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International financial reporting standards, domestic debt finance and institutional quality: Evidence from developing countries

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Abstract

We have examined the relationship between international financial reporting standards (IFRS and IFRS for SMEs) and domestic credit to the private sector by banks. Using data on 107 developing countries from 2000 to 2017, we found that the use of IFRS and IFRS for SMEs is positively associated with an increase in domestic credit to the private sector in developing countries. Our analysis on the individual global standards shows that the relationship is much stronger for the use of full IFRS than IFRS for SMEs. We found that the effect of both international standards on domestic credit is more profound in countries with weaker institutional quality, indicating the overwhelming support that these sets of international standards are quality standards that boost confidence in financial statements. Other robustness tests confirm our results.

KEYWORDS

developing countries, domestic credit, IFRS, IFRS (SME), private sector

1 | INTRODUCTION

Proponents of international financial reporting standards¹ (IFRS and IFRSSME) such as the International Accounting Standard Board (IASB) suggest that the use of high-quality accounting standards improves the functioning of capital markets (Horton, Serafeim, & Serafeim, 2013; Kim, Tsui, & Yi, 2011) and reduces the cost of capital (IASB, 2015; Kim, Shi, & Zhou, 2014). Consequently, prior studies investigated the capital-markets effects of IFRS and have reported a reduction in the cost of equity (Brown, 2011; Florou & Pope, 2012; Kim et al., 2014). More recently, however, Florou and Kosi (2015) found that IFRS adoption increases firms' propensity to issue bonds rather than obtain loans.

Despite the numerous benefits of IFRS such as increased transparency and comparability, existing literature has ignored the impact of these sets of standards on domestic debt financing. This is partially due to the perception that IFRS is an equity-oriented standard (Brown, 2011). However, the increasing adoption of IFRS (IFRSSME) by most countries that do not have stock exchanges indicates that the consequences of global financial reporting standards go beyond equity market finance. Therefore, in this paper, we focus on the supply side and explore whether the use of IFRS by firms affects domestic credit to the private sector. More specifically, we focus on loans and advances and examine whether the use of full IFRS and IFRSSME influences the lending decisions of banks and other financial institutions in developing countries.

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We are motivated to focus on the effects of IFRS (IFRSSME) on domestic credit to the private sector in developing countries due to the following considerations. Although prior studies suggest that IFRS has favourable capital market consequences (DeFond, Hung, Li, & Li, 2015), most developing countries that use IFRS (IFRSSME) have less-developed capital markets or no stock exchanges (Nnadi & Soobaroyen, 2015). In these countries, firms rely on bank loans for their financing needs because most firms are unlisted or are micro-small companies that rarely issue debt instruments. Consequently, Quartey, Turkson, Abor, and Iddrisu (2017) suggest that at least 80% of all company funding in developing countries is sourced from bank loans and other forms of advances from financial institutions. Moreover, the information needs of banks and other financial institutions may be different from those of equity and debt markets (Florou & Kosi, 2015; Loaba & Zahonogo, 2019). For example, unlike capital markets, banks consider customer relationships and credit information when making lending decisions (Bahadir & Valev, 2019; Bermpei, Kalyvas, & Leonida, 2020; Boot & Thakor, 2000). This implies that findings from previous studies that focused on capital markets may not be generalizable to accessing bank loans in developing countries. The centrality of bank loans in firms' financing decisions vis-à-vis the differential information requirements of banks makes it imperative to examine the implications of IFRS (IFRSSME) for bank lending decisions in developing countries.

Financial reporting quality is a function of the institutional setting, including law enforcement, corruption, etc. in the country in which the firm resides (Soderstrom & Sun, 2007). In fact, the quality of an accounting system depends on the country's overall institutional quality (Barth, Landsman, & Lang, 2008). This is because institutional quality (IQ) ensures enforcement of accounting standards as well as litigation against parties such as managers and auditors who may influence the financial reporting process (Soderstrom & Sun, 2007). However, developing countries have weaker institutions (Bova & Pereira, 2012; Houqe & Monem, 2016) and enforcement mechanisms that attenuate the quality financial reporting that IFRS (IFRSSME) offers. Arguably, the implications of IFRS in developed countries may be different from those of developing countries due to the lower levels of IQ. Our analyses consider the effect of IQ on the IFRS (IFRSSME)–domestic credit relationship.

Using data on 107 developing countries from 2000 to 2017, we argue that quality accounting standards improve the credibility of accounting numbers regarding the financial performance of firms; hence, they are important determinants of banks' lending behaviour and

risk profiling (Basel Committee, 2017). Thus, if IFRS is a high-quality accounting standard (Barth et al., 2008) that ensures transparency (Houqe & Monem, 2016) and detailed disclosure (Daske, Hail, Leuz, & Verdi, 2008), then we expect the adoption of IFRS (IFRSSME) to increase domestic debt financing in developing countries. We found that developing countries that use full IFRS as well as those that use IFRSSME experience increases in domestic credit to private sectors (DCP). The results suggest that the positive relationship between DCP and both IFRS and IFRSSME is more pronounced in developing countries with lower IQ. Our results imply that the benefits of IFRS go beyond the capital market effects and that in developing countries, domestic financial institutions have more confidence in IFRS- and IFRSSME-prepared financial statements even when IQ is low. Thus, in countries with limited access to capital markets, IFRS (IFRSSME) has a positive influence on the lending behaviour of banks and other financial institutions towards the private sector. Our results are robust to several sensitivity tests, including alternative measures of variables and alternative samples.

Our study contributes to both the international accounting and banking literature in the following ways. First using a multi-country, multi-period sample from developing countries, this study provides evidence of the economic benefits of both IFRS and IFRSSME. Given the dominance of developed countries in prior studies, our results provide new insights into the economic consequences of globalization of accounting standards via the adoption of IFRS and IFRSSME in developing countries. Second, we believe that this is the first study to examine the effect of IFRS adoption on the lending decisions of banks in developing countries. We depart from existing literature on IFRS and debt financing such as de Lima, de Lima, and Gotti (2018), Florou, Kosi, and Pope (2017) and Wu and Zhang (2014) by looking at the dollar amount of bank loans, not debt contracts. Our study also differs from Beneish, Miller, and Yohn's (2015) study on debt markets because we focused on domestic debt, not the foreign debt market. We demonstrate that in developing countries where firms have a greater need for bank loans and advances due to underdeveloped capital markets, banks look favourably on IFRS (IFRSSME)-prepared financial statements in making lending decisions. Our results, therefore, contribute to the limited literature on the consequences of IFRS (IFRSSME) for bank loans and advances in developing countries.

Third, despite the importance of small-medium enterprises (SMEs) to economic development, access to finance is a major challenge (Beck, Demirgüç-Kunt, Laeven, & Maksimovic, 2006). We contribute to the literature by documenting that SMEs can increase their

access to finance by using the less-demanding IFRSSME. This has important policy implications for governments and policymakers around the world seeking to increase SMEs' access to finance. Lastly, we contribute to the literature by documenting that the IFRS (IFRSSME)-DCP relationship is more relevant in developing countries with low IQ. These findings add to the stream of research on the role of institutional structures in harnessing the benefit of IFRS (IFRSSME) (Bova & Pereira, 2012; Kim et al., 2014). This stream of literature provides mixed evidence on whether countries with low-institutional structures can benefit due to the complexity and principle-based nature of IFRS (IFRSSME). Our finding implies that in developing countries, banks have greater confidence in IFRS- and IFRSSME-prepared financial statements even in low-quality institutional settings. Hence, our study complements prior studies by providing additional evidence on the substitutive relation between IFRS (IFRSSME) and IQ on domestic credit.

The paper proceeds as follows. Section 2 reviews the literature and develops hypotheses. Section 3 presents the research methods. Analysis and discussion are presented in Section 4. Section 5 provides robustness checks on the main findings, and Section 6 concludes the paper with some policy implications.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The transactional-based approach theory of lending suggests that financial institutions demand hard information such as quality financial statements and documentation of collateral as input for measuring credibility and affordability (Bermpei et al., 2020). This approach is consistent with standard banking practices and the fulfilment of financial institutions' requirements. Beatty (2008) claims that accounting information from financial statements plays both ex-ante and ex-post roles in credit contract relationships. In its ex-ante role, accounting information helps banks and other lenders to evaluate credit risk, which mitigates adverse selection. Accounting information also helps financial institutions to monitor credit risk over the life of the debt contract through financial covenants. Thus, it mitigates the problem of moral hazard in the ex-post contract of the loan, especially when the borrower has no alternative for reducing agency costs (Beatty, Liao, & Weber, 2010).

Therefore, quality financial statement and its analysis are major tools that debtholders use to mitigate agency problems associated with debt (Harasheh, Doni, Franceschelli, & Amaduzzi, 2020; Jensen & Meckling, 1976; Smith & Warner, 1979). Accordingly, debt markets need higher-quality financial reporting than equity markets

(Ball, 2016; Ball, Robin, & Sadka, 2008) to enforce monitoring and bonding contracts on debt. The agency theory posits that high quality and more comparable financial information reduces information asymmetry between lenders and borrowers (Florou & Kosi, 2015; Jensen & Meckling, 1976; Lambert, Leuz, & Verrecchia, 2007).

