Financial market consequences of early adoption of international standards on auditing: international evidence

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Abstract

Purpose – This paper aims to investigate the effects of the early adoption of International Standards on Auditing (ISAs) on Financial Market Indicators (FMIs) from a diffusion of innovation (DOI) theory perspective.

Design/methodology/approach – Using panel data from 110 countries in a period that spans from 1995 to 2014, this study applies an ordinary least squares regression model to investigate the financial consequences of adopting ISAs. This analysis was supplemented with estimating a fixed-effects and two-stage least squares regression models to address any concerns regarding the possible existence of endogeneity problems.

Findings – This study reports three key findings. First, the authors find that early ISAs adoption has a negative effect on several financial market consequences, namely stock market integration, market capitalisation, market turnover, market return, market development, stock price volatility and stock trading volume. Second, using an alternative measure to the one that is proposed by DOI theory, the authors found that some financial indicators have been significantly improved after ISAs adoption, but only for listed firms that prepared their financial statements under International Financial Reporting Standards and audited by ISAs simultaneously. Finally, the financialindicators of European stock markets, however, have insignificantly shrank post the mandatory adoption of ISAs in 2006.

Practical implications – The empirical evidence raises questions about how ISAs were enforced and implemented. For example, countries that adopted ISAs at early stages may have been dominated mostly by recently established stock exchanges. This implies a crucial need to determine and apply the best type of auditing regime that can increase investors trust and enhance the credibility of stock markets information, which might ultimately advance the FMIs over time significantly.

Originality/value – To-date, studies investigating the impact of the adoption of ISAs on FMI from a DOI theory perspective are virtually non-existent. The study, therefore, seeks to contribute to the extant literature by examining the influence of ISAs adoption on a wide range of FMIs.

Keywords International standards on auditing, Stock markets, Diffusion of innovation theory, Financial consequences, Financial market indicators

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1. Introduction

Foreign investors tend to invest in those stock markets characterised by a higher level of transparent auditing standards and high-quality accounting information (Boolaky and Omoteso, 2016; Boolaky and Soobaroyen, 2017). International standards on auditing (ISAs), therefore, have been adopted by many countries to attract more inward foreign direct investments (FDI) to their financial markets (Al-Awaqleh, 2010; Rudhani *et al.*, 2017). Stock markets, on the other hand, expect to obtain some financial benefits from adopting ISAs such as lower cost of capital (Fraser, 2010; Wong, 2004). In this regard, Francis *et al.* (2003) argue that the development of financial markets is positively linked to a higher quality of auditing standards mainly in those countries characterised by vigorous legal enforcement for investor protection.

Although previous studies have examined the influence of stock market development on the strength of auditing and reporting standards (Boolaky, 2011; Boolaky and Cooper, 2015; Boolaky and O'Leary, 2011; Boolaky and O'Leary, 2012; Boolaky *et al.*, 2013), a very limited attention has been paid to examining the relationship between the adoption of ISAs and stock market indicators such as market capitalisation (Boolaky and Soobaroyen, 2017; Boolaky and Omoteso, 2016). For example, to date, studies investigating the impact of the adoption of ISAs on financial market indicators (FMIs) are virtually non-existent. Our research, therefore, seeks to contribute to the extant literature by examining the influence of ISAs adoption on a range of financial market consequences at the macro-country level.

At the macro-country level, prior studies have examined the influence of adopting accounting innovation practices such as International Financial Reporting Standards (IFRS) on a few financial consequences (i.e. stock market capitalisation), either from the perspective of institutional theory (Boolaky and Soobaroyen, 2017) or Hofstede-Gray framework perspective (Boolaky and Omoteso, 2016). However, we distinctively use the diffusion of innovation (DOI) theory to explain the financial consequences of adoptingISAs. According to DOI theory, a group of adopters might tend to adoptinnovations rapidly at the initial stages or it may prefer to delay its adoption to late stages based on their characteristics. As a result, the DOI theory suggests that adopters of innovations can be classified into five main groups based on their first-time adoption. These groups are experimenters, early adopters, early majority, late majority and non-adopters (Rogers, 1976; Rogers, 2002; Robertson, 1967).

Consequently, and using a DOI theoretical framework, we examine the extent to which early ISAs adoption impact on a wide range of FMIs. A priori, the higher level of transparency, reliability and credibility regarding auditing standards and high-quality accounting information that is often associated with the adoption of ISAs is expected to result in observable improvement in FMIs. Thus, we specifically examine how ISAs adoption affect seven FMIs, including financial/stock market: capitalisation; development; integration; liquidity; returns; trading volume; and volatility. Our findings suggest that early adoption of ISAs has a negative effect on seven financial market consequences, namely financial integration, market capitalisation as a percentage of GDP, market capitalisation in USD, stock market traded to GDP, stock market turnover, stock market return, stock price volatility and financial market development. By contrast, we find that mandatory ISAs adoption by most EU countries in 2006 has no significant effect on financial market consequences. Our findings, therefore, extend the existing literature by offering new evidence on the effect of early ISAs adoption on FMIs.

The remainder of this study is organised as follows. Section 2 presents the background to the adoption of ISAs and discusses the theoretical framework applied in this study. Also reviews the empirical literature and develops hypotheses. Section 3 explains the research methodology. Section 4 presents the descriptive statistics. Section 5 reports the empirical

results and discussion. Section 6 discusses the robustness analyses, while Section 7 outlines the conclusions of the study.

2. International auditing standards and financial market indicator

Since the 1960s, the need for issuing one single set of international auditing standards has significantly increased to meet the requirements of multinational corporations (Needles *et al.*, 2002). After the 2008 global financial crisis, many countries have adopted ISAs, intending their adoption to improve the quality of their auditing standards (Humphrey *et al.*, 2009; Mennicken, 2008). In 1991, the International Auditing and Assurance Standards Board released 29 International Auditing Guidelines, which are now known as ISAs (Roussey, 1996; Humphrey and Loft, 2008). Furthermore, in 2006, the European Commission released the audit directive of 2006/43/EC to encourage European countries to adopt ISAs (Merkt, 2009).

Accordingly, several international bodies such as the European Federation of Financial Analysts Societies, World Trade Organization, International Organization of Securities Commissions, World Federation of Exchanges (WFE), Securities and Exchange Commission and Financial Stability Board have encouraged standards-setters to adopt ISAs to improve the quality of their auditing standards (Kelly, 1998; Needles *et al.*, 2002; Fraser, 2010).

Even though the adoption of ISAs can trigger financial and non-financial benefits (Wang *et al.*, 2015), yet, some associated challenges should be considered by audit firms and stock markets adopting, implementing and enforcing ISAs usage among their companies and organizations (Kohler *et al.*, 2010). Among other things, these challenges might include a lack of human resources, a scarcity of financial resources, shortage of technical skills, inconsistency between ISAs requirements and the legal system of a country and the lack of accuracy in translating ISAs into native languages (Hegarty *et al.*, 2004). Therefore, adopters need to weigh the opportunities and challenges of applying ISAs before adopting and implementing them within a given country (Obaidat, 2007). In this regard, Harahap *et al.* (2018) conclude that the adoption of ISAs has been challenging for some stock markets, although it has led to increasing markets profitability and attracting more inward FDIs.

Arguably, ISAs adoption can be more challenging for small and new stock exchanges, where they usually lack some vital resources such as finance, technical expertise, organisational infrastructure and human resources (Yong and Mahzan, 2013). Additionally, the legal origin of a country can be a major factor that could hinder the adoption of ISAs. For example, civil law countries tend to experience lower levels of law enforcement in terms of protecting the rights of foreign investors in addition to a shortage in the quality of auditing standards compared with their common-law counterparts (Ball *et al.*, 2003; Al-Awaqleh, 2010).

Against this background and given that we know very little about the effect that the adoption of ISAs has on FMIs around the world, we seek to investigate the financial market consequences for countries that adopt ISAs.

2.1 Theoretical framework

This paper uses the perspective of DOI theory developed by Everett Rogers in 1962 primarily to explain the adoption of ISAs internationally. According to DOI theory, there are four main factors that canimpact the adoption rate of international accounting innovations, namely adopter characteristics, attributes of the innovations, communication channels and adoption time (Rogers, 2003). Therefore, flexible changes with relative advantages (e.g. enhanced FMIs) are more likely to be adopted at the initial stages than complicated innovations, as they are more difficult to be applied within a short period(Rogers, 1995).

Gaining desirable financial consequences is, also, one of the relative advantages that can encourage countries to adopt international accounting innovations such as ISAs, at the early stages (Rogers, 2003). Moreover, interpersonal networks tend to also serve as a communication channel, which can promote peers to adopt the same innovations rapidly (Rogers and Kincaid, 1981).

As stated by DOI theory, adopters of international accounting innovations are categorised based on their adoption-times into four groups:

(1) innovators;

(2) early adopters;

(3) early majority; and

(4) late majority and laggards (Rogers, 1962; El-Helaly *et al.*, 2020; Elmghaamez, 2019).

Adopters of innovations have different purposes for adopting the same innovations to satisfy their desires (Botha and Atkins, 2005). For example, the number of countries that adopted international accounting standards (IASs) has significantly increased over time, reflecting the desire of different countries to attract more FDIs into their economies (Alon, 2010). Arguably, adopting ISAs can lead to meeting various needs and provide many relative advantages such as enhancing international comparability, increasing the efficiency of financial markets and improving global integration to financial markets (Wong, 2004; Mourik and Walton, 2014).

DOI theory has been applied by prior studies to explain the diffusion of management accounting innovations (Leftesi, 2008; Askarany, 2016; Epstein, 2012; Tucker and Parker, 2014). Accordingly, we uniquely used DOI theory to explain the diffusion of ISAsas the adoption rate has been gradually increasing over time.

To date, there is no single theoretical framework that has been appropriately applied to examine the expected financial market consequences of ISAs adoption (Kohler, 2009). Consistent with previous IFRS research, we also build on positive accounting theory that was developed by Watts and Zimmerman (1986) to complement our understanding of the expected financial market consequences of ISAs adoption. According to positive accounting theory, financial markets are mostly enforced to adopt global accounting and auditing standards as a response to various stakeholders' pressures, who seek to maximise their utility, which can often lead to unintended financial market consequences because of the inherent conflict of interests the exist between different stakeholders (Sayumwe and Francoeur, 2017; Senyiit, 2014; Samaha and Khlif, 2016; Ali *et al.*, 2016; Ball, 2016; Kimeli, 2017; Kabir, 2010). The adoption of international accounting and auditing standards has both intended and unintended financial market consequences, which might either result in positive or negative effects on capital markets at the macro-economic level (Brüggemann *et al.*, 2013). Daske *et al.* (2013) argue that voluntary adopters may only adopt the label of international accounting and auditing standards without fully adhering to the requirements of these global standards. Similarly, some scholars believe that adopters of ISAs are primarily required to have sufficient knowledge, skills and training for their audit staff to ensure proper application of ISAs (Ali *et al.*, 2016; Ball, 2016; Samaha and Khlif, 2016; Kimeli, 2017; Sayumwe and Francoeur, 2017). By doing so, listed firms may be able to demonstrate to various stakeholders that they have enhanced the quality of their financial statements, and thus, achieve potential expected financial market consequences from adopting ISAs (Ball, 2001; Elmghaamez and Ntim, 2016; Burns and Fogarty, 2010).

Although adoption of a single set of global accounting and auditing standards can improve the efficiency of stock markets and increase the international integration among

capital markets, nevertheless, the absence of needed mechanisms for uniform application and the differences across countries in national legal enforcement regimes, investor protection, auditing practices, tax regulation and corporate governance practices can lead to a reduction in the benefits that stock markets could achieve by adopting these global standards (Palea, 2013).

2.2 Empirical literature review and hypotheses development

Two fundamental mechanisms have been proposed in the current IFRS literature to examine the causal relationships between ISAs adoption on FMIs involving environmental impacts and economic indicators. However, market mechanisms have not sufficiently been covered in the extant ISAs literature (Boolaky and Omoteso, 2016; Boolaky and Soobaroyen, 2017). Hence, it is essential to expand these mechanisms to include an additional mechanism, namely, FMIs. This is because the practical application of ISAs adoption requires the integration of various mechanisms, including environmental, economic and market mechanisms. Hence, in this study, a comprehensive range of financial indicators have been included as proxies for market mechanisms to test the impact of ISAs adoption on the FMIs. Additionally, financial market mechanisms are important because they can consider causality effects of environmental factors in addition to the financial consequences of ISAs adoption at the macro or country level. For instance, ISAs adoption may affect stock prices, market capitalisation, stock market returns and the other FMIs relevant to the auditing environment of stock exchanges.

Furthermore, regulatory enforcement and compliance are one of the primary mechanisms that may explain the effect of ISAs adoption on FMIs. Therefore, regulatory authorities of stock markets further to accounting and audit standard-setting bodies should establish more rigorous audit legislation and robust set of regulations to protect shareholder rights and to increase the transparency of financial statements, and thus, able to attract more foreign investors (Boolaky and Soobaroyen, 2017).

Our study focusses on the theoretical assumptions and classifications suggested by DOI theory. In particular, it relies on the current IFRS literature (El-Helaly *et al.*, 2020; Elmghaamez, 2019) as a background to propose its hypotheses, as there is no previous empirical research that has been done so far to examine the impact of ISAs adoption on the FMIs of the adopting nations. Accordingly, it is possible to compare our results with the findings of IFRS studies to examine whether these two accounting innovations have the same influence on the various FMIs examined in this study.

Most previous studies have examined the influence of adopting IFRS on few FMIs, whereas there is no attention being paid to study the financialconsequences of adopting of ISAs for adopting countries. Therefore, and drawing on prior ISAs literature (Boolaky and Omoteso, 2016; Boolaky and Soobaroyen, 2017; El-Helaly *et al.*, 2020), we develop our hypotheses to examine the relationships between ISAs adoption and a comprehensive set of seven FMIs, including financial market integration, stock market capitalisation, stock trading volume, stock market turnover, stock market returns, stock market volatility and stock market development. By doing so, we contribute to the existing literature by responding to the recent call to examine the macro-level consequences of adopting ISAs for adopting countries (Boolaky and Soobaroyen, 2017).

2.3 International standards on auditing adoption and financial market integration

Our first hypothesis focusses on examining the effect of ISAs adoption on the level of financial market integration. In this case, the majority of prior studies reported that IFRS adoption enhances the financial market integration by improving comparability, and thus,

attracting more foreign investors (Li *et al.*, 2013; Jayaraman and Verdi, 2014; De George, 2013; Cai and Wong, 2010). However, a few studies show that there is an insignificantrelationship between the adoption of IFRS and the financial market integration across countries (Naranjo *et al.*, 2017; Alnodel, 2016). Therefore, we set the first hypothesis to test the relationship between ISAs adoption and financial market integration as follows:

H1. Countries categorised with early adoption of international auditing standards are more likely to have higher levels of financial market integration.

