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Abstract

Despite the growing importance of institutional investors in global capital markets and the link between bank earnings management and financial crash risk, little is known about the role of institutional investors in mitigating bank earnings management. We conduct the first international analysis of this issue using a broad

sample of banks and institutional investors. We find a negative relation between institutional ownership and bank earnings management, after controlling for the stringency of a country's bank regulations and other relevant bank and country characteristics. Additionally, institutional ownership is more negatively related to earnings management in countries with more-stringent bank disclosure requirements or when ownership is held by domestic rather than foreign institutional investors. Institutional ownership is also more negatively related to earnings management in countries in which insiders extract more private benefits or when ownership is held by institutional blockholders. Our findings have important policy implications regarding institutional investors' engagement with banks.

Keywords

Institutional investors, Earnings management, Banks, Corporate governance, Bank regulations

1. Introduction

This study explores the monitoring role of institutional investors in deterring bank earnings management across 45 countries. Following the literature, we define earnings management as opportunistic financial reporting by corporate insiders to other stakeholders for the purpose of extracting private benefits (Healy and Wahlen, 1999). One key trend in global capital markets is the growing importance of institutional investors (Ferreira and Matos, 2008). Assets under the management of institutional investors in OECD countries grew almost fivefold, from $22 trillion in 1995 to $100 trillion in 2015.[1] Further, an extensive body of literature documents the effect of institutional investors on corporate governance of nonfinancial firms around the globe (see, e.g., Ferreira and Matos, 2008; Aggarwal et al., 2011; Iliev et al., 2015; Dyck et al., 2019). However, little is known about the governance role of institutional investors in banks, especially their role in curbing bank earnings management.

Empirically, whether institutional investors can impact bank earnings management is unclear. On the one hand, ample evidence has shown that institutional investors play an important role in constraining earnings management in non-financial firms. (Section 2.1 reviews this literature.) Therefore, it is logical to assume that institutional investors can apply the same skill set to monitor bank earnings management. On the other hand, two competing arguments suggest that institutional investors have fewer incentives and are less able to monitor bank earnings management. First, banks are more opaque than nonfinancial firms (Flannery et al., 2013). While information asymmetry is a necessary condition for earnings management (Ayers et al., 2011), the costs associated with monitoring bank financial reports may be too high for institutional investors to bear, leading them to be less-effective monitors or in the extreme case shy away from performing this monitoring task. Second, banks are more strictly regulated than nonfinancial firms. To the extent that stringent bank regulations serve as substitutes for monitoring by institutional investors or create barriers to their involvement in banks (Prowse, 1997; Flannery and Rangan, 2008), no empirical relation may be detected between institutional investors and bank earnings management.[2]

It is critical to understand whether institutional investors constrain bank earnings management for three key reasons, especially given the empirical nature of this research question. First, banks can engender systemic risks that disrupt the entire economy, as witnessed during the 1929 Great Depression and the 2008 Global Financial Crisis (Bernanke, 1983; Laeven and Valencia, 2013). Second, banks are more prone to earnings management than nonfinancial firms (Greenawalt and Sinkey, 1988; Allen and Saunders, 1992). Third, bank earnings management is “highly predictive” of bank crash risk during financial crises (Cohen et al., 2014, page 193).

This paper uses a broad international sample of banks and institutional investors to investigate whether and under which conditions institutional investors are effective at curbing bank earnings management. Although market discipline is the third pillar of the Basel Accord, which is meant to ensure the safety and soundness of the global financial system, it is overlooked and “sometimes forgotten” (Beck et al., 2008, page 509). After the 2008

Global Financial Crisis, U.S. Federal Reserve Governor Daniel K. Tarullo called for "special corporate governance measures…as part of an effective prudential regulatory system" (Tarullo, 2014). A long line of literature establishes that institutional investors serve as a key market disciplinary force in global capital markets (see, e.g., Gillan and Starks, 2003; Aggarwal et al., 2011). Therefore, the results in this paper have the potential to offer important policy implications for bank regulators and policymakers.

We assemble data for over 800 publicly traded banks across 45 countries from 2007 to 2018. Following the literature (see, e.g., Bushman and Williams, 2012; Beatty and Liao, 2014), we employ two main measures of bank earnings management—discretionary loan loss provisions (*DLLP*) and the ability of loan loss provisions to predict future net loan charge-offs (*Pred_NCO*). We find a negative relation between institutional ownership and bank earnings management, after controlling for bank characteristics, the stringency of a country's bank regulations, and bank and year fixed effects. We employ various econometric tools to address potential endogeneity concerns. We use the two-stage least-squares instrumental variable (2SLS-IV) procedure to isolate exogenous variation in institutional ownership. We use a change-on-change test to address the potential reverse causality issue. Our results are robust to these endogeneity tests, which in turn pass all the relevant specification tests. Additionally, our results are robust to alternative model specifications such as using *Country×Year* fixed effects and controlling for additional variables such as government ownership and interaction effects between institutional investors and bank regulations.

To further explore the impact of institutional investors on bank earnings management, we adopt the approach of "identification through differential effects" and test four hypotheses that offer directional predictions based on the economic arguments of monitoring costs and benefits. This research design is consistent with the Method of Concomitant Variation advocated by Acharya and Ryan (2016), which calls researchers to identify the causal force at play by showing the hypothesized effect is stronger when the hypothesized cause is stronger. Specifically, we design two tests based on the prediction that institutional investors have a stronger incentive to monitor, and monitor more effectively, when net monitoring costs are lower. Information acquisition and processing costs are of particular importance to monitoring bank earnings management because information asymmetry is a necessary condition for earnings management (Ayers et al., 2011) and banks are more opaque than nonfinancial firms (Flannery et al., 2013). Consistent with our hypotheses, we find that institutional investors are more effective at constraining bank earnings management in countries with higher bank disclosure requirements. Additionally, domestic rather than foreign institutional investors are more effective at deterring bank earnings management. This result is consistent with the notion that domestic institutional investors, due to their proximity to monitoring information in terms of geographical distance, language, cultural, and business norms, face lower monitoring costs than their foreign peers (Kim et al., 2016).

In the other two tests, we probe concomitant variations by using the economic prediction that institutional investors have a stronger incentive to monitor, and monitor more effectively, when net monitoring benefits are higher. The first test involves the extent to which insiders extract private benefits through earnings manipulation. Managers manipulate earnings to