International financial reporting standards improve accounting information; hence, it increases the usefulness of financial statements to bankers and other lenders (Barth et al., 2008). Fair valuation helps lenders to evaluate the current economic position of companies in order to assess their ability to pay them back (Ehalaiye, Tippett, & van Zijl, 2017; Florou et al., 2017). Arguably, fair valuation under IFRS is likely to bring the value of borrowers up to date to enable lenders to make an informed decision (Ehalaiye, Tippett, & van Zijl, 2020).

Prior studies assert that IFRS (IFRSSME) improves accounting information quality because of its superior measurement and disclosure requirements as compared to national standards (Barth et al., 2008; Gassen, 2017; Hail, Leuz, & Wysocki, 2010; Mohsin et al., 2020). For example, Mohsin et al. (2020) found that mandatory adoption of IFRS increased information on earnings timeliness. Such detailed disclosures are very relevant to lenders who mostly do not have access to proprietary company information.

According to the IASB (2015), financial statements prepared under IFRS (IFRSSME) provide useful accounting numbers for forecasting future cash flows and net assets. Moreover, these variables are integral factors for giving out loans (Florou et al., 2017). As outsiders, lenders are faced with uncertainty about the distribution of a company's future cash flows. However, Beneish et al. (2015) argue that the extent of the uncertainty of cash-flow distribution is associated with the precision of financing information. Thus, accurate financial information such as financial statements under IFRS (IFRSSME) reduces the level of uncertainty.

As argued by IASB (2015), consistent with the agency theory, the adoption of IFRS (IFRSSME) minimizes information asymmetry between preparers and users of financial statements, thereby decreasing the risk and cost of capital (Daske, 2006; Daske et al., 2008). The domestic credit markets are usually dominated by transnational or multinational financial institutions (Quartey et al., 2017). This means decisions on some loans are likely to be made by a central headquarters in a different country or by foreign managers. Hence using IFRS makes it easier for such financial institutions to compare and evaluate domestic companies in different countries. IFRS (IFRSSME) reduces differences in recognition and measurement methods across countries thereby reducing the problem of country-level idiosyncratic measurement

errors in accounting numbers likely to be faced by multinational banks operating in different countries (Florou et al., 2017). The use of a common set of accounting standards under international financial reporting is likely to increase the level of familiarity between transnational banks and their borrowers across different branches regardless of the country of operation. The use of IFRS may also reduce the need for periodic reassessments of loans given to the private sector (Beneish et al., 2015). These benefits of reduction in information asymmetry due to increase in comparability and familiarity associated with IFRS will increase the amount of domestic credit to the private sector through the reduction of cost of monitoring debts.

Owing to the wealth of empirical evidence that full IFRS is value relevant than domestic standards (Barth et al., 2008; Cai, Rahman, & Courtenay, 2014), particularly in developing countries (Bova & Pereira, 2012; Houqe & Monem, 2016), we argue that IFRS financial statements have a positive impact on the borrowing behaviour of domestic financial institutions. Further, consistent with agency theory and transactional-based-approach theory of bank lending, we expect the use of IFRS to increase domestic credit to the private sector. Therefore, we hypothesize that:

H₁. *The use of IFRS increases domestic credit to the private sector.*

Knowing very well that most developing countries adopt IFRS for their large corporations or listed companies, but that most companies are SMEs, we expect more companies to be using IFRSSME than full IFRS. Kaya and Koch (2015) report that more than 70 countries are using IFRSSME. In a study of 24 countries, Gassen (2017) found that IFRSSMEs have significant influence on private firms' financial reporting and transparency. Furthermore, the author documents that IFRSSME is more relevant for debt contracting than other purposes. Similarly, Quagli and Paoloni (2012) found that, compared with preparers, users of financial statements see IFRSSME as more beneficial. This finding is also consistent with Albu et al. (2013) on the relevance of IFRSSME. Specifically, Albu et al. (2013) argue that users prefer full adoption whereas preparers prefer convergence to IFRS for SMEs. This is partly because preparers' perception of IFRSSME is significantly associated with cost of implementation rather than the benefit (Litjens, Bissessur, Langendijk, & Vergoossen, 2012). According to Kaya and Koch (2015), countries with low-quality governance are likely to adopt IFRSSME to improve their financial reporting environment, especially for private firms. These prior studies largely point to the positive effect of

IFRSSME improving the reporting quality of the private sector. Further, IFRSSME appears to be more beneficial to users by reducing information asymmetry and enhancing users' confidence in financial statements (Albu et al., 2013). Therefore, given that financial institutions are one of the primary users of financial statements, we expect IFRSSME to have a strong relationship with an increase in domestic credit to the private sector because bank loans form a large proportion of the capital of SMEs in developing countries (Beck et al., 2006). It is, therefore, hypothesized that:

H₂. *The use of IFRSSME increases domestic credit to the private sector.*

Prior studies suggest that IQ is critical in harnessing the full benefits of IFRS, nevertheless the results have been mixed. For example, some scholars demonstrate that IFRS are more beneficial to countries with weak institutional settings (Cai et al., 2014; Houqe & Monem, 2016). These studies attribute their results to the fact that IFRS serves as a new quality rule that instils discipline in stakeholders associated with financial statement preparation.

Other scholars, including Ahmed, Neel, and Wang (2013), Ball (2006), Daske et al. (2008), Bova and Pereira (2012) and Lee, Oh, and Park (2020) submit that as a complex standard with several discretionary measurements and recognition, IFRS may be less beneficial if there are no strong institutions to ensure their effective implementation. That is, the superiority of IFRS may not always hold because some aspects of the standards such as fair valuation require extensive use of non-verifiable estimates about assets and liabilities (de Lima et al., 2018). Consequently, borrowers may take advantage of estimates to engage in earnings management through the recognition of transient gains and losses, which may reduce the confidence that users of accounting information may have in IFRS-prepared financial statements (Ball, Xi, & Shivakumar, 2015; Schipper, 2005).

The financial sector thrives on quality institutions, and debt providers will prefer to give more credit in an environment with high-quality institutions (Weill, 2011). Indeed, the low levels of IQ in developing countries may be a major concern to banks due to its ability to insulate borrowers from the consequences of default by reducing lenders' ability to enforce laws relating to loan recoveries (Vogel 2007). As global standards, IFRS (IFRSSME) are of higher quality than most national standards in developing countries (Barth et al., 2008; Cai et al., 2014; Hail et al., 2010). Consequently, the use of IFRS (IFRSSME) may reduce the abuse of discretion reporting in weak institutional environments and increase the confidence

that banks have in IFRS (IFRSSME)-prepared financial statements. IFRS (IFRSSME) may offer an extra layer of protection against fraudulent reporting in countries with weak institutions (Houqe & Monem, 2016). Arguably, in these low-quality institutional countries, banks may have even greater confidence in IFRS (IFRSSME)-prepared financial statements.

Consequently, we expect the relationship between IFRS (IFRSSME) and domestic credit to be much stronger in a low-quality institutional environment.

H₃. *The IFRS (IFRSSME)-domestic credit relationship is stronger in developing countries with a low institutional quality.*

3 | RESEARCH METHODS

3.1 | Sample and measurement of variables

We used panel data from 107 countries between 2000 and 2017 to estimate the impact of IFRS (IFRSSME) on domestic credit to the private sector. We begin the sample selection from 166 jurisdiction profiles of the IFRS Foundation as disclosed on www.ifrs.org as at March 2019. Since we are interested in developing countries, we dropped all developed countries as classified by 2011² World Economic Outlook Report by the World Bank. Next, we excluded all countries that only permit IFRS (IFRSSME), because we cannot be sure if any company is using the standard. For example, Suriname is classified as an IFRS-permitting country by IFRS Foundation. However, World Bank's (2019) review of accounting standards indicated that none of the sample published accounts followed IFRS.

Similarly, because we are interested in estimating whether the use of IFRS influences banks' decision on loans, we focused on countries that have mandated IFRS for all companies and we dropped countries where IFRS is mandatory only for banks (e.g., Angola and Yemen). Finally, countries with missing data were excluded, leaving a sample of 107 developing countries over 18 years and a total of 1,926 country-level observations. Our main variables of interest are IFRS (IFRSSME) and domestic credit by financial institutions to the private sector. We present the variable description and sources in Table 1.

International financial reporting standards: The IFRS Foundation defined IFRS to include full IFRS, and IFRS for SMEs (IFRSSME). The determination of a country's adoption status of IFRS is challenging due to the lack of a single database that provides updated

information on all countries (Kossentini & Othman, 2015; Nnadi & Soobaroyen, 2015). To overcome this challenge, we follow prior studies in compiling the use of IFRS (IFRSSME) in countries from different data sources such as the IFRS Foundation website, PWC and Deloitte. However, the IFRS Foundation is the first preference. Data on IFRS (SME) was collected from the IFRS Foundation.

Given that we are investigating the impact of IFRS (IFRSSME) on domestic credit, we focused on the year in which financial statements per IFRS (IFRSSME) became available. Hence, we defined the IFRS (IFRSSME) usage year as the earliest year that companies can submit an IFRS (IFRSSME) financial statement for a loan application. In this case that will be at least 1 year after the effective implementation date of the IFRS (IFRSSME).³ For IFRSSME, the first financial statements were available from 2010 because the effective implementation date was 2009 except for South Africa, which adopted it in 2007. Hence, the sample period for IFRS (SME) starts from 2010 for 96 jurisdictions giving 768 country-level observations.