2.4 International standards on auditing adoption and stock market capitalisation

Prior literature is primarily suggestive of a positive and significant association between IFRS adoption and the financial market capitalisation (Judge *et al.*, 2010; Ben Othman and Kossentini, 2015; Felski, 2015; Lasmin, 2011; Beuselinck *et al.*, 2009; Yurekli, 2016; Klibi and Kossentini, 2014; Beneish *et al.*, 2012; Stainbank, 2014). A few others, nevertheless, indicate a negative association between IFRS adoption and the financial market capitalisation (Shima and Yang, 2012; Hope *et al.*, 2006; Akman, 2011; Clements *et al.*, 2010; Renders and Gaeremynck, 2007; Brochet *et al.*, 2013). On the other hand, only two studies found an insignificant relationship between the adoption of IFRS and market capitalisation (Chebaane and Ben Othman, 2014; Riahi and Khoufi, 2015). Therefore, we propose our next hypothesis to test the association between ISAs adoption and stock market capitalisation as follows:

H2. Countries have adopted ISAs early are more likely to have higher levels of stock market capitalisation.

2.5 International standards on auditing adoption and stock market trading volume

With respect to stock trading volume, there have been very few empirical studies that examined the relationship between stock trading volume and the adoption of IFRS. Most previous studies are indicative of a positive and significant correlation between the volume of shares traded and IFRS adoption (Okoye *et al.*, 2014; Brüggemann *et al.*, 2012; Elbakry, 2010; Alsaqqa, 2012; Leuz and Verrecchia, 2000; Manyara and Benuto, 2014; Landsman *et al.*, 2012). Other scholars concluded that IFRS adoption has led to a reduction in the volume of stocks trading on financial markets (Figlioli *et al.*, 2017). Therefore, we suggest the following hypothesis to test the relationship between ISAs adoption and stock trading volumes:

H3. Countries that adopted the ISAs early are more likely to have higher levels of stocks trading volumes.

2.6 International standards on auditing adoption and stock market turnover

With reference to stock market turnover, most previous studies have revealed that IFRS adoption has significantly resulted in increasing the ratio of share turnover, as it leads to reductions in information asymmetry between firms listed on different stock markets (Leuz and Verrecchia, 2000; Loureiro and Taboada, 2012; Bova and Pereira, 2012; Drake *et al.*, 2010; Barth *et al.*, 2018). Further empirical studies, however, are supportive of a negative association between IFRS adoption and the ratio of stock turnover (Khurana and Michas, 2011; Burnett *et al.*, 2015). Accordingly, this study assumes the following hypothesis to assess the relationship between ISAs adoption and stock market turnover as follows:

H4. Countries characterised with early adoption of ISAs are more likely to have a higher stock market turnover.

2.7 International standards on auditing adoption and stock market returns

The vast majority of previous studies indicated a positive and significant association between IFRS adoption and stock market returns (Escaffre and Sefsaf, 2011; Loureiro and Taboada, 2012; Yip and Young, 2012; Adereti and Sanni, 2016; Erin *et al.*, 2017; Bartov *et al.*, 2005; Okafor *et al.*, 2016; Kang, 2013; Paglietti, 2009). On the contrary, a few studies have suggested a negative and significant impact of the adoption of IFRS on stock market returns (Patro and Gupta, 2016; Key and Kim, 2017; Klimczak, 2011). Furthermore, a limited number of other studies have reported an insignificant relationship between IFRS adoption and stock market returns (Alnodel, 2016; Barth *et al.*, 2008). Hence, this study posits the following hypothesis to test the association between ISAs adoption and stock market returns as follows:

H5. Countries categorised with early adoption of ISAs are highly likely to have higher stock market returns.

2.8 International standards on auditing adoption and stock market volatility

Stock market volatility is mostly expected to be remarkably decreased post the adoption of IFRS (Chau *et al.*, 2013; Patro and Gupta, 2016; Chalmers *et al.*, 2011; Nulla, 2014). In contrast, others believed that stock market volatility is positively attributed to IFRS adoption (Gassen and Sellhorn, 2006; Landsman *et al.*, 2012; Daske *et al.*, 2008), whereas only a minimal number of studies found mixed results between the adoption of IFRS and stock market volatility (Lambertides and Mazouz, 2013; Negi *et al.*, 2014). In return, a few previous studies are supportive of an insignificant relationship between stock market volatility and IFRS adoption (Leuz and Verrecchia, 2000; Cuijpers and Buijink, 2005; Auer, 1998; Daske, 2006; Floros, 2007). Therefore, we propose the following hypothesis to test the relationship between ISAs adoption and stock market volatility:

H6. Countries categorised with early adoption of ISAs are more likely to have lower levels of stock market volatility.

2.9 International standards on auditing adoption and stock market development

With a specific focus on the stock market development index, most prior studies found a positive and significant association between the adoption of IFRS and the level of stock market development (Klibi and Kossentini, 2014; Ben Othman and Kossentini, 2015; Ndagijimana and Barayandema, 2017). Similarly, prior auditing studies reported a positive and significant association between the strength of auditing and reporting standards and the development of the stock market (Boolaky, 2011; Boolaky and Cooper, 2015; Boolaky and O'Leary, 2011; Boolaky and O'Leary, 2012; Boolaky *et al.*, 2013). Accordingly, we propose the following hypothesis to check the association between ISAs adoption and financial market development:

H7. Countries categorised with early adoption of ISAs are more likely to have better development of the stock market.

3. Research design

3.1 Sample selection

By 2016, almost 50 countries around the world have not established their stock markets yet (De Sousa *et al.*, 2016). Accordingly because of the limited availability of data related to these financial markets, our sample consists of 110 countries from 1995 to 2014, resulting in 2200 observations. Specifically, countries that have adopted the ISAs within five years after they were issued in 1991 are classified as experimenters and only 6 out of 110 countries adopted ISAs by 1995, including Jordan, Malta, Netherland, Peru, Slovenia and Sri Lanka. Countries that adopted ISAs during the Asian crisis of 1997, precisely between 1996–2000 are classified as early adopters and 19 out of 110 nations are included in this group. Countries that have adopted ISAs after the Enron scandal of 2001 up to 2004 were classified as early majority adopters, which encompass 38 out of 110 nations. Countries that have adopted ISAs after the Directive 2006/43/EC on statutory audits were classified as late majority adopters, which involved 42 out of 110 countries. We found that only 5 out of 110 countries have not adopted ISAs by 2014 and they are classified as laggards of ISAs, including Colombia, Germany Oman, Qatar and the USA.

Crucially, we have classified the USA as a laggards group based on its adoption status and not based on whether this country has developed auditing or most developed market or not. Therefore, including the USA in laggards' group will not lead to obtaining biased results for many reasons. Firstly, we used laggards' group as a base category, so only the first four groups have appeared in our results tables. Secondly, it is true to say that the inclusion of one unique country in a group that consists of several other countries share the same characteristics will not lead to obtaining biased results as the effect of these countries will be higher than the influence of that unique country. Finally, we have analysed our data without including the USA into the non-adoption group of ISAs, but the results remained unchanged. Consequently, we included the USA in our selected sample, such that it will not lead to the generation of biased results.

Table 1 shows the classification of our sampled countries, which are categorised by the DOI theory based on their ISAs adoption date. In this sense, Harrell (2001) argues that a study should include a minimum of 10 cases per independent variable to acquire more rigorous empirical results. Therefore, we ended up including 110 cases for two independent variables, namely ISAs adoption categories (*ISAAC*) and ISA adoption status (*ISAAS*), further to three control variables (social factors). Additionally, our sample is representative of 56% of the total population (196 countries), which arguably enhances the generalizability of our results.

There is no consensus among researchers regarding how many subjects and observations should a researcher include to obtain valid and reliable findings for running multiple linear regression. For example, Green (1991) and Schneider *et al.* (2010) suggest that a minimum of 15 observations per independent variable must be included to obtain valid results. Therefore, our study has included 1,100 observations for an extended period from 1995–2014 to examine the causal associations between ISAs adoption and financial indicators of stock exchanges. To avoid the impact of 2007/2008 financial crisis on our findings, we have applied dummy variables to control for the effect of the 2007 financial crisis on the financial indicators of stock exchanges.

Additionally, the optimal sample size for running multiple linear regression can be achieved by using the rule-of-thumb equation suggested by Green (1991) that $N \geq 50 + 8\,m$, where m is the number of predictors included in a study. Accordingly, this study has five predictors, including ISAs adopter groups, ISAs adoption status in addition to three control variables: geographical location, official language and colonial history, so $M = 5$. By

Experimenters (1991–1995)	Early adopters (1996–2000)	Early majority (2001–2004)		Late majority (2005–2014)		Non-adopters up to 2014
Jordan	Armenia	Bahrain	Singapore	Argentina	Saint Kitts and Nevis	Colombia
Malta	Bangladesh	Bolivia	South Africa	Australia	Saudi Arabia	Germany
The Netherlands	Denmark	Bulgaria	Tanzania	Austria	Slovakia	Oman
Peru	El Salvador	Canada	Turkey	Barbados	Spain	Qatar
Slovenia	Fiji	Chile	Ukraine	Belgium	Swaziland	USA
Sri Lanka	France	China	United Kingdom	Botswana	Sweden	
	Georgia	Costa Rica	Vietnam	Brazil	Switzerland	
	Kenya	Czech Republic	Zambia	Cote d'Ivoire	Thailand	
	Latvia	Ecuador		Croatia	Tunisia	
	Macedonia	Guyana		Cyprus	UAE	
	Moldova	Hong Kong		Egypt	Venezuela	
	Mongolia	Hungary		Estonia	Zimbabwe	
	Paraguay	Ireland		Finland		
	Poland	Jamaica		Ghana		
	Romania	Kazakhstan		Greece		
	South Korea	Kyrgyzstan		Iceland		
	Trinidad and Tobago	Lebanon		India		
	Uganda	Lithuania		Indonesia		
	Uruguay	Luxembourg		Iran		
		Malawi		Israel		
		Mauritius		Italy		
		Montenegro		Japan		
		Nepal		Kuwait		
		New Zealand		Malaysia		
		Norway		Mexico		
		Panama		Morocco		
		Papua New Guinea		Namibia		
		Philippines		Nigeria		
		Russia		Pakistan		
		Serbia		Portugal		

Table 1.
The classifications of 110 countries based on their adoption-time into five adopters' groups suggested by DOI theory

applying the rule-of-thumb equation, our optimal sample size = $110 \geq 50 + 8\ m$, so our sample size was $110 \geq 90$, which is higher than the minimum representative sample size proposed by Green. This implies that our results could be of a high level of reliability and validity.

3.2 Variables definitions

Table 2 shows how our research variables have been operationally defined. In examining our hypotheses, we classified the variables into three types. Firstly, our dependent variables are the financial consequences of adopting countries. These financial consequences includea wide range of FMIs such asfinancial market integration (*IFNI*), the market capitalization percentage of GDP (*MCPL*), market capitalization in USD (*SMCP*), stocks traded (*SMTD*),

Dependent variables	Measures	Data sources
IFNI ($)	International financial integration is measuredby multiplying the net foreign assets in the current local currencies by the annual official exchange rates provided by the International Monetary Fund (IMF)	The IMF, International Financial Statistics, the World Development Indicators-World Bank Data
MCPL (%)	Market capitalisation to GDP ratio is measured by dividing stock market capitalisation of a country by its GDP, then multiplied by 100	The World Development Indicators-World Bank Data, The WFE database, UN Data, the Global Financial Development Database (GFDD),
SMCP ($)	The marketcapitalisation of listed firms is measuredby multiplying the number of outstanding stocks by the current market price of one share	The World Development Indicators-World Bank Data, The WFE database
SMTD (%)	Stock market traded to GDP ratio is measured by using the total number of all shares traded in a stock market at the end of the year, multiplied by their respective matching prices and divided by GDP, then multiplied by 100	The World Development Indicators-World Bank Data, The WFE database
SMTO (%)	The stock market turnover ratio is measured by using the total value of shares traded in a stock market at the end of the year divided by the average market capitalisation for the period, then multiplied by 100	The World Development Indicators-World Bank Data, The WFE database
SMRT (%)	The stock market return might be in the form of profit through trading or dividends paid by a company to its shareholders from time to time	The Global Financial Development Database (GFDD) – provided by the World Bank
SPVO	Stock price volatility is measured by deducting the average from the daily stock prices to compute the difference. Then, by squaring the differences and dividing them by 360 days to extract the variance and calculate the square root of the variance to compute the standard deviation, which represents the stock-price volatility	The Global Financial Development Database (GFDD) – provided by the World Bank
FMKD	Financial market development ranges from 1–7, where "1" = indicates that a country has not offered any financial services to shareholders, whereas "7" = denotes that a country has provided a higher level of financial services to shareholders	The Global Competitiveness Index defined by the World Economic Forum

Table 2.
The operational definition of the research variables and data sources

(*continued*)

Independent variables	Measures	Data sources
ISAAC	The adoption categories of the ISAs involve the five adopter groups that proposed by the DOI theory, which are:	Reports on the observance of standards and codes
EXPRA	"1" = experiments refer to countries adopted the ISAs before 1995	Basis of ISA adoption by jurisdiction from the IFAC
ERADA	"2" = early adopters refer to countries adopted the ISAs 1995–2000	
ERMJA	"3" = early majority refer to countries adopted the ISAs 2001–2006	
LTMJA	"4" = late majority refer to countries adopted the ISAs 2007–2014	
LGGRA	"5" = laggards refer to countries have not adopted the ISAs till 2014	
ISAAS	The adoption status of the ISAs, which includes several groups:	Action plan template – IFAC
NOAD	"0" = Non-adopters of ISAs (laggards)	Basis of ISA adoption by jurisdiction from the IFAC
WIAM	"1" = ISAs are the local audit standards with modifications	Reports on the observance of standards and codes
WOAM	"2" = ISAs are the local audit standards without amendments	(ROSCs) provided by the World Bank Group
WITR	"3" = ISAs are the local audit standards with translation	
WOTR	"4" = ISAs are the local audit standards without translation	
WAMT	"5" = ISAs are national standards with modifications and translation	
BLAW	"6" = ISAs are required to be adopted mandatory by the law	
GMAT	"7" = ISAs only apply in matters not regulated by local audit standards	
IFRSS	"8" = financial statements issued under IFRS must be audited by ISAs	
Control variables	Measures of (social factors)	Data sources
GERI	The geographical regions	The classification of all countries by the continental regions presented at the World Bank website
EURO	"1" = the country is in Europe	
NLSA	"2" = the country is in North, Latin and South America	
CSAS	"3" = the country is in Central and South Asia	
EASP	"4" = the country is in East Asia and Pacific	
MENA	"5" = the country is in the Middle East and North Africa	
AFRC	"6" = the country is in Sub-Saharan Africa	

(*continued*)

Table 2.

