

DO INVESTORS EXPLOIT BANK EARNINGS MANAGEMENT INFORMATION TO EARN PROFITS IN STOCK MARKETS?

Nguyen N.T. Vo ^a
Thai V.H. Nguyen ^b
Duc H.T. Phan ^c

^a Becamex Business School, Eastern International University, Vietnam

^b School of Business and Management, RMIT University, Vietnam

^c School of Accounting, RMIT University, Australia

Abstract

The issue of asymmetric information remains the concern in investment decisions and has regained attention in relation to financial crisis. This study investigates whether investors exploit bank earnings management information to earn profits by trading on the basis of this informational advantage in stock markets. We argue that investors are divergent in capability to detect bank earnings management, which will be subsequently reflected in their trading positions. We answer the questions if bank accounting regulations, enforcement regimes, institutional quality and IFRS adoption play the roles in shaping investors' behaviours in exploiting trading profits on the basis of detecting bank earnings management. Our research, on the sample of 198 banks across 13 Asia-Pacific countries in the period of 2002-2017, finds that there is a significant positive relationship between bank income-decreasing earnings management and bid-ask spreads. Our study also sheds light on the signalling effects of bank accounting regulations/ enforcement/ institutions/ IFRS adoption in guiding investors' behaviours in response to bank earnings management.

JEL Classification: G11, G14, G15, G18

Key words: bank earnings management, bank regulations, enforcement regimes, institutional quality, IFRS, bid-ask spread, Asia-Pacific countries

1. Introduction

In recognition of disadvantages of debts from the Asian financial crisis in 1997, efforts have been observed in pushing capital allocation toward equity markets as opposed to debt markets in emerging economies (Dvořák, 2005). Adopting International Financial Reporting Standards (IFRS) aligns this movement, emphasizing the fundamental role of accounting information in guiding efficient capital allocation (Bhattacharya et al., 2013). Nevertheless, earnings

management, a use of accounting techniques to manipulate reported earnings, has been identified as one of the sources of information asymmetry (Jayaraman, 2008; Bhattacharya et al., 2013; Abad et al., 2016), which arguably impedes equity market development (Dvořák, 2005). In response to the concerns on the possibility of the next financial crisis as the consequence of capital misallocation (Eichengreen, 2015; Rogoff, 2019), our study investigates if investors take informational advantages on earnings management to earn profits in banking industry in Asia Pacific countries. Building on the argument that some investors possess better ability to capture precise information or greater ability to interpret information (Bagehot, 1971; Copeland & Galai, 1983; Easley et al., 1987; Kyle, 1985), we posit that investors are divergent in capability of detecting earnings management, which is reflected in their trading positions. While earnings management has been well discussed in non-financial sectors (for example, Dechow et al., 1995; Roychowdhury, 2006; Bhattacharya et al., 2013; Abad et al., 2016), the literature largely ignores the incentives to exploit earnings management in banking sector in emerging markets. This task is imperative as banking industry plays a central role in emerging countries' financial systems and is subject to intense government regulations (Duru et al., 2018). In addition, weaknesses in regulations and supervision have been pointed out as one of the factors leading to the 2007-2009 global crisis (Dam, 2010; Cihak et al., 2013).

Asia-Pacific region offers a fruitful context where countries are undergoing different stages of economic development with great variation in institutional environments, regulation/enforcement regimes and IFRS adoption. These legitimate factors have been argued to restrain banks' behaviours in manipulating accounting numbers (Duru et al., 2018). However, the literature largely ignores how those factors shape the trading behaviours of investors from the perspective of information receivers, i.e. investors (as opposed to information producers, such as banks) where earnings management is present. Our study fills this research gap by investigating whether investors exploit bank earnings management to earn profits by trading on the basis of this informational advantage in stock markets, taking into account bank accounting regulations, enforcement regimes, country institutional quality and the adoption of IFRS. We argue that legitimate factors serve as the signals on banking integrity in reporting financial figures and hence converge investors' belief when interpreting financial reports. Therefore, investors' attention on earnings management issues would be diverted away in highly legitimate environments. We further investigate the complementary/substitutable effects between accounting regulations and enforcement regimes in exploiting earnings management information of investors.

In this study, we focus on earnings smoothing, a special case of earnings management which involves intertemporal smoothing of reported earnings relative to economic earnings with an attempt to make earnings less variable over time (Goel & Thakor, 2003). It is argued that earnings is managed upwards during hard times and downwards during good times (Kallunki & Martikainen, 2003). Loan loss provisions (LLP), the most important accruals of banks, are found to be a primary tool banks use to manage earnings (Greenawalt & Sinkey, 1988; Bhat, 1996; Kanagaretnam et al., 2004; Fonseca & Gonzalez, 2008; Shen & Huang, 2013; Curcio & Hasan, 2015). The purpose of LLP is to adjust banks' loan loss reserves to reflect expected

future losses on their loan portfolios. These provisions can have significant effects on the reported earnings as they are a large accrual for banks. Bank managers tend to raise LLP in periods of high operating income in order to lower volatility of reported earnings (Ma, 1988; Greenawalt & Sinkey, 1988). On the other hand, low levels of current earnings provide an incentive for managers to decrease LLP, in order to artificially increase earnings (Collins et al., 1995). Since different types of earnings management may have different effects on investors' incentives to exploit this informational advantage, we examine the effect of earnings management on investors' trading behaviours in two separate sub-samples: income-decreasing earnings management (when LLPs are managed upwards) and income-increasing earnings management (when LLPs are managed downwards).

Our study contributes to the literature on three fronts. First, the study provides evidence on the impacts of earnings management to trading behaviours in banking sector in 13 Asia-Pacific countries. We find that income-decreasing earnings management widens bid-ask spreads in the stock markets, indicating the undesirable effects of information asymmetry on trading costs (Chung et al., 2017). Income-increasing earnings management on the other hand has an opposite effect on bid-ask spreads, implying that informed investors have less incentive to exploit earnings management information to earn profits in stock markets when earnings are managed upwards. Second, our study examines the legitimate factors from the perspective of information receivers, and therefore sheds light on the signalling effects of legitimate factors in guiding investors' behaviours when earnings management is present. We find that the likelihood to exploit earnings management information tends to be lower under better regulations and enforcement regimes. Finally, the study extends the joint effects between accounting regulations and enforcement regimes on investors' behaviours in exploiting earnings management and finds that those two legitimate factors play the substitutable roles in guiding trading behaviours of investors when the earnings management exists.

The remainder of this paper is organized as follows. Section Two presents literature review and hypothesis development. Research design is presented in Section Three. Data collection and sample are reported in Section Four. Section Five presents the empirical results, robustness tests and discussion. Section Six provides conclusion of the study.