Domestic credit (DCP): We use domestic credit to the private sector by only banks (DCP) as a percentage of GDP as a proxy for domestic debt financing. According to the DCP refers to financial resources provided to the private sector by all private and government banks (including deposit-taking corporations except for central banks) through loans, purchases of non-equity securities and advances that establish a claim for repayment. We also use domestic credit by banks and other financial institutions to the private sector (DCF) as a percentage of GDP as an alternative measure in the robustness test. DCF is the financial resources provided to the private sector by financial corporations, through loans, purchases of non-equity securities and trade credits and other accounts receivable that establish a claim for repayment.

We use GDP-deflated values of domestic debt financing because it controls for differences in the size of sample countries and gives ease in comparison to prior studies (Beneish et al., 2015). Data on domestic credit were collected from the World Development Indicators (WDI) database. Mbate (2013) used similar measures for domestic credit. We controlled for other macroeconomic and institutional variables that are likely to influence domestic credit to the private sector.

Institutional quality (IQ): We derived our measure of IQ from World Governance Indicators (WGI) by Kaufmann et al. (2010). The WGI covers six areas, namely: control of corruption (CCPT); government effectiveness (GVE); political stability and absence of violence (PST); regulatory quality (RQ); rule of law (RUL) and voice and accountability (VAA). Each of the six indicators

TABLE 1 Variable description

Variable	Acronym	Description	Source
Domestic credit to the private sector	DCP	Domestic credit to private sector as percentage of GDP refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities and trade credits and other accounts receivable that establish a claim for repayment.	World development indicators
Domestic credit to the private sector by banks	DCF	Domestic credit to private sector by banks as percentage of GDP refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of nonequity securities and trade credits and other accounts receivable that establish a claim for repayment.	World development indicators
IFRS use	IFRS	The use of IFRS in country. Dummy variable that takes value of 1 if a country has mandated the use of IFRS and value of zero, otherwise	IFRS foundation https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/
Years of IFRS usage	IFRS_EXP	<i>IFRS_EXP</i> was measured as the years between first year use of IFRS standard to 2017	Author construction
IFRSSME use	IFRSSME	The use of IFRS for SME in country. Dummy variable that takes value of 1 if a country has mandated the use of IFRS and value of zero, otherwise	
Years of IFRSSME usage	IFRSSME_EXP	<i>IFRSSME_EXP</i> was measured as the years between first year use of IFRS standard to 2017	Author construction
Institutional quality	IQ	We use principal component analysis (PCA) to derive a composite measure of national governance quality (world governance indicators Composit, WGIC). Input variables include worldwide governance indicators (WGI); control of corruption index (CCI), government effectiveness index (GEI), voice and accountability index (VAI), regulatory quality index (RQI), political stability and absence of violence index (PSAVI) and rule of law index (ROLI). The dataset for WGI is compiled by Kaufmann, Kraay, and Mastruzzi (2010). WGIs are freely obtainable from the World Bank Group (Worldbank.org).	World Governance indicators by Kaufmann et al. (2010). info.worldbank.org/governance
Lending rate	LRT	Lending rate is the bank rate that charge on loans to the private sector.	World development indicators
Inflation	INF	Inflation as measured by the consumer price index reflects the annual percentage change	World development indicators
Stock market capitalization	MKT	Market capitalization is the share price times the number of shares outstanding (including their several classes) for listed domestic companies as percentage of GDP. Data are end of year values.	World development indicators
GDP per capita	LGDPCC	GDP per capita is gross domestic product divided by midyear population.	World development indicators
Corruption	CCPT	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5 .	World Governance indicators by Kaufmann et al. (2010). info.worldbank.org/governance

captures different aspects of IQ. However, as presented in Panel A of Table 3, there is significant high correlation among the six indicators. Consequently, including all six indicators in the same equation will create a multicollinearity problem. Therefore, following Elamer, Ntim, and Abdou (2017) Konara and Shirodkar (2018) and Tunyi, Ehalaiye, Gyapong, and Ntim (2020), we collapsed the six WGI into a single composite index using principal component analysis (PCA).

Lending rate (LRT): A major determinant of debt financing is the cost of borrowing. LRT can have both a negative and a positive effect on borrowing (Beck et al., 2006; Weill, 2011). From the demand side, a high LRT will result in less borrowing. Contrarily, on the supply side, high LRT is a positive motivation for financial institutions to provide more credit. Therefore, we predict a competition relationship between the LRT and domestic credit. Annualized LRT sourced from WDI was used as a proxy for the cost of borrowing.

Inflation rate (INF): Following on from Boyd, Levine, and Smith (2001), Afrifa, Gyapong, and Zalata (2019) and Beck and Levine (2004), we considered the impact of inflation. Like the LRT, inflation can have both a positive and negative effect on domestic credit. High inflation may cause a business to borrow more money to finance operations. However, high inflation is likely to cause hikes in the LRT, which will discourage borrowing. Annualized INF sourced from WDI was used as a proxy for the INF.

Stock market development (MKT): A well-functioning stock market means companies have alternative sources of funding other than debt (Beck & Levine, 2004). Hence, there will be a decline in debt financing. Market capitalization as a percentage of GDP sourced from WDI used as a proxy to control for the effect of stock market development.

Corruption level (CCPT): Corruption breeds mismanagement of funds (Weill, 2011). Therefore, financial institutions are not attracted to giving loans in a corrupt environment. We used CCPT index collected from World Governance Indicator as a proxy for the level of corruption in a country. Control of corruption captures perceptions of the extent to which public power is exercised for private gain. The CCPT estimate gives the country's score on the aggregate indicator, in units of standard normal distribution that is ranging from approximately 2.5 to 2.5. A higher score means less corruption. Due to the nature of the CCPT scoring, we predict a positive relationship between CCPT and domestic credit.

GDP per capita (LGDPPC): High GDP per capita means citizens have enough money to spend and save at the time. Therefore, they will create markets that require investments. Personal savings give financial institutions large amount of deposits to give out as loans; hence, we

expect LGDPPC to have a positive impact on the increase in domestic credit (Weill, 2011). We use the log form of GDP per capita sourced from WDI.

3.2 | Econometric model

Following on from Weill (2011), we begin our econometric estimations by first examining the relationship of domestic credit and the control variables as the benchmark model. This first examination gives assurance that the selected variables are appropriate for controlling other factors that impact domestic credit by banks to the private sector. Further, comparison of the benchmark model with subsequent models provides evidence on how the inclusion of IFRS improves the explanation of variation in domestic credit to the private sector. Following Gyapong, Monem, and Hu (2016), we performed different diagnostic tests, including the Breusch and Pagan (1980)⁴ LM test and the Hausman (1978) test.⁵ Based on these tests, we adopted the fixed effects regression technique to minimize potential misspecification and spurious regression due to the differences in individual country settings.

$$DCP_{it} = a + \beta_1 LRT_{it} + \beta_2 INF_{it} + \beta_3 MKT_{it} + \beta_4 LGDPPC_{it} + \beta_5 CPT_{it} + \varepsilon_{it} \quad (1)$$

Building upon the relationship between domestic credit and the control variables, we extended (1) to include IFRS representing the use of IFRS.

$$DCP_{it} = a + \beta_1 IFRS_{it} + \beta_2 LRT_{it} + \beta_3 INF_{it} + \beta_4 MKT_{it} + \beta_5 LGDPPC_{it} + \beta_6 CPT_{it} + \varepsilon_{it} \quad (2)$$

In Equation (3) below, we replace IFRS with IFRSSME to estimate the impact of IFRS (SME) on domestic credit to the private sector.

$$DCP_{it} = a + \beta_1 IFRSSME_{it} + \beta_2 LRT_{it} + \beta_3 INF_{it} + \beta_4 MKT_{it} + \beta_5 LGDPPC_{it} + \beta_6 CPT_{it} + \varepsilon_{it} \quad (3)$$

As discussed earlier, prior studies argue that the benefits of global financial reporting standards are subject to the institutional setting of the country (Ahmed et al., 2013; Ball, 2006; Cai et al., 2014; Daske et al., 2008; Houque & Monem, 2016). Following these arguments, we use Equations (4) and (5) below to estimate the moderation effect of IQ on the consequences of IFRS in the domestic credit market.

$$DCP_{it} = a + \beta_1 IFRS_{it} + \beta_2 IFRS * IQ_{it} + \beta_3 LRT_{it} + \beta_4 INF_{it} + \beta_5 MKT_{it} + \beta_6 LGDPPC_{it} + \beta_7 CPT_{it} + \varepsilon_{it} \quad (4)$$

$$DCP_{it} = a + \beta_1 IFRS_{it} + \beta_2 IFRSSME * IQ_{it} + \beta_3 LRT_{it} + \beta_4 INF_{it} + \beta_5 MKT_{it} + \beta_6 LGDPPC_{it} + \beta_7 CPT_{it} + \varepsilon_{it} \quad (5)$$

4 | ANALYSIS AND DISCUSSION

4.1 | Descriptive statistics

Table 2 presents the descriptive statistics of the variables used in the estimations. For both full IFRS and