Control variables	Measures of (Social factors)	Data sources
OFLN	The official language per group	The World Facebook website established by the Central Intelligence Agency (CIA)
ENGL	"1" = English is an official language in the country	
FRNL	"2" = French is an official language in the country	
SPNL	"3" = Spanish is an official language in the country	
ARBL	"4" = Arabic is an official language in the country	
GRML	"5" = German is an official language in the country	
RUSL	"6" = Russian is an official language in the country	
OTLN	"7" = Other languages are official languages in the country	
COHS	The colonial history	The World Facebook website established by the CIA
NEVC	"0" = never colonised countries	
BRTC	"1" = countries colonised by the British Empire	
FRNC	"2" = countries colonised by the French Empire	
SPNC	"3" = countries colonised by the Spanish Empire	
PORC	"4" = countries colonised by the Portuguese Empire	
DUTC	"5" = countries colonised by the Dutch Empire	
GRMC	"6" = countries colonised by the German Empire	
RUSC	"7" = countries colonised by the Russian Empire	
OTCO	"8" = countries colonised by other colonists	
D08–D09	Year dummy for the crisis period, where 1 = 2008–2009, 0 = otherwise	Year dummies to control for the financial crisis of 2008

Table 2.

stock market turnover (*SMTO*), stock market return (*SMRT*), stock price volatility (*SPVO*) and financial market development (*FMKD*).

Second, we use two main independent variables. Firstly, the adoption of ISAs categories (*ISAAC*), which includes five ISAs adopter groups suggested by DOI theory (i.e. experimenters, early adopters, early majority, late majority and laggards). The classification of these five groups has been constructed based on both the global financial crisis and the auditing reforms released by some international bodies such as the Directive 2006/43/EC that issued by the European Commission. Secondly, the adoption of ISAs status (*ISAAS*), which contains nine groups. These ISAs status are ISAs adopted with amendments, ISAs adopted without amendments, ISAs adopted with translations, ISAs adopted without translations, ISAs adopted with amendments and translations, ISAs adopted by the country law, ISAs adopted in gap matters, ISAs adopted for financial statements prepared in accordance to IFRS and the non-adopters' group of ISAs (Boolaky and Soobaroyen, 2017).

Third, we include three variables to control for the financial consequences of ISAs adoption. Our control variables include three social factors, namely geographical regions,

the official language and colonial history, in addition to year dummies of 2008–2009 (D08–D09) to control for the effect of the most recent Financial Crisis of 2008–2009 on FMIs internationally.

3.3 Model specification

This study uses a multivariate linear regression analysis based on balanced panel data to examine the cause-effect relationship between the FMIs and the adoption of ISAs. This study assumes a linear relationship between the dependent variables (FMI) and the independent variables. This is because all our dependent variables are naturally continuous. Therefore, the multiple linear regression model can be specified as follows:

$$FCISAs_{it} = \alpha_0 + \beta_1\ ISAAC_{it} + \beta_2\ ISAAS_{it} + \sum_{i=1}^{4} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (1)$$

Where, $FCISAs_{it}$ is the financial consequences of adopting ISAs for a country (i) in a year (t), which involves a wide range of FMI including financial market integration (*IFNI*), market capitalization (*MCPL*), market capitalization (*SMCP*), stocks traded (*SMTD*), stock market turnover (*SMTO*), stock market return (*SMRT*), stock price volatility (*SPVO*) and financial market development (*FMKD*), α_0 is the constant term, β_j are the coefficients on the independent variables, the first independent variable is ISAs adoption categories ($ISAAC_{it}$), which includes five adopter categories of ISAs, namely experiments (*EXPRA*), early adopters (*ERADA*), early majority (*ERMJA*), late majority (*LTMJA*) and laggards (*LGGRA*). The second independent variable is ISAs adoption status ($ISAAS_{it}$), including non-adopters of ISAs (*NOAD*), ISAs adopted with modifications (*WIAM*), ISAs adopted without amendments (*WOAM*), ISAs adopted with translation (*WITR*), ISAs adopted without translation (*WOTR*), ISAs adopted with modifications and translation (*WAMT*), ISAs required by the country law (*BLAW*), ISAs only apply in matters not regulated by the local standards (*GMAT*) and financial statements issued under the IFRS must be audited by ISAs (*IFRSS*). $\sum \beta_i CONTROLS_{it}$ Refers to three control variables, including geographical regions (*GERE*), official languages (*OFLN*) and colonial history (*COHS*), in addition to year dummies to control for the global financial crisis period (*D08–D09*), ε_{it} Refers to the error term for the country (i) in a year (t).

4. Empirical results

4.1 Descriptive statistics

Table 3 presents the descriptive statistics of the dependent variables (i.e. FMIs). It reports that only six countries are included in the experimenter's group, 19 in the early adopter's group, 38 in the initial majority group and 42 countries in the late majority group, while only five nations are classified as laggards.

Table 3 also shows that the data relating to the financial integration (*IFNI*) variable that is relevant to the *LGGRA* and *ERMJA* groups exhibit the highest and second highest variable values among the four adopter categories of ISAs. The data relevant to the *LGGRA* group ranges from −535.68 to 2,288.37, with a higher average of 230.28 and a standard deviation of 607.95, whereas the data relevant to the *ERMJA* group ranges from −149.39 to 4,641.46, with an average of 75.72 and a standard deviation of 381.17, revealing that there is a considerable variation in the data of *IFNI* relevant to countries included in the *LGGRA* and

Dep var	*ISAAC*	*N*	(%)	Mean	Std. D	Variance	Min	Max
IFNI ($)	EXPRA	120	5.5	21.86	44.85	2.01	−9.54	259.96
	ERADA	380	17.3	37.66	130.01	16.90	−14.31	885.75
	ERMJA	760	34.5	75.72	381.17	145.29	−149.39	4,641.46
	LTMJA	840	38.2	42.12	140.71	19.80	−341.61	1,351.91
	LGGRA	100	4.5	230.28	607.95	369.61	−535.68	2,288.37
MCPL (%)	EXPRA	120	5.5	54.28	48.90	23.91	1.04	298.67
	ERADA	380	17.3	20.76	26.14	6.83	0.10	106.35
	ERMJA	760	34.5	64.53	126.65	160.39	0.02	1,254.47
	LTMJA	840	38.2	52.87	51.18	26.19	0.01	487.88
	LGGRA	100	4.5	61.70	41.48	17.20	9.46	156.81
SMCP ($)	EXPRA	120	5.5	111.16	225.79	5.10	0.15	956.16
	ERADA	380	17.3	125.58	394.07	15.53	0.00	2,740.34
	ERMJA	760	34.5	248.50	687.83	47.31	0.01	6,004.95
	LTMJA	840	38.2	257.63	601.92	36.23	0.07	4,614.07
	LGGRA	100	4.5	3,379.30	6,454.04	4,165.47	2.38	26,330.59
SMTD (%)	EXPRA	120	5.5	25.46	45.80	20.98	0.26	200.01
	ERADA	380	17.3	12.40	30.86	9.52	0.00	172.08
	ERMJA	760	34.5	24.89	67.09	45.01	0.00	723.59
	LTMJA	840	38.2	29.77	45.96	21.12	0.00	331.26
	LGGRA	100	4.5	55.91	85.23	72.64	0.31	387.54
SMTO (%)	EXPRA	120	5.5	32.46	43.10	18.58	0.66	207.76
	ERADA	380	17.3	42.59	113.33	128.44	0.00	1,612.94
	ERMJA	760	34.5	36.45	56.13	31.51	0.00	580.60
	LTMJA	840	38.2	48.24	57.35	32.89	0.01	497.40
	LGGRA	100	4.5	67.73	76.39	58.35	2.39	404.07
SMRT (%)	EXPRA	120	5.5	9.15	28.20	7.95	−41.77	129.02
	ERADA	380	17.3	6.98	28.05	7.87	−54.47	402.46
	ERMJA	760	34.5	9.92	30.72	9.44	−63.16	378.83
	LTMJA	840	38.2	11.75	33.55	11.26	−55.02	386.44
	LGGRA	100	4.5	15.15	22.50	5.06	−40.60	89.73
SPVO (%)	EXPRA	120	5.5	15.48	9.09	8.27	1.00	42.89
	ERADA	380	17.3	13.15	18.23	33.22	1.00	141.58
	ERMJA	760	34.5	16.64	14.09	19.86	1.00	95.46
	LTMJA	840	38.2	17.14	11.55	13.33	1.00	63.87
	LGGRA	100	4.5	19.02	6.95	4.83	7.47	39.59
FMKD (scale)	EXPRA	120	5.5	4.53	0.49	0.24	2.85	5.63
	ERADA	380	17.3	4.08	0.51	0.26	3.07	5.89
	ERMJA	760	34.5	4.39	0.77	0.59	3.03	6.40
	LTMJA	840	38.2	4.35	0.67	0.44	2.86	5.87
	LGGRA	100	4.5	4.79	0.45	0.20	4.01	5.84

Table 3.
Summary of the descriptive statistics of 110 countries from 1995 to2014

Note: The variables have been operationally defined in Table 2

ERMJA groups. This result is in line with those of prior studies (Jayaraman and Verdi, 2014; Cai and Wong, 2010; De George, 2013).

Table 3 also indicates that market capitalisation to GDP (*MCPL)* variable data that relates to the *ERMJA* group exhibits the highest variable scores among the four adopter categories of ISAs. The data of *MCPL* that is relevant to the *ERMJA* group ranges from 0.02 to 1,254.47, with a higher average of 64.53 and a significant standard deviation of 126.65, indicating a considerable variation in the *ERMJA* group, which is consistent with the results of previous studies (Lasmin, 2011; Judge *et al.*, 2010; Felski, 2015; Klibi and Kossentini, 2014).

The data of market capitalisation of listed firms (*SMCP)* that is relevant to the *LGGRA* group presents the highest dispersion scores of *SMCP* among the four adopter categories of ISAs. The pertinent data to the *LGGRA* group ranges from 2.38 to 26,330.59, with an average of 3,379.3 and a standard deviation of 6,454.04, suggesting that there is a substantial variation in the data of *SMCP* relating to the *LGGRA* group, which is in line with the findings reported by previous studies (Beneish *et al.*, 2012; Klibi and Kossentini, 2014; Stainbank, 2014; Ben Othman and Kossentini, 2015).

Similarly, total stock traded (*SMTD)* data that is relevant to the *LGGRA* and *ERMJA* groups exhibits the highest and second-highest dispersed data among the four adopter groups of the ISAs. This is consistent with the findings of existing studies (Okoye *et al.*, 2014; Brüggemann *et al.*, 2012; Elbakry, 2010; Alsaqqa, 2012). Likewise, stock market turnover *(SMTO)* data that is related to the *ERADA* group exhibits the most significant variable values among the four adopter categories of ISAs with a mean of 42.59, a standard deviation of 113.33, indicating a wide variation in *SMTO* variable that is relevant to the countries included in the *ERADA* group. This result is in line with the findings of previous studies (Leuz and Verrecchia, 2000; Loureiro and Taboada, 2012; Bova and Pereira, 2012).

By presenting the most substantial variability among the four adopter categories of ISAs, stock market return (*SMRT*) data that is relevant to the *LTMJA* group is consistent with the findings of previous studies (Alnodel, 2016; Key and Kim, 2017; Klimczak, 2011; Escaffre and Sefsaf, 2011; Loureiro and Taboada, 2012).

Additionally, stock price volatility (*SPVO*) data that relates to the *ERADA* group exhibits the highest variable values among the four adopter categories of ISAs with 13.15 mean value and 18.23 standard deviation. This result is tied to prior studies (Leuz and Verrecchia, 2000; Cuijpers and Buijink, 2005; Auer, 1998; Daske, 2006; Floros, 2007).

While, the financial market development (*FMKD*) variable data that is relevant to the *ERMJA* and *LTMJA* groups exhibits the highest and second highest variable values among the other four adopter categories of ISAs with an average of 4.39 and a standard deviation of 0.77, the *FMKD* data that is relevant to the *LTMJA* group ranges from 2.86 to 5.87, with an average of 4.35 and a standard deviation of 0.67. Our findings in this regard are in line with the findings of prior studies (Boolaky and O'Leary, 2011; Ndagijimana and Barayandema, 2017).

Table 4 provides descriptive statistics for all categorical independent and control variables. Specifically, Panel (A) of Table 4 shows that the experimenter's group (*EXPRA*) includes only six countries that adopted ISAs by 1995. The early adopter's group (*ERADA*) involves 19 nations that adopted ISAs over the period from 1996–2000. The early majority adopters (*ERMJA*) comprises 38 nations that adopted ISAs over the period 2001–2006. The late majority adopters' group (*LTMJA*) consists of 42 countries that adopted ISAs late – between 2007 and 2014. The laggards' group (*LGGRA*) includes only five countries that had not yet adopted ISAs by 2014.

