated that: “consistent with the proposed benefits of harmonization is the prediction that stock market development and economic growth should both be greater when IASs are adopted without modification in developing countries.” However, in recent literature, it has repeatedly shown that the extent of IFRS adoption changes from one developing country to another (Ramanna and Sletten, 2010; Judge *et al.*, 2010; Clements *et al.*, 2010). If, on one side, local standards are based on IFRS (e.g. Tunisia and Iran), it may, on the other side, make such standards permitted (e.g. Morocco and Israel) or even mandatory for some types of companies (e.g. Costa Rica and Saudi Arabia). Consequently, the use of IFRS can take many forms and stages. From the perspective of modernization theory, it is expected that higher levels of IFRS adoption would have a positive influence on ESMs development.

Theoretical advancing developed above leads us to formulate our two first hypotheses:

- H1. The higher the level of harmonization with IFRS in emerging economies, the greater is the development of stock markets.
- H2. The adoption of IFRS without modifications by emerging economies affects positively and significantly stock markets development.

3.2 Partial IFRS adoption and contingency theory support

Larson and Kenny (1996) supported that contingency theory originated in psychology and has been used in the international business field for over 35 years. They suggested that contingency theory recognizes the importance and influence of environmental factors in economic development. Starting from the idea that each country has a unique set of environmental variables, Larson and Kenny (1996) stated that Schweikart (1985) believes that contingency theory assumes that such environmental conditions are salient and interact with the development and requirements of country’s-specific accounting system. For example, the pioneer work of Radebaugh (1975) provide

	Economic development theory	Modernization theory	Contingency theory	World system theory
Table I. Relationship between IFRS accounting standard-setting strategies and theories of economic development: implications on ESMs development	Accounting standard-setting strategy	Harmonization	Naturalistic	Particularism
	Implication for the adoption of IFRS	Supports IFRS adoption without modification	Supports IFRS adoption, but only if modified for the local environment	Supports IFRS rejection
	Prediction of the effects of IFRS adoption on emerging stock market development	Adoption of IFRS without modifications should lead to high-stock market development	Adoption of IFRS with modifications should lead to higher stock market development	Adoption of IFRS should lead to lower stock market development
	Source: Adapted from Larson and Kenny (1996)			

a detailed description of the environmental factors influencing the development of accounting objectives, standards and practices in developing countries. More recently, Perera and Baydoun (2007) in Indonesia, Mir and Rahman (2005) in Bangladesh and Hassan (1998) in Egypt outline the impact of environmental factors on accounting systems. In this regard, contingency theory supports the naturalistic strategy, suggesting the adoption of IFRS with modifications (see Table I).

Indeed, naturalistic strategy allows developing countries to adopt an existing accounting system, such as IFRS, but it requires that changes should be made to the accounting system in order to consider environmental needs (Perera and Baydoun, 2007; Mir and Rahman, 2005; Briston and Wallace, 1992). Thus, partial IFRS adoption would be positively associated with a better SMD.

Therefore, from the perspective of contingency theory, it is expected that partial IFRS adoption would have a positive influence on ESMs development. This enables us to enunciate our third hypothesis:

H3. Partial IFRS adoption by emerging economies affects positively and significantly stock markets development.

3.3 Opposition to IFRS adoption and world system theory support

Larson and Kenny (1996) considered that world system theory, the evolution of the dependency theory, was rooted in the political economy of development. This theory, based on notions of social conflict and transfer of wealth, shows that developing countries should isolate themselves and work hard to create a system that is more appropriate (Larson and Kenny, 1996). In this regard, Larson and Kenny (1996, p. 11) argued that "World-system theory and dependency theory have roots in both Marxist and fascist ideologies. That being the case, their solutions to the problem of poor economic development differ markedly from those promoted by modernization theorists. Rather than interaction and imitation as prescribed by modernization theorists, world system theorists argue that developing countries should close themselves off from the world and independently industrialize and develop through the uniting of their people for this great task."

The particularism strategy of accounting standard-setting is based on world system and dependency theories because of their shared focusses on internal development. As stated by Larson and Kenny (1996), just as world system theory advocates support internally generated solutions to various economic challenges, the particularism strategy advocates internally generated accounting systems to meet the information needs of each country's economy. Belkaoui (1988) calls particularism by "evolutionary approach," in which accounting is developed in a country's particular context independently from the influence of the international community. The result is a unique accounting system that meets the needs of a particular country at a particular point in time (Tyrrall *et al.*, 2007; Briston and Wallace, 1992; Belkaoui, 1988). As a consequence, developing countries opting for harmonization standard-setting strategy, which is represented by IFRS adoption, whatever the form (with or without modifications), will have a negative effect on the development of its stocks markets (Ali, 2005; Gernon and Wallace, 1995).

From the perspective of world system theory, it is suggested that emerging economies should construct their own accounting system and reject IFRS in order to enhance the development of their stock markets:

H4. Rejection of IFRS by emerging economies affects positively and significantly stock markets development.

4. Research design

4.1 Sample

We considered a large number of developing countries based on the list provided by the World Bank (2011) web site in order to consider a fair presentation of emerging economies. However, we excluded developing countries with missing data. Then, we removed a number of developing countries with no stock markets or not well-established capital market. Our final sample consists of a complete data set for 50 developing countries with stock markets over a period spanning from 2001 to 2007 (see Table II).

Middle East and North Africa (13 countries)	Africa (9 countries)	Asia (13 countries)	Latin America (15 countries)
Bahrain (7)	Botswana (3)	<i>Armenia</i> (5) and (2)	Argentina (1)
Iran (2)	Cote D'Ivoire (1)	Bangladesh (6)	Bolivia (3)
Israel (5)	<i>Ghana</i> (2) and (7)	India (5)	Brazil (2)
Jordan (7)	Kenya (7)	Indonesia (5)	Chile (2)
Kuwait (7)	<i>Mauritius</i> (2) and (7)	<i>Kazakhstan</i> (2), (4) and (7)	Colombia (2)
Lebanon (7)	<i>Namibia</i> (5) and (7)	South Korea (5)	Costa Rica (7)
<i>Morocco</i> (1) and (3)	Nigeria (2)	<i>Malaysia</i> (2), (3) and (5)	Ecuador (2)
Oman (7)	<i>South Africa</i> (5) and (7)	<i>Mongolia</i> (5) and (7)	<i>El Salvador</i> (2) and (3)
<i>Qatar</i> (4) and (7)	<i>Zambia</i> (5) and (7)	Pakistan (2)	Guyana (7)
Saudi Arabia (4)		<i>Philippines</i> (2) and (6)	<i>Jamaica</i> (2) and (7)
Tunisia (2)		Singapore (5)	Mexico (5)
<i>Turkey</i> (1) and (3)		<i>Sri Lanka</i> (2) and (3)	Paraguay (1)
<i>United Arabs Emirates</i> (4) and (7)		Thailand (5)	Peru (6)
			Trinidad and Tobago (7)
			<i>Uruguay</i> (2) and (5)

Notes: ^aWe present in Table II italicized countries in order to highlight the emerging economies shifting toward higher levels of IFRS adoption over the seven-year period (from 2001 to 2007). We rank seven categories of IFRS harmonization from the weakest to the strongest form. Values from 1 to 7 are defined for a period ranging from 2001 to 2007 as follows: (1) No IFRS adoption for listed companies and local GAAPs reject IFRS. (2) No IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes. (3) Permitted IFRS adoption for listed companies. (4) Mandatory IFRS adoption for some listed companies. (5) IFRS adopted as local GAAPs for all listed companies with minor changes. (6) IFRS adopted as local GAAPs for all listed companies. (7) IFRS adopted as published by IASB for all listed companies

Table II.
Distribution of 50
emerging economies
by region^a

After identifying the sample, we present the measurement of variables as well as their data sources. Thereafter, we develop our empirical model. IFRS adoption strategies

4.2 Data sources and the measurement of variables

4.2.1 *Measuring SMD variable.* In line with previous literature related to SMD, we focussed on the proxy of market capitalization as a percentage of GDP (Yartey, 2010; Billmeier and Massa, 2009; Li, 2007; Ben Naceur *et al.*, 2007; Bekaert *et al.*, 2001; Garcia and Liu, 1999; Levine and Zervos, 1998; Demirgüç-Kunt and Maksimovic, 1998; La Porta *et al.*, 1997). Although SMD has more dimensions than market capitalization, we use this measure rather than constructing a composite index of SMD for two reasons. First, market capitalization is a good proxy for such general development and it is less arbitrary than any other index (Billmeier and Massa, 2009; Garcia and Liu, 1999). Second, Demirgüç-Kunt and Levine (1996) demonstrated that different individual measures and indexes of SMD are highly correlated with market capitalization to GDP. We have also explored alternative indicators, including the number of listed companies, but most of these alternative indicators are either subject to serve imperfections or are not available for a sufficient part of the sample. Therefore, we opt for market capitalization as a percentage of GDP as a general proxy for SMD variable.