2. Hypothesis development

2.1 Earnings management and bid-ask spread

The separation between ownership and management gives room for managers not to act for owners' best interests but their own (Lambert, 1984). The opportunistic perspective suggests that earnings management is an example of this agency problem when managers manipulate earnings to hide true business performance, hence misleading investors (Watts & Zimmerman, 1986). Accordingly, managers manipulate earnings in order to increase the present value of their bonuses, relax debt constraints and lower the risk of facing government interference (Watts & Zimmerman, 1986). Even though the practices of earnings management have been well acknowledged in the literature (Yates, 2016), it is largely admitted that filtering earnings

management is a complex process (Lo et al., 2017), where investors are arguably incapable of perfectly detecting reporting bias (Fischer & Verrecchia, 2000).

Bounded rationality theories suggest that investors make decisions within their limited sets of information (Simon, 1982; Ballester & Hernandez, 2012) due to their limits of (i) access to information (Abad et al., 2016) or (ii) ability to assess and interpret information (Kim & Verrecchia, 1994; Abad et al., 2016). Information asymmetry in stock markets is materialized when the informed investors exploit trading profits on the basis of their informational advantage (Bagehot, 1971; Copeland & Galai, 1983; Easley et al., 1987; Kyle, 1985; Abad et al., 2016). The jeopardized informativeness of business performance caused by earnings management (Fischer & Verrecchia, 2000) has been documented to provide opportunities for informed investors to exploit profits in non-financial sectors (Jayaraman, 2008; Bhattacharya et al., 2013; Abad et al., 2016). Despite the discussion on the existence of earnings management in banking industry (see Beaver et al., 1989; Collins et al., 1995; Kim & Kross, 1998; Liu & Ryan, 2006), it remains unanswered if informed investors exploit trading profits from earnings management in banking industry, given that this industry is heavily regulated and serves a significant role in financial systems.

We argue that earnings management worsens information asymmetry among traders, leading to adverse selection as pointed out by Bagehot (1971), which subsequently exposes market makers to liquidity risk (Kyle, 1985; Glosten & Milgrom, 1985). Thus, to protect themselves, market makers demand a larger compensation by widening the spread between the bid and ask prices (Kyle, 1985; Glosten & Milgrom, 1985). We hypothesize that bank earnings management can widen the bids and ask prices.

2.2 Bank regulations and enforcement regimes

Bank regulations and supervision are formal institutional mechanisms that aim to improve banking-sector performance by reducing the adverse selection and moral hazard risks (Neyapti & Dincer, 2014). The restraining effects of bank regulations and enforcement on bank managers' manipulation of accounting numbers have been documented by the literature (Duru et al., 2018). The strand of literature under Legitimacy Theory (Brown & Deegan, 1998) largely argues that firms perceive regulations as their contracts with society (Cormier & Gordon, 2001) and hence adjust their behaviours accordingly as the failure of compliance is detrimental to their operations (Brown & Deegan, 1998). In this line of argument, the literature has documented that strict bank accounting regulations limit managers' accounting discretion in various items of financial statements (Barth et al., 2008). In addition, strong enforcement mechanisms increase the power and responsibility of market participants, auditors, and regulatory agencies (Barth et al., 2004; Barth et al., 2006), thereby constrain banks managers' manipulation of accounting numbers (Brown et al. 2014; Duru et al., 2018). While this strand of literature discusses the legitimate impacts of regulations and enforcement on behaviours of financial information producers, i.e. banks, the literature largely ignores the impacts on behaviours of information receivers, i.e. investors. We argue that the establishment of bank regulations and enforcement may send the signals to the investors on the integrity of bank

managers in producing accounting figures. By signalling to investors on the good practices of accounting reporting, the presence of bank regulations and enforcement may reduce the information asymmetry (Duru et al., 2018; Hope, 2003), which can arguably divert investors' attention away from earnings management issues. We hypothesize that investors in countries with strong bank regulations or enforcement regimes are less likely exploit trading profit from earnings management. Therefore, the nexus of earnings management and bank regulations/enforcement regimes has a negative relationship with bid-ask spread.

We further investigate the joint effects of banking accounting regulations and enforcement on investors' response to earnings management. Although differences in accounting rules across countries have reduced significantly (Hope, 2003), supervision has varying impacts from country to country and from one financial environment to another (Ben Bouheni, 2014). Bank accounting regulations are likely to interact with the strength of enforcement mechanisms in affecting the informativeness of banks' financial statements (Duru et al., 2018). It is argued that enforcement is stronger in environments where accounting and disclosure practices are of low quality or the least consistent (Hope, 2003). In other words, the role of stronger bank accounting regulations are argued to have marginal effects in environments with stronger enforcement (Duru et al., 2018). In addition, supervisors may concentrate on promoting self-interest (Barth et al., 2013) as they may be able to conceal some supervisory information and exchange it for private benefits (Boyer & Ponce, 2012). Therefore, we hypothesize that bank supervision substitutes the effect of bank accounting regulation on trading behaviours of investors when the earnings management exists.

2.3 Institutional quality and IFRS adoption

Beside bank regulations and enforcement, we also examine the roles of country's institutional quality and IFRS adoption on the investors' behaviours in response to earnings management. Institutions are the social rules that set constraints on human behaviors which subsequently stimulate economic incentives (North, 1990). The adoption of IFRS has introduced some new standards which require banks to provide detailed information about loan loss provisions. The literature on institutional quality and IFRS adoption generally follows Legitimacy approach and supports institutions and IFRS adoption positively adjust bank managers' behaviours in reporting accounting figures. For example, strong institutional quality has been found to enhance timely disclosure and transparency (Darrough & Stoughton, 1990; Pagano & Volpin, 2005) and reduce opportunistic behaviours (Hung, 2000) and thus reducing the likelihood of earnings management activities (Leuz et al., 2003). Similarly, IFRS has also been documented to enhance boards of directors' effectiveness in constraining earnings management (Marra et al., 2011). Nevertheless, the literature is silent on the impacts of institutions and IFRS adoption on the behaviours of investors in response to earnings management. Applying Signalling Theory which posits that information asymmetry can be reduced by signals from related party (Morris, 1987), we argue that institutions and IFRS adoption shape investors' belief toward high quality of financial reporting, converge their interpretation of accounting figures and hence less likely to detect earnings management issues. Therefore, investors from countries with high institutional quality and IFRS adoption are less likely to exploit trading profits from

earnings management. We hypothesize that the interaction between earnings management and institutions/ IFRS adoption has a negative relationship with bid-ask spread.