IFRSSME, we split the sample observations into users and non-users. Moreover, we used *T*-test to examine the differences in variables between users and non-users. Panel A refers to a sample of full IFRS, while Panel B relates to a sample for IFRSSME. For both full IFRS and IFRSSME samples, we observed significant difference between users and non-users in terms of DCP and DCF as well as other control variables. Consistently, in Panel B we can see that the domestic credit to private sector (DCP, DCF) of IFRSSME users is higher than for non-users. These reported differences indicate the systematic effects of IFRS on sources of finance. The mean of the variables of interest, domestic credit to the private sector (DCP and DCF), is not too far from the median, indicating near normality of the data. However, all the variables have

TABLE 2 Descriptive statistics (A) IFRS users and Non-IFRS users and (B) IFRS (SME) users and non-users

Panel A											
Variables	IFRS periods (OBS = 721)					NON-IFRS periods (OBS -1,205)					T-test PV
	Mean	P25	Median	P75	STD	Mean	P25	Median	P75	STD	
DCP	43.78	26.79	43.94	59.66	22.51	29.646	11.99	21.68	40.05	26.56	0.00
DCF	46.814	27.55	44.95	61.84	27.10	30.85	12.14	22.49	40.84	28.46	0.00
IFRSEXP	6.88	3	6	10	4.44						
IQ	1.205	-0.24	1.12	2.70	1.89	-0.60	-1.96	-0.78	0.38	2.01	0.00
LRT	12.91	8.62	10.89	16.38	6.90	14.44	8.39	12.80	16.61	10.65	0.001
INF	6.31	1.99	4.219	7.53	14.91	7.48	2.26	4.71	8.35	20.22	0.145
MKT	23.09	0	0	29.42	14.91	16.17	0	0	19.18	31.55	0.004
LGDPPC	8.48	7.85	8.64	9.29	1.15	7.54	6.56	7.53	8.41	1.24	0.000
CCPT	-0.008	-0.53	-0.115	0.516	0.69	-0.52	-0.93	-0.680	-0.24	0.610	0.000
Panel B											
Variables	IFRS periods (OBS = 271)					NON-IFRS periods (OBS -497)					T-test PV
	Mean	P25	Median	P75	STD	Mean	P25	Median	P75	STD	
DCP	40.286	20.68	35.75	56.14	22.67	38.83	18.04	32.37	51.06	28.93	0.04
DCF	44.48	20.85	36.44	59.98	30.06	40.65	18.41	34.00	51.86	30.91	0.07
IFRSEXP	4.02	2	4	6	2.20						
IQ	0.606	-0.65	0.57	1.58	1.84	-0.36	-1.82	-0.681	0.690	2.15	0.000
LRT	13.33	8.5	11.22	16.38	8.11	11.12	5.70	10.80	14.01	5.70	0.001
INF	7.829	2.35	4.71	6.78	23.29	5.18	1.62	3.60	6.76	6.47	0.068
MKT	22.81	0	0	29.82	49.17	18.32	0	0	26.58	31.21	0.174
LGDPPC	8.23	7.32	8.31	9.06	1.11	8.12	7.17	8.19	8.97	1.27	0.233
CCPT	-0.15	-0.63	-0.28	0.27	0.642	-0.46	-0.85	-0.59	-0.25	0.66	0.000

Note: The table presents the descriptive statistics of the variables. Panel A reports the composition of full IFRS users and non-users. Panel B reports the composition of IFRSSME users and non-users. *DCP* is the domestic credit to the private sector by banks. *DCF* is domestic credit to the private sector by banks and other financial institutions. *IFRS* is the dummy variable for use of full IFRS. *IFRS_EXP* measures the number years a country has used full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. *IFRSSME_EXP* measures the number of years a country has used IFRS for SME. *IQ* is a composite index for institutional quality. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *GDP* is the GDP per capita. *CCPT* is the level of corruption in a country.

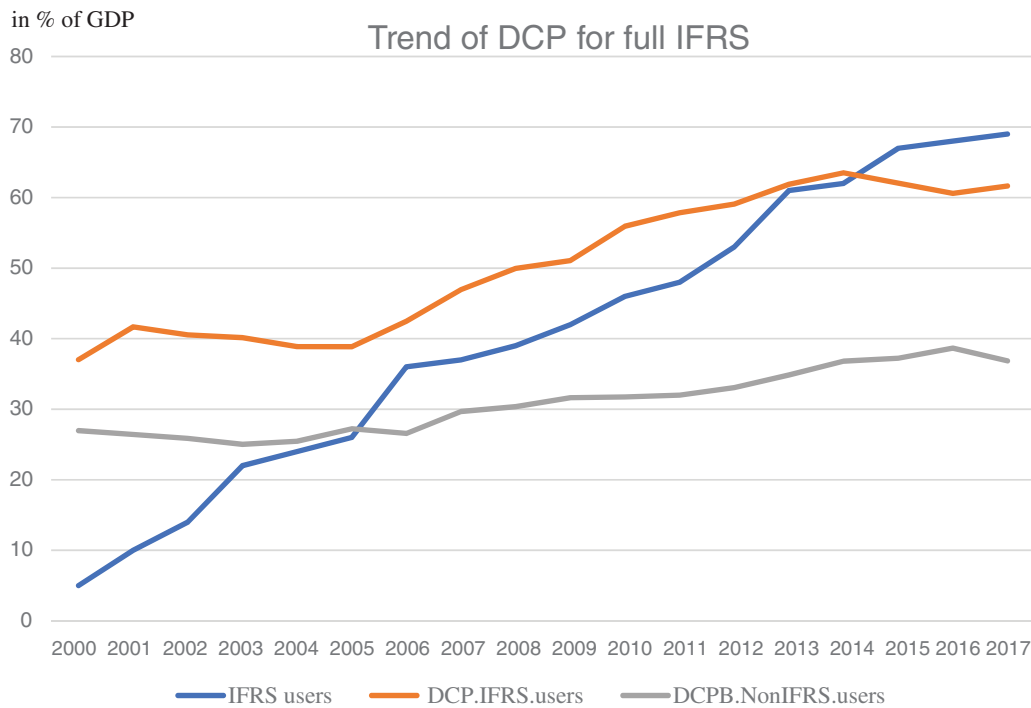


FIGURE 1 Graphical presentation of the trend in DCP between users and non-users of IFRS [Colour figure can be viewed at wileyonlinelibrary.com]

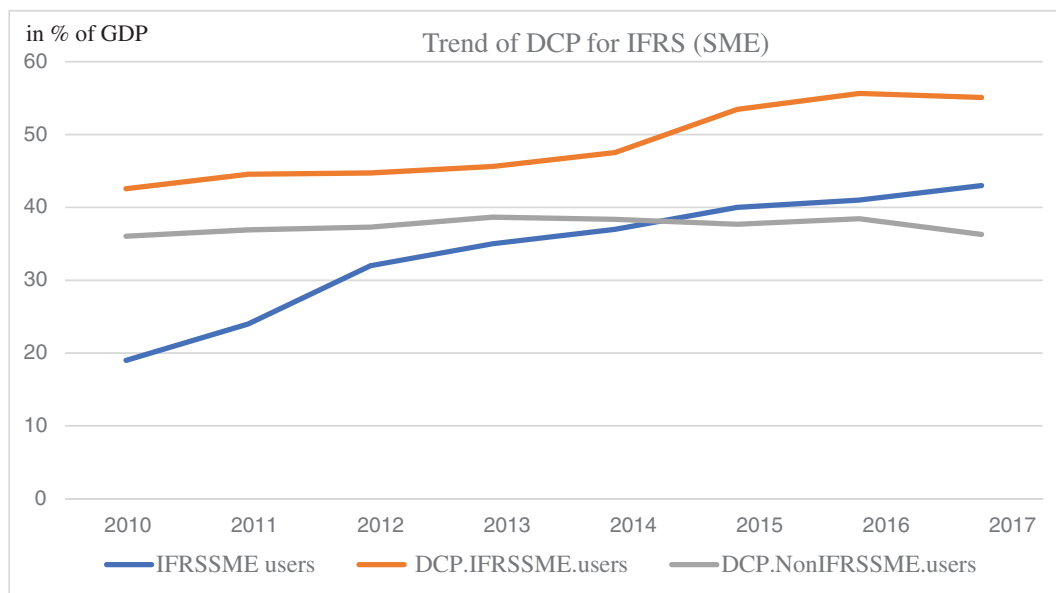


FIGURE 2 Graphical presentation of the trend in DCP between users and non-users of IFRSSME [Colour figure can be viewed at wileyonlinelibrary.com]

a high standard deviation, which implies variations across the sample periods.