Panel (B) of Table 4 displays the frequency of ISAs adoption status (*ISAST*) across countries up to 2014. Panel (B) of Table 4 presents a different independent variable namely the ISAs adoption status (ISAST), which is different from the ISAs categories suggested by DOI theory appear in Panel (A) of Table 4, which involves five main adopter categories. For example, if a country adopted ISAs in 2014, then, such a country will be a non-adopter over the 19 years up to 2013 and it will be classified as adopter only in the final year 2014. Therefore, Panel (B) of Table 4 displays that the non-adopters' group of the ISAs (NOAD) includes 1093 observations from 102 countries over the whole period from 1995 up to 2014. This is done by gathering the number of non-adopters for each country on the entire period until they have adopted ISAs in a specific year. Specifically, there are 28 countries that

Variables	Observations	Countries	(%)	Cumulative (%)	Tolerance	VIF
Independent variables						
Panel A: ISAAC						
EXPRA	120	6	5.5	5.5	0.62	1.61
ERADA	380	19	17.3	22.7	0.66	1.52
ERMJA	760	38	34.5	57.3	0.60	1.66
LTMJA	840	42	38.2	95.5	0.58	1.73
LGGRA	100	5	4.5	100	0.69	1.45
Total	2200	110	100			
Panel B: ISAST						
NOAD	1093	102	49.7	49.7	0.33	3.05
WIAM	308	28	14.0	63.7	0.45	2.21
WOAM	106	10	4.8	68.5	0.70	1.44
WITR	344	34	15.6	84.1	0.41	2.42
WOTR	15	1	0.7	84.8	0.78	1.29
WAMT	139	16	6.3	91.1	0.51	1.95
BLAW	177	14	8.0	99.2	0.52	1.92
GMAT	16	2	0.7	99.9	0.86	1.16
IFRSS	2	1	0.1	100	0.98	1.02
Total	2200		100			
Control variables						
Panel C: GERE						
EURO	720	36	32.7	32.7	0.14	6.92
LNAM	420	21	19.1	51.8	0.21	4.86
CSAS	220	11	10.0	61.8	0.47	2.13
EASP	300	15	13.6	75.5	0.52	1.93
MENA	260	13	11.8	87.3	0.15	6.59
AFRC	280	14	12.7	100	0.38	2.60
Total	2200	110	100			
Panel D: OFLN						
ENGL	620	31	28.2	28.2	0.28	3.53
FRNL	60	3	2.7	30.9	0.56	1.78
SPNL	280	14	12.7	43.6	0.11	9.13
ARBL	220	11	10.0	53.6	0.13	7.70
GRML	140	7	6.4	60.0	0.46	2.17
RUSL	60	3	2.7	62.7	0.45	2.16
OTHL	820	41	37.3	100	0.25	4.08
Total	2200	110	100			
Panel E: COHS						
NEVC	340	17	15.5	15.5	0.33	2.99
BRTC	740	37	33.6	49.1	0.17	5.96
FRNC	100	5	4.5	53.6	0.62	1.60
SPNC	260	13	11.8	65.5	0.10	10.26
PORC	40	2	1.8	67.3	0.77	1.30
DUTC	60	3	2.7	70.0	0.57	1.74
GRMC	40	2	1.8	71.8	0.80	1.25
RUSC	200	10	9.1	80.9	0.32	3.14
OTHC	420	21	19.1	100	0.24	4.12
Total	2200	110	100			

Note: The Panels (A and B) represent the abbreviations of our independent variables. Table 2

Table 4.
A summary of all categorical independent and control variables for 110 countries over 1995–2014

adopted ISAs with some amendments (*WIAM*), while only 10 countries adopted ISAs without any amendments (*WOAM*). While 34 countries embraced ISAs with translation to local languages (*WITR*), only one country (Armenia) adopted ISAs without any translation to its local language (*WOTR)*. On the other hand, 16 countries adopted ISAs with amendments and translation alike (*WAMT*) and 14 countries embraced ISAs to comply with their local laws (*BLAW*). Additionally, only two countries (Austria and Japan) adopted ISAs to fill in areas where local audit standards do not exist (*GMAT*), while, only one country (Argentina) adopted ISAs just for financial statements that were prepared in accordance with IFRS (*IFRS*).

Regarding the control variables, Panel (C) of Table 4 shows six geographical regions (*GERE)* for 110 destinations around the world as follows:

(1) 36 countries in the European (*EURO*) region;

(2) 21 countries from the Latin, North and South America (*LNAM*) region;

(3) 11 countries from America, the Central and South Asia (*CSAS*) region;

(4) 15 countries from Asia, the East Asia and Pacific (*EASP*) region;

(5) 13 countries from the Middle East and North African (*MENA*) region; and

(6) 14 countries from the sub-Saharan African (*AFRC*) region.

Panel (D) of Table 4 represents the official languages (*OFLN*), which include seven common spoken languages. Panel (D) of Table 4 also shows that the English language (*ENGL*) is a commonly spoken language in 31 countries, three nations use French (*FRNL*), the Spanish language (*SPNL*) is an official language in 14 countries, the Arabic language (*ARBL*) is commonly spoken in 11 states, the German language (*GRML*) is an official language in 7 countries, the Russian language (*RUSL*) is an official language in 3 nations and other languages are spread among 41 countries.

Panel (E) of Table 4 describes the frequency of colonial history (*COHS*) for 110 destinations that consist of 9 common groups. Panel (E) of Table 4 reports that the sample covered 17 never colonised countries (*NEVC*), where all of them adopted ISAs, but at varying periods. The sample also includes 37 countries that were colonised by the British Empire (*BRTC*), five by the French Empire (*FRNC*), 13 by the Spanish Empire (*SPNC),* two countries colonised by the Portuguese Empire (*PORC*), three by the Dutch Empire (*DUTC*), two countries by the German Empire (*GRMC*), 10 colonised by the Russian Empire (*RUSC*) and finally, 21 countries were colonised by others (*OTCO*).

Table 5 shows the correlation coefficients of Pearson and Spearman matrices. Our results suggest that the presence of multicollinearity issues is not a severe statistical problem in our study. Crucially, Table 5 shows that the *ERADA* group is negatively and significantly correlated with all the FMIs. It also indicates that there are positive and significant correlations between the *ERMJA* group and *IFNI, MCPL* and *FMKD*, suggesting that countries that have adopted ISAs at the initial stages are more likely to obtain higher levels of *IFNI, MCPL* and *FMKD*. Likewise, Table 5 shows positive and significant correlations between *LTMJA* and *SMTD, SMTO, SMRT* and *SPVO*, indicating that countries that have adopted ISAs during the late stages are more likely to have higher levels of *SMTD, SMTO, SMRT* and *SPVO*. Additionally, Table 5 reports positive and significant correlations between the *LGGRA* group and all financial indicators, except for *MCPL* and *SMRT* that show insignificant correlations with ISAs.

Table 5.
Bivariate correlation coefficients for all variables included in this study

Variables	IFNI	MCPL	SMCP	SMTD	SMTO	SMRT	SPVO	FMKD	EXPRA	ERADA	ERMJA	LTMJA	LGGRA
IFNI		0.361***	0.562***	0.412***	0.303***	0.091***	0.281***	0.230***	0.007	−0.100***	−0.033	0.063***	0.103***
MCPL	0.143***		0.745***	0.749***	0.389***	0.096***	0.160***	0.609***	0.067***	−0.322***	0.008	0.163***	0.114***
SMCP	0.195***	0.176***		0.861***	0.659***	0.125***	0.473***	0.510***	−0.003	−0.290***	−0.058***	0.215***	0.160***
SMTD	0.237***	0.741***	0.444***		0.836***	0.081***	0.456***	0.582***	0.044**	−0.259***	−0.097***	0.215***	0.143***
SMTO	0.195***	0.158***	0.259***	0.458***		0.122***	0.490***	0.375***	−0.004	−0.110***	−0.111***	0.152***	0.102***
SMRT	−0.018	0.024	0.001	−0.034	0.042**		0.128***	0.064***	−0.014	−0.082***	−0.016	0.044**	0.097***
SPVO	0.094***	0.058***	0.061***	0.201***	0.228***	0.135***		0.155***	0.001	−0.169***	−0.001	0.100***	0.075***
FMKD	0.087***	0.489***	0.211***	0.468***	0.200***	−0.044**	0.063***		0.084***	−0.188***	0.006	0.034	0.159***
EXPRA	−0.033	0.007	−0.036	−0.002	−0.037	−0.009	−0.014	0.064***		−0.110***	−0.174***	−0.189***	−0.052**
ERADA	−0.037*	−0.169***	−0.065***	−0.113***	−0.004	−0.049**	−0.105***	−0.180***	−0.110***		−0.332***	−0.359***	−0.100***
ERMJA	0.040*	0.110***	−0.056***	−0.015	−0.070***	−0.009	0.020	0.050**	−0.174***	−0.332***		−0.571***	−0.159***
LTMJA	−0.051**	0.010	−0.052**	0.053**	0.056***	0.037*	0.050**	0.001	−0.189***	−0.359***	−0.571***		−0.171***
LGGRA	0.132***	0.026	0.406***	0.118***	0.076***	0.034	0.044**	0.143***	−0.052**	−0.100***	−0.159***	−0.171***	
NOAD	−0.059***	−0.011	0.065***	0.026	0.056***	0.055***	0.061***	0.092***	−0.239***	−0.278***	−0.076***	0.308***	0.220***
WIAM	−0.045**	0.021	−0.049**	−0.073***	−0.146***	−0.056***	−0.204***	−0.006	−0.097***	0.093***	0.208***	−0.193***	−0.088***
WOAM	0.229***	0.261***	0.049**	0.221***	0.090***	−0.016	0.010	0.154***	−0.054**	0.077***	0.020	−0.033	−0.049**
WITR	−0.021	−0.107***	−0.049**	−0.068***	0.018	0.054**	0.175***	−0.219***	0.007	0.141***	0.053**	−0.125***	−0.094***
WOTR	−0.018	−0.050**	−0.018	−0.039*	−0.047**	−0.025	−0.093***	−0.095***	−0.020	0.181***	−0.060***	−0.065***	−0.018
WAMT	0.039*	0.036*	0.013	0.088***	0.104***	−0.058***	−0.040*	−0.002	0.267***	0.104***	−0.142***	−0.043**	−0.057***
BLAW	−0.058***	−0.085***	−0.063***	−0.120***	−0.106***	−0.027	−0.051**	0.031	0.370***	0.011	−0.046**	−0.109***	−0.065***
GMAT	0.141***	0.001	0.086***	0.052**	0.053**	−0.026	0.061***	0.051**	−0.021	−0.039*	−0.062***	0.109***	−0.019
IFRSS	−0.002	−0.015	−0.006	−0.014	−0.017	0.048**	0.026	−0.058***	−0.007	−0.014	−0.022	0.038*	−0.007
GERE	−0.009	0.026	−0.070***	−0.060***	−0.145***	−0.007	−0.164***	−0.076***	−0.099***	−0.097***	−0.006	0.123***	0.011
OFLN	0.086***	−0.187***	−0.107***	−0.067***	0.149***	0.053**	0.330***	−0.135***	0.060***	0.096***	−0.068***	−0.006	−0.071***
COHS	−0.069***	−0.235***	−0.147***	−0.243***	−0.051**	0.023	0.148***	−0.232***	−0.074***	0.158***	0.057***	−0.148***	0.010

Notes: The bottom left part of the table represents the Pearson correlation, while the upper right part represents the Spearman correlation. The variables are defined in Table 2

(*continued*)

Table 5.

Variables	NOAD	WIAM	WOAM	WITR	WOTR	WAMT	BLAW	GMAT	IFRSS	GERE	OFLN	COHS
IFNI	−0.104***	−0.015	0.108***	0.114***	−0.082***	0.087***	−0.114***	0.098***	0.031	0.020	0.036*	−0.177***
MCPL	0.055**	0.026	0.108***	−0.116***	−0.133***	0.084***	−0.107***	0.038*	−0.029	−0.051**	−0.200***	−0.382***
SMCP	0.031	−0.099***	0.177***	−0.004	−0.132***	0.092***	−0.143***	0.103***	0.015	−0.151***	0.021	−0.332***
SMTD	0.092***	−0.169***	0.163***	−0.056***	−0.134***	0.138***	−0.114***	0.085***	−0.027	−0.151***	0.081***	−0.339***
SMTO	0.117***	−0.260***	0.161***	−0.031	−0.091***	0.170***	−0.120***	0.093***	−0.027	−0.232***	0.279***	−0.190***
SMRT	0.109***	−0.050**	−0.012	−0.023	−0.043**	−0.060***	−0.027	−0.026	0.048**	0.007	0.033	−0.013
SPVO	0.076***	−0.225***	0.020	0.155***	−0.109***	−0.029	−0.045**	0.079***	0.037*	−0.217***	0.340***	0.056***
FMKD	0.100***	−0.028	0.139***	−0.222***	−0.103***	−0.001	0.056***	0.065***	−0.051**	−0.125***	−0.115***	−0.269***
EXPRA	−0.239***	−0.097***	−0.054**	0.007	−0.020	0.267***	0.370***	−0.021	−0.007	−0.100***	0.064***	−0.065***
ERADA	−0.278***	0.093***	0.077***	0.141***	0.181***	0.104***	0.011	−0.039	−0.014	−0.088***	0.103***	0.140***
ERMJA	−0.076***	0.208***	0.020	0.053**	−0.060***	−0.142***	−0.046**	−0.062***	−0.022	0.009	−0.083***	0.055***
LTMJA	0.308***	−0.193***	−0.033	−0.125***	−0.065***	−0.043**	−0.109***	0.109***	0.038*	0.097***	0.002	−0.153***
LGGRA	0.220***	−0.088***	−0.049**	−0.094***	−0.018	−0.057***	−0.065***	−0.019	−0.007	0.021	−0.070***	0.048**
NOAD		−0.401***	−0.224***	−0.428***	−0.082***	−0.258***	−0.294***	−0.085***	−0.030	0.049**	−0.042*	−0.055***
WIAM	−0.401***		−0.091***	−0.174***	−0.033	−0.105***	−0.119***	−0.035	−0.012	0.197***	−0.343***	−0.102***
WOAM	−0.224***	−0.091***		−0.097***	−0.019	−0.058***	−0.067***	−0.019	−0.007	0.039*	−0.012	−0.146***
WITR	−0.428***	−0.174***	−0.097***		−0.036*	−0.112***	−0.127***	−0.037*	−0.013	−0.090***	0.249***	0.237***
WOTR	−0.082***	−0.033	−0.019	−0.036*		−0.022	−0.025	−0.007	−0.002	0.020	0.094***	0.078***
WAMT	−0.258***	−0.105***	−0.058***	−0.112***	−0.022		−0.077***	−0.022	−0.008	−0.130***	0.090***	−0.081***
BLAW	−0.294***	−0.119***	−0.067***	−0.127***	−0.025	−0.077***		−0.025	−0.009	−0.136***	0.065***	0.078***
GMAT	−0.085***	−0.035	−0.019	−0.037*	−0.007	−0.022	−0.025		−0.003	−0.023	0.059***	−0.003
IFRSS	−0.030	−0.012	−0.007	−0.013	−0.002	−0.008	−0.009	−0.003		−0.008	−0.014	0.010
GERE	0.053**	0.200***	0.033	−0.109***	0.004	−0.118***	−0.121***	−0.019	−0.015		−0.349***	−0.323***
OFLN	−0.042	−0.340***	−0.010	0.250***	0.092***	0.087***	0.062***	0.061***	−0.015	−0.325***		0.390***
COHS	−0.061***	−0.142***	−0.133***	0.239***	0.102***	−0.036*	0.074***	0.021	−0.003	−0.388***	0.518***	

5. Regression analyses and discussion

This study uses a multivariate linear regression method to test the hypothesised relationships between the adoption of ISAs and a range of FMIs. Table 6 shows the results of using several statistical tests to check the potential violations of the assumptions of multiple linear regression that issued to examine the effects of ISAs adoption on FMIs, including heteroscedasticity, linearity, normality, serial-correlation and unit-roots. Accurately, Shapiro-Wilk and Jarque-Bera tests report that the normality assumption has been violated. Hence, according to Templeton and Burney (2017), a two-step transformation is the most appropriate method to mitigate the normality violation. Similarly, Durbin's alternative and Breusch-Godfrey tests show that the serial correlation assumption has been violated. In this case, running a linear regression with robust standard errors is the most appropriate method for correcting serial correlations (Hoechle, 2007). White and Breusch-Pagan tests indicate that the homoscedasticity assumption has been violated. Therefore, the standard cluster-robust mistake is the optimal technique to handle the violation of homoscedasticity of error terms and generate efficient estimates of residuals, thus providing robust results (Gow *et al.*, 2010). Additionally, LLC test and Breitung test indicate that the panel data has a unit root. Consequently, the first-differences approach is the best method to correct for non-stationary variables (Young, 1993).