3. Research design

3.1 Empirical model

We follow the models from Bhattacharya et al. (2013) and Abad et al. (2016) in examining the impacts of earnings management on bid-ask spread taking into account bank regulations, enforcement regimes, institutional quality and IFRS adoption:

$$\begin{aligned}
 SPREAD = & \beta_0 + \beta_1 EM + \beta_2 REG + \beta_3 ENF + \beta_4 INST + \beta_5 IFRS \\
 & + \beta_6 REG \times ENF + \beta_7 EM \times REG + \beta_8 EM \times ENF \\
 & + \beta_9 EM \times INST + \beta_{10} EM \times IFRS + \beta_{11} EM \times REG \times ENF \\
 & + \beta_{12} CONTROLS + \langle YEAR CONTROL \rangle + \varepsilon \quad (1)
 \end{aligned}$$

where bid-ask spread (*SPREAD*) is the dependent variable and bank accrual earnings management (*EM*) is our main interested independent variable. Bank-accounting-regulations, enforcement-mechanism, institutional-quality and IFRS-adoption variables are denoted by *REG*, *ENF*, *INST* and *IFRS*, respectively. The interaction $EM \times REG$ reflects the impact of bank accounting regulations on the relation between accrual earnings management and bid-ask spreads. Similarly, $EM \times ENF$, $EM \times INST$ and $EM \times IFRS$ present the impact of bank enforcement regimes, institutional quality and IFRS adoption on the relation between bank accrual earnings management and bid-ask spreads, respectively. The interaction term $EM \times REG \times ENF$ captures the joint effect of bank accounting regulations and enforcement regimes on bid-ask spreads when accrual earnings management exists. Following Abad et al., 2016, we include following control variables: stock volatility (*VOL*), trading volume (*TURN*), return on assets (*ROA*), number of analyst following (*AF*), bank size (*SIZE*), ownership concentration (*OWN*) and GDP growth rate (*GDP*).

3.2 Measure of Bid-Ask spreads

Bid-Ask spread - the difference between the dealer's posted bid price and ask price for the share in which they specialize (Libby et al., 2002) - is the compensation the dealer receives for the losses he may incur in dealing with informed traders (Bagehot, 1971; Copeland & Galai, 1983; Easley et al., 1987; Kyle, 1985). Follow Abad et al. (2016), the study computes the relative quoted spread as follows:

$$Spread = \frac{(a_t - b_t)}{(a_t + b_t)/2}$$

where a_t and b_t corresponds to the closing ask and bid quotes on day t. The bid-ask spread (*SPREAD*) is first computed on a daily basis. After that, the annual spread is obtained by averaging (equally weighted) daily values.

3.3 Measure of bank earnings management

This study examines the use of loan loss provisions (*LLP*) by banks to manage their earnings. *LLP* is measured as the ratio of loan loss provisions to beginning total assets. Following Kanagaretnam et al. (2009) and Kanagaretnam et al. (2010), this study separates the nondiscretionary and discretionary components of *LLP* by regressing *LLP* on beginning loan loss allowance (*BEGLLA*), change in total loans outstanding (*CHLOAN*), total loans outstanding (*LOAN*), nonperforming loans (*NPL*), and controls for period and country effects. The beginning of loan loss allowance (*BEGLLA*) has a negative effect on *LLP* because a higher initial allowance requires a lower *LLP* in the current period (Kanagaretnam et al., 2004). Higher levels of nonperforming loans (*NPL*) indicate that problems in the loan portfolio will require higher provisions, therefore *NPL* is positively related to *LLP* (Kanagaretnam et al., 2004). Besides *NPL*, the remaining of the loan portfolio also has some default risk exposure, thus total loans outstanding is positively related to *LLP* (Kanagaretnam et al., 2009). Furthermore, change in the total loans outstanding (*CHLOAN*) has an unpredictable on *LLP* due to the uncertainty in the quality of incremental loans (Kanagaretnam et al., 2009). In addition, the model includes year-dummy variables to control for period specific effects and country-dummy variables to control for country specific effects.

Following Kanagaretnam et al. (2009) and Kanagaretnam et al. (2010), we employ below model to separate the nondiscretionary and discretionary components of *LLP*:

$$LLP = \alpha_0 + \alpha_1 BEGLLA + \alpha_2 CHLOAN + \alpha_3 LOAN + \alpha_4 NPL \\ + < YEAR CONTROL > + < COUNTRY CONTROL > + \varepsilon \quad (2)$$

The residuals from the above model (2) are the abnormal or discretionary component of *LLP* and referred as abnormal loan loss provisions (*ALLP*). We take the absolute values of the residuals as a measure for earnings management. Variable measurements and regression results are provided in Appendix 1.

3.4 Measure of bank accounting regulations and enforcement

Following prior bank regulation studies (Tadesse, 2006; Duru et al., 2018), this study constructs bank accounting regulations and enforcement variables using the World Bank's Bank Regulation and Supervision Survey related to disclosure practices. This study employs Duru et al. (2018)'s indexes of accounting regulations and enforcement standards. Specifically, to measure bank accounting regulations, this study constructs an index, *REG*, by summing the assigned values of the six survey responses on questions related to bank reporting and disclosure. In addition, a comprehensive index of a country's bank enforcement regime, *ENF*, is the sum of the assigned values of the questions related to three enforcement mechanisms, namely, audit services, market discipline, and direct supervision by bank regulatory agencies. Details of bank accounting regulations and supervision variable constructions are provided in the Appendix 2.

3.5 Measure of institutional quality

To measure macro-level institutional environment, this study uses the Worldwide Governance Indicator (WGI) which is a research dataset consisting of six composite indicators of broad dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. These indicators summarize the views on the quality of governance provided by a large number of enterprises, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms (Kaufmann et al., 2011). Definition of each composite index is provided in Appendix 3. This study computes the first principal component of these six WGIs to measure the macro-level institutional variable in our main regression model.

3.6 IFRS Adoption

IFRS adoption is a dummy variable which is coded “0” for non-adoption and “1” for adoption. Among 13 countries in our sample, Indonesia is the only one that has not adopted IFRS Standards for reporting by domestic companies. Therefore IFRS adoption is coded “0” for all bank-year observations in Indonesia.

Australia, Hong Kong and South Korea have adopted IFRS standards nearly word-for-word as their national accounting standards. In China, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan and Thailand, the national accounting standards are substantially converged with IFRS Standards but not in full. In Japan, IFRS Standards are permitted but not required for domestic public companies but are one of four permitted financial reporting frameworks. Therefore, IFRS is coded “1” for bank-year observations after IFRS became effective in these countries and coded “0” for the period before adoption. Appendix 4 reports the years that IFRS standards became effective in these countries.