4.2.2 *Measuring LIFRS harmonization.* In previous empirical literature, the adoption of IFRS has been often operationalized either through a binary variable, that takes the value of 1 if the country adopts IFRS and 0 otherwise (e.g. Clements *et al.*, 2010; Zeghal and Mhedhbi, 2006; Hope *et al.*, 2006) or through a variable that, in addition to IFRS adoption or rejection, takes into account countries that adopt IFRS with modifications (countries adapting international accounting standards with their local environmental conditions) (Chen and Sami, 2009). Both measures suffer from several weaknesses. Indeed, the decision to adopt IFRS by a country does not necessarily mean a full adoption or a partial adoption. With this respect, we do find countries that harmonize their accounting standards with IFRS (e.g. Tunisia, Iran). Other countries allow voluntary use of IFRS (Morocco, Turkey), or require IFRS adoption for only some categories of listed companies (Saudi Arabia). It is noteworthy that the nature of IFRS adoption by a country varies across jurisdictions and across time.

This has led many authors like Ramanna and Sletten (2009, 2010) and Judge *et al.* (2010) to improve the operationalization of IFRS adoption. Ramanna and Sletten (2009) used three country levels of IFRS adoption based on Deloitte web site: Adopters where IFRS are required for all listed companies; non-adopters where IFRS are not permitted for all listed companies; and partial adopters where IFRS are permitted for listed companies and/or IFRS are required for some listed companies. Likewise, Judge *et al.* (2010) relied on Deloitte web site categorization to measure the extent of adoption of IFRS. Their variable, labeled IFRS adoption, took one of four stages in order to consider the degree of adoption of IFRS by a national economy. When a country is coded as “1,” that signifies that the IFRS standards are not permitted and local accounting standards are utilized exclusively. In contrast, a country coded as “4” signifies that IFRS standards are mandatory for all listed firms. However, Judge *et al.* (2010) consider that some economies are in a state of transition from local standards to international standards and have partially adopted IFRS. As such the authors have chosen to code as “2” countries that indicate optional IFRS adoption; and “3” countries that indicate mandatory IFRS adoption for some listed firms. In another study, Ramanna and Sletten (2010) categorized IFRS adoption using an ordinal variable reflecting the variety of

possible IFRS adoption stages. Their variable takes five values: “1” for country-year with no IFRS-related activities; “2” for country-year with convergence projects; “3” for country-year in which voluntary IFRS adoption is permitted; “4” for country-year in which IFRS is required for some listed firms; and “5” for country-year with full IFRS adoption for listed firms.

We believe that all the attempts for categorizations mentioned above are not mutually exclusive. Most of these coding systems classify as non-adopters some countries that have essentially been adopting IFRS as their national standards but with some minor or major changes. Therefore, we cannot categorize them as countries rejecting IFRS. For example, IFRS are prohibited for listed companies in Tunisia, but Tunisian accounting system was developed on the basis of IFRS but with significant changes (WB, 2012). Likewise, IFRS are not permitted for listed companies in Singapore, but local GAAPs were developed on the basis of IFRS with some minor changes (Deloitte, 2011). Additionally, in Philippines, IFRS are not permitted for listed companies, however, starting from 2006 Philippine adopts IFRS as their national accounting standards without changes (WB, 2012). Unfortunately, coding Tunisia, Singapore and Philippines as non-adopters countries leads to an imperfect operationalization of IFRS adoption.

In this paper, we introduce our primary IFRS adoption variable as an ordinal reflecting the extent of adoption of IFRS. We rank seven categories of IFRS harmonization from the weakest to the strongest form (see Table I and Appendix). For that, we attribute the rank of 1 for country-year in which there is no IFRS adoption for listed companies and local GAAPs reject IFRS, the rank of 2 for country-year (like Tunisia from 2001 to 2007[2]) in which there is no IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes, the rank of 3 for country-year in which IFRS are permitted for listed companies, the rank of 4 for country-year in which IFRS are mandatory only for some listed companies, the rank of 5 for country-year (like Singapore from 2001 to 2007) in which IFRS are adopted as local GAAPs for all listed companies with minor changes, the rank of 6 for country-year (like Philippines from 2006 to 2007) in which IFRS are adopted as local GAAPs for all listed companies, and the rank of 7 for country-year in which IFRS are adopted as published by IASB for all listed companies. Our extended coding system aims to improve the categorization of IFRS adoption employed in previous literature.

4.2.3 Control variables identification. To control for the effect of IFRS adoption strategies on SMD improve we introduce a set of control variables considered by previous literature:

- Economic growth (ECGR).

It is generally known that the SMD contributes to economic growth in developing countries (Larson and Kenny, 1995; Ndubizu, 1992). This relationship was found to be bi-directional. Garcia and Liu (1999) argue that “Economic growth makes the development of financial intermediation system profitable, and the establishment of an efficient financial system permits faster economic growth.” This variable is represented by the annual change in GDP:

- Macroeconomic stability (MES).

General macroeconomic stability may well be an important factor for the development of the stock market. We expect that the higher the volatility of economy (inflation change) the less incentive firms and savers would have to participate in the market

(Ben Naceur *et al.*, 2007; Garcia and Liu, 1999). To assess the effect of macroeconomic stability on SMD we use annual inflation change:

- Law enforcement (LENF).

The most basic prediction of the legal approach is that law enforcement encourages the development of stock markets (Ben Othman and Zeghal, 2008). There is evidence that countries with stricter enforcement regimes experience larger positive capital market benefit (Armstrong *et al.*, 2010). La Porta *et al.* (1998, 2006) show that law enforcement contains three main components: efficiency of the judicial system, rule of law and corruption index. Also, Kauffmann *et al.* (2007) provide other measures of the law enforcement, including regulatory quality, rule of law and control of corruption. We measure law enforcement as the mean of the three measures introduced by Kauffmann *et al.* (2007) (Ben Othman and Zeghal, 2008):

- Financial intermediary development (FID).

Banks and financial markets are the key intermediaries that are able to finance investment projects. They can be either compliments or substitutes (Garcia and Liu, 1999). But it seems that the general trend of the international finance literature argues for complementarities (Byond and Smith, 1999; Demircuc-Kunt and Levine, 1996). In our study, the FID variable gives an idea about the relative importance attached by developing countries to finance coming from the banking sector. For example, some previous studies that were conducted in the context of Middle Eastern and North African countries aiming at studying the determinants of SMD have shown the positive impact of the importance of financial intermediaries on SMD (Ben Naceur *et al.*, 2007). FID is proxied by domestic credit to the private sector divided by GDP:

- Financial market liquidity (FIMAL).

Liquidity has often been defined by “the ease and speed at which agents can buy and sell securities” (Garcia and Liu, 1999, p. 41). The financial market needs this liquidity so that investors can diversify their portfolio and therefore minimize future risks linked to their investments (Ben Naceur *et al.*, 2007; Garcia and Liu, 1999; Levine, 1991). We represent this variable by the turnover ratio that is equal to the total value traded divided by market capitalization:

- Level of investment (INVL).

Investment is considered as an important determinant of SMD as stock markets constitute one way to intermediate saving to investment projects. Billmeier and Massa (2009) found a positive and significant association between the level of savings and investment with the development of emerging financial markets. Investment is measured as the ratio of gross fixed capital formation to GDP.

4.2.4 Data sources. We identify the main sources of data collection for the different variables selected for this research, as follows. As for quantitative variables, we used web sites of WB and IMF and more specifically the World Development Indicators (hereafter, WDI) section. For Law Enforcement (LENF) variable we referred to the web site of WB and more specifically to the World Governance indicators (hereafter, WGI) (<http://info.worldbank.org/governance/wgi/index.asp>).

In order to classify developing countries according to their level of harmonization with IFRS, our interest variable is built through using five data sources. Our primary source for IFRS categorization is ROSC reports (accounting and auditing section) produced by a program jointly sponsored by the WB and the IMF

(www.worldbank.org/ifa/rosc_aa.html). We analyzed 36 ROSC reports available for 36 emerging economies included in our study (see Appendix). We focussed on “setting accounting and auditing standards” section as well as “accounting standards as designed and practiced” section. This analysis was conducted to compare between local standards and IFRS in order to rule on the real status of a country *vis-à-vis* IFRS (see column “A” in the Appendix). The second main source of data is Deloitte’s web site (www.iasplus.com) which provides, in “jurisdiction” section, a table summarizing the global use of IFRS in 174 countries. In most cases, Deloitte web site provides a timeframe and/or a history of IFRS adoption country by country and somewhat a brief comparison between national GAAPs and IFRS (see column “B” in the Appendix). The third main source of IFRS categorization is PwC web site (www.pwc.com) that provides information about the adoption of IFRS in 109 countries. Additionally, each section for a given country provides, in some cases, key useful dates for the effective usage of IFRS (see column “C” in the Appendix).