Figure 1 presents the trend of full IFRS users, DCP of IFRS users and DCP of non-IFRS users from 2000 to 2017. As expected, the numbers of full IFRS users have

been increasing over the period with 68 of 107 sample countries using it as of 2017. Relying on the average DCP, we can observe an increasing trend of DCP for both full IFRS users and non-users. However, IFRS users experienced high increases starting from 37% in

TABLE 3 Descriptive statistics on institutional quality (A) Correlation matrix for World Governance Indicators (WGI)- PCA and (B) PCA Statistics

Panel A							
	CCPT	GVE	PST	RQ	RUL	VAA	
CCPT	1						
GVE	0.857	1					
PST	0.680	0.621	1				
RQ	0.776	0.881	0.596	1			
RUL	0.906	0.899	0.696	0.863	1		
VAA	0.603	0.568	0.498	0.618	0.628	1	
Panel B							
	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Unexpl
CCPT	0.432	−0.159	−0.031	−0.696	−0.212	0.507	0.000
GVE	0.433	−0.230	−0.292	0.087	0.815	0.001	0.000
PST	0.359	−0.166	0.884	0.238	0.053	0.044	0.000
RQ	0.432	−0.059	−0.346	0.645	−0.436	0.301	0.000
RUL	0.447	−0.143	−0.100	−0.183	−0.293	−0.805	0.000
VAA	0.341	0.932	0.042	−0.041	0.102	−0.010	0.000
Eigenvalue	4.6037	0.531	0.483	0.213	0.094	0.073	
Difference	4.072	0.047	0.269	0.119	0.020		
Proportion	0.767	0.088	0.080	0.035	0.015	0.012	
Cumulative	0.767	0.855	0.936	0.972	0.987	1.00	

Note: Panel A of the table presents pairwise correlation coefficients of WGI for the countries in our sample. All values are significant at 1%. Panel B of the table presents the PCA statistics for predicting IQ index. *CCPT*—control of corruption. *GVE*—government effectiveness; *PST*—political stability and absence of violence. *RQ*—regulatory quality; (*ASV*); *RUL*—rule of law and voice and accountability (*VAA*).

2000 to 62% in 2017. In contrast, the increase in domestic credit for non-IFRS users DCP stayed around the 30–40 percentile range. In Figure 2, we plot the DCP of IFRS (SME) users and non-users against the years that the standard has been operational.⁶ We also included the number of IFRSSME users over the period. Similar to the trend of full IFRS, the usage of IFRS (SME) is growing over time; however, the rate of increase is less than that of full IFRS.

In Table 3, we present the correlation and PCA of World Governance Indicator, which was used to create the IQ index. Panel A contains the results on the correlation matrix between the six indicators: *CCPT*; *GVE*; *PST*; *RQ*; *RUL* and *VAA*. The results show significant high correlation between the components. Therefore, we employed PCA to develop IQ from six governance indicators. The PCA statistics presented in Panel B of Table 3 show that component 1 (*Comp1*) can explain 0.767 (76.7%) of the variance among the indicators whereas each the other five components capture less than 10% of the variance. In addition, the first component (*Comp1*) has the highest eigenvalue of 4.6037. Following on from

these PCA statistics, we predicted our *IQ* index from the first principal component.

4.2 | Pre-regression analysis

We admit that examining only the trend of DCP between users and non-users of the specific global standard does not clearly indicate whether the standard is associated with an increase in domestic credit to the private sector. Consequently, we use Pearson pairwise correlation matrix to establish the direction of the relationship between DCP and use of IFRS as well as the other control variables. The results in Table 4 show that there is a significant positive correlation between DCP and both *IFRS* and *IFRSSME*. These results give precursory evidence that the use of international financial standards has a positive association with an increase in domestic credit to the private sector. Another observation worth noting is the significant positive correlation between DCP and DCF, indicating that both variables are alternative to each other and are suitable for robustness analysis.

TABLE 4 Pearson pairwise-correlation matrix among variables

Variable	DCP	DCPB	IFRS	IFRSEXP	IFRSSME	IFRSSMEEXP	IQ	LRT	INF	MKT	LGDPPC
DCP	1.00										
DCPB	0.963	1									
IFRS	0.266	0.263	1								
IFRSEXP	0.262	0.273	0.745	1							
IFRSSME	0.159	0.145	0.546	0.605	1						
IFRSSMEEXP	0.156	0.134	0.474	0.645	0.853	1					
IQ	0.522	0.539	0.407	0.364	0.163	0.151	1				
LRT	-0.273	-0.278	-0.078	-0.073	0.009	0.003	-0.218	1			
INF	-0.110	-0.107	-0.030	-0.024	-0.004	-0.000	-0.196	0.267	1		
MKT	0.537	0.426	0.088	0.067	0.029	0.058	0.250	-0.151	-0.049	1	
LGDPPC	0.481	0.504	0.353	0.315	0.187	0.167	0.632	-0.270	-0.089	0.255	1
CCPT	0.465	0.481	0.360	0.326	0.163	0.146	0.927	-0.212	-0.151	0.212	0.583

Note: The table presents the Pearson pairwise correlation matrix among the dependent and independent variables. *DCP* is the domestic credit to the private sector by banks. *DCPB* is domestic credit to the private sector by banks and other financial institutions. *IFRS* - dummy variable for use of full IFRS. *IFRS_EXP* measures the number years a country has used full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. *IFRSSME_EXP* measures the number of years a country has used IFRS for SME. *IQ* is a composite index for institutional quality. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *LGDPPC* is the *GDP* per capita. *CCPT* is the level of corruption in a country. All values are significant at 1 and 5% except for values in bold font.

TABLE 5 Main results

Variable	Benchmark Benchmark (1)	Main results		Institutional quality	
		IFRS (2)	IFRSSME (3)	IFRS*IQ (4)	IFRSSME*IQ (5)
IFRS		3.539*** (4.92)		3.192*** (4.23)	
IFRSSME			2.581** (2.18)		2.105** (2.01)
IFRS*IQ				0.437* (1.39)	
IFRSSME*IQ					0.150 (0.28)
IQ				1.703*** (3.97)	4.044*** (4.94)
LRT	0.120*** (3.27)	0.129*** (3.54)	0.147 (1.49)	0.134*** (3.97)	0.102 (1.05)
INF	0.009 (0.439)	0.008 (0.67)	0.041* (1.68)	0.015 (1.21)	0.064** (2.57)
MKT	0.059*** (3.68)	0.057*** (3.55)	-0.022 (-0.74)	0.054*** (3.41)	-0.026 (-0.88)
LGDPCC	12.502*** (25.51)	11.287*** (20.66)	1.703** (2.05)	11.17*** (20.51)	0.296* (1.67)
CCPT	1.898* (1.71)	1.801* (1.65)	1.62 (0.80)		
Intercept	-66.015*** (-15.99)	-57.846*** (-13.07)	27.062* (1.65)	-57.7*** (-13.18)	37.592** (2.30)
R-squared	0.293	0.341	0.301	0.352	0.310
Observations	1926	1926	768	1926	768

Note: The table presents the panel regression estimations of EQ1, EQ2, EQ3, EQ4 and EQ5. The dependent variable; *DCP* is domestic credit to the private sector by banks. *IFRS* is dummy variable for use of full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. *IFRS*IQ* is an interaction between the use of full IFRS and institutional quality. *IFRSSME*IQ* is an interaction between the use of IFRSSME and institutional quality. *IQ* is the measure of institutional quality. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *GDPPC* is the *GDP* per capita. *CCPT* is the level of corruption in a country. *t*-statistics are in parentheses. *, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.3 | Main results

Table 5 reports the results of the panel estimation for testing the hypotheses. We performed five estimations in testing the impact of different IFRS on domestic credit to the private sector. In column 1, we report the benchmark model, which does not include IFRS (IFRSSME). We estimated the impact of control variables on domestic credit. The results show that most of the selected control variables have a significant association with domestic credit except for inflation (*INF*) and market capitalization (*MKT*), which was predicted to have a negative relationship, but they are positive. The stock exchanges in developing countries are not big enough to serve as an alternative source of finance (Nnadi & Soobaroyen, 2015). Moreover, countries with stock exchanges have large

economies and more companies that require more domestic credit to support their operations.

In column 2, we introduce the use of IFRS into the benchmark model to test the first hypothesis that the use of IFRS has a positive association with an increase in domestic credit to the private sector. The positive coefficient of *IFRS* (3.539) at 1% significance level indicates that the use of IFRS contributes to the increase in the domestic credit by banks to the private sector. The overall *R*-square of the model (34.1%), which is higher than that of the benchmark model (29.3%), also provides empirical evidence that IFRS improves the explanation of the increase in domestic credit to the private sector.

In economic terms, financial institutions are likely to give about 5.0% more credit $[(3.539 \times 0.484) / 34.99]^7$ to the private sector in countries that use IFRS compared to

non-IFRS users. This is a significant increase given that the average domestic credit to the private sector of the sample over the period is about 34.99%. Our results, therefore, imply that banks and other financial institutions have confidence in financial statements prepared under IFRS. Hence, companies that use IFRS are likely to get more loans as compared to those who present financial statements as per domestic accounting standards during a loan application. Specifically, the use of IFRS has a positive impact on the lending behaviour of financial institutions towards the private sector. Arguably, IFRS reduces information asymmetry through detailed disclosure and market-oriented recognition and measurement. The use of IFRS also increases the credibility of borrowers in the eyes of the lender because of the perceived high quality and comparability of the standards. Thus, IFRS provide a source of legitimacy to its users in the loan application process. The results, therefore, provide support for H_1 that the use of IFRS is positively associated with an increase in domestic credit to the private sector.