3.7 Control variables

With regard to control variables, it has been documented that stocks of larger and more profitable firms and those with larger trading volumes and lower return volatility suffer lower adverse selection problems (Easley et al., 1996; Stoll, 2000; Goh et al., 2016; Abad et al., 2016). Therefore, this study includes bank size (*SIZE*) measured as the natural logarithm of total assets; return on assets (*ROA*) measured by operating income divided by total assets; trading volume (*TURN*) as the logarithm of the average daily trading volume scaled by the market value of the firm’s equity at the end of the year; and stock volatility (*VOL*) calculated as the standard deviation of daily returns. Furthermore, more analyst following increases publicly available information on the firms, and thus decreases the risk of informed trading (Easley et al., 1998; Roulstone, 2003). Therefore, this study also controls for analyst following (*AF*) measured by the total number of analysts following a bank. In addition, a more highly concentrated ownership is expected to be positively associated with information asymmetry because the larger shareholders are likely to have access to, or generate, private information

about the firm (Heflin & Shaw, 2000). This study therefore includes ownership concentration (*OWN*) measured as percentage of common shares held by the largest five shareholders of the bank. Lastly, this study also includes GDP growth (*GDP*) to control for country-wide economic factors.

4. Data and sample

This study collects financial data at bank level, daily bid ask closing prices, daily trading volume, number of analyst following and GDP growth rate from Thomson Reuters Eikon. Bank accounting regulations and enforcement data are available on World Bank database. The six Worldwide Governance Indicators used to measure institutional variables are also downloaded from World Bank database. IFRS data is based on www.ifrs.org in November 2018.

The original sample collected from Thomson Reuters Eikon consists of all listed banks (413 banks) in 17 countries in the Asia Pacific region including Australia, Bangladesh, China, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand and Vietnam for the period of 20 years from 1998 to 2017. After applying several filters, the final sample includes 198 banks from 13 countries spanning from 2002-2017 with a total of 1,387 annual observations. Appendix 5 reports the number of banks and number of bank-year observations of each country. This sample is first used to separate the non-discretionary and discretionary components of Loan Loss Provisions in the regression model (2). The residuals from this equation represent the abnormal component of LLP. Since the positive and negative residuals represent different incentives for managing earnings (income-decreasing vs. income-increasing earnings management) which may cause different impacts on investors' incentives to exploit earnings management information, this study separates the residuals into two samples. The first sample includes only bank-year observations with positive residuals, the second sample includes bank-year observations with negative residuals. After removing gaps, there are 313 observations and 604 observations from 13 countries in the first and second sample, respectively. These observations are used as a measure of bank earnings management in the main regression model (model 1). Appendix 5 reports the number of banks and number of bank-year observations of each country in each sample.

5. Empirical results and discussion

5.1 Income-decreasing earnings management measured by positive abnormal loan loss provisions

Table 5.1.1 reports the descriptive statistics of the variables in the main regression model (model 1). Bid-ask spread ranges from 0.03% to 4.53% with an average level of 0.72%. The mean of earnings management variable, *EM*, is 0.0041 and its standard deviation is 0.0039. The mean and standard deviation of bank accounting regulations variable, *REG*, is 4.5048 and 0.5008, respectively. Enforcement mechanisms variable, *ENF*, has a mean of 17.4010 and a standard deviation of 1.8142. The proxy of institutional quality, *INST*, has a mean of 0.0000 and a standard deviation of 2.3119. Furthermore, the dummy variable *IFRS* has a mean of

0.5208 indicating that more than half of the bank-year observations in our sample have IFRS coded “1”.

Table 5.1.1 Descriptive statistics

| | Mean | Std. Dev | Min | Max |
|----------|----------|----------|----------|----------|
| SPREAD | 0.0072 | 0.0072 | 0.0003 | 0.0453 |
| EM | 0.0041 | 0.0039 | 0.0001 | 0.0200 |
| REG | 4.5048 | 0.5008 | 4.0000 | 5.0000 |
| ENF | 17.4010 | 1.8142 | 13.0000 | 22.0000 |
| INST | 0.0000 | 2.3119 | -4.0280 | 3.6361 |
| IFRS | 0.5208 | 0.5004 | 0.0000 | 1.0000 |
| VOL | 0.0184 | 0.0074 | 0.0022 | 0.0454 |
| TURN | -6.9741 | 1.3509 | -11.9061 | -3.9541 |
| ROA | 153.4760 | 89.4917 | 1.0000 | 308.0000 |
| AF | 11.5080 | 9.7205 | 0.0000 | 29.0000 |
| SIZE | 28.1063 | 2.4833 | 22.7987 | 34.6563 |
| OWN | 39.3924 | 30.8061 | 0.0617 | 100.0300 |
| GDP | 3.8844 | 2.8177 | -5.4164 | 15.2404 |
| <i>N</i> | 313 | | | |

We employ Ordinary Least Squares with Fixed Effects (FEM) which is the dominant regression strategy in this area (see Bhattacharya et al., 2013; Abad et al., 2016) to remove the unobserved, time-constant effects across banks and include year dummies in the regression model to control for period specific effects. In order to strengthen the robustness of regression results, we also use two-step system Generalised Method of Moments (SGMM) estimator to control for potential endogeneity (Roodman, 2009). The Fixed Effects and SGMM estimators are applied to the whole sample and sub-sample regressions; the sub-sample covers emerging markets only, including Indonesia, Hong Kong, South Korea, China Mainland, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan and Thailand. The sub-sample for developed markets (Australia and Japan) does not provide sufficient observations for regression. The purpose of running the main regression on emerging market sample is to eliminate the bias of economic development on our results. In addition, a substantial fraction of bank population come from Japan (see Appendix 5). Thus, our results may be driven by disproportionately many bank-year observations from Japan if we just run our regression for the whole sample. The regression results are reported in Table 5.1.2. The residuals are free of unit root and serial correlation.

Table 5.1.2 Regression results from the Fixed Effects estimations and the SGMM estimations for the whole sample and emerging-market subsample

| Dependent: SPREAD | Whole sample | | Emerging economies | |
|------------------------------|---------------------|---------------------|---------------------------|--------------------|
| | FEM | SGMM | FEM | SGMM |
| EM | 30.14*** (6.155) | 120.7*** (43.34) | 26.09*** (7.335) | 44.70* (25.03) |
| REG | 0.0250 (0.0175) | 0.160* (0.0812) | 0.0116 (0.0481) | 0.0492 (0.0484) |
| ENF | 0.00678 | 0.0384** | 0.00340 | 0.0112 |