GAAP 2001 survey was used by Ding *et al.* (2009) to calculate a conformity score between local GAAPs and IFRS for 62 countries. We used this conformity score, as a secondary data source to check IFRS categorization during the earlier years (especially 2001 and 2002) even though data provided by GAAP 2001 survey is relatively old (see column “D” in the Appendix). Occasionally, we used additional data sources when the history of IFRS adoption in a given country is not available in the three main data sources (e.g. Bolivia, Costa Rica, Iran, etc.) (see column “E” in the Appendix).

These data sources enabled us to determine in which year a country shifted from one category to another. In some cases, the effective date of IFRS adoption takes effect in mid-year. For example, Deloitte web site indicated that Uruguay required IFRS effective July 2007. In such a case, we consider the effective date of IFRS usage as the next year. Therefore, Uruguay is categorized as non-adopter country in 2007 because we believe that it is difficult for a developing country, at a first time adoption, to adequately use IFRS. In other cases, the effective date of IFRS adoption is not clearly specified. Therefore, it is not clear if the country starts the IFRS usage at January 1 or not. For example, PwC web site pointed out that IFRS are required for all listed companies in Qatar since 2002. In that case, we classified Qatar as an adopter-country starting from January 1, 2003.

Each main data source covers a different set of countries and/or time periods. The estimation of the main data sources of the extent of IFRS adoption occasionally differ from one source to another. For example, in the Venezuelan case, Deloitte web site shows that IFRS are not permitted for listed companies while PwC web site indicates that IFRS are permitted for listed companies. For such conflicting situations, some authors like Ramanna and Sletten (2010) decided on the adoption status by referring to the majority of data sources. We believe that Ramanna and Sletten’s approach is not usually appropriate. These authors relied on the data source providing more information (e.g. Deloitte) and ignored a second reliable data source (e.g. PwC). In our study, we exclude countries with discrepancies among data sources. Our objective is to operationalize our variable of interest as cleanly as possible (Table III).

4.3 Econometric modeling

To take advantage of both individual and time dimensions of our sample, we use panel estimation techniques. Indeed, during a period that spans from 2001 to 2007, data are available for 50 emerging economies.

Variables	Definition	Sources
<i>SMD</i>	Stock market development measured by market capitalization as a percentage of GDP	WDI
<i>LIFRS</i>	Level of harmonization with IFRS measured by an ordinal variable from non-adoption to full adoption	Constructed by authors
<i>FID</i>	Financial intermediary development measured by the amount of domestic credit to the private sector as a percentage of GDP	WDI
<i>FIMAL</i>	Financial market liquidity measured by the turnover ratio that is equal to the total value traded divided by market capitalization	WDI
<i>ECGR</i>	Economic growth measured by the annual variation of the GDP	WDI
<i>MES</i>	Macroeconomic stability measured by annual inflation change	WDI
<i>LENF</i>	Law enforcement measured by the mean of regulatory quality, rule of law and control of corruption	WGI
<i>INVL</i>	Level of investment measured by the ratio of gross fixed capital formation to GDP	WDI

Table III.
Data sources

Our empirical model is as follows:

$$Y_{it} = \eta_i + \alpha' Z_{it} + \beta' F_{i,t-1} + \varepsilon_{it}, \quad i = 1, \dots, n; t, \dots, T_i \quad (1)$$

Y_{it} is the dependent variable: SMD_{it} . $F_{i,t-1}$ includes different IFRS adoption measurements.

$LIFRS_{i,t-1}$ the level of harmonization with IFRS that takes the value of: 1. For country-year in which there is no IFRS adoption for listed companies and local GAAPs reject IFRS; 2. For country-year in which there is no IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes; 3. For country-year in which IFRS are permitted for listed companies; 4. For country-year in which IFRS are mandatory only for some listed companies; 5. For country-year in which IFRS are adopted as local GAAPs for all listed companies with minor changes; 6. For country-year in which IFRS are adopted as local GAAPs for all listed companies; 7. For country-year in which IFRS are adopted as published by IASB for all listed companies. $FIFRS_{i,t-1}$ the Full IFRS adoption measured by a dummy variable that takes the value of 1 for the country-year coded six and seven as for $LIFRS$ and 0 otherwise. $PIFRS_{i,t-1}$ the partial adoption of IFRS measured by a dummy variable that takes the value of 1 for the country-year coded two and/or three and/or four and/or five as for $LIFRS$ and 0 otherwise. $NOIFRS_{i,t-1}$ the non-adoption of IFRS measured by a dummy variable that takes the value of 1 for the country-year coded one as for $LIFRS$ and 0 otherwise. Z_{it} determines the vector of k control variables including FID_{it} , $FIMAL_{it}$, $ECGR_{it}$, MES_{it} , $LENF_{it}$, $INVL_{it}$. η_i , $i = 1, \dots, n$, are constant coefficients specific to each country. Their presence assumes that differences across the considered countries appear by means of differences in the constant term. These individual coefficients are estimated together with both vectors of coefficients β' & α' . ε_{it} is the error term.

We consider that studying the effects of IFRS adoption and macroeconomic variables on ESMS development can be characterized by a joint endogeneity of most variables involved. That is, most explanatory variables in our model are either simultaneously determined with the dependent variable or have a two-way causal relationship with it[3]. Yartey (2010) outlines that the presence of unobserved country-specific effects is probable. These effects should not be ignored because this might produce inconsistent estimates given that country-specific effects are likely to be

correlated with the explanatory variables. In the presence of any correlation between the right hand side variables and the country-specific effect, estimation methods such as ordinary least squares will not be consistent. This is because of the violation of the assumption of strict exogeneity of the explanatory variables (Yartey, 2010). Furthermore, our equation contains also lagged endogenous variable. This leads to a correlation between the error term in the differenced equation and the lagged dependent variable. Consequently, neither the fixed effects nor the random effects models will produce consistent estimates under such conditions (Cameron and Trivedi, 2009).

Arellano and Bond (1991) proposed using a dynamic panel data estimator based on Generalized Method of Moments (hereafter, GMM) methodology that optimally exploits the linear moment restrictions implied by the dynamic panel model. The dynamic GMM estimator is an instrumental variable estimator that uses lagged values of all endogenous regressors as well as lagged and current values of all strictly exogenous regressors as instruments (Yartey, 2010).

With panel data, the dependent variable is observed over time, opening up the possibility of estimating parameters of dynamic models that specify the dependent variable for an individual to depend in part on its values in previous periods (Cameron and Trivedi, 2009). Thus, instead of using market capitalization relative to GDP as a general proxy for SMD, which is a fixed point analysis, we believe that such proxy is a dynamic concept. Furthermore, most of previous literature related to the development of stock markets (e.g. Yartey, 2010; Billmeier and Massa, 2009; Garcia and Liu, 1999), used one year lag of the dependent variable as one of the right hand side variables. The dynamic estimation of stock markets development in the model puts all specifications inside the context of dynamic panel models and estimators are given through the GMM. Arellano and Bond (1991) pointed out that it is possible to use optimal GMM, also called the two-step estimator. In the first step, the error terms are assumed to be independent and homoscedastic across countries and over time. In the second step, the residuals retained at the first step serve to construct a consistent estimate for the variance-covariance estimator. Therefore, the difference estimator is asymptotically more efficient than the first step estimator (Ben Naceur and Ghazouani, 2007).

Given the construction of the instruments as lagged variables, the presence of second-order serial correlation will render such instruments invalid. That is why we conduct the Sargan specification test in order to test for both the over identifying restrictions and the lack of residual serial correlation. Under the null hypothesis, there is no second-order serial correlation. According to Yartey (2010), Sargan test is based on the sample analog of the moment conditions used in the estimation process and evaluates the validity of the set of instruments and, therefore, determines the validity of the assumptions of predeterminedness, endogeneity and exogeneity. Therefore, the residuals examined are those of the regressions indifferences, first order serial correlation is expected by construction and thus only second and higher order serial correlation is a sign of misspecification.

In this study, we used data on the different IFRS adoption proxies as of the prior year from SMD. We utilize this one year lag to all proxies of IFRS adoption because we expect that first introduction of an accounting standard in an ESM (including IFRS) requires a considerable effort, especially through a more emphasis on monitored practical training (WB, 2011; Abd-Elsalem and Weetman, 2003). We believe that such

effort takes time before results can be assessed. Furthermore, annual reports of listed firms are generally published few months after the ending year. Therefore, the effects of the financial information, published under IFRS, on SMD will be basically observed in the next year. For example, to explain the development of an ESM in 2006, we use IFRS adoption proxies from 2005. According to previous literature related to the macroeconomic determinants of stock markets development, control variables are used at the instant t to explain stock markets development at the same instant (Yartey, 2010; Billmeier and Massa, 2009; Li, 2007; Ben Naceur *et al.*, 2007; Bekaert *et al.*, 2001; Garcia and Liu, 1999).