After addressing all the statistical issues relating to testing the assumptions of linear regression, Table 7 shows the results of conducting multiple linear regression models with cluster-robust standard errors to examine the ISAs–FMIs nexus.

Column 1 of Table 7 reports that countries that adopted ISAs during the initial stages are more likely to have lower levels of financial market integration (*IFNI*). This means that *H1* has been statistically rejected. This result is, however, aligned with those of Palea (2013) that state that the absence of the needed mechanisms for uniform application of ISA internationally in addition to other differences among countries such as national legal enforcement regimes, investor protection, auditing practices, tax regulation and corporate governance practices, can lead to a reduction in the level of financial market integration.

Columns 2 and 3 of Table 7 indicate that countries with lower levels of stock market capitalisation are more likely to become the early adopters of ISAs. This means that *H2* has not been statistically supported. This finding contradicts the results of previous studies (Boolaky and Omoteso, 2016; Boolaky and Soobaroyen, 2017) that found a positive and significant association between ISAs adoption and stock market capitalisation level. In line with prior studies (Sayumwe and Francoeur, 2017; Samaha and Khlif, 2016; Ali *et al.*, 2016; Ball, 2016; Kimeli, 2017), financial markets are mostly compelled to adopt global accounting and auditing standards as a response to various stakeholders' pressures, who seek to maximise their interests; this seemed to be leading to unintended consequences such as a decreasing level of market capitalisation because of the conflict of interests between stakeholders.

As shown in Column 4 of Table 7, the results suggest a negative and significant association between ISAs adoption and the total value of stock traded (*SMTD*). Thisimplies that *H3* has not been statistically supported. However, it is tied to the results of Figlioli *et al.* (2017) that claim that the volume of stocks traded has significantly decreased after the adoption of IFRS due to reduction in stock prices. Theoretically, though, if accounting standards were not geared to meeting investors' demands in a context that may be characterised by low legal and institutional enforcement, the adoption of ISAs may not reflect positive economic consequences such as lower levels of stock traded (Figlioli *et al.*, 2017).

Table 6. The results of multiple linear regression models for 110 countries over 1995–2014

OLS regression models	Financial consequences (dependent variables)							
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
The ISAs adopters DOI classification								
EXPRA	−0.23*** (0.000)	11.43 (0.314)	−39.42*** (0.000)	−30.84*** (0.000)	−55.05*** (0.000)	−6.65 (0.170)	−2.36 (0.208)	−0.19** (0.029)
ERADA	−0.28*** (0.000)	−40.18*** (0.000)	−40.67*** (0.000)	−55.20*** (0.000)	−39.50*** (0.000)	−11.65*** (0.003)	7.11*** (0.000)	−0.50*** (0.000)
ERMJA	−0.20*** (0.000)	2.62 (0.761)	−38.98*** (0.000)	−40.74*** (0.000)	−45.40*** (0.000)	−8.70** (0.018)	3.98*** (0.005)	−0.17** (0.011)
LTMJA	−0.25*** (0.000)	−10.74 (0.189)	−39.03*** (0.000)	−38.41*** (0.000)	−35.92*** (0.000)	−3.56 (0.307)	−2.50* (0.064)	−0.41*** (0.000)
The ISAs status classical classification								
WIAM	4.23** (0.025)	−0.52 (0.921)	−1.32 (0.185)	7.07** (0.031)	−14.46*** (0.002)	2.81 (0.211)	−2.67*** (0.002)	−0.15*** (0.000)
WOAM	27.83*** (0.000)	94.97*** (0.000)	5.67*** (0.000)	42.88*** (0.000)	9.61 (0.154)	1.80 (0.576)	−0.39 (0.756)	0.24*** (0.000)
WITR	2.41 (0.165)	6.97 (0.153)	2.05** (0.027)	3.13 (0.303)	0.91 (0.834)	5.60*** (0.007)	2.14*** (0.008)	−0.13*** (0.000)
WOTR	3.81 (0.594)	27.59 (0.169)	1.77 (0.461)	4.38 (0.727)	−54.08 (0.003)	−10.91 (0.203)	−12.74*** (0.000)	−0.03 (0.832)
WAMT	5.47** (0.036)	18.68** (0.011)	3.33** (0.016)	15.65*** (0.001)	19.59*** (0.003)	−5.99* (0.056)	−6.27*** (0.000)	−0.08 (0.129)
BLAW	5.77** (0.014)	−0.27 (0.967)	1.03 (0.409)	−8.13** (0.049)	−20.35*** (0.001)	0.46 (0.869)	−3.13*** (0.004)	−0.02 (0.696)
GMAT	30.57*** (0.000)	−36.45** (0.045)	18.18*** (0.000)	−8.99 (0.428)	7.83*** (0.629)	−7.31 (0.346)	0.38 (0.899)	0.04 (0.793)
IFRSS	8.26 (0.641)	−6.05 (0.903)	3.16 (0.736)	0.91 (0.977)	−7.54 (0.865)	39.99* (0.059)	13.03 (0.112)	−0.81** (0.031)
Dummy 08–09								
D08–D09	1.04 (0.570)	−3.27 (0.523)	−0.58 (0.549)	17.91*** (0.000)	10.36** (0.023)	−25.89*** (0.000)	5.88*** (0.000)	0.14*** (0.000)
Control variables								
Geographical region								
EURO	−10.68*** (0.000)	9.06 (0.208)	−0.78*** (0.566)	4.92 (0.273)	31.51*** (0.000)	−2.84 (0.355)	1.87 (0.116)	0.59*** (0.000)
LNAM	1.43 (0.580)	35.14*** (0.000)	19.40*** (0.000)	26.43*** (0.000)	23.72*** (0.000)	−3.30 (0.286)	0.66 (0.584)	0.09 (0.100)
CSAS	−7.23** (0.012)	−5.62 (0.484)	−1.25 (0.412)	5.29 (0.290)	58.90*** (0.000)	2.07 (0.546)	−0.38 (0.776)	0.08 (0.192)
EASP	9.47*** (0.000)	60.88*** (0.000)	1.55*** (0.226)	36.69*** (0.000)	37.66*** (0.000)	−1.04 (0.719)	6.62*** (0.000)	0.54*** (0.000)
MENA	−13.46*** (0.005)	7.52 (0.571)	−4.80* (0.056)	−19.76** (0.017)	−16.89 (0.154)	−10.40* (0.067)	−12.53*** (0.000)	0.44*** (0.000)
Geographical region EURO	−10.68***	9.06	−0.78***	4.92	31.51***	−2.84	1.87	0.59***
LNAM	1.43 (0.000)	35.14*** (0.208)	19.40*** (0.566)	26.43*** (0.273)	23.72*** (0.000)	−3.30 (0.355)	0.66 (0.116)	0.09(0.000)
CSAS	−7.23** (0.580)	−5.62 (0.000)	−1.25 (0.000)	5.29 (0.000)	58.90*** (0.000)	2.07 (0.286)	−0.38 (0.584)	0.08 (0.100)
EASP	9.47*** (0.012)	60.88*** (0.484)	1.55*** (0.412)	36.69*** (0.290)	37.66*** (0.000)	−1.04 (0.546)	6.62*** (0.776)	0.54*** (0.192)
MENA	−13.46*** (0.000)	7.52 (0.000)	−4.80* (0.226)	−19.76** (0.000)	−16.89 (0.000)	−10.40* (0.719)	−12.53*** (0.000)	0.44*** (0.000)
	(0.005)	(0.571)	(0.056)	(0.017)	(0.154)	(0.067)	(0.000)	(0.000)

(*continued*)

Table 6.

OLS regression models	Financial consequences (dependent variables)							
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
Official language								
ENGL	−4.61** (0.037)	74.69*** (0.000)	2.15* (0.067)	36.20*** (0.000)	3.77 (0.497)	−3.09 (0.245)	−6.46*** (0.000)	0.21*** (0.000)
FRNL	19.13*** (0.000)	39.58*** (0.000)	0.32 (0.882)	17.89** (0.010)	−9.99 (0.316)	−3.45 (0.470)	−0.59 (0.751)	0.32*** (0.000)
SPNL	−17.01*** (0.004)	33.97** (0.041)	−1.22 (0.698)	36.74*** (0.000)	48.87*** (0.001)	−4.83 (0.495)	−1.97 (0.472)	−0.31** (0.014)
ARBL	11.47** (0.017)	68.51*** (0.000)	−1.25 (0.625)	47.19*** (0.000)	30.35** (0.012)	9.47 (0.101)	12.74*** (0.000)	−0.07 (0.472)
GRML	14.56*** (0.000)	49.75*** (0.000)	−6.40*** (0.000)	22.79*** (0.000)	8.68 (0.201)	−4.35 (0.181)	−7.33*** (0.000)	0.60*** (0.000)
RUSL	−2.41 (0.569)	−19.03 (0.108)	−1.43 (0.524)	−23.15*** (0.002)	3.12 (0.768)	5.16 (0.308)	10.51*** (0.000)	−0.50*** (0.000)
Colonial history								
NEVC	14.06*** (0.000)	47.06*** (0.000)	8.73*** (0.000)	48.64*** (0.000)	32.50*** (0.000)	1.24 (0.611)	1.98** (0.036)	0.50*** (0.000)
BRTC	−9.38*** (0.001)	−38.36*** (0.000)	−1.16 (0.426)	−27.55*** (0.000)	−13.35* (0.051)	−2.85 (0.385)	−6.64*** (0.000)	0.51*** (0.000)
FRNC	−14.40*** (0.000)	−57.43*** (0.000)	2.87 (0.135)	−32.30*** (0.000)	−23.59*** (0.009)	−5.01 (0.248)	−12.28*** (0.000)	−0.14* (0.063)
SPNC	3.42 (0.622)	−59.33*** (0.002)	−21.26*** (0.000)	−70.99*** (0.000)	−91.50*** (0.000)	9.80 (0.238)	−6.38** (0.047)	0.51*** (0.001)
PORC	−15.38*** (0.001)	−28.23** (0.037)	−23.88*** (0.000)	−41.03*** (0.000)	−27.80** (0.021)	−1.40 (0.809)	−1.01 (0.652)	0.50*** (0.000)
DUTC	−5.51 (0.158)	14.43 (0.187)	3.14 (0.130)	−26.79*** (0.000)	−28.39*** (0.004)	−1.88 (0.687)	−7.49*** (0.000)	0.35*** (0.000)
GRMC	−21.54*** (0.000)	−57.67*** (0.000)	2.03 (0.425)	−52.48*** (0.000)	−34.57*** (0.004)	−3.66 (0.523)	−5.13** (0.021)	−0.30*** (0.004)
RUSC	−0.99 (0.684)	2.72 (0.690)	0.70 (0.585)	−2.70 (0.526)	−29.11*** (0.000)	3.04 (0.297)	−4.55*** (0.000)	0.04 (0.498)
Constant	32.84*** (0.000)	16.92 (0.127)	39.52*** (0.000)	45.87*** (0.000)	65.93*** (0.000)	21.91*** (0.000)	24.99*** (0.000)	3.97*** (0.000)
Observations	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Clusters groups	110	110	110	110	110	110	110	110
F-value	20.00*** (0.000)	32.24*** (0.000)	37.84*** (0.000)	42.70*** (0.000)	20.64*** (0.000)	6.71*** (0.000)	28.41*** (0.000)	45.53*** (0.000)
R^2	0.228	0.323	0.359	0.387	0.237	0.090	0.296	0.402
Adjusted R^2	0.217	0.313	0.349	0.377	0.222	0.077	0.285	0.393
Polynomials contrasts	36.21*** (0.000)	8.08*** (0.000)	18.36*** (0.000)	27.90*** (0.000)	28.73*** (0.000)	4.43** (0.035)	5.63** (0.017)	6.74*** (0.009)
Shapiro–Wilk W test	0.251*** (0.000)	0.475*** (0.000)	0.213*** (0.000)	0.500*** (0.000)	0.547*** (0.000)	0.699*** (0.000)	0.928*** (0.000)	0.984*** (0.000)
Jarque–Bera LM test	1.46*** (0.000)	7.25*** (0.000)	1.16*** (0.000)	1.75*** (0.000)	1.86*** (0.000)	2.05*** (0.000)	7.33*** (0.000)	62.5*** (0.000)
Durbin's alternative	8,870.8*** (0.000)	6,494.7*** (0.000)	10,391.6*** (0.000)	12,752.7*** (0.000)	1,748.4*** (0.000)	383.3*** (0.000)	6,303.8*** (0.000)	13,315.5*** (0.000)
Breusch–Godfrey LM	1,720.9*** (0.000)	1,510.1*** (0.000)	1,727.9*** (0.000)	1,756.1*** (0.000)	711.9*** (0.000)	348.9*** (0.000)	1,525.9*** (0.000)	17,77.2*** (0.000)
Breusch–Pagan test	1,051.5*** (0.000)	9,400.1*** (0.000)	18,767.8*** (0.000)	4,397.5*** (0.000)	392.6*** (0.000)	492.9*** (0.000)	279.7*** (0.000)	32.05*** (0.000)
White's test χ^2	1,182.8*** (0.000)	1,453.2*** (0.000)	1,242.4*** (0.000)	1,157.8*** (0.000)	114.5*** (0.000)	264.9*** (0.000)	425.4*** (0.000)	1,172.1*** (0.000)
Levin-Lin-Chu test	−2.74*** (0.000)	−23.30*** (0.000)	−7.43*** (0.000)	−16.01*** (0.000)	−8.83*** (0.000)	−7.96*** (0.000)	−6.56*** (0.000)	−7.86*** (0.000)
Breitung test	8.55 (0.987)	−7.32*** (0.000)	−6.57*** (0.000)	0.19 (0.425)	−7.41*** (0.000)	−16.12*** (0.000)	−6.64*** (0.000)	1.42 (0.922)