We admit that SMEs form the bulk of the companies in most developing countries and that they are more likely to use IFRS (SME) than full IFRS due to the complexity of full IFRS (IASB, 2004). Therefore, we incorporated *IFRSSME* in the benchmark model to form Equation (3). The results, which are presented in column 3 of Table 5, show that the use of *IFRSSME* also has a positive and significant association with an increase in domestic credit to the private sector. However, the relationship is weaker relative to that of *IFRS* and domestic credit in column 2. Thus, the benefits of *IFRSSME* on domestic credit are fewer than those of full IFRS. It is probable that banks and other financial institutions do not have the same level of confidence in *IFRSSME* as they have in full IFRS. The results could also be influenced by the fact that *IFRSSME* is relatively new and not many jurisdictions have adopted it. In addition, most countries that allow *IFRSSME* already use full IFRS, hence there will not be a huge change in domestic credit after using *IFRSSME*. The results on *IFRSSME*, notwithstanding the small coefficient and less significant level, show that the standard reduces information asymmetry and is perceived to be of higher quality than national accounting standards. In economic terms, the private sector is likely to receive about 2.85% more domestic credit $[(2.581 \times 0.3869) / 0.3499]$ if the country has mandated the use of *IFRSSME* as a basis for preparing financial statements. The results, therefore, provide support for H_2 that *IFRSSME* has a significant positive influence on financial institutions giving more loans to the private sector. This conclusion is in line with IASB's (2003, 2004) view that *IFRSSME* gives equal opportunities to SMEs to enjoy the benefits of a single set

TABLE 6 Sensitivity—stock market activities

Variables	IFRS (1)	IFRSSME (2)
IFRS*MKT	0.035 (1.53)	
IFRSSME*MKT		0.017 (0.46)
MKT	0.144*** (3.75)	0.009 (0.19)
IFRS	3.650*** (4.66)	
IFRSSME		2.644** (2.15)
LRT	0.126*** (3.53)	-0.116 (-1.34)
INF	-0.25 (-0.12)	0.017 (0.02)
LGPPC	12.06*** (21.12)	2.307 (1.12)
CCPT	1.140 (0.99)	1.071 (0.51)
Intercept	-42.13*** (-12.18)	32.095* (1.83)
R-squared	0.314	0.212
Observations	1926	768

Note: The table presents the panel regression for sensitivity analysis. The dependent variable; *DCP* is domestic credit to the private sector by banks. *IFRS*MKT* is an interaction between IFRS and market capitalization (MKT). *IFRSSME*MKT* is an interaction between *IFRSSME* and market capitalization (MKT). *IFRS* is dummy variable for use of full IFRS. *IFRSSME* is dummy variable for use of *IFRSSME*. *LRT* is the lending rate. *INF* is the annualized inflation rate. *GDPPC* is the GDP per capita. *CCPT* is the level of corruption in a country. *t*-statistics are in parentheses. *, ** and *** indicate 10%, 5% and 1% significant level, respectively.

of global standards without incurring the high cost of recognition, measurement and detailed disclosure associated with full IFRS. The overall *R*-square of 30.1%, which is higher than that of the benchmark model of 29.3%, demonstrates that the inclusion of *IFRSSME* into the model provides a better explanation of the variation in domestic credit to the private sector.

4.4 | Moderating effect of IQ

In this section, we test our third hypothesis, which is that IQ moderates the relationship between IFRS and domestic credit to the private sector. Specifically, we examine whether IFRS (*IFRSSME*) is still beneficial to countries with lower IQ in terms of domestic credit. By doing this, we are able to investigate whether debt providers still

TABLE 7 Estimation results on alternative measurement of variables

Variables	Dependent variable (DCF)				Independent variable (experience)	
	IFRS (1)	IFRSSME (2)	DCF—IQ (3) (4)		IFRS (5)	IFRSSME (6)
IFRS	4.381*** (5.85)		3.705*** (4.70)			
IFRSSME		2.581** (2.18)			2.105*** (2.80)	
IFRS*IQ			0.877*** (2.68)			
IFRSSME*IQ					0.150 (0.28)	
IQ			1.126*** (2.52)	1.126*** (2.52)		
IFRS_EXP					0.408*** (5.42)	
IFRSSME_EXP						0.776*** (4.23)
LRT	0.140*** (3.58)	−0.147 (−1.49)	0.141*** (3.73)	−0.102 (−1.05)	0.122*** (3.35)	−0.126 (−1.30)
INF	−0.001 (−0.13)	0.041* (1.68)	0.004 (0.37)	0.064** (2.56)	0.007 (0.61)	0.033 (1.38)
MKT	0.102*** (6.15)	−0.022 (−0.74)	0.100*** (6.00)	−0.026 (−0.88)	0.068*** (4.22)	−0.026 (−0.89)
LGDPPC	11.991*** (21.05)	1.703 (0.86)	11.932*** (20.98)	0.296 (0.15)	11.271*** (21.00)	0.823 (0.42)
CCPT	0.973 (0.85)	1.622 (0.80)			2.059* (1.87)	1.875 (0.93)
Intercept	−63.02*** (−13.65)	27.57* (1.65)	−63.13*** (−13.80)	37.592** (2.30)	−57.49*** (−13.10)	34.034** (2.07)
R-squared	0.321	0.139	0.334	0.213	0.310	0.0718
Observations	1926	768	1926	768	1926	768

Note: The table presents the panel regression estimations using the alternative measure of both dependent and independent variable of interest. The dependent variable in columns 1–4 is *DCF*—domestic credit to the private sector by banks and other financial institutions. The dependent variable in columns 5 and 6 is *DCP*—domestic credit to the private sector by banks. *IFRS* is the use of full IFRS in a country. *IFRSSME* is the use of IFRS (SME) in a country. *IFRS*IQ* is an interaction between the use of full IFRS and institutional quality. *IFRSSME*IQ* is an interaction between the use of IFRSSME and institutional quality. *IQ* is the measure of institutional quality. *IFRS_EXP* is the number of years a country has been using IFRS. *IFRSSME_EXP* is the number of years a country has been using IFRS (SME). *LRT* is the lending rate. *INF* is annualized inflation rate. *MKT* is the market capitalization. *GDPPC* is the GDP per capita. *CCPT* is the level of corruption in a country. *t*-statistics are in parentheses. *, ** and *** indicate 10%, 5% and 1% significant level, respectively.

value IFRS given the IQ of the country. The results are presented in columns 4 and 5 of Table 5.

The coefficient of the two-way interaction term *IFRS*IQ* (0.437*) is positive but smaller and weaker than the *IFRS* (3.192***) and that of *IQ* (1.703***). Statistically, the small interaction term implies that the higher the IQ, the weaker the relationship between IFRS and domestic credit. The results for IFRSSME are more pronounced as the interaction term is insignificant compared with a significant large coefficient of *IFRSSME*. As hypothesized, the results imply that the benefits of

international financial report standard to domestic credit are higher in countries with a lower IQ environment. This is true because the business of given credit requires transparency and comparability and IFRS (*IFRSSME*) is known to provide higher-quality reporting than most national standards in developing countries (Barth et al., 2008; Cai et al., 2014; Gassen, 2017; Hail et al., 2010). Therefore, IFRS reduces the abuse of discretionary reporting and non-disclosure in weak institutional environments. As such, IFRS (*IFRSSME*)-based financial statements offer an extra layer of protection

against the non-disclosure and incomparability of financial information, which increases the banks' confidence in giving out loans. Our results are consistent with Cai et al. (2014) and Houqe and Monem (2016) that IFRS are beneficial to countries with weak institutions because they can supplement the institutional structures of the country. However, our results contrast with the argument by Ahmed et al. (2013), Ball (2006) and Daske et al. (2008) that IFRS is suitable only for countries with a high quality level of institutions.

4.5 | The impact of stock exchange activities—sensitivity analysis

Given that IFRS is perceived to be an equity-oriented standard (Armstrong et al., 2010; Brown, 2011; Nobes, 2010), we expect the level of stock market activities to moderate the relationship between international financial reporting and domestic credit. Further, an active stock market provides an alternative source of finance, including bonds. Consequently, in this section, we conduct additional analysis to test if our results are sensitive

to the trading activities of the capital market. To do this, we interacted *IFRS* (*IFRSSME*) with *MKT* to create *IFRS*MKT* (*IFRSSME*MKT*). If IFRS is an equity-oriented standard, then we expect *IFRS*MKT* to be negative and significant. This is because in an active capital environment, the benefit of IFRS should flow to the equity market. Our results, which are presented in Table 6 show a positive but insignificant coefficient of *IFRS*MKT*, implying that the level of trading activities or size of stock exchange does not have any significant impact on the relationship between IFRS and domestic credit. The result is similar in the case of *IFRSSME*. On the whole, these results indicate that the benefits of international financial reporting are not limited only to the equity market.