Therefore, the Equation (1) introduced above can be written using the growth as dependent variable and is defined as follows:

$$Y_{it} - Y_{i,t-1} = \eta_i + \gamma_1 Y_{i,t-1} + \alpha' Z_{it} + \beta' F_{i,t-1} + \varepsilon_{it}, \quad i = 1, \dots, n; t, \dots, T_i \quad (2)$$

Y is the dependent variable that refers to SMD measured by market capitalization as a percentage of GDP; $Y_{it} - Y_{i,t-1}$ the growth of the stock market capitalization as a percentage of GDP; Z the determines the vector of k control variables; F includes different measures of our interest variable (IFRS adoption); η_i the unobserved country-specific effect; ε_{it} is the error term.

5. Results and interpretations

5.1 Descriptive statistics and correlation tests

Table IV (panel A) reports that market capitalization (SMD) varies widely among the 50 emerging economies with a minimum of 0.1 percent and a maximum of 298 percent. The average of the market capitalization as a percentage of GDP, which is around 51.57 percent, is considered as comparable with Euro Zone where the cap does not exceed 67 percent during the same period (i.e. from 2001 to 2007)[4]. Additionally, the countries of the sample showed a very large variability in all control variables (*FID*, *FIMAL*, *ECGR*, *MES*, *INVL* and *LENF*).

Regarding the level of harmonization with IFRS (Table I, Panel B), it seems that emerging economies are influenced by IFRS in shaping their local accounting standards. Indeed, 27 percent represents country-year observations with no IFRS adoption for listed companies and local GAAPs are based on IFRS with major changes (Rank 2). Moreover, 20 percent represents country-year observations where IFRS are adopted as local GAAPs for all listed companies with minor changes (Rank 5). However, 33 percent represents country-year observations where IFRS are fully adopted either as local standards or as published by IASB (Ranks 6 and 7). There are only 8 percent of country-year observations that show a total rejection of IFRS (Rank 1). Most emerging economies included in our study do not reject IASB's standards and experience a move toward high levels of IFRS adoption. Indeed, 60 percent of country-year observations show a partial adoption of IFRS (categories 2, 3, 4 and 5 combined) and 33 percent represents country-year observations where there is a full IFRS adoption (categories 6 and 7 combined).

In order to report the Pearson correlation matrix, we have determined the average of the seven years (from 2001 to 2007). We got a total of 50 observations, where each country is considered only once. Table V reports the correlation coefficients between the SMD and all explanatory variables. We find that *SMD* is significantly and positively correlated with *LIFRS*, *LENF* and *FIMAL*. In addition, *SMD* is significantly and negatively correlated with *MES*. Our univariate tests suggest that higher stages of IFRS adoption are positively and significantly associated with ESMs development.

Variables	Mean	SD	Minimum	Maximum
<i>Panel A: distributional statistics of dependent and independent variables</i>				
LIFRS	4.280	2.166	1	7
SMD	51.577	56.863	0.101	298.044
FID	45.371	30.585	5.682	162.456
FIMAL	37.950	65.841	0	497.38
ECGR	5.467	4.131	-11.032	26.759
MES	8.053	8.116	-8.180	80.750
INVL	21.442	5.689	8.685	47.011
LENF	-0.045	0.661	-1.393	1.987
<i>Panel B: descriptive statistics of all categories of IFRS adoption</i>				
Variables	Number of country-years	Percentage of country-years		
NOIFRS	27	7.71		
Rank 1	27	7.71		
PIFRS	209	59.72		
Rank 2 (AIFRS1)	94	26.86		
Rank 3 (AIFRS2)	30	8.57		
Rank 4 (AIFRS3)	14	4.00		
Rank 5 (AIFRS4)	71	20.29		
FIFRS	114	32.57		
Rank 6	16	4.57		
Rank 7	98	28.00		
Total	350	100		

Notes: LIFRS is the level of harmonization with IFRS that takes the value of 1 for country-year in which there is no IFRS adoption for listed companies and local GAAPs reject IFRS, the value of 2 for country-year in which there is no IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes, the value of 3 for country-year in which IFRS are permitted for listed companies, the value of 4 for country-year in which IFRS are mandatory only for some listed companies, the value of 5 for county-years in which IFRS are adopted as local GAAPs for all listed companies with minor changes, the value of 6 for country-year in which IFRS are adopted as local GAAPs for all listed companies, and the value of 7 for country-year in which IFRS are adopted as published by IASB for all listed companies; SMD is SMD measured by market capitalization as a percentage of GDP; FID is financial intermediary development measured by the amount of domestic credit to the private sector as a percentage of GDP; FIMAL is financial market liquidity measured by the turnover ratio that is equal to the total value traded divided by market capitalization; ECGR is economic growth measured by the annual variation of the GDP; MES is macroeconomic stability measured by annual inflation change; INVL is level of investment measured by the ratio of gross fixed capital formation to GDP; LENF is law enforcement measured by the mean of regulatory quality, rule of law and control of corruption; FIFRS is the full IFRS adoption measured by a dummy variable that takes the value of 1 for the country-year which was ranked sixth and seventh in the variable LIFRS and 0 otherwise; PIFRS is the partial adoption of IFRS measured by a dummy variable that takes the value of 1 for the country-year which was ranked either second and/or third and/or fourth and/or fifth in the variable LIFRS and 0 otherwise; NOIFRS is the non-adoption of IFRS measured by a dummy variable that takes the value of 1 for the country-year which was ranked first in the variable LIFRS and 0 otherwise; AIFRS1 is the partial IFRS adoption measured by a dummy variable that takes the value of 1 for country-year in which there is no IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes and 0 otherwise; AIFRS2 is the partial IFRS adoption measured by a dummy variable that takes the value of 1 for country-year in which IFRS are permitted for listed companies and 0 otherwise; AIFRS3 is the partial IFRS adoption measured by a dummy variable that takes the value of 1 for country-year in which IFRS are mandatory only for some listed companies and 0 otherwise; AIFRS4 is the partial IFRS adoption measured by a dummy variable that takes the value of 1 for county-years in which IFRS are adopted as local GAAPs for all listed companies with minor changes and 0 otherwise

Table IV.
Descriptive statistics
on dependent and
independent
variables for the
total sample of
emerging economies

	SMD	LIFRS	FIFRS	PIFRS	NOIFRS	AIFRS1	AIFRS2	AIFRS3	AIFRS4	LENF	ECGR	FIMAL	FID	MES
LIFRS	0.276*	1												
FIFRS	0.139	0.831**	1											
PIFRS	-0.048	-0.527**	-0.825**	1										
NOIFRS	-0.148	-0.475**	-0.243	-0.347*	1									
AIFRS1	-0.172	-0.610**	-0.425**	0.534**	-0.210	1								
AIFRS2	-0.177	-0.280*	-0.274*	0.242	0.038	-0.144	1							
AIFRS3	0.174	0.062	-0.024	0.068	-0.077	-0.145	-0.087	1						
AIFRS4	0.175	0.204	-0.316*	0.406**	-0.173	-0.296*	-0.195	-0.141	1					
LENF	0.583**	0.282*	0.061	0.125	-0.317*	-0.139	0.007	0.057	0.270	1				
ECGR	0.077	0.147	0.082	0.064	-0.247	-0.090	0.236	0.085	-0.023	0.186	1			
FIMAL	0.189	-0.038	-0.234	0.285*	-0.100	-0.023	-0.035	0.223	0.290*	0.079	-0.019	1		
FID	0.586**	0.236	0.038	0.101	-0.237	-0.093	-0.137	0.032	0.299*	0.496**	-0.134	0.206	1	
MES	-0.275*	-0.195	-0.103	0.086	0.023	0.228	0.066	0.048	-0.213	-0.258	0.135	-0.090	-0.493**	1
INVL	0.084	0.265	0.134	0.017	-0.253	-0.078	-0.129	0.012	0.188	0.107	0.397**	0.030	0.083	0.093

Notes: Refer to Table IV for the definitions of variables. *, **Significant at 0.05 and 0.01 levels, respectively (two-tailed)

Table V.
Pearson correlation matrix for all variables in regressions

It is noteworthy that correlation results should be interpreted cautiously as they do not control for other factors. Thus, we will turn to the multivariate tests in the next subsection.

According to Gujarati (1995), the existence of multicollinearity poses a serious problem if the Pearson pair-wise correlation exceeds 0.6. A visual inspection of Table V reveals that there is a high degree of correlation among some of the proposed proxies of IFRS adoption variables[5] (as highlighted in bold). To avoid this problem of multicollinearity we ran eight separate regression specifications, for each one only a single proxy of IFRS adoption is considered (see Tables VI and VII). Regarding all control variables, correlations are < 0.6 . This suggests that multicollinearity is unlikely to affect the reliability of the results.

Furthermore, we tested the variance inflation factor (hereafter, VIF) in order to confirm the existence or absence of multicollinearity between independent variables. With reference to Groebner *et al.* (2008), there is a serious problem of multicollinearity between a model's independent variables when VIF values exceed 5. When applying the VIF test to the explanatory variables[6], we obtained values that do not exceed 2.25 (particularly for the case of *FID* variable). In all specifications considered in this study, we found that mean VIF ranges from 1.45 to 1.50. These results show that the multicollinearity does not appear to be a problem in our regressions.