Notes: The variables are defined in Table 2. Statistical significance level (p-value) in parentheses *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$

Table 7.
The results of the multiple linear regression with cluster-robust standard errors for 110 countries

OLS regression models	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
The ISAs adopters DOI theory classification									
EXPRA	−16.14 (0.147)	−8.74 (0.627)	−20.74** (0.010)	−35.86 (0.104)	−56.91* (0.070)	−13.06*** (0.009)	−3.63 (0.361)	−0.17 (0.480)	−1.539** (0.021)
ERADA	−19.52* (0.064)	−83.42*** (0.000)	−29.75*** (0.000)	−72.21*** (0.001)	−62.18** (0.036)	−17.90*** (0.000)	−9.60*** (0.005)	−0.49*** (0.008)	−2.54*** (0.000)
ERMJA	−14.44 (0.146)	−18.25 (0.251)	−18.69** (0.019)	−42.87** (0.047)	−53.03* (0.074)	−14.30*** (0.001)	−5.20* (0.093)	−0.17 (0.348)	−1.516** (0.016)
LTMJA	−15.66 (0.140)	−19.15 (0.161)	−15.11 (0.152)	−30.94 (0.127)	−39.24 (0.172)	−10.38 (0.118)	−3.23 (0.313)	−0.41** (0.018)	−1.123* (0.061)
The ISAs status classical classification									
WIAM	9.94*** (0.001)	10.21 (0.228)	3.76** (0.030)	−3.43 (0.564)	−18.89** (0.027)	3.39 (0.129)	−1.98 (0.147)	−0.12 (0.216)	0.052 (0.778)
WOAM	14.69 (0.104)	47.34** (0.012)	13.04*** (0.000)	32.46*** (0.001)	25.48*** (0.009)	2.80 (0.369)	0.50 (0.834)	0.25 (0.124)	1.083*** (0.000)
WITR	14.42*** (0.000)	20.17** (0.036)	7.02*** (0.001)	7.40 (0.236)	−7.56 (0.342)	1.86 (0.477)	2.09 (0.217)	−0.14 (0.103)	0.417** (0.022)
WOTR	2.28 (0.791)	7.68 (0.665)	−1.87 (0.595)	−40.64*** (0.000)	−71.69*** (0.007)	−11.44 (0.109)	−12.13* (0.065)	−0.15 (0.422)	−0.959** (0.016)
WAMT	10.53 (0.103)	26.03** (0.039)	5.45** (0.022)	21.86*** (0.000)	24.68*** (0.005)	−6.39*** (0.005)	−5.88** (0.029)	−0.09 (0.505)	0.468** (0.010)
BLAW	4.27 (0.276)	−10.08 (0.478)	1.40 (0.592)	−9.46 (0.258)	−23.22** (0.039)	0.60 (0.875)	−2.71 (0.281)	−0.02 (0.850)	−0.151 (0.576)
GMAT	26.02* (0.063)	−15.45 (0.365)	10.86*** (0.008)	−2.93 (0.771)	8.27 (0.406)	−7.13*** (0.004)	1.51 (0.822)	0.05 (0.711)	0.425* 0.087
IFRSS	26.65*** (0.000)	−24.80 (0.105)	9.57*** (0.002)	−5.17 (0.593)	−10.42 (0.369)	46.53*** (0.000)	14.72*** (0.000)	−1.01*** (0.000)	0.560* (0.088)
Dummy 08–09									
D08–D09	1.62 (0.233)	2.70 (0.250)	1.21*** (0.000)	16.09*** (0.000)	10.17*** (0.000)	−35.56*** (0.000)	5.79*** (0.000)	0.14*** (0.000)	0.211*** (0.000)
Control variables									
Geographical region									
EURO	−0.09 (0.993)	65.90*** (0.009)	12.71*** (0.005)	43.21*** (0.005)	56.85*** (0.005)	−3.24 (0.457)	3.14 (0.489)	0.56** (0.011)	1.450*** (0.003)
LNAM	−1.44 (0.792)	82.13*** (0.004)	11.98 (0.116)	29.28 (0.230)	19.11 (0.486)	−5.88 (0.134)	0.57 (0.876)	0.05 (0.878)	0.880 (0.246)
CSAS	3.42 (0.749)	22.51 (0.328)	8.62* (0.057)	32.68** (0.030)	70.01*** (0.009)	−0.13 (0.984)	0.11 (0.986)	0.10 (0.594)	1.016* (0.050)
EASP	14.20 (0.261)	88.45*** (0.002)	16.05*** (0.000)	60.21*** (0.000)	66.61*** (0.001)	−4.41 (0.233)	6.27* (0.081)	0.52** (0.049)	1.805*** (0.000)
MENA	14.13 (0.197)	51.42* (0.057)	9.01 (0.150)	18.87 (0.238)	14.81 (0.487)	−10.07* (0.083)	−11.94 (0.113)	0.28 (0.661)	0.690 (0.162)
Official language									
ENGL	0.43 (0.957)	48.40** (0.014)	3.53 (0.275)	10.72 (0.242)	−10.97 (0.370)	−2.88 (0.411)	−6.47* (0.068)	0.19 (0.329)	0.106 (0.708)
FRNL	18.16 (0.155)	59.31** (0.012)	13.01*** (0.005)	24.98** (0.013)	−1.93 (0.920)	−0.73 (0.860)	1.30 (0.754)	0.29 (0.121)	0.903** (0.020)
SPNL	−32.89*** (0.000)	38.76*** (0.008)	3.30 (0.265)	15.84* (0.075)	28.47** (0.011)	−4.73 (0.110)	−1.87 (0.478)	−0.26 (0.195)	0.220 (0.376)
ARBL	6.43 (0.444)	55.46** (0.024)	1.93 (0.734)	27.45** (0.017)	12.80 (0.421)	7.83 (0.128)	12.50* (0.083)	0.07 (0.905)	0.584* (0.079)

(*continued*)

Table 7.

OLS regression models	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
GRML	18.34* (0.082)	41.91** (0.050)	2.44 (0.488)	16.91 (0.103)	−6.81 (0.636)	−3.98 (0.250)	−7.56* (0.092)	0.56*** (0.003)	0.143 (0.640)
RUSL	7.25 (0.459)	−14.63 (0.604)	−1.90 (0.802)	−13.59 (0.255)	4.50 (0.910)	0.81 (0.925)	7.35 (0.479)	−0.60** (0.027)	−0.103 (0.850)
Colonial history									
NEVC	18.68** (0.017)	58.21*** (0.000)	16.62*** (0.000)	44.67*** (0.000)	40.04*** (0.002)	3.45 (0.269)	2.66 (0.386)	0.48** (0.011)	1.380*** (0.000)
BRTC	−3.24 (0.732)	13.79 (0.560)	0.60 (0.875)	−0.11 (0.993)	−5.09 (0.759)	−0.88 (0.822)	−5.93 (0.168)	0.47** (0.054)	0.012 (0.973)
FRNC	−9.18 (0.285)	−61.46** (0.039)	−6.78 (0.180)	−33.12** (0.039)	−17.36 (0.368)	−1.76 (0.757)	−10.48** (0.030)	−0.14 (0.502)	−0.893* (0.053)
SPNC	44.17*** (0.003)	−80.17** (0.019)	−5.94 (0.531)	−46.19 (0.113)	−65.68* (0.064)	9.84 (0.151)	−5.01 (0.472)	0.44 (0.300)	−0.773 (0.396)
PORC	−4.95 (0.732)	−11.20 (0.680)	0.37 (0.978)	−4.37 (0.888)	3.17 (0.937)	−0.32 (0.965)	−0.91 (0.920)	0.53 (0.110)	0.166 (0.887)
DUTC	22.07** (0.022)	30.67 (0.375)	3.30 (0.364)	−22.11* (0.075)	−51.09* (0.096)	−0.45 (0.929)	−7.72 (0.108)	0.35** (0.037)	−0.297 (0.465)
GRMC	−23.36** (0.021)	−44.27 (0.347)	−10.49** (0.023)	−67.63*** (0.004)	−89.06* (0.052)	0.33 (0.962)	−3.74 (0.754)	−0.32 (0.585)	−1.78*** (0.009)
RUSC	−10.76* (0.085)	−38.31** (0.011)	−10.84*** (0.002)	−25.34** (0.011)	−30.78* (0.074)	3.46 (0.437)	−3.93 (0.364)	0.04 (0.853)	−1.03*** (0.001)
Constant	7.38 (0.629)	10.43 (0.718)	5.92 (0.510)	24.71 (0.346)	61.07* (0.091)	29.43*** (0.000)	25.31*** (0.000)	4.01*** (0.000)	4.991*** (0.000)
Observations	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Clusters groups	110	110	110	110	110	110	110	110	110
F value	27.85*** (0.000)	68.72*** (0.000)	84.99*** (0.000)	80.62*** (0.000)	57.80*** (0.000)	11.32*** (0.000)	33.15*** (0.000)	41.03*** (0.000)	89.80*** (0.000)
R^2	0.291	0.504	0.557	0.544	0.461	0.143	0.329	0.377	0.570
Adjusted R^2	0.281	0.496	0.550	0.537	0.453	0.131	0.319	0.368	0.563
Polynomials contrasts	2.50*** (0.000)	16.09*** (0.000)	12.10*** (0.000)	77.86*** (0.000)	59.12*** (0.000)	9.97*** (0.002)	2.75*** (0.005)	7.92*** (0.005)	14.53*** (0.000)
Jarque-Bera LM test	0.146 (0.929)	0.241 (0.887)	0.704 (0.703)	0.268 (0.874)	0.484 (0.785)	0.022 (0.989)	0.171 (0.997)	0.393 (0.822)	4.849*** (0.000)
Levin-Lin-Chu test	−22.66*** (0.000)	−16.06*** (0.000)	−11.10*** (0.000)	−18.69*** (0.000)	−8.93*** (0.000)	−7.77*** (0.000)	−7.07*** (0.000)	−15.16*** (0.000)	−10.4*** (0.000)
Breitung test	−17.75*** (0.000)	−4.49*** (0.000)	−3.64*** (0.000)	−11.28*** (0.000)	−5.48*** (0.000)	−16.26*** (0.000)	−5.45*** (0.000)	−13.16*** (0.000)	−4.98*** (0.000)

Notes: The variables are defined in Table 2. Statistical significance level in parentheses *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

As reported in Column 5 of Table 7, the stock market turnover (*SMTO*) has significantly decreased after the early adoption of ISAs. This finding does not empirically support *H4*. It is, however, in line with the findings of previous IFRS studies (Khurana and Michas, 2011; Burnett *et al.*, 2015) that reported a negative and significant association between the adoption of IASs and stock market turnover. Arguably, Daske *et al.* (2013) state that voluntary adopters may only adopt the label of international accounting and auditing standards without fully adhering to the requirements of these global standards, which might result in decreasing stock market turnover.

Contrary to the expectation, Column 6 of Table 7 reports a negative and significant association between ISAs adoption and stock market return (*SMRT*). This result indicates that *H5* is rejected. Even though the negative coefficient on *SMRT* tends to support the existing IFRS literature (Patro and Gupta, 2016; Key and Kim, 2017; Klimczak, 2011) that suggested a negative and significant association between the adoption of international accounting innovations and stock market returns, yet, it contradicts the findings of other IFRS studies that found a significant and positive association between IFRS adoption and stock market returns (Escaffre and Sefsaf, 2011; Loureiro and Taboada, 2012; Yip and Young, 2012; Adereti and Sanni, 2016; Erin *et al.*, 2017; Bartov *et al.*, 2005). In this regard, Barth *et al.* (2008) explained two potential reasons of such a negative association between ISAs adoption and stock market returns to include:

(1) ISAs may be of lower quality as compared with domestic auditing standards; and

(2) other features of financial reporting system can mitigate potential development in the quality of auditing information because of the existence of higher quality auditing standards (Key and Kim, 2017).

Column 7 of Table 7 shows a negative and significant association between ISAs adoption and stock price volatility (*SPVO*). This means that *H6* has been statistically accepted. This result is consistent with previous studies (Chau *et al.*, 2013; Patro and Gupta, 2016; Chalmers *et al.*, 2011; Nulla, 2014) that suggested that the level of stock market volatility has been significantly decreased post the adoption of international accounting and auditing standards. This appears to imply that both the international accounting and auditing standards have the same negative and significant impact on reducing stock price volatility and make stock markets more stable, which can attract more foreign investors. Crucially, the scrutiny of foreign investors can persuade companies to provide more accurate financial disclosures, where the adoption of accounting and auditing standards can provide firms with opportunities to produce more informative financial statements, which offer better information to foreign investors and reduce stock price volatility (Patro and Gupta, 2016).

As shown in Column 8 of Table 7, the levels of financial market development (*FMKD*) have been significantly reduced following the early and the mandatory adoption of ISAs. This implies that *H7*is rejected. This result, though, offers support for the results of Larson and Kenny (1995) that reported a negative and significant association between the adoption of international accounting innovations and financial market development. Theoretically, our empirical evidence raises questions about how ISAs were enforced and implemented. Arguably, countries that had adopted IASs early might have been the ones categorised with the most recently established stock markets (Larson and Kenny, 1995). This implies a crucial need to determine the best type of accounting and auditing systems that can best help developing economies in facilitating their financial market development.

The main reason for this inconsistency with previous research is because prior studies have focussed on examining the influence of strength of auditing and reporting standards on stock market development and they found a positive and significant link (Boolaky, 2011;

Boolaky and Cooper, 2015; Boolaky and O'Leary, 2011; Boolaky and O'Leary, 2012; Boolaky *et al.*, 2013). However, our study examines the relationship between ISAs adoption categories suggested by DOI theory and stock market development, which can definitely trigger different findings.

In Column 9 of Table 7, we compute one proxy that summarizes all the FMIs through the mean value. Consistent with our individual variable analysis, it shows that the adoption of ISAs has a significantly negative impact on FMIs internationally.

In totality, Table 8 shows that the financial consequences are negatively associated with early adoption of ISAs internationally. Form a DOI theory perspective, the consequences of the adoption of international accounting innovation can be direct or indirect, desirable or undesirable, anticipated or unanticipated (Rogers, 1995). In this regard, Tan (2004) defined the direct consequences as changes to an organisation that happen immediately as a response to innovation adoption, although indirect consequences might take a longer time to develop. In line with our results, Schmukler (2004), for example, argues that the globalisation of financial markets appeared to lead to large benefits to developing countries with weak financial markets integration, but only in the longer term.