5 | ROBUSTNESS CHECK

5.1 | Alternative measure of variables

Following prior studies such as Florou and Kosi (2015) and Kim et al. (2014, 2011), we use an alternative

TABLE 8 Year effect and transitional economies classification

Variables	Year effect		Transitional economies		Non-transitional economies	
	(1) IFRS	(2) IFRSSME	(3) IFRS	(4) IFRSSME	(5) IFRS	(6) IFRSSME
IFRS	1.417* (1.915)		4.596** (2.253)		2.823*** (3.658)	
IFRSSME		3.146*** (4.029)		4.447** (2.265)		0.143** (2.192)
LTR	0.100*** (2.807)	0.103*** (2.899)	−0.091 (−0.767)	−0.146 (−1.228)	0.130*** (3.321)	0.119*** (3.035)
INFL	0.016 (1.285)	0.019 (1.538)	0.092 (1.438)	0.121* (1.919)	0.018 (1.378)	0.019 (1.480)
MKT	0.067*** (4.137)	0.065*** (4.033)	−0.111* (−1.792)	−0.090 (−1.413)	0.066*** (3.962)	0.068*** (4.071)
GDPPC	7.266*** (7.595)	7.306*** (7.678)	14.231*** (8.932)	15.099*** (10.874)	10.751*** (18.630)	11.713*** (20.586)
CCPT	1.848* (1.714)	2.108* (1.961)	2.703 (0.943)	0.253 (0.090)	0.931 (0.777)	1.146 (0.954)
Intercept	−27.768*** (−3.938)	−27.948*** (−3.982)	−84.668*** (−6.103)	−91.567*** (−7.308)	−53.019*** (−11.530)	−59.342*** (−12.879)
R-squared	0.349	0.353	0.574	0.574	0.268	0.262
Observations	1,926	1,926	216	96	1,710	644

Note: The table presents robustness check accounting for year effects and sub-sampling into transitional and non-transitional economies. The dependent variable; *DCP* is domestic credit to the private sector by banks. *IFRS* is dummy variable for use of full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *GDPPC* is the *GDP* per capita. *CCPT* is the level of corruption in a country. *t*-statistics in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

measurement of the variable interests, namely IFRS (IFRSSME) and domestic credit, to check the robustness of our results. For the dependent variable (domestic credit), we used domestic credit by banks and other financial institutions (DCF) to the private sector deflated by GDP. The results, which are presented in columns 1 and 2 of Table 7 are similar to the main results in columns 2 and 3 of Table 5.

Columns 3 and 4 of Table 7 contain the results on the estimation for IQ where the dependent variable is DCF—domestic credit by banks and other financial institutions. The results mimic that of Table 5.

In columns 5 and 6 of Table 7, we report the estimation results when the independent variables of interest (IFRS and IFRSSME) are measured alternatively by the number of years a country has been using the standards (*EXP*). *EXP* was measured as the years of first use of the standard till 2017. For example, in Romania, the first IFRS financial statement was available from 2006; hence, the *IFRS_EXP* is equal to 11 years (2006–2017). This

measure of IFRS adoption is consistent with Houqe and Monem (2016). By doing this, we capture the variations among the sample in terms of early users and late users of the standards. The significant positive coefficients of *IFRS_EXP* and *IFRSSME_EXP* show that the benefits of IFRS to domestic credit increase with experience. Economically, all other things being equal, for an additional year of using IFRS domestic credit will increase by 3.95%. In fact, the use of *IFRSSME_EXP* shows a stronger relationship between IFRS (SME) than the main results in Table 3. Despite this stronger relationship, we caution that the main results in Table 3 are not directly comparable to the results in columns 3 and 4 of Table 5 because there is a difference in measurement approach of the variables. In Table 3, all *IFRS* and *IFRSSME* were measured as a binary variable, while in Table 5, they are continuous variables. The overall results of both Table 5 and 7 are qualitatively similar, confirming that our models are robust to an alternative measure of both dependent and independent variables.

Variables	GFC as dummy	Before GFC	After GFC	
	(1) IFRS	(2) IFRS	(3) IFRS	(4) IFRSSME
IFRS	3.315*** (4.586)	2.850*** (2.869)	2.721** (2.424)	
IFRSSME				2.982*** (2.696)
LTR	0.102*** (2.834)	0.156*** (4.873)	−0.136 (−1.452)	−0.121 (−1.289)
INF	0.018 (1.405)	0.006 (0.558)	0.053** (2.131)	0.046* (1.844)
MKT	0.052*** (3.238)	0.011 (0.567)	−0.027 (−0.869)	−0.025 (−0.804)
LGDPCC	11.349*** (20.720)	8.498*** (10.561)	0.595 (0.314)	0.560 (0.297)
CCPT	1.707 (1.552)	−2.027 (−1.457)	6.578*** (3.619)	6.264*** (3.445)
GFC	0.299 (0.454)			
Intercept	−57.907*** (−13.153)	−38.684*** (−6.414)	37.853** (2.403)	38.186** (2.429)
R-squared	0.309	0.199	0.034	0.036
Observations	1,926	856	856	768

TABLE 9 The effect of the global financial crisis

Note: The table presents the effect of global financial crisis on the relationship between IFRS/IFRSSME and domestic credit. The dependent variable; *DCP* is domestic credit to the private sector by banks. *IFRS* is dummy variable for use of full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *GDPPC* is the *GDP* per capita. *CCPT* is the level of corruption in a country. *t*-statistics in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note that the results for IFRSSME before GFC are omitted because there are not enough observations to run the regression.

5.2 | Accounting for year effect and transitional economies

In this section, we perform additional robustness checks, taking into account the year effect and transitional economies. First, we include year effect in the model and the results are presented in columns 1–2 of Table 8. The results remain similar to the main findings, suggesting that the use of IFRS and IFRSSMEs have a positive effect on domestic credit to the private sector. Next, we follow prior studies (Chen, Tang, Jiang, & Lin, 2010; Florou & Kosi, 2015) to employ the sub-sampling technique as an additional robustness check. We partition the sample into transitional and non-transitional economies based on the country

classification in the World Economic Situation and Prospects report by the UN. Transitional economies or economies in transition are developing countries with high development but not as high to be classified as developed countries. The results of the transitional economies are presented in columns 3–4 and that of non-transitional economies presented in columns 5–6. The coefficient of IFRS and IFRSSME is positive and significant in both transitional economies and non-transitional economies, indicating that our main findings are not driven by the level and rate of development in the country. That is countries in transition and those not in transition all benefit from the increased domestic credit associated with IFRS and IFRSSME.

TABLE 10 Endogeneity check—Two-stage and GMM

Variables	Two-stage				GMM	
	(1)	(2)	(3)	(4)	(5)	(6)
	IFRS		IFRSSME		IFRS	IFRSSME
	First stage	Second stage	First stage	Second stage	IFRS	IFRSSME
IFRS		14.299*** (3.484)			15.519*** (4.028)	
IFRSSME				2.639** (2.33)		0.543** (2.07)
ROSC	0.188*** (10.66)		0.109*** (7.34)			
EDU	0.003*** (5.14)		0.002** (2.05)			
LTR	−0.001 (−0.82)	−0.304*** (−5.081)	0.003*** (3.25)	−0.310*** (−4.845)	−0.223*** (−3.361)	−0.231*** (−3.627)
INF	0.002** (2.11)	−0.059 (−1.327)	0.002** (2.10)	−0.044 (−1.001)	−0.060** (−2.274)	−0.046 (−1.387)
MKT	−0.0005* (1.90)	0.230*** (16.092)	−0.0001 (−0.38)	0.230*** (16.493)	0.222*** (10.158)	0.231*** (11.728)
GDPPC	0.010 (0.68)	4.111*** (6.601)	0.024* (1.89)	5.143*** (8.854)	4.839*** (8.326)	6.180*** (12.440)
CCPT	0.182*** (9.07)	5.756*** (4.790)	0.096*** (5.66)	7.988*** (7.014)	5.435*** (4.617)	7.707*** (6.709)
Intercept	−0.004 (−0.04)	0.495 (0.107)	−0.116 (−1.40)	−2.346 (−0.514)	−7.271* (−1.766)	−11.772*** (−3.087)
R-squared	0.239	0.382	0.091	0.413	0.372	0.409
Observations	1,455	1,455	658	658	658	658

Note: The table presents the results of the endogeneity check, using two-stage least squares and generalized method of moments. The dependent variable; *DCP* is domestic credit to the private sector by banks. *IFRS* is dummy variable for use of full IFRS. *IFRSSME* is dummy variable for use of IFRSSME. The instrumental variables are ROSC reports and level of education *ROSC* is a measure of the number of times a ROSC (AA) report has been issued on a country during the sample period. *EDU* is a measured by the level of secondary school enrolment in the country. *LRT* is the lending rate. *INF* is the annualized inflation rate. *MKT* is the market capitalization. *GDPPC* is the *GDP* per capita. *CCPT* is the level of corruption in a country. *t*-statistics in parentheses ****p* < 0.01, ***p* < 0.05, **p* < 0.1.

5.3 | Accounting for the effect of the global financial crisis

Although the global financial crisis was caused by banks dominated in developed countries, it affected the operations of the banking sector worldwide including that of developing countries (Claessens & van Horen, 2015). The global financial crisis changed the amount and direction in which banks give credit. Therefore, we tested whether the global financial crisis would have any significant impact on our main findings. To do this, we first included GFC as a binary variable as control variable in the model. GFC takes on 1 for 2008 and 2009. The results are presented in columns 1–2 of Table 9. Next, we break the sample period into before GFC (2000–2007) and after GFC (2010–2018) and ran a separate regression for each period. The results of the period before GFC are presented in column 2 and that of after GFC in columns 3–4 of Table 9. The coefficient of IFRS and IFRSSME remains positive and significant in all of the columns of Table 9, suggesting that our main findings are robust after accounting for the effect of the global financial crisis.