5.2 Multivariate analysis

5.2.1 Model testing. As developed in the econometric modeling section (Section 4), several specifications of the dynamic panel model were considered. Tables VI and VII report GMM-in level estimates. Our sample includes 50 countries observed over the period ranging from 2001 to 2007. For all specifications considered, the Sargan and autocorrelation tests tend to support the specification estimated with the GMM procedure (see Tables VI and VII).

Table VI shows regression results of SMD on IFRS adoption and control variables using GMM estimations. As expected we notice in column (1) that the level of harmonization with IFRS has a significant effect on ESMs development. Indeed, the coefficient of *LIFRS* is positively and significantly associated with *SMD*. Consequently, we validate our first hypothesis. The higher the level of harmonization with IFRS, the greater is the development of ESMs.

Furthermore, column (1) shows that stock markets development is positively and significantly associated with financial market liquidity (*FIMAL*)[7] and economic growth (*ECGR*). We also notice that the SMD and the banking sector are not mutually exclusive. Thus, the positive and significant association at a 1 percent level between the dependent variable and the development of financial intermediaries suggests that stock markets and credit institutions in emerging economies operate in a complementary way. In addition, consistent with our predictions, the coefficient of the variable level of investment (*INVL*) is positive and significant. This indicates that the level of savings and investment plays a considerable role in determining stock markets development[8]. The variable *LENF* reports no statistically significant coefficient, suggesting that there is no substantial effect of law enforcement, as measured by the mean of regulatory quality, rule of law and control of corruption, on ESMs development.

To test for the effect of full IFRS adoption on ESMs development (*H2*), we refer to the second column specification in Table VI. Prior literature (e.g. Judge *et al.*, 2010; Daske *et al.*, 2009) showed that serious adopters are associated with better adoption benefits than label

	Level of IFRS adoption <i>H1</i>	Full IFRS adoption for listed firms <i>H2</i>	Partial IFRS adoption for listed firms <i>H3</i>	No IFRS adoption for listed firms <i>H4</i>
Dependent variable	SMD	SMD	SMD	SMD
Specification number	(1)	(2)	(3)	(4)
Lagged <i>dependent</i>	0.253 (0.000)***	0.267 (0.000)***	0.286 (0.000)***	0.306 (0.000)***
<i>ECGR</i>	1.009 (0.000)***	1.226 (0.000)***	1.251 (0.001)***	1.246 (0.000)***
<i>LENF</i>	-2.186 (0.808)	1.200 (0.903)	-0.471 (0.964)	6.838 (0.422)
<i>LIFRS</i>	6.146 (0.000)***			
<i>FIFRS</i>		24.063 (0.000)***		
<i>PIFRS</i>			-18.642 (0.000)***	
<i>NOIFRS</i>				-4.032 (0.637)
<i>MES</i>	0.685 (0.002)***	0.610 (0.006)***	0.584 (0.009)***	0.769 (0.004)***
<i>FIMAL</i>	0.155 (0.015)**	0.158 (0.015)**	0.167 (0.009)***	0.148 (0.017)**
<i>FID</i>	0.804 (0.000)***	0.793 (0.000)***	0.798 (0.000)***	0.912 (0.000)***
<i>INVL</i>	1.986 (0.009)***	1.538 (0.042)**	1.628 (0.032)**	1.273 (0.100)*
<i>W</i> -statistic	380.28 (0.000)***	542.84 (0.000)***	524.63 (0.000)***	423.01 (0.000)***
<i>Sargan</i> -test of over identifying restrictions	26.498 (0.022)**	24.374 (0.041)**	25.628 (0.028)**	24.328 (0.041)**
1st order autocorrelation	-2.246 (0.024)**	-2.225 (0.026)**	-2.227 (0.025)**	-2.205 (0.027)**
2nd order autocorrelation	1.256 (0.208)	1.378 (0.168)	1.328 (0.184)	0.815 (0.414)
Number of countries	50	50	50	50
Number of country-year observations	250	250	250	250

Table VI.
Regression results of stock market development on IFRS adoption and control variables using GMM estimations for 50 emerging economies

Notes: Refer to Table IV for the definitions of variables. *W*-statistic is for χ^2 -Wald test which is used to test whether the explanatory variables in the GMM model are jointly significant. *Sargan*-test is used to examine both the over identifying restrictions and the lack of residual serial correlation. *, **, ***Statistical significant at 10, 5 and 1 percent level, respectively (two-tailed tests)

	Major differences between local GAAPs and IFRS	Permitted IFRS adoption for listed firms	IFRS adopted for some listed firms	IFRS adopted as local GAAPs with minor changes for listed firms
Dependent variable	SMD	SMD	SMD	SMD
Specification number	(5)	(6)	(7)	(8)
Lagged <i>dependent</i>	0.275 (0.000)***	0.308 (0.000)***	0.311 (0.000)***	0.296 (0.000)***
<i>ECGR</i>	0.934 (0.001)***	1.242 (0.000)***	1.225 (0.000)***	1.011 (0.004)***
<i>LENF</i>	-0.045 (0.996)	6.610 (0.437)	7.614 (0.336)	4.570 (0.591)
<i>AIFRS1</i>	-14.526 (0.000)***			
<i>AIFRS2</i>		1.826 (0.682)		
<i>AIFRS3</i>			-20.704 (0.107)	
<i>AIFRS4</i>				0.449 (0.912)
<i>MES</i>	0.707 (0.004)***	0.753 (0.004)**	0.699 (0.006)***	0.768 (0.003)***
<i>FIMAL</i>	0.161 (0.011)**	0.150 (0.016)**	0.147 (0.019)**	0.169 (0.007)***
<i>FID</i>	0.906 (0.000)***	0.907 (0.000)***	0.875 (0.000)***	0.900 (0.000)***
<i>INVL</i>	1.859 (0.017)**	1.291 (0.096)*	1.259 (0.087)*	1.336 (0.087)*
<i>W</i> -statistic	302.45 (0.000)***	424.34 (0.000)***	389.18 (0.000)***	309.82 (0.000)***
<i>Sargan</i> -test of over identifying restrictions	28.152 (0.013)**	24.363 (0.041)**	24.882 (0.035)**	24.677 (0.037)**
1st order autocorrelation	-2.166 (0.030)**	-2.206 (0.027)**	-2.254 (0.024)**	-2.15 (0.031)**
2nd order autocorrelation	0.827 (0.408)	0.824 (0.409)	1.159 (0.246)	0.793 (0.427)
Number of countries	50	50	50	50
Number of observations (seven years for 50 countries)	250	250	250	250

Table VII. Regression results of stock market development on partial IFRS adoption and control variables using GMM estimations for 50 emerging economies

Notes: Refer to Table IV for the definitions of variables. *W*-statistic is for χ^2 -Wald test which is used to test whether the explanatory variables in the GMM model are jointly significant. *Sargan*-test is used to examine both the over identifying restrictions and the lack of residual serial correlation. *, **, ***Statistical significant at 10, 5 and 1 percent level, respectively (two-tailed tests)

adopters. As stated by Judge *et al.* (2010), we believe that countries using full IFRS are serious adopters. This urged us to deepen the results issued from the first specification (Table VI, column 1). We, then, use a different regression specification where we transform our variable of interest (*LIFRS*) into a dichotomous variable (*FIFRS*) that takes the value of 1 for country-year in which IFRS are locally adopted for all listed firms or adopted as published by IASB and 0 otherwise. With respect to the second specification (Table VI, column (2)), the coefficient of *FIFRS* is positive and significant at a 1 percent level.

Therefore, full IFRS adoption has a substantial impact on SMD. Consequently, our second hypothesis is confirmed. Consistent with Larson and Kenny (1996) predictions based on modernization theory, full IFRS adoption may support SMD. Overall, our results are in accordance with Assenso-Okofu *et al.* (2011), Al-Akra *et al.* (2009), Tyrrall *et al.* (2007), HassabElnaby *et al.* (2003), Chamisa (2000), Ndubizu (1992), Carey (1990), Sudweeks (1989) and Belkaoui (1988). Therefore, accounting harmonization, through full IFRS adoption, is likely to attract investors and enhance ESMs development.

We use *PIFRS* to examine the effect of partial IFRS adoption on ESMs development (*H3*). We classify in the same group, country-year in which there is no IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes, country-year in which IFRS are permitted for listed companies, country-year in which IFRS are mandatory only for some listed companies, county-year in which IFRS are adopted as local GAAPs for all listed companies with minor changes. To sum up, we got a new variable of interest (*PIFRS*) that takes the value of 1 for country-year with partial adoption and 0 otherwise. Results are reported in Table VI (column 3). The negative coefficient of *PIFRS* is significantly associated with *SMD*. In the light of the results obtained in this specification, adopting IFRS with modifications might be not only inappropriate and irrelevant, but also significantly harmful to ESMs development (Perera, 1989). As a consequence, we refute our third hypothesis. Thus, the support of contingency theory for partial IFRS adoption did not explain ESMs development. This finding is not in accordance with a number of researchers (e.g. Perera and Baydoun (2007); Mir and Rahman, 2005; Hassan, 1998; Larson, 1993). They require that changes have to be made to IFRS in order to reflect and satisfy specific environmental needs. This association, which seems to be counter-intuitive, requires much further investigations.