| | | | | |
|-----------------------|-------------|------------|-------------|------------|
| | (0.00424) | (0.0190) | (0.0111) | (0.0107) |
| INST | -0.00154 | 0.00209*** | -0.00107 | -0.000309 |
| | (0.00152) | (0.000690) | (0.00189) | (0.000472) |
| IFRS | -0.00188 | -0.00328 | -0.00203 | -0.000979 |
| | (0.00168) | (0.00370) | (0.00218) | (0.00393) |
| REGxENF | -0.00128 | -0.00881* | -0.000518 | -0.00270 |
| | (0.000930) | (0.00447) | (0.00255) | (0.00266) |
| EMxREG | -6.748*** | -27.38*** | -5.828*** | -10.95* |
| | (1.467) | (10.13) | (1.780) | (6.105) |
| EMxENF | -1.591*** | -6.662*** | -1.382*** | -2.513* |
| | (0.348) | (2.358) | (0.414) | (1.488) |
| EMxINST | -0.124*** | -1.121*** | -0.0821** | 0.107 |
| | (0.0342) | (0.295) | (0.0337) | (0.153) |
| EMxIFRS | -0.142 | 0.318 | -0.0621 | -0.0142 |
| | (0.179) | (0.694) | (0.164) | (0.760) |
| EMxREGxENF | 0.356*** | 1.498*** | 0.309** | 0.607* |
| | (0.0832) | (0.549) | (0.100) | (0.357) |
| VOL | 0.176 | -0.177 | 0.0558 | -0.0708 |
| | (0.108) | (0.258) | (0.0598) | (0.322) |
| TURN | -0.00181** | 0.000128 | -0.00120*** | -0.00157 |
| | (0.000694) | (0.00234) | (0.000261) | (0.00130) |
| ROA | -2.54e-06 | 1.10e-06 | -8.98e-06* | 3.39e-06 |
| | (8.31e-06) | (2.89e-05) | (4.64e-06) | (2.31e-05) |
| AF | 2.66e-05 | -0.000369 | 1.35e-06 | -3.28e-05 |
| | (7.23e-05) | (0.000389) | (8.16e-05) | (0.000270) |
| SIZE | -0.00531*** | -0.00141** | -0.00514** | 0.000401 |
| | (0.00167) | (0.000605) | (0.00168) | (0.000779) |
| OWN | -1.01e-05 | 5.74e-05 | -5.78e-06 | -2.57e-05 |
| | (1.36e-05) | (6.29e-05) | (1.01e-05) | (2.48e-05) |
| GDP | -0.000108 | 0.000207 | 0.000122 | -0.000625 |
| | (0.000157) | (0.000368) | (0.000154) | (0.000461) |
| Year Dummies | Yes | Yes | Yes | Yes |
| N | 313 | 177 | 228 | 182 |
| Adj. R-squared | 0.220 | | 0.390 | |
| No. of instru./groups | | 44/68 | | 45/46 |
| AR(2) p-value | | 0.803 | | 0.557 |
| Hansen p-value | | 0.653 | | 0.778 |

Note: ***, ** and * denote statistical significance at the 1%, 5% or 10% levels, respectively. Robust standard errors are reported in parentheses

Regarding control variables, table 5.1.2 shows the statistically negative impact of trading volume (*TURN*) on the spread in Fixed Effects model. These results are in line with the literature (Bhattacharya et al., 2013; Abad et al., 2016) and indicate that bank stocks with lower trading volume are associated with higher bid-ask spreads. In addition, bank size also has a significant negative impact on spread in three regressions, indicating that larger banks suffer lower adverse selection problems (Goh et al., 2016; Abad et al., 2016). Other control variables i.e., volatility (*VOL*), return on assets (*ROA*), analyst following (*AF*) and ownership concentration (*OWN*) do not provide consistent impacts.

The four legitimate factors, namely bank accounting regulations (*REG*), bank enforcement regimes (*ENF*), institutional quality (*INST*), IFRS adoption (*IFRS*) and the intermediate interaction term between regulation and enforcement (*REG*×*ENF*) do not present any significant direct impacts on the spread. Interestingly, bank earnings management (*EM*) has significant positive relationship with the spread consistently across regression designs. This supports the hypothesis that bank earnings management provides opportunities for informed investors to exploit trading profits in Asia Pacific countries. The finding is consistent with the literature for non-bank context where earnings management is found to widen the bid-ask spread (Bhattacharya et al., 2013; Abad et al., 2016).

The interactions of *EM*×*REG* and *EM*×*ENF* have significant negative impacts on the spread. These findings indicate that the positive impacts of earnings management on the spread is attenuated in the environments of strong banking accounting regulations or strong enforcement regimes. These support our arguments that strong bank accounting regulations and enforcement regimes send signals to investors on banks' integrity in reporting accounting numbers. Therefore, earnings management is less likely to catch investors' attention, hence, tends to be less exploited as an informational advantage by informed investors. More interestingly, the interaction of *EM*×*REG*×*ENF* is positive with high significance levels. This finding indicates that the signalling effects of strong regulations and enforcement are mutually substitutable. In other words, the signalling effect of regulation is weaker under the strong enforcement regimes and vice versa. However, the interactions between earnings management and institutional quality (*EM*×*INST*) are only significant in three regression designs and interactions between earnings management and IFRS adoption (*EM*×*IFRS*) are not significant indicating the weak signalling effects of these two legitimate factors in guiding trading behaviors of informed investors in exploiting earnings management.

5.2 Income-increasing earnings management measured by the absolute values of negative abnormal loan loss provisions

Table 5.2.1 reports the descriptive statistics of the variables in the main regression. Bid-ask spread ranges from 0.03% to 48.97% with an average level of 1.84%. The mean of earnings management variable, *EM*, is 0.0034 and its standard deviation is 0.0032. The mean and standard deviation of bank accounting regulations variable, *REG*, is 4.3858 and 0.5420, respectively. Enforcement mechanisms variable, *ENF*, has a mean of 16.5505 and a standard deviation of 1.9974. The proxy of institutional quality, *INST*, has a mean of 0.0000 and a standard deviation of 2.3179. Furthermore, the dummy variable *IFRS* has a mean of 0.4321 indicating that nearly half of the bank-year observations in our sample have IFRS coded "1".

Table 5.2.1 Descriptive statistics

| | Mean | Std. Dev. | Min | Max |
|--------|---------|-----------|---------|---------|
| SPREAD | 0.0184 | 0.0526 | 0.0003 | 0.4897 |
| EM | 0.0034 | 0.0032 | 0.0000 | 0.0296 |
| REG | 4.3858 | 0.5420 | 3.0000 | 5.0000 |
| ENF | 16.5505 | 1.9974 | 12.0000 | 22.0000 |

| | | | | |
|----------|----------|----------|----------|----------|
| INST | 0.0000 | 2.3179 | -4.5589 | 3.1239 |
| IFRS | 0.4321 | 0.4958 | 0.0000 | 1.0000 |
| VOL | 0.0184 | 0.0094 | 0.0000 | 0.0672 |
| TURN | -7.4014 | 1.6653 | -15.1567 | -4.2239 |
| ROA | 298.8576 | 172.8301 | 1.0000 | 599.0000 |
| AF | 7.3129 | 8.9281 | 0.0000 | 37.0000 |
| SIZE | 28.0338 | 2.2204 | 21.2723 | 33.7398 |
| OWN | 41.2660 | 29.7838 | 0.0096 | 98.0423 |
| GDP | 3.3515 | 2.9688 | -5.4164 | 10.6361 |
| <i>N</i> | 604 | | | |

Similar to the sample with earnings management variable measured by positive residuals from regression model (2), we employ Ordinary Least Squares with Fixed Effects (FEM) to remove the unobserved, time-constant effects across banks and two-step system Generalised Method of Moments (SGMM) estimator to control for potential endogeneity (Roodman, 2009). The Fixed Effects and SGMM estimators are applied to the whole sample and sub-sample which includes only emerging markets. The sub-sample for developed markets does not provide sufficient observations for regression because it contains only two countries (Australia and Japan). The regression results are reported in Table 5.2.2. The residuals are free of unit root and serial correlation.