Similarly, Rogers (1995, 2003) argues that the consequences of the adaptation of innovation can be either desirable or undesirable. This means that whether a consequence such as market capitalisation level, is desirable or undesirable can be determined by whether the effects of innovation adoption (i.e. ISAs adoption) are functional or dysfunctional from a country point of view (Tan, 1995). In addition, DOI theory states that a financial consequence of innovations' adoption can be anticipated or unanticipated, which is highly dependent on whether countries recognise these changes as the intended consequences of the adoption of innovations (Rogers, 1998). Unanticipated financial consequences are likely to be unknown to non-adopters until after the effects are widespread (Rogers, 1995; Tan, 1995). This implies that countries associated with a higher value of stock traded, stock market returns and financial market development might not be able to anticipate the consequences of ISAs adoption until after its impact is well-recognised internationally, which can ultimately lead to a late ISAs adoption (Ali Rashed and Mouyiasis, 2013).

Although we exclusively use the classification of DOI theory in examining the impact of ISAs adoption on FMIs, yet, we also use a previous rankings of adopters that are reported by Boolaky and Soobaroyen (2017)[1], as an alternative measure. Table 7 reports that ISAs adoption with amendments (*WIAM*) is positively and significantly associated with *IFNI* and

Table 8.
A comparison between research hypotheses and results

Hypothesis	Expected sign	Result	Decision
H1	+	–	The early adoption of ISA is associated with lower stock market integration
H2	+	–	The adoption of ISA cannot predict equity market integration
H3	+	–	ISAs adoption is negatively correlated with the total value of stock traded
H4	+	–	Stock market turnover has significantly decreased after the early adoption of ISAs
H5	+	–	There is a significant negative association between ISAs adoption and the stock market return
H6	–	–	The early adoption of ISA is attributed to lower stock price volatility
H7	+	–	The level of financial market development has been significantly reduced following the early ISA adoption

SMCP and negatively with *SMTO*. ISAs adoption without amendments (*WOAM*) is positively and significantly associated with *MCPL, SMCP, SMTD* and *SMTO*. ISAs adoption with translation (*WITR*) is positively and significantly associated with *IFNI, MCPL* and *SMCP* and negatively with *SMTO*. ISAs adoption without translation (*WOTR*) is negatively and significantly associated with *SMTD, SMTO* and *SPVO*. ISAs adoption with amendment and translation (*WAMT*) is positively and significantly associated with *MCPL, SMCP, SMTD* and *SMTO* and negatively with *SMRT* and *SPVO*. ISAs adopted by a country's law (*BLAW*) is positively correlated with *SMTO*, while ISAs adopted in "gap matters" (*GMAT*) is positively and significantly attributed to *IFNI* and *SMCP* and negatively with *SMRT*. ISAs adopted for financial reports prepared in accordance with IFRS (*IFRSS*) is positively and significantly associated with *IFNI, SMCP, SMRT* and *SPVO* and negatively with *FMKD*.

Unlike Boolaky and Soobaroyen (2017), which reported a positive relationship between ISAs adoption and FMIs, our results are suggestive of heterogeneous effects of ISA adoption on the financial consequences of stock markets in that they might have either encouraged or discouraged the FMIs. Even though Boolaky and Soobaroyen (2017) examined the ISA–FMI nexus across 89 countries for four years, we investigate it across 110 countries covering 20 years. This gives more credibility and generalisability to our findings, where we argue that unanticipated FMIs could be unknown to non-adopters until after the effects of adopting this innovation are widespread (Rogers, 1995). This implies that countries associated with higher FMIs appeared not to be able to anticipate the financial consequences of ISA adoption until after its impact is well-recognised internationally, which ultimately might lead to the late adoption ISAs by such countries (Ali Rashed and Mouyiasis, 2013).

Concerning the geographical regions, consistent with prior studies (Ramanna and Sletten, 2014; De George *et al.*, 2016), we find that countries that adopted ISAs and are located in the *EURO* region seem to have higher levels of *MCPL, SMCP, SMTD, SMTO* and *FMKD*, whilecountries that adopted ISAs and are located in the *LNAM* region tend to have higher levels of *MCPL*. Similarly, adopters in the *CSAS* region appeared to have higher levels of *SMCP, SMTD* and *SMTO*, whereas those located in the *EASP* region tend to have higher levels of *MCPL, SMCP, SMTD, SMTO, SPVO* and *FMKD*. Likewise, countries in the *MENA* region lean towards having higher levels of *MCPL* and lower levels of *SMRT*.

With respect to language, adopters with *ENGL* as an official language are more likely to have higher levels of *MCPL* and a lower level of *SPVO*. Furthermore, *FRNL* spoken countries are more likely to have higher levels of *MCPL, SMCP* and *SMTD*. Although adopters with *SPNL* are likely to have higher levels of *MCPL, SMTD* and *SMTO* and lower levels of *IFNI*, others with *ARBL* tend to have higher levels of *MCPL, SMTD* and *SPVO*. Additionally, adopters with *GRML* are likely to have higher levels of *IFNI, MCPL* and *FMKD* and lower levels of *SPVO*, while other adopters with *RUSL* appeared to have higher levels of *FMKD*. This result indicates that language barriers can also make the adoption of ISAs even harder (De George *et al.*, 2016; Hossain *et al.*, 2015).

Regarding the colonial history, our results are in line with the findings of previous studies (Ramanna and Sletten, 2009; Degos *et al.*, 2019; Likitwongkajon and Sutthachai, 2019). For example, our findings suggest that countries that adopted ISAs and have never been colonised *NEVC* tend to have higher levels of *IFNI, MCPL, SMCP, SMTD, SMTO*and *FMKD*. Likewise, adopters linked to the *SPNC* colonisation tend to have higher levels of *IFNI* and lower levels of *MCPL* and *SMTO*, although others colonised by the *DUTC* Empire have a tendency to have higher levels of *IFNI* and *FMKD* and lower levels of *SMTD* and *SMTO*.

6. Robustness analyses

The country-year level effects might not be detected by solely using multiple linear regression. Drawing on prior literature, therefore, a fixed-effects model and a two-stage least squares (2SLS) model have been used as robustness tests (Boolaky and Omoteso, 2016; Boolaky and Soobaroyen, 2017). Crucially, by using country-year level characteristics to control for the omitted variables bias, we use a fixed-effects model. Table 9 presents the results of fixed-effects models. Our results suggest that the magnitudes and directions of most financial indicators used in our study remained relatively similar to the results of the multiple linear models in Table 7. This implies that our results appear to be largely rigorous and reliable. Table 10 shows the results of estimating a *2SLS* model. The results are supportive of the earlier inferences that we obtained from estimating both ordinary least squares (OLS) and fixed-effects models, with a small degree of sensitivity. This implies that our findings do not appear to suffer from any severe endogeneity problems.

7. Conclusion

Although prior studies focussed on examining the IFRS–FMIs nexus, we have distinctively addressed an existing gap in the literature by examining the financial consequences of adopting ISAs internationally. We argue that countries with lower levels of FMIs are more likely to adopt ISAs as a strategy to attract higher FDIs. In contrast, stock markets in developed countries tend to delay their decision to adopt ISAs because of better financial strength and lesser motivation to attract inward FDIs compared to their developing counterparts. Additionally, this study shows that the extent of international financial integration among countries has significantly increased after the introduction and adoption of ISAs, but only for those countries where ISAs applies in matters not regulated by the local audit standards. Finally, and most importantly, we found that international financial integration and stock market capitalization in addition to stock market returns and stock market volatility have significantly improved after ISAs adoption, but only for listed firms that issued their financial statements under IFRS and audited by ISAs. Furthermore, we argue that DOI theory complements our understanding of how countries adopt new accounting innovations such as ISAs.

Our findings of our study have important implications for academics, governments, policymakers, practitioners, regulators and standards-setters. For example, it provides impetus for academics to enhance current understanding by conducting further empirical research on the relationship between ISAs adoption and the FMIs. Our empirical evidence also raises questions about how ISAs were enforced and implemented. For example, countries that had adopted IASs at early stages may have been characterised with the most recently established stock exchanges and enforced by dominant stakeholder pressures. This implies a crucial need to determine the best type of accounting and auditing systems that can best help emerging economies in facilitating the development of their financial markets through positive financial consequences of ISAs adoption.

Although the results of the present study are robust, several limitations should be acknowledged. This study has been limited to 110 countries because of restricted availability of data. Additionally, our results might be constrained by the coding scheme suggested by the DOI theory, which is based on the adoption-time. Therefore, future research may improve on our findings by using our framework using a larger number of countries and different coding schemes to the one that we have used in this study to further test the robustness of their findings. Moreover, our results indicate that the adoption of ISAs has a negative effect on FMIs. These puzzling results may be attributed to the composition of the study's sample, which includes both countries with high and low enforcement regions.

Table 9.
The results of the fixed-effects model with cluster-robust standard errors for 110 countries

Fixed cluster effects	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
The ISAs adopters DOI classification									
EXPRA	−16.44 (0.142)	17.29 (0.343)	−13.71* (0.092)	−30.05 (0.170)	−64.71** (0.041)	−13.05*** (0.007)	−5.82 (0.145)	−0.19 (0.453)	−1.230* (0.069)
ERADA	−19.71* (0.053)	−60.93*** (0.000)	−23.89*** (0.003)	−66.86*** (0.002)	−67.94** (0.023)	−18.01*** (0.000)	−11.43*** (0.001)	−0.50*** (0.007)	−2.276*** (0.000)
ERMJA	−14.96 (0.120)	−3.53 (0.833)	−14.62* (0.068)	−39.09* (0.069)	−56.90* (0.057)	−14.27*** (0.000)	−6.47** (0.035)	−0.17 (0.341)	−1.329** (0.036)
LTMJA	−14.39 (0.136)	−10.65 (0.440)	−12.84 (0.110)	−28.99 (0.151)	−41.60 (0.149)	−10.34 (0.106)	−3.95 (0.213)	−0.41** (0.017)	−1.022* (0.090)
The ISAs status classical classification									
WIAM	13.59*** (0.000)	−18.71** (0.037)	−3.48* (0.064)	−10.83 (0.113)	−12.93 (0.192)	4.35** (0.039)	−0.27 (0.864)	−0.12 (0.237)	−0.291 (0.162)
WOAM	6.07 (0.321)	20.30 (0.278)	5.88** (0.018)	26.10** (0.010)	32.67*** (0.003)	2.69 (0.313)	2.75 (0.263)	0.26 (0.120)	0.760*** (0.003)
WITR	14.55*** (0.000)	6.21 (0.518)	0.03 (0.991)	1.37 (0.829)	−0.29 (0.974)	0.39 (0.891)	4.30** (0.025)	−0.14 (0.173)	0.104 (0.575)
WOTR	1.35* (0.084)	−22.19 (0.223)	−9.35** (0.010)	−48.97*** (0.000)	−65.80** (0.017)	−6.18 (0.171)	−9.97 (0.124)	−0.15 (0.424)	−1.319*** (0.001)
WAMT	6.19 (0.459)	1.29 (0.917)	−1.48 (0.550)	16.93*** (0.004)	33.45*** (0.006)	−5.51*** (0.006)	−3.74 (0.171)	−0.07 (0.642)	0.178 (0.353)
BLAW	7.25** (0.032)	−35.62** (0.013)	−5.43** (0.043)	−15.43* (0.064)	−16.04 (0.157)	0.27 (0.946)	−0.58 (0.828)	−0.01 (0.926)	−0.456 (0.101)
GMAT	16.45*** (0.000)	−37.48** (0.037)	4.54 (0.287)	−7.50 (0.465)	15.91 (0.145)	−4.12 (0.284)	3.51 (0.606)	0.06 (0.670)	0.158 (0.527)
IFRSS	18.61*** (0.000)	−43.81** (0.010)	2.39 (0.449)	−3.45 (0.731)	−4.59 (0.721)	47.50*** (0.000)	19.68*** (0.000)	−0.93*** (0.000)	0.370 (0.272)
Dummy 08–09									
D08–D09	1.63 (0.225)	59.21*** (0.000)	11.15*** (0.000)	33.28*** (0.000)	10.88 (0.153)	−35.53*** (0.000)	7.29*** (0.000)	0.10** (0.028)	0.822*** (0.000)
Control variables									
Geographical region									
EURO	0.12 (0.990)	65.26** (0.010)	12.61*** (0.005)	42.94*** (0.006)	56.67*** (0.006)	−3.04 (0.489)	3.16 (0.486)	0.56** (0.011)	1.442*** (0.004)
LNAM	−1.48 (0.788)	81.68*** (0.004)	11.91 (0.116)	29.08 (0.233)	19.01 (0.490)	−5.72 (0.148)	0.59 (0.872)	0.05 (0.881)	0.874 (0.249)
CSAS	4.64 (0.675)	22.46 (0.327)	8.62* (0.058)	32.72** (0.031)	70.03*** (0.009)	−0.15 (0.982)	0.12 (0.986)	0.10 (0.594)	1.017* (0.051)
EASP	15.56 (0.214)	87.58*** (0.003)	15.88*** (0.000)	59.90*** (0.000)	66.57*** (0.001)	−4.32 (0.249)	6.32* (0.079)	0.52** (0.049)	1.795*** (0.000)
MENA	14.23 (0.215)	51.87* (0.061)	9.18 (0.133)	18.87 (0.241)	14.43 (0.499)	−10.08* (0.097)	−11.99 (0.109)	0.28 (0.666)	0.695 (0.162)
Official language									
ENGL	−0.73 (0.929)	49.06** (0.013)	3.59 (0.266)	11.08 (0.231)	−10.62 (0.388)	−3.35 (0.350)	−6.48* (0.069)	0.19 (0.323)	0.113 (0.689)
FRNL	19.94 (0.131)	58.68** (0.012)	13.01*** (0.005)	24.52** (0.015)	−2.59 (0.892)	−1.08 (0.795)	1.31** (0.753)	0.28 (0.128)	0.894** (0.022)
SPNL	−33.15*** (0.000)	39.74*** (0.006)	3.57 (0.231)	16.03* (0.071)	28.09** (0.013)	−5.16* (0.088)	−1.94 (0.464)	−0.26 (0.195)	0.231 (0.353)
ARBL	6.35 (0.468)	54.53** (0.033)	1.68 (0.761)	27.26** (0.020)	13.08 (0.416)	7.64 (0.157)	12.57* (0.078)	0.08 (0.904)	0.573* (0.088)

(*continued*)

Table 9.