Given that partial IFRS adoption includes many categories, we shall try in what follows, to find out the real causes of such a relationship. We examine, separately, the effect of each of the fourth partial IFRS adoption categories on ESMs development. Thus, we use four dummy variables: *AIFRS1* for country-year in which there is no IFRS adoption for listed companies and local GAAPs are based on IFRS with major changes; *AIFRS2* for country-year in which IFRS are permitted for listed companies; *AIFRS3* for country-year in which IFRS are mandatory only for some listed companies; and *AIFRS4* for county-year in which IFRS are adopted as local GAAPs for all listed companies with minor changes.

Table VII exhibits regression results of ESMs development on the four partial IFRS adoption and control variables using GMM estimations. With respect to specification (6) (see Table VII), we find a positive but not significant association between permitted IFRS adoption for listed firms (*AIFRS2*) and SMD. Similarly, specification (8) (see Table VII) indicates a positive but not significant relationship between the adoption of IFRS as local GAAPs with trifling changes (*AIFRS4*) and ESMs development. However, the coefficient of *AIFRS1* is negative and statistically significant at 1 percent

level (see Table VII, specification 5). Indeed, it appears that local GAAPs shaped partially on the basis of IFRS with significant changes affect negatively ESMs development. International accounting literature (e.g. Ali, 2005; Chamisa, 2000; Perera, 1989) suggests that a number of developing countries are not in a position to effectively regulate accounting and financial reporting, whereas other countries are in embryonic stage in accounting development with new professional organizations. Furthermore, specification 7 (see Table VII) shows that the coefficient of (AIFRS3) is negative and not significant. Therefore, requiring IFRS only for some types of listed companies does not play a considerable role in determining ESMs development.

To test for the effect of IFRS rejection on ESMs development (*H4*), we refer to the fourth column specification in Table VI. We notice that there is no significant effect of IFRS rejection on ESMs development. Indeed, the coefficient of *NOIFRS* is negative and not significant. Consequently, we refute our fourth hypothesis. Emerging economies selecting the particularistic accounting standard-setting strategy show that IFRS rejection does not facilitate ESMs development. Therefore, world system theory support for internally generated accounting systems seems to be inappropriate to the development of ESMs (Ali, 2005; Gernon and Wallace, 1995).

5.2.2 Further robustness checks

The main objective of this study is to test for the effects of IFRS adoption levels on ESMs development. We realize that our sample includes 32 countries who have no changes in their status of IFRS adoption for the period ranging from 2001 to 2007. Therefore, only 18 countries experienced a move toward high stages of IFRS adoption during the seven-year period (see Appendix, column F and/or italicized countries in Table II). Thus, it is possible that our initial statistical results are sensitive to the fixed LIFRS adoption of some countries. In order to assess the robustness of our models, we re-run the four models of hypothesis testing using a revised sample, in which 32 countries are excluded because of the fixed attitude toward IFRS adoption. Table VIII contains four statistical models for further hypothesis testing for a sample of 18 emerging economies that experienced changes in their LIFRS adoption for the period ranging from 2001 to 2007.

Table VIII shows that the results are generally similar to those based on the original sample where *H1* and *H2* are validated and *H3* and *H4* are refuted. There are only trifling changes in terms of significance of some independent control variables (see Table VIII) compared with the significance issued from Table VIII. The move toward high levels of IFRS adoption for listed firms affects positively and significantly ESMs development (see specification 9). Thus, *H1* is strongly supported. Furthermore, full IFRS adoption for listed firms affects positively and significantly ESMs development (see specification 10), providing a good empirical support for *H2*. As noticed from specifications 11, partial IFRS adoption for listed firms affects negatively and significantly ESMs development, which lead us to refute the third hypothesis. Finally, rejecting IFRS for listed firms does not affect ESMs development (see specification 12) and *H4* is refuted.

6. Conclusion

We explored the underlying assumptions of economic development theories that may support or constrain accounting standard-setting strategies related to IFRS adoption and their potential effects on ESMs development. We investigate the country-level association between the extent of IFRS adoption and ESMs development. In this paper,

	Level of IFRS adoption <i>H1</i>	Full IFRS adoption for listed firms <i>H2</i>	Partial IFRS adoption for listed firms <i>H3</i>	No IFRS adoption for listed firms <i>H4</i>
Dependent variable	SMD	SMD	SMD	SMD
Specification number	(9)	(10)	(11)	(12)
Lagged dependent	0.287 (0.000)***	0.272 (0.000)***	0.260 (0.000)***	0.395 (0.000)***
<i>ECGR</i>	0.763 (0.000)***	0.789 (0.000)***	0.646 (0.000)***	0.722 (0.000)***
<i>LENF</i>	14.501 (0.395)	37.149 (0.109)	23.836 (0.122)	16.742 (0.625)
<i>LIFRS</i>	4.160 (0.000)***			
<i>FIFRS</i>		20.157 (0.000)***		
<i>PIFRS</i>			-17.527 (0.000)***	
<i>NOIFRS</i>				13.413 (0.480)
<i>MES</i>	0.426 (0.000)***	0.369 (0.000)***	0.367 (0.000)***	0.315 (0.001)***
<i>FIMAL</i>	0.729 (0.000)***	0.715 (0.000)***	0.754 (0.000)***	0.772 (0.000)***
<i>FID</i>	0.291 (0.049)**	0.300 (0.016)**	0.176 (0.191)	0.394 (0.005)***
<i>INVL</i>	1.017 (0.001)***	0.499 (0.073)*	0.588 (0.005)***	1.111 (0.001)***
<i>W</i> -statistic	7680.10 (0.000)***	78908.69 (0.000)***	2518.75 (0.000)***	248622.80 (0.000)***
<i>Sargan</i> -test of over identifying restrictions	9.836 (0.047)**	11.066 (0.049)**	9.821 (0.037)**	10.050 (0.048)**
1st order autocorrelation	-1.926 (0.050)**	-1.829 (0.067)*	-1.463 (0.143)	-1.717 (0.085)*
2nd order autocorrelation	-1.113 (0.265)	-1.156 (0.247)	-0.961 (0.336)	-1.170 (0.241)
Number of countries	18	18	18	18
Number of country-year observations	126	126	126	126

Table VIII.
Regression results of stock market development on IFRS adoption and control variables using GMM estimations for the revised sample of 18 emerging economies

we also shed light on the macroeconomic determinants expected to have an influence on ESMs. The empirical analysis is based on a dynamic panel model using the GMM for 50 emerging economies over a period spanning from 2001 to 2007.

Findings provide evidence, as hypothesized, that a higher LIFRS adoption affects positively and significantly SMD. Furthermore, full IFRS adoption by listed firms is significantly associated with SMD. Consistent with Larson and Kenny (1996) predictions based on modernization theory, full IFRS adoption may support stock markets development.

Globally, we report also that partial adoption of IFRS is unimportant or even harmful for stock markets development. This finding urged us to investigate the main causes of this counter-intuitive relationship. Indeed, it appears that using local GAAPs, shaped on the basis of IFRS with major changes, was at the origin of the negative association between partial IFRS adoption and ESMs development. Furthermore, we find that IFRS rejection is not significantly associated with ESMs development. As stated by Perera (1989) as well as Perera and Baydoun (2007), there is ample evidence to suggest that in many developing countries profession and government are not in a position to effectively regulate accounting and financial reporting, whereas there are other countries without any recognized professional organization. Under such circumstances, shaping under-developed local GAAPs do not lead to a higher SMD.

This paper has some policy implications for developing countries. In order to enhance ESMs development, it is important to improve financial information quality through full adoption of IFRS. In a global economic system, it is essential to standard-setters as well as market regulators in non-adopter developing countries to require IFRS adoption.

Our study had some limitations. First, the sample selection may be problematic in that only countries without confusing data sources, specifically for IFRS adoption proxies, were included in the analysis. Therefore, our findings may not be generalizable to the entire population of emerging economies. Second, results may also be different if variables were measured differently in our model specifications. Third, although a number of important control variables are considered in the current study, some additional control variables, that prior research has shown to positively affect stock markets development, are not included.

Finally, we believe that the research area of financial consequences of IFRS adoption on ESMs development remains rich and requires much further investigations.