Table 5.2.2 Regression results from the Fixed Effects estimations and the SGMM estimations for the whole sample and emerging-market subsample

| Dependent: SPREAD | Whole sample | | Emerging economies | |
|------------------------------|-----------------------|-----------------------|---------------------------|----------------------|
| | FEM | SGMM | FEM | SGMM |
| EM | -54.99*** (13.76) | -566.6** (255.6) | -49.55** (18.40) | -397.6** (188.0) |
| REG | 0.0183 (0.0192) | -0.506 (0.314) | 0.0217 (0.0306) | -0.413** (0.203) |
| ENF | 0.00627 (0.00546) | -0.136 (0.0907) | 0.00740 (0.00855) | -0.0999* (0.0535) |
| INST | -0.00557 (0.00567) | -0.00310 (0.00516) | -0.00874 (0.00559) | 0.00376 (0.0102) |
| IFRS | -0.00592 (0.00410) | -0.0180 (0.0161) | -0.00405 (0.00344) | -0.00681 (0.0295) |
| REGxENF | -0.00138 (0.00122) | 0.0301 (0.0193) | -0.00164 (0.00193) | 0.0242* (0.0122) |
| EMxREG | 10.84*** (2.985) | 127.4** (54.55) | 9.211** (3.942) | 104.6** (51.80) |
| EMxENF | 3.570*** (0.868) | 34.18** (16.06) | 3.177** (1.175) | 22.96** (11.47) |
| EMxINS | 0.259 (0.169) | 0.885 (1.901) | 0.503* (0.247) | -0.685 (2.828) |
| EMxIFRS | 0.362 (0.681) | -0.122 (6.738) | 0.600 (0.815) | -5.720 (11.59) |

| | | | | |
|-----------------------|-------------------------|--------------------------|-------------------------|-------------------------|
| EMxREGxENF | -0.717*** (0.186) | -7.641** (3.369) | -0.606** (0.247) | -6.077* (3.123) |
| VOL | 0.232 (0.261) | -0.193 (0.433) | 0.215 (0.309) | -0.644 (0.624) |
| TURN | -0.00568** (0.00217) | -0.0111*** (0.00317) | -0.00563** (0.00224) | -0.0144*** (0.00518) |
| ROA | 1.85e-05 (1.71e-05) | -5.97e-05 (3.88e-05) | 2.20e-05 (2.47e-05) | -4.27e-05 (4.81e-05) |
| AF | 0.000102 (0.000258) | 0.000298 (0.000347) | 7.50e-05 (0.000198) | -0.000288 (0.000826) |
| SIZE | 0.0251** (0.0111) | -8.23e-05 (0.00435) | 0.0332** (0.0142) | 0.00318 (0.00665) |
| OWN | -0.000194 (0.000114) | -0.000388* (0.000233) | -0.000235 (0.000146) | -0.000482 (0.000314) |
| GDP | -0.000234 (0.000537) | 0.00487 (0.00307) | 0.000257 (0.000612) | 0.0105** (0.00474) |
| Year Dummies | Yes | Yes | Yes | Yes |
| N | 604 | 362 | 423 | 257 |
| Adj. R-squared | 0.249 | | 0.251 | |
| No. of instru./groups | | 43/120 | | 43/82 |
| AR(2) p-value | | 0.299 | | 0.253 |
| Hansen p-value | | 0.344 | | 0.376 |

Note: ***, ** and * denote statistical significance at the 1%, 5% or 10% levels, respectively. Robust standard errors are reported in parentheses

As reported in Table 5.2.2, only trading volume (*TURN*) has a statistically significant impact on spread while other control variables are not significant. The four legitimate factors (*REG*, *ENF*, *INST* and *IFRS*) do not show direct impact on spread. Interestingly, the regression results on this sample show that income-increasing earnings management (*EM*) has significant negative relationship with the bid-ask spread consistently across all regression designs. Contradict to our first hypothesis that earnings management widen bid-ask spread, this finding suggests bank income-increasing earnings management narrow the difference between the bid and ask prices, which indicates that bank income-increasing earnings management decreases information asymmetry among investors. As a result, there is less opportunity for informed investor to exploit earnings management information to earn profits in stock markets. The finding contradicts the literature for non-financial firm context where earnings management is found to increase the bid-ask spread (Bhattacharya et al., 2013; Abad et al., 2016).

The interactions of *EM*×*REG* and *EM*×*ENF* have significant positive impacts on the spread in all regressions. These findings indicate that the negative impacts of bank income-increasing earnings management on the spread is attenuated in the environments of strong banking accounting regulations or strong enforcement regimes. In addition, the interaction of *EM*×*REG*×*ENF* is significantly negative, indicating that the effects of strong regulations and enforcement are mutually substitutable. The interaction between earnings management and institutional quality (*EM*×*INST*) and that between earnings management and IFRS adoption (*EM*×*IFRS*), on the other hand, are not significant.