5.4 | Endogeneity test

In this study, endogeneity between the use of IFRS (IFRSSME) and domestic debt finance is unlikely to be a concern because banks' lending activity causing a country to mandate the use of international standards seems implausible. However, a caveat for our findings may be the effect of observed variables and self-selection bias. Accordingly, we used two different econometric estimation techniques to address these potential endogeneity problems. First, we follow prior studies (Gordon, Loeb, & Zhu, 2012; Gyapong, Ahmed, Ntim, & Nadeem, 2019; Gyapong, Khaghaany, & Ahmed, 2020; Kim et al., 2011, 2014; Nnadi & Soobaroyen, 2015) using the Two-Stage Least Squares Instrumental variable analysis (2 standard writing (SLS) IV). To identify an appropriate instrument, we look out for factors that have been found to influence the use of IFRS (IFRSSME) but are less likely to influence domestic debt finance. Our lookout from the literature indicates that issuance of Report on Observance of Standards and Code—Accounting and Auditing (ROSC AA) (Boolakay, Tawiah, & Soobaroyen, 2020) and educational level (Judge, Li, & Pinsker, 2010) were appropriate instruments for the IV analysis. The ROSC (AA) variable is measured by the number ROSC (Accounting and Auditing) report issued on a country before 2017. Following Judge et al. (2010), educational level is measured by the secondary school enrolment. Consistent with Kim et al. (2011, 2014), we add the instrumental variables to the other control variable to

obtain the fitted value of IFRS (IFRSSME) from the first stage. The results of 2SLS IV are presented in columns 1–4 of Table 10.

Next, we employ the Generalized Method of Moments (GMM) to control for possible endogeneity. The instruments are the same as those used in the 2SLS. The results as presented in columns 5 and 6 are not qualitatively different from that of the 2SLS and the main results in Table 5. In sum, both of the tests on endogeneity provide evidence that the significant positive impact of both IFRS and IFRSSME on debt finance is not sensitive to endogeneity problems.

6 | CONCLUSION

The overarching objective of this paper has been to investigate whether the use of IFRS is associated with an increase in domestic credit to the private sector in developing countries. Specifically, our study provides evidence on the impact of (i) the use of full IFRS on domestic credit and (ii) the use of IFRS (SME) on domestic credit.

Using a sample of 107 developing countries over 18 years, we provide empirical findings that the use of IFRS is positively associated with an increase in domestic credit by banks and other financial institutions to the private sector. Our analysis on the individual IFRS shows that the relationship is much stronger for the use of full IFRS than IFRS (SME). Our results provide evidence that the consequences of a single set of IFRS are not limited to the capital markets.

Distinctively, therefore, while most prior studies have concentrated on the consequences of IFRS on the capital markets (Cai et al., 2014; Daske et al., 2008; Houque, Zijl, Dunstan, & Karim, 2012), others on credit rating (de Lima et al., 2018; Florou et al., 2017) and some on foreign direct investment (Beneish et al., 2015; Gordon et al., 2012; Nnadi & Soobaroyen, 2015), we can argue that though both IFRS and IFRS (SME) are global standards, they have a positive influence on the lending behaviour of banks and other financial institutions in the domestic credit market of developing countries. Our study also contributes to the scanty research on IFRSSME and makes a strong case for why developing countries should adopt it. Further, by examining the consequences of IFRS at the macroeconomic level, we provide evidence on how accounting contributes to the economic development of a country, an area that has been largely neglected in the accounting literature. Our study also complements prior studies such as those by Bahadir and Valev (2019) and Anderson, Ruiz-Ortega, and Tressel (2017) on factors that influence the lending behaviour of banks.

The findings of this study also have important policy implications to national accounting standard setters,

policymakers and regulators in developing countries. First, the findings imply that the use of IFRS (IFRSSME) improves the informational environment of the overall economy and hence facilitates the flow of financial resources to the private sector where it is needed most. Second, the benefit of these international standards is not limited to the international capital market. As such, adopting IFRS (IFRSSME) can create legitimacy and credibility of the financial statements of firms even within the domestic economy. National accounting standard setters are, therefore, encouraged to fully adopt and implement IFRS (IFRSSME) because these standards yield good benefits in terms of facilitating bank lending to the private sector.

As with any country-level empirical analysis on IFRS (IFRSSME), our results should be interpreted with caution because of the variation in the use of IFRS (IFRSSME) in different countries. While some countries required all companies to use IFRS, others only require some companies. Therefore, our results could be more plausible if we were able to capture the number of companies that use IFRS (IFRSSME) in each country. In addition, the measure of domestic credit to the private sector is an aggregate amount that does not allow analysis of how the use of IFRS (IFRSSME) affects domestic credit to a particular industry. Further, we acknowledge that in addition to financial statements, banks can demand additional information from firms, which could influence the giving of credit. Such mechanisms might affect our results, but it is difficult to quantify in the model.

Looking at the benefits associated with IFRS, it will be interesting for future researchers to explore why some IFRS users still use national standards for SMEs instead of the IFRS (SMEs).

DATA AVAILABILITY STATEMENT

Data used for the study are available here.

IFRS adoption status <https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/>.

All other variables can be found at the World Development Indicators at this link.

<https://databank.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/1ff4a498/Popular-Indicators>.

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ENDNOTES

¹ We use international financial reporting standards to represent both IFRS and IFRS for SMEs, henceforth referred to as IFRSSME.

² We used the 2011 classification because it is based on 2010 figures, which was mid-year of the sample period. In addition, it is

the time international financial reporting standards gained momentum.

³ For example, the effective implementation of IFRS in Ghana was January 2007. Therefore, the first IFRS financial statement was available from 2008.

⁴ Breusch and Pagan LM test indicate that pooled OLS is not suitable because there is variance across the sample countries.

⁵ The Hausman test rejects the null hypothesis that individual effects are uncorrelated with the independent variable.

⁶ IFRS (SME) was effective from January 1, 2009, but we start from 2010 because we are interested in the year where the first IFRS (SME) financial statement was produced.

⁷ The economic significance is calculated as [(coefficient*standard deviation)/mean of dependent variable]. This is consistent with prior studies (Adhikari & Agrawal, 2016; Tawiah & Karungi, 2020).

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APPENDIX A

TABLE A1 1.0 list of sample countries

Country	IFRS	IFRSSME	Country	IFRS	IFRSSME	Country	IFRS	IFRSSME
Albania	A	NA	Egypt	NA	NA	Namibia	A	A
Algeria	NA	NA	El Salvador	A	A	Nepal	A	NA
Antigua and Barbuda	A	A	Equatorial Guinea	NA	NA	Nicaragua	A	A
Argentina	A	A	Estonia	A	NA	Niger	NA	NA
Armenia	A	A	Eswatini	A	A	Nigeria	A	A
Azerbaijan	A	A	Fiji	A	A	Oman	A	NA
Bahamas, The	A	A	Gabon	NA	NA	Pakistan	A	A
Bahrain	A	A	Georgia	A	A	South Africa	A	A
Bangladesh	A	A	Ghana	A	A	Papua New Guinea	NA	NA
Belarus	NA	A	Grenada	A	A	Paraguay	NA	NA
Belize	A	A	Guinea Bissau	NA	NA	Peru	NA	NA
Benin	NA	NA	Guyana	A	A	Tanzania	A	A
Bhutan	NA	NA	Honduras	A	A	Poland	A	NA
Bolivia	NA	NA	Hungary	A	NA	Qatar	A	NA
Bosnia and Herzegovina	A	A	India	NA	NA	Romania	A	NA
Botswana	A	A	Indonesia	NA	NA	Rwanda	A	A
Brazil	A	A	Iran	NA	NA	St. Lucia	A	A
Brunei Darussalam	NA	NA	Jamaica	A	A	St. Vincent and the Grenadines	A	A
Bulgaria	A	NA	Jordan	A	A	Saudi Arabia	NA	NA
Burkina Faso	NA	NA	Kazakhstan	A	A	Senegal	NA	NA
Burundi	NA	NA	Kenya	A	A	Serbia	A	A
Cambodia	NA	NA	Kosovo	A	A	Sierra Leone	A	A
Cameroon	NA	NA	Lesotho	A	A	Sri Lanka	A	A
Central African Republic	NA	NA	Liberia	NA	NA	St. Kitts and Nevis	A	A
Chad	NA	NA	Macao SAR, China	NA	NA	Thailand	NA	NA
Chile	A	A	Malawi	A	A	Timor-Leste	NA	NA
China	NA	NA	Malaysia	NA	NA	Togo	NA	NA
Colombia	A	A	Panama	A	A	Trinidad and Tobago	A	A
Comoros	NA	NA	Maldives	A	A	Turkey	A	NA
Congo, rep.	NA	NA	Mali	NA	NA	Uganda	A	A
Cong democratic	NA	NA	Mauritius	A	A	Ukraine	A	A
Costa Rica	A	A	Mexico	A	NA	Uruguay	A	A
Cote d'Ivoire	NA	NA	Moldova	A	NA	Venezuela	A	A
Dominica	A	A	Mongolia	A	NA	Vietnam	NA	NA
Dominican Republic	A	NA	Montenegro	A	NA	Zambia	A	A
Ecuador	A	NA	Myanmar	NA	A			

Note: The above table contains the list of sample countries and their IFRS/IFRSSME adoption status as 2017.

Abbreviations: A, adopted; NA, non-adopted.