Notes

1. For simplicity we refer to both International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) as IFRS throughout.
2. For all analysis, we focus on a study period that spans from 2001 to 2007.
3. For example, Garcia and Liu (1999) pointed out that financial development is crucial for economic growth. However, the relationship can go the other direction. Therefore, economic growth can also promote financial development.
4. These EU statistics are from the WB's online WDI. <http://publications.worldbank.org/WDI/> (accessed January 14, 2011).
5. Of note, the highest correlations for IFRS adoption variables are between *LIFRS* and *FIFRS* ($r = 0.831$), between *FIFRS* and *PIFRS* ($r = -0.825$) and between *LIFRS* and *AIFRS1* ($r = 0.610$).
6. We used the average of the seven years.
7. A number of researches (e.g. Yartey, 2010; Ben Naceur *et al.*, 2007; Garcia and Liu, 1999; Levine, 1991) found a positive and significant effect of financial market liquidity on stock markets development.
8. Our expectations regarding the control variables considered in this study are relatively consistent with a number of prior works. It is noteworthy that some studies reported that there is no significant effect of some control variables on stock markets development. For example, we point out that Yartey (2010) found that there is no significant association between inflation rate and emerging stock markets development.

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(The appendix follows overleaf.)

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
<i>MENA</i> Bahrain (1)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	IFRS mandatory for all listed companies starting from January 1, 1996 (Al Shammari <i>et al.</i> , 2008)	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7
Iran (2)	Not applicable	IFRS not permitted	Not applicable	Conformity score between local GAAP and IFRS is 61.26%	Although the Iranian Accounting Standards were developed on the basis of IFRS, there are major differences between the two systems and there are certain standards in IFRS that are not applicable in Iran (Mashayekhi and Mashayekhi, 2008)	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2
Israel (3)	Not applicable	Israel accounting standards are based on IFRS with minor changes	IFRS required for all listed companies (except for listed or unlisted banks)	Conformity score between local GAAP and IFRS is 70.27%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Jordan (4)	In May 1997, all listed companies must prepare their financial statements in accordance with IFRS (ROSC, 2004)	Starting from January 1, 2008, Israel required IFRSs for all listed companies (except banks) IFRS required for all listed companies starting from May 1997	IFRS required for all listed companies	No applicable	Not applicable	2006:5 2007:5 2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7
Kuwait (5)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	IFRS mandatory for all listed companies starting from January 1, 1991 (Al Shammari <i>et al.</i> , 2008)	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7
Lebanon (6)	In August 1996, all listed companies must prepare their financial statements in accordance with IFRS (ROSC, 2003)	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	Not applicable	2007:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Table AI.

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Morocco (7)	The Moroccan framework for preparing and presenting financial statements is fundamentally different from the framework approved by the IASB (ROSC, 2002)	All listed companies other than banks and similar financial institutions can choose between IFRSs and Moroccan GAAPs starting from May 2004. All banks and similar financial institutions are required to use IFRS for the accounting periods starting from January 1, 2008.	IFRS permitted for all listed companies. IFRS required for listed banks and financial institutions.	Conformity score between local GAAP and IFRS is 38.7%.	Not applicable	2001:1 2002:1 2003:1 2004:1 2005:3 2006:3 2007:3
Oman (8)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	IFRS mandatory for all listed companies starting from January 1, 1986 (Al Shammari <i>et al.</i> , 2008)	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Qatar (9)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies since 2002	Not applicable	IFRS mandatory for all banks and investment and finance companies starting from January 1, 1999 (Al Shammari <i>et al.</i> , 2006:7, 2007:7)	2001:4 2002:4 2003:7 2004:7 2005:7 2006:7 2007:7
Saudi Arabia (10)	Not applicable	All banks and insurance companies listed on the Saudi Stock Exchange must use IFRS	IFRS required for all banks and insurance companies	Conformity score between local GAAP and IFRS is 39.36%	IFRS mandatory for all banks, investment and finance companies starting from January 1, 1992 (Al Shammari <i>et al.</i> , 2006:4, 2007:4)	2001:4 2002:4 2003:4 2004:4 2005:4 2006:4 2007:4
Tunisia (11)	The Tunisian accounting system was based on IFRS (starting from January 1, 1997) but there are significant differences between the two systems (WB, 2012)	IFRS not permitted for all listed companies	IFRS not permitted for all listed companies	Conformity score between local GAAP and IFRS is 59.45%	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2

(continued)

Table AI.

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Turkey (12)	IFRS permitted for all listed companies starting from January 1, 2003 (WB, 2012)	IFRS permitted for all listed companies	Starting from January 1, 2008 all listed companies are required to disclose in accordance with IFRS	Conformity score between local GAAP and IFRS is 36.03%	Not applicable	2001:1 2002:1 2003:3 2004:3 2005:3 2006:3 2007:3
United Arab Emirates (13)	Not applicable	IFRS required for all listed companies since 2003	IFRS required for all listed companies	Not applicable	IFRS mandatory for all banks, investment and finance companies starting from January 1, 1999 (Al Shammari <i>et al.</i> , 2008)	2001:4 2002:4 2003:4 2004:7 2005:7 2006:7 2007:7
<i>Africa</i> Botswana (1)	IFRS were permitted without enforcement before 2007 (no local GAAPs) (WB, 2012)	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	Not applicable	2001:3 2002:3 2003:3 2004:3

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Cote D'Ivoire (2)	ROSC not permitted (WB, 2012) All listed companies are required to use OHADA accounting framework which is substantially different from IFRS (WB, 2012)	IFRS not permitted for all listed companies	IFRS are prohibited for all listed companies	Not applicable	Not applicable	2001:1 2002:1 2003:1 2004:1 2005:1 2006:1 2007:1
Ghana (3)	All listed companies are required to use Ghanaian National Accounting Standards (based on IFRS with significant differences) (WB, 2012)	IFRS required for all listed companies starting from January 1, 2007	IFRS required for all listed companies	Not applicable	Not applicable	2001:2 2005:2 2006:2 2007:7

(continued)

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Kenya (4)	IFRS required for all types of companies since 1998 (WB, 2012)	IFRS required for all listed companies	IFRS required for all listed companies	Conformity score between local GAAP and IFRS is 100%	Not applicable	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7
Mauritius (5)	Mauritius accounting standards (based on IFRS with significant differences) were required for all listed companies (ROSC, 2003) IFRS required for all listed companies without specifying the effective date (WB, 2012)	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	IFRS required for all listed companies starting from January 1, 2005 (Mirza <i>et al.</i> , 2009)	2001:2 2002:2 2003:2 2004:2 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Namibia (6)	Not applicable	IFRS required for all listed companies starting from January 1, 2005	IFRS required for all listed companies	Not applicable. Given that Namibian standards are the same that South African GAAPs (see www.ican.org.na/) we refer to the conformity score of South Africa. The score is 92.79%	Before full IFRS adoption, starting from January 1, 2005, listed companies are required to use Namibian accounting standards (the same that South African GAAPs) (web site of the Institute of chartered accountants of Namibia www.ican.org.na/)	2001:5 2002:5 2003:5 2004:5 2005:7 2006:7 2007:7
Nigeria (7)	All listed companies are required to use Nigerian Accounting Standards (based on IFRS with significant differences) (ROSC, 2004)	IFRS not permitted for all listed companies. Convergence project planned for 2012	IFRS not permitted for all listed companies	Not applicable	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2

(continued)

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
South Africa (8)	The South African GAAPs were comparable with the IFRS. Trifling inconsistencies do exist between local GAAPs and IFRS (ROSC, 2003)	IFRS required for all listed companies starting from January 1, 2005	IFRS required for all listed companies	Conformity score between local GAAP and IFRS is 92.79%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:7 2006:7 2007:7
Zambia (9)	Zambian accounting standards were based on IFRS, except 2 standards (WB, 2012)	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:7 2006:7 2007:7

(continued)

Table AI.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
<i>Asia</i> Armenia (1)	Starting from January 1, 2001, Armenian GAAPs were based on IFRS with minor differences (WB, 2012) Differences became significant starting from January 1, 2005 because GAAPs are outdated (WB, 2012)	IFRS required for all listed companies	IFRS mandatory for listed financial institutions starting from January 1, 2009 IFRS mandatory for all listed companies starting from January 1, 2011	Not applicable	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:2 2006:2 2007:2
Bangladesh (2)	Bangladesh accounting standards are widely based on IFRS with some differences (ROSC, 2003)	IFRS not permitted From 1994 IFRS were adopted locally as national accounting standards with some changes. Bangladesh accounting standards are mandatory for all listed companies	Not applicable	Not applicable	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
India (3)	Indian accounting standards are based on IFRS with minor differences (ROSC, 2004)	Permitted IFRS adoption for all listed companies starting from January 1, 2010	Permitted IFRS usage for all listed companies starting from January 1, 2010	Conformity score between local GAAP and IFRS is 66.67%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5
Indonesia (4)	The Indonesian financial accounting standards are based on IFRS with minor differences (ROSC, 2005; WB, 2012)	IFRS required for all listed companies starting from 2011	IFRS required for all listed companies starting from 2011	Conformity score between local GAAP and IFRS is 78.38%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5
Kazakhstan (5)	Kazakh accounting standards were based on IFRS with significant differences (WB, 2012)	Listed banks are required to use IFRS starting from January 1, 2003	IFRS required for all listed companies	Not applicable	Not applicable	2001:2 2002:2 2003:4 2004:4 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Korea (6)	Listed banks are required to use IFRS starting from January 1, 2003 (WB, 2012)	IFRS permitted for all listed companies starting from January 1, 2009	IFRS permitted for all listed companies starting from January 1, 2009	Conformity score between local GAAP and IFRS is 76.58%	Not applicable	2001:5
	IFRS required for all listed companies starting from January 1, 2005 (WB, 2012)					2002:5
Malaysia (7)	Korean financial standards are based on IFRS with minor differences (WB, 2012)	IFRS mandatory for all listed companies starting from January 1, 2011	IFRS mandatory for all listed companies starting from January 1, 2011	Conformity score between local GAAP and IFRS is 61.26%	Not applicable	2003:5
	Before 2006, Malaysian GAAPs were based on IFRS with significant differences (WB, 2012)					2004:5
						2005:5
						2006:5
						2007:5
						2001:2
						2002:2
						2003:2
						2004:2
						2005:2
						2006:3
						2007:5