5.3 Discussion of the results

Overall, these results confirm that bank earnings management has a statistically significant impact on bid-ask spreads. However, the directions of the effects are different between the two types of earnings management. On the one hand, bank income-decreasing earnings management has a significant positive impact on bid-ask spread, supporting our first hypothesis which suggests even in the highly regulated banking industry, investors tend to acquire and exploit earnings management to earn profits in stock markets. This result is consistent with the evidence documented by Bhattacharya et al. (2013) and Abad et al. (2016), who find that poor earnings quality exacerbates information asymmetry in stock markets for non-financial firms. In addition, this finding supports the opportunistic perspective of earnings management which views earnings management as an example of agency problem when managers manipulate earnings to mislead investors (Watts & Zimmerman, 1986). On the other hand, bank income-increasing earnings management has a significant negative impact on spread, indicating that income-increasing earnings management decreases information asymmetry among investors thus creating less opportunity for investors to trade on the basis of this informational advantages. One possible explanation is that income-increasing abnormal loan loss provisions help to reduce the volatility of bank earnings (Norden & Stoian, 2013), which in turn increases bank earnings predictability (Graham et al., 2005; Dichev & Tang, 2009). More earnings predictability decreases information asymmetry in the markets (Affleck-Graves et al., 2002), thus decreasing trading opportunities for the informed investors. Consequently, banks earnings management may decrease adverse selection cost of bid-ask spread. Although this finding is contradict with some evidence documented in the literature for non-bank context that earnings management widen information asymmetry in stock market (Bhattacharya et al., 2013), Abad et al., 2016), it supports the signalling perspective of earnings management that earnings management may be beneficial because it improves earnings informativeness by conveying private information to investors (Louis & Robinson, 2005; Jiraporn et al., 2008). By managing earnings, managers demonstrate their predictive powers and hard work to the owners (Demski, 1998). In addition, it is argued that managerial discretion can improve the ability of earnings to reflect fundamental value (Subramanyam, 1996). Therefore, a managed earnings stream can convey more information than an unmanaged earnings stream (Arya et al., 2003). The different effects of bank earnings management on bid-ask spread suggest that investors' incentive to exploit bank earnings management information to earn profits in stock markets not only depends on information gap among investors but also depends on management's motives to manage bank earnings.

Among the four legitimate factors examined in this study, only bank accounting regulations and enforcement mechanisms can help to reduce the impact of bank earnings management on investors' incentives to acquire and exploit this private information. Specifically, the findings on bank income-decreasing earnings management sample show that bid-ask spreads tend to be less positively associated with bank earnings management in countries with better bank accounting regulations or stronger enforcement regimes. These results support previous studies which find that bank accounting regulations and enforcement mechanisms improve information environment (Duru et al., 2018; Horton et al., 2013). On the contrary, the findings

on bank income-increasing earnings management sample show that bid-ask spreads tend to be less negatively associated with bank earnings management in countries with better bank accounting regulations or stronger enforcement mechanisms. Country's institutional quality and IFRS adoption, on the other hand, do not play a significant role in reshaping the relationship between bank earnings management and bid-ask spread. Therefore, this study suggests that the trading behaviours of exploiting informational advantages from earnings management can be constrained by strong bank accounting regulations or enforcement regimes. Nevertheless, these effects are mutually substitutable, hence become marginal when the other factor has already been advanced. This evidence contradicts the finding of Duru et al. (2018) who report that enforcement mechanisms are complementary to bank accounting regulations. This study, therefore, suggests that countries may substitute strong enforcement regimes for weak laws and regulations. In addition, it is usually easier and less time-consuming to improve regulations and enforcement of an industry than to improve a country's institutional quality or adopt IFRS. Thus this study suggests that the more efficient way to improve information environment in stock markets is to set (or improve) industry regulations and enforcement mechanisms, while institutional quality and IFRS adoption can remain a longer term focus.

6. Conclusion

This study investigates whether investors exploit earnings management information to earn profits in stock markets by employing a sample of 198 banks across 13 Asian-Pacific countries over 16 years from 2002-2017. In addition, this study also examines the effect of bank regulations, enforcement regimes, country's institutional quality and IFRS adoption level on investors' incentives to acquire and exploit earnings management information. The results show that there is a significant positive relationship between bank income-decreasing earnings management and bid-ask spreads, which implies that even in the highly regulated banking industry investors exploit bank earnings management information to obtain profits in stock markets when earnings are managed downward. On the other hand, bank income-increasing earnings management has a negative impact on bid-ask spreads suggesting that informed investors have less incentive to exploit earnings management information to earn profits in stock markets when earnings are managed upwards. Furthermore, this study finds that the positive relationship between bank earnings management and bid-ask spreads is less pronounced in countries with better bank accounting regulations or stronger enforcement mechanisms whereas country's institutional quality and IFRS adoption do not have a significant impact. These findings indicate that strong bank regulations and enforcement regimes can signal to investors of banking integrity in financial reporting, yet, signalling effects from these two legitimate factors tend to be mutually substitutable. These results lead to some policy implications. Regardless of the institutional quality and IFRS adoption level, the adverse effect of bank earnings management on information environment can be offset by good accounting regulations and enforcement mechanisms. Therefore, bank accounting regulations and enforcement mechanisms should be prioritized.

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APPENDICES

Appendix 1 Variable measurements and regression results of banks earnings management

Appendix 1A Definitions of variables

| | |
|-----------------|--|
| LLP | Provisions for loan losses deflated by beginning total assets |
| ALLP | Abnormal loan loss provisions which is used as a measure of bank earnings management |
| BEGLLA | Beginning loan loss allowance deflated by beginning total assets |
| CHLOAN | Change in total loans outstanding deflated by beginning total assets |
| LOAN | Natural log of total loans outstanding |
| NPL | Non-performing loans deflated by beginning total assets |
| YEAR CONTROL | Year dummy to control for period specific effects |
| COUNTRY CONTROL | Country dummy to control for country specific effects |

Appendix 1B Regression results

| Dependent Variable: LLP | Coefficients |
|-----------------------------------|-------------------------|
| BEGLLA | -0.0413 (0.0732) |
| LOAN | -6.97e-05 (0.000322) |
| CHLOAN | -5.44e-05 (0.000369) |
| NPL | 0.119** (0.0478) |
| Constant | 0.00164 (0.00816) |
| Year dummies | Yes |
| Country dummies | Yes |
| Observations | 1,387 |
| Adj. R ² | 0.2008 |

Note: This table reports OLS coefficients of bid-ask spreads on bank accrual earnings management and control variables. Adjusted R² and number of observations are reported. Standard errors reported in parentheses are robust to clustering within each bank. ***, ** or * next to coefficients are indicate that coefficients are significantly different from zero at the 1%, 5% or 10% levels, respectively.

Appendix 2 Measurement of bank accounting regulations and enforcement regimes

| Variable | Definition |
|------------------------------------|--|
| Bank Accounting Regulations | The sum of assigned values of the questions as below (by default, 1 if it equals “yes” and 0 otherwise.): (1) Does accrued, though unpaid interest/principal enter the income statement while the loan is still performing? (2) Are financial institutions required to produce consolidated accounts covering all bank and any non-bank financial subsidiaries? (3) Are off-balance sheet items disclosed to the public? (4) Must banks disclose their risk management procedures to the public? (5) Are bank directors legally liable if information disclosed is erroneous or misleading? (6) Does accrued, though unpaid interest/principal enter the income statement while the loan is still nonperforming? (1 if it is No; 0 otherwise.)’ Barth et al. (2006). |
| Audit | ‘The sum of assigned values of the questions as below (by default, 1 if it equals “yes” and 0 otherwise.): (1) Is an external audit a compulsory obligation for banks? (2) Are specific requirements for the extent or nature of the audit spelled out? (3) Are auditors licensed or certified? (4) Do supervisors get a copy of the auditor’s report?’ |

| | |
|---------------------------|---|
| | <p>(5) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank?</p> <p>(6) Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse?</p> <p>(7) Can supervisors take legal action against external auditors for negligence?’ Barth et al. (2006).</p> |
| Market Discipline | <p>‘The sum of assigned values of the questions as below (by default, 1 if it equals “yes” and 0 otherwise.):</p> <p>(1) What percentage of the top ten banks are rated by international credit rating agencies (e.g. Moody’s, Standard and Poor)? (1 if it equals 100%; 0 otherwise.)</p> <p>(2) How many of the top ten banks are rated by domestic credit rating agencies? (1 if it equals 100%; 0 otherwise.)</p> <p>(3) a. Is there an explicit deposit insurance protection system? b. Were depositors wholly compensated (to the extent of legal protection) the last time a bank failed? (1 if a = 0 and/or b = 0, 0 otherwise.)</p> <p>(4) a. Is subordinated debt allowable as part of capital? b. Is subordinated debt required as part of capital? (1 if a or b equals “yes”)</p> <p>(5) Are bank regulators/supervisors required to make public formal enforcement actions, which include cease and desist orders and written agreements between a bank regulatory/supervisory body and a banking organization?’ Barth et al. (2006).</p> |
| Direct Supervision | <p>‘The sum of assigned values of the questions as below (by default, 1 if it equals “yes” and 0 otherwise.):</p> <p>(1) Can the supervisory authority force a bank to change its internal organizational structure?</p> <p>(2) Are off-balance sheet items disclosed to supervisors?</p> <p>(3) Can the supervisory agency order the bank’s directors or management to constitute provisions to cover actual or potential losses?</p> <p>(4) Can the supervisory agency suspend the directors’ decision to distribute dividends?</p> <p>(5) Can the supervisory agency suspend the directors’ decision to distribute Bonuses?</p> <p>(6) Can the supervisory agency suspend the directors’ decision to distribute management fees?</p> <p>(7) Who can legally declare – such that this declaration supersedes the some of the rights of shareholders – that a bank is insolvent: bank supervisor, court, deposit insurance agency, bank restructuring, asset management agency or other. (bank supervisor = 1; deposit insurance agency = 0.5; bank restructuring or asset management agency = 0.5; 0 otherwise.)</p> <p>(8) According to the Banking Law, who has authority to intervene – that is, suspend some or all ownership rights- a problem bank? Bank supervisor, court, deposits insurance agency, bank restructuring, asset management agency or other. (bank supervisor = 1; deposit insurance agency = 0.5; bank restructuring or asset management agency = 0.5; 0 otherwise.)</p> |

| | |
|-------------------------|--|
| | <p>(9) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency supersede shareholder rights? Bank supervisor, court, deposits insurance agency, bank restructuring, asset management agency or other. (Bank supervisor = 1; deposit insurance agency = 0.5; bank restructuring or asset management agency = 0.5; 0 otherwise.)</p> <p>(10) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency remove and replace management? Bank supervisor, court, deposits insurance agency, bank restructuring, asset management agency or other. (Bank supervisor = 1; deposit insurance agency = 0.5; bank restructuring or asset management agency = 0.5; 0 otherwise.)</p> <p>(11) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency remove and replace directors? Bank supervisor, court, deposits insurance agency, bank restructuring, asset management agency or other. (bank supervisor = 1; deposit insurance agency = 0.5; bank restructuring or asset management agency = 0.5; 0 otherwise.)' Barth et al. (2006).</p> |
| Bank Enforcement | Audit + Market Discipline + Direct Supervision |

Source: Duru et al. (2018)

Appendix 3 Definitions of the six institutional composite index.

| | |
|--|---|
| <i>(a) The process by which governments are selected, monitored, and replaced</i> | |
| <i>1. Voice and Accountability</i> | Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. |
| <i>2. Political Stability and Absence of Violence/Terrorism</i> | Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. |
| <i>(b) The capacity of the government to effectively formulate and implement sound policies</i> | |
| <i>3. Government Effectiveness</i> | Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. |

| | |
|--|---|
| 4. <i>Regulatory Quality</i> | Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. |
| (c) <i>The respect of citizens and the state for the institutions that govern economic and social interactions among them</i> | |
| 5. <i>Rule of Law</i> | Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence |
| 6. <i>Control of Corruption</i> | Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. |

Source: Kaufmann et al. (2011)

Appendix 4 IFRS Adoption Year

| No. | Country | IFRS Adoption Year |
|------------|----------------|---------------------------|
| 1 | Australia | 2005 |
| 2 | China Mainland | 2006 |
| 3 | Hong Kong | 2005 |
| 4 | Indonesia | Not adopt |
| 5 | Japan | 2010 |
| 6 | Korea | 2011 |
| 7 | Malaysia | 2012 |
| 8 | Pakistan | 2008 |
| 9 | Philippines | 2005 |
| 10 | Singapore | 2010 |
| 11 | Sri Lanka | 2012 |
| 12 | Taiwan | 2013 |
| 13 | Thailand | 2011 |

Appendix 5 Distribution of bank-year observations by country

| No. | Country | All residuals | | Positive residuals | | Negative residuals | |
|--------------|-------------------|---------------|--------------|--------------------|-------------|--------------------|-------------|
| | | No. of Banks | No. of Obs. | No. of Banks | No. of Obs. | No. of Banks | No. of Obs. |
| 1 | Australia | 7 | 67 | 5 | 25 | 4 | 25 |
| 2 | China Mainland | 13 | 80 | 5 | 20 | 3 | 18 |
| 3 | Hong Kong | 11 | 98 | 3 | 17 | 7 | 57 |
| 4 | Indonesia | 31 | 217 | 8 | 43 | 20 | 99 |
| 5 | Japan | 63 | 392 | 17 | 60 | 34 | 156 |
| 6 | Korea | 4 | 16 | 1 | 4 | 3 | 10 |
| 7 | Malaysia | 9 | 90 | 6 | 27 | 7 | 39 |
| 8 | Pakistan | 11 | 51 | 4 | 16 | 5 | 17 |
| 9 | Philippines | 14 | 73 | 3 | 17 | 10 | 42 |
| 10 | Singapore | 3 | 27 | 2 | 10 | 2 | 7 |
| 11 | Sri Lanka | 4 | 12 | 3 | 9 | 1 | 3 |
| 12 | Taiwan | 17 | 111 | 2 | 10 | 16 | 84 |
| 13 | Thailand | 11 | 153 | 9 | 55 | 9 | 47 |
| Total | | 198 | 1,387 | 68 | 313 | 121 | 604 |