Fixed cluster effects	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
GRML	19.78** (0.047)	42.54** (0.045)	2.59 (0.460)	17.13* (0.098)	−6.82 (0.636)	−4.45 (0.190)	−7.60* (0.092)	0.57*** (0.003)	0.151 (0.621)
RUSL	7.03 (0.447)	−14.61 (0.599)	−1.76 (0.813)	−13.94 (0.239)	3.78 (0.924)	1.34 (0.878)	7.29 (0.486)	−0.60** (0.027)	−0.105 (0.847)
Colonial history									
NEVC	20.32** (0.010)	56.59*** (0.000)	16.23*** (0.000)	44.21*** (0.000)	40.30*** (0.002)	3.12*** (0.318)	2.79 (0.365)	0.48** (0.011)	1.360*** (0.000)
BRTC	−2.71 (0.775)	13.84 (0.557)	0.60 (0.873)	−0.08 (0.995)	−5.08 (0.761)	−1.04 (0.795)	−5.93 (0.169)	0.48* (0.055)	0.012 (0.972)
FRNC	−9.72 (0.257)	−60.52** (0.044)	−6.61 (0.199)	−32.78** (0.043)	−17.25 (0.374)	−1.55 (0.788)	−10.53** (0.029)	−0.14 (0.510)	−0.882* (0.059)
SPNC	45.36*** (0.001)	−82.31** (0.015)	−6.51 (0.488)	−46.69 (0.109)	−65.04* (0.069)	10.10 (0.141)	−4.87 (0.485)	0.44 (0.300)	−0.798 (0.380)
PORC	−4.54 (0.750)	−9.91 (0.721)	0.69 (0.960)	−4.01 (0.898)	2.97 (0.941)	−0.28 (0.969)	−1.01 (0.911)	0.53 (0.110)	0.182 (0.878)
DUTC	21.06** (0.024)	28.33 (0.414)	2.59 (0.464)	−22.52* (0.070)	−50.11 (0.102)	−0.92 (0.856)	−7.49 (0.120)	0.35** (0.037)	−0.325 (0.423)
GRMC	−25.13** (0.015)	−43.77** (0.343)	−10.45** (0.027)	−67.37*** (0.005)	−88.80* (0.052)	0.02 (0.998)	−3.74 (0.753)	−0.31 (0.588)	−1.783** (0.011)
RUSC	−10.20* (0.098)	−39.39** (0.010)	−11.08*** (0.002)	−25.64** (0.010)	−30.72* (0.076)	2.96 (0.503)	−3.84 (0.374)	0.04 (0.859)	−1.046*** (0.001)
Constant	6.81 (0.652)	−50.63* (0.078)	−1.32 (0.884)	5.97 (0.816)	53.76 (0.134)	29.68*** (0.000)	25.97*** (0.000)	3.98*** (0.000)	4.457*** (0.000)
Observations	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Clusters groups	110	110	110	110	110	110	110	110	110
F-value	20.00*** (0.000)	51.63*** (0.000)	62.24*** (0.000)	55.86*** (0.000)	38.74*** (0.000)	27.32*** (0.000)	24.51*** (0.000)	27.22*** (0.000)	61.04*** (0.000)
R^2	0.317	0.546	0.592	0.565	0.474	0.135	0.363	0.388	0.586
Adjusted R^2	0.301	0.535	0.582	0.555	0.462	0.125	0.348	0.374	0.577
Cox and Snell R^2	0.318	0.546	0.592	0.565	0.474	0.135	0.363	0.388	0.587
Nagelkerke R^2	0.318	0.546	0.592	0.565	0.474	0.135	0.363	0.388	0.600
Sargan-Hansen statistic	13.2*** (0.000)	22.92*** (0.003)	52.97*** (0.000)	56.28*** (0.000)	20.76*** (0.007)	8.46*** (0.000)	71.93*** (0.000)	38.50*** (0.000)	57.53*** (0.000)
Wald test (testparm)	4.54*** (0.000)	17.4*** (0.000)	20.1*** (0.000)	10.9*** (0.000)	7.08*** (0.000)	11.1*** (0.000)	11.3*** (0.000)	6.05*** (0.000)	27.172*** (0.000)

Notes: The variables are defined in Table 2. Statistical significance level in parentheses *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table 10. The results of instrumental variables (2SLS) estimation for 110 countries from 1995 to 2014

2SLS regression models	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
The ISAs adopters DOI theory classification									
EXPRA	−18.66 (0.119)	8.90 (0.715)	−10.20 (0.157)	−7.53 (0.720)	−22.52 (0.410)	−10.97* (0.071)	−1.49 (0.746)	0.15 (0.565)	−26.37 (0.181)
ERADA	−20.03* (0.069)	−63.27*** (0.004)	−21.25*** (0.003)	−48.21** (0.016)	−35.74 (0.161)	−16.39*** (0.003)	−8.29** (0.028)	−0.17 (0.311)	−6.059 (0.633)
ERMJA	−17.43* (0.097)	−12.50 (0.569)	−10.40 (0.140)	−22.09 (0.262)	−24.14 (0.340)	−12.50** (0.015)	−3.00 (0.402)	0.06 (0.971)	−6.329 (0.593)
LTMJA	−16.88 (0.116)	−3.42 (0.848)	−8.66 (0.209)	−12.81 (0.491)	−21.04 (0.385)	−8.70* (0.061)	−2.10 (0.556)	−0.15 (0.377)	4.085 (0.654)
The ISAs status classical classification									
WIAM	9.48*** (0.003)	9.92 (0.234)	3.55** (0.014)	−5.58 (0.381)	−24.09** (0.004)	4.60* (0.047)	−1.32 (0.344)	−0.14* (0.092)	−2.004 (0.425)
WOAM	13.45* (0.084)	38.73** (0.027)	10.89*** (0.000)	24.90** (0.014)	15.75 (0.148)	4.10 (0.225)	1.29 (0.615)	0.14 (0.227)	−1.443 (0.611)
WITR	13.79*** (0.000)	18.42** (0.048)	6.11*** (0.001)	2.82 (0.639)	−14.96* (0.052)	2.66 (0.331)	2.30 (0.189)	−0.19** (0.022)	1.730* (0.079)
WOTR	4.72 (0.545)	−16.62 (0.304)	−4.88 (0.146)	−55.43*** (0.000)	−81.02*** (0.005)	−10.21 (0.137)	−10.28* (0.096)	−0.49*** (0.004)	0.849 (0.628)
WAMT	17.16** (0.017)	28.01** (0.038)	7.36*** (0.001)	19.51** (0.012)	18.53 (0.146)	−2.60 (0.345)	−3.19 (0.201)	−0.13 (0.351)	9.090 (0.254)
BLAW	0.70 (0.869)	−14.65 (0.338)	1.98 (0.444)	−12.94 (0.134)	−27.28** (0.010)	1.90 (0.637)	−2.07 (0.421)	−0.08 (0.544)	8.398 (0.281)
GMAT	32.23* (0.077)	−17.61 (0.251)	4.62 (0.155)	−19.59** (0.030)	−20.11* (0.079)	−5.73** (0.046)	1.60 (0.805)	−0.06 (0.596)	1.953 (0.125)
IFRSS	33.12*** (0.000)	−35.06** (0.030)	5.95** (0.048)	−13.38 (0.191)	−16.89 (0.136)	46.14*** (0.000)	15.19*** (0.000)	−1.18*** (0.000)	0.585 (0.473)
Dummy 08-09									
D08–D09	2.97** (0.036)	1.78 (0.484)	0.96** (0.012)	14.68*** (0.000)	8.26*** (0.003)	−35.13*** (0.000)	6.15*** (0.000)	0.12*** (0.000)	−0.230 (0.687)
Control variables									
Geographical region									
EURO	−0.08 (0.994)	20.45 (0.394)	6.95 (0.116)	24.14 (0.149)	54.03** (0.019)	−4.12 (0.397)	4.83 (0.332)	0.08 (0.971)	5.652 (0.167)
LNAM	2.52 (0.628)	68.12*** (0.007)	9.85* (0.073)	20.03 (0.308)	12.65 (0.583)	−5.09 (0.191)	1.95 (0.572)	−0.18 (0.519)	0.724 (0.105)
CSAS	6.58 (0.509)	17.82 (0.423)	6.46 (0.133)	28.13* (0.071)	65.47** (0.012)	−0.33 (0.959)	0.26 (0.966)	0.06 (0.929)	5.050 (0.213)
EASP	6.86 (0.529)	53.29** (0.032)	14.11*** (0.001)	49.29*** (0.002)	70.02*** (0.000)	−4.81 (0.215)	7.49** (0.045)	0.14 (0.563)	2.962** 0.032
MENA	9.41 (0.330)	16.01 (0.519)	3.56 (0.482)	3.91 (0.805)	11.73 (0.586)	−11.84* (0.089)	−11.77 (0.182)	−0.12 (0.839)	3.272 (0.257)
Official language									
ENGL	0.19 (0.978)	42.66** (0.018)	4.90 (0.122)	12.09 (0.206)	−6.06 (0.580)	−1.70 (0.618)	−5.13 (0.149)	0.14 (0.421)	−1.769 (0.319)
FRNL	11.25 (0.462)	44.48*** (0.005)	8.81* (0.056)	13.42 (0.253)	−12.87 (0.423)	−2.00 (0.655)	0.14 (0.974)	0.12 (0.632)	−3.419 (0.355)
SPNL	−31.44*** (0.000)	44.99*** (0.000)	3.61 (0.122)	16.99** (0.031)	27.93** (0.010)	−5.28* (0.087)	−2.51 (0.346)	−0.20 (0.255)	−3.460 (0.295)
ARBL	5.17 (0.450)	50.33** (0.039)	1.73 (0.745)	17.63 (0.168)	4.10 (0.812)	7.25 (0.304)	11.72 (0.194)	−0.06 (0.918)	−0.293 (0.775)
GRML	19.73* (0.089)	1.60 (0.937)	−0.91 (0.838)	4.87 (0.659)	−2.95 (0.843)	−3.34 (0.386)	−4.61 (0.341)	0.10 (0.607)	0.069 (0.944)
RUSL	0.12 (0.989)	−33.59 (0.189)	−5.49 (0.378)	−20.78 (0.101)	3.94 (0.925)	−1.44 (0.860)	6.23 (0.518)	−0.78*** (0.000)	−1.796 (0.357)

(*continued*)

Table 10.

2SLS regression models	Financial consequences (dependent variables)								
Dependent variables	*IFNI*	*MCPL*	*SMCP*	*SMTD*	*SMTO*	*SMRT*	*SPVO*	*FMKD*	*Average*
Independent variables	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
Colonial history									
NEVC	17.66** (0.028)	40.62*** (0.002)	12.29*** (0.000)	34.81*** (0.000)	33.81*** (0.006)	2.51 (0.430)	2.57 (0.416)	0.28* (0.098)	3.374** (0.036)
BRTC	−6.41 (0.405)	−10.22 (0.623)	−2.53 (0.513)	−8.93 (0.496)	−4.07 (0.809)	−2.48 (0.542)	−5.94 (0.192)	0.21 (0.360)	6.176 (0.295)
FRNC	−6.12 (0.520)	−57.70* (0.056)	−2.81 (0.614)	−19.78 (0.266)	0.04 (0.998)	0.04 (0.995)	−8.25 (0.138)	−0.04 (0.856)	2.624 (0.347)
SPNC	33.33** (0.017)	−94.34*** (0.001)	−9.06 (0.215)	−49.75** (0.041)	−59.23* (0.059)	7.82 (0.260)	−5.68 (0.410)	0.28 (0.469)	8.097 (0.315)
PORC	−13.15 (0.395)	−23.80 (0.340)	−0.76 (0.943)	0.22 (0.993)	16.56 (0.598)	−2.63 (0.708)	−1.74 (0.838)	0.50* (0.062)	6.836 (0.377)
DUTC	19.84** (0.041)	−12.51 (0.481)	1.84 (0.633)	−25.67* (0.090)	−30.27 (0.128)	−1.68 (0.775)	−5.31 (0.213)	0.08 (0.785)	1.220 (0.363)
GRMC	−30.22*** (0.001)	−39.34 (0.393)	−9.85* (0.075)	−62.04*** (0.009)	−83.61* (0.083)	−1.12 (0.881)	−5.26 (0.680)	−0.19 (0.723)	3.316 (0.458)
RUSC	−12.43** (0.045)	−37.90*** (0.003)	−6.30** (0.024)	−18.53* (0.052)	−19.24 (0.274)	4.78 (0.282)	−2.58 (0.520)	0.06 (0.704)	−5.153 (0.205)
Constant	11.78 (0.416)	−9.74 (0.727)	6.60 (0.417)	16.79 (0.493)	52.25 (0.105)	29.91*** (0.000)	25.36*** (0.000)	3.92*** (0.000)	−5.275 (0.704)
Observations	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Clusters groups	110	110	110	110	110	110	110	110	110
F value	396.3*** (0.000)	149.5*** (0.000)	298.2*** (0.000)	266.1*** (0.000)	274.3*** (0.000)	209.8*** (0.000)	322.3*** (0.000)	899.8*** (0.000)	48.82*** (0.000)
Adjusted R^2	0.343	0.551	0.643	0.578	0.492	0.132	0.339	0.472	0.520
The SW χ^2 test for underid									
EXPRA	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)	7.67* (0.053)
ERADA	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)	8.07** (0.044)
ERMJA	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)	7.51** (0.047)
LTMJA	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)	7.65* (0.053)
The LM test of IV redundancy	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)	371.7*** (0.000)
The Sargan-Hansen of overid	3.98 (0.137)	1.05 (0.593)	2.73 (0.112)	0.54 (0.764)	1.07 (0.585)	2.71 (0.258)	3.49 (0.175)	0.22 (0.894)	5.646* (0.059)
The C statistic of endogeneity	26.33*** (0.000)	201.9*** (0.000)	116.1*** (0.000)	129.7*** (0.000)	139.2*** (0.000)	3.30 (0.509)	39.15*** (0.000)	275.2*** (0.000)	114.64*** (0.000)
Reset test of omitted variables	2.24 (0.135)	2.53 (0.112)	0.14 (0.708)	2.52 (0.113)	1.37 (0.243)	0.94 (0.325)	0.96 (0.328)	1.49 (0.223)	0.02 (0.893)

Notes: The variables are defined in Table 2. Statistical significance level (p-value) in parentheses; *** $p < 0.01$, ** $p < 0.05$; * $p < 0.1$

Hence, future studies may improve upon our findings by including countries with similar strength of auditing and reporting standards.

Note

1. Boolaky and Soobaroyen (2017) measure IAS adoption as follows: "4" means that ISA is mandatory by law, "3" national standard setters have adopted ISA as auditing standards, but not mandatory by law, "2" ISAs have been generally adopted as the local auditing standards, but subject to modification and finally when a country is coded as "1" it means the IFAC does not have adequate information. "0" ISA not adopted".

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