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
	After 2006 Malaysian GAAPs were based on IFRS with minor differences (WB, 2012)	IFRS not permitted to other listed companies				
	Starting from January 1, 2005, foreign listed companies are permitted to use IFRS (WB, 2012)					
Mongolia (8)	All listed companies are required to use Mongolian GAAPs (based on IFRS with minor differences) (WB, 2012)	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	All listed companies are required to use IFRS starting from April 2002 (Mongolian institute of certified public accountants) www.monipcpa.mn	2001:5 2002:5 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Pakistan (9)	Pakistan accounting standards are based on IFRS with significant differences (WB, 2012)	IFRS not permitted for all listed companies	Listed companies are required to use Pakistan accounting standards based on IFRS Five IFRS standards are rejected	Conformity score between local GAAP and IFRS is 63.06%	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2
Philippines (10)	Before 2005, Philippine GAAPs were based on IFRS with significant differences (WB, 2012) After 2005, Philippine GAAPs were based on IFRS with some trifling differences (WB, 2012)	IFRS not permitted for listed companies	IFRS as adopted locally are required for all listed companies	Conformity score between local GAAP and IFRS is 65.77%	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:6 2007:6

(continued)

Table AI.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Singapore (11)	Not applicable	IFRS not permitted for listed companies Singaporean GAAPs are widely based on IFRS with minor differences Convergence planned for 2012	Local accounting standards are based on IFRS with few differences Convergence planned for 2012	Conformity score between local GAAP and IFRS is 83.78%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5
Sri Lanka (12)	Sri Lanka's accounting standards are based on IFRS with significant differences (ROSC, 2004)	IFRS permitted for all listed companies starting from 2004	IFRS permitted for all listed companies	Not applicable	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:3 2006:3 2007:3
Thailand (13)	Thai accounting standards are based on IFRS with minor differences (WB, 2012)	IFRS not permitted for listed companies Convergence project planned for 2013	IFRS not permitted for listed companies Most Thai standards are in accordance with IFRS Convergence project planned for 2013	Conformity score between local GAAP and IFRS is 67.57%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
<i>Latin America</i> Argentina (1)	Argentinean GAAPs are substantially different from IFRS (WB, 2012)	IFRS permitted for listed companies starting from January 1, 2011 IFRS required for listed companies starting from January 1, 2012	IFRS permitted for listed companies starting from January 1, 2011 IFRS required for listed companies starting from January 1, 2012	Conformity score between local GAAP and IFRS is 29.73%	Not applicable	2001:1 2002:1 2003:1 2004:1 2005:1 2006:1 2007:1
Bolivia (2)	Not applicable	IFRS permitted for listed companies	IFRS not permitted	Not applicable	Local GAAPs are based on IFRS with significant differences Since 1999, the use of IFRS is permitted in the absence of specific local regulation, but only on a supplementary basis (Van Dorn <i>et al.</i> , 2008)	2001:3 2002:3 2003:3 2004:3 2005:3 2006:3 2007:3
Brazil (3)	Brazilian accounting standards are based on IFRS with many significant differences (ROSC, 2005)	IFRS required for all listed companies starting from January 1, 2010	IFRS required for all listed companies starting from January 1, 2010	Conformity score between local GAAP and IFRS is 46.85%	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2

(continued)

Table AI.

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Chile (4)	Chilean GAAPs are based on IFRS with significant differences (ROSC, 2004)	IFRS required for some listed companies starting from January 1, 2009 IFRS required for all listed companies starting from January 1, 2010	IFRS required for some listed companies starting from January 1, 2009 IFRS required for all listed companies starting from January 1, 2010	Conformity score between local GAAP and IFRS is 46.85%	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2
Colombia (5)	Colombian GAAPs are based on IFRS with significant differences (ROSC, 2003)	IFRS not permitted for listed companies Convergence project planned for 2014	IFRS not permitted for listed companies Convergence project planned for 2012	Not applicable	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2
Costa Rica (6)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	IFRS required for all listed companies starting from January 1, 2000 (Catacora and Hamon, 2005)	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Ecuador (7)	Ecuadorian GAAPs are based on IFRS with significant differences (ROSC, 2004)	IFRS required for all listed companies starting from January 1, 2010	IFRS required for all listed companies starting from January 1, 2010	Not applicable	Not applicable	2001:2 2002:2 2003:2 2004:2 2005:2 2006:2 2007:2
El Salvador (8)	Local accounting standards are based on IFRS with significant differences (ROSC, 2005)	Starting from January 1, 2003, IFRS are permitted for listed companies except banks	Starting from January 1, 2011, mandatory IFRS adoption for listed companies except banks	Not applicable	Not applicable	2001:2 2002:2 2003:3 2004:3 2005:3 2006:3 2007:3
Guyana (9)	Not applicable	IFRS required for all listed companies starting from July 1, 2000	Not applicable	Not applicable	Not applicable	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Jamaica (10)	Jamaican GAAPs were based on IFRS with significant differences IFRS required for all listed companies starting from July 1, 2002	IFRS required for all listed companies starting from July 1, 2002	IFRS required for all listed companies	Not applicable	Not applicable	2001:2 2002:2 2003:7 2004:7 2005:7 2006:7 2007:7
Mexico (11)	Mexican GAAPs are based on IFRS with minor differences (ROSC, 2004)	IFRS not permitted for listed companies All companies listed on the Mexican Stock Exchange are required to use IFRS starting from 2012	IFRS required for all listed companies starting from 2012	Conformity score between local GAAP and IFRS is 83.78%	Not applicable	2001:5 2002:5 2003:5 2004:5 2005:5 2006:5 2007:5

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Paraguay (12)	No local GAAPs in Paraguay and most listed companies in practice default to tax rules for financial reporting purposes. These rules are substantially different from IFRS (WB, 2012)	In the absence of local accounting standards, all accounting systems around the world are permitted, including IFRS	IFRS not permitted	Not applicable	Not applicable	2001:1 2002:1 2003:1 2004:1 2005:1 2006:1 2007:1
Peru (13)	From 1998 IFRS were adopted locally as national accounting standards. Peru GAAPs are required for all listed companies (ROSC, 2004)	IFRS required for all listed companies	IFRS as adopted locally are required for all listed companies IFRS as issued by the IASB are required for all listed companies starting from October 2010	Not applicable	Not applicable	2001:6 2002:6 2003:6 2004:6 2005:6 2006:6 2007:6

(continued)

Table A1.

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (2009) (Column D)	Other sources (Column E)	Coding (Column F)
Trinidad and Tobago (14)	Not applicable	IFRS required for all listed companies	IFRS required for all listed companies	Not applicable	Starting from 1988 Trinidad and Tobago adopted many international accounting standards as their national standards (Bowrin, 2007) IFRS required for all listed companies starting from January 1, 1999 (Bowrin, 2007)	2001:7 2002:7 2003:7 2004:7 2005:7 2006:7 2007:7

(continued)

Country	ROSC (Column A)	Deloitte (2011) (Column B)	PwC (2011) (Column C)	GAAP 2001 survey conformity score provided by Ding <i>et al.</i> (Column D)	Other sources (Column E)	Coding (Column F)
Uruguay (15)	Starting from 1991, local GAAPs were based on IFRS. At that date, only eight standards are required. Starting from 1993, six additional IFRS standards were adopted with some significant differences. Starting from 2004, Uruguay adopted the majority of IFRS except four standards (WB, 2012)	IFRS required for all listed companies starting from July 31, 2007	IFRS required for all listed companies effectively starting from January 1, 2009	Conformity score between local GAAP and IFRS is 50.45%	Not applicable	2001:2 2002:2 2003:2 2005:5 2006:5 2007:5

Coding system: (1) No IFRS adoption for listed companies and local GAAPs reject IFRS; (2) No IFRS adoption for listed companies and local GAAPs were based on IFRS with major changes; (3) Permitted IFRS adoption for listed companies; (4) Mandatory IFRS adoption for some listed companies; (5) IFRS adopted as local GAAPs for all listed companies with minor changes; (6) IFRS adopted as local GAAPs for all listed companies; and (7) IFRS adopted as published by IASB for all listed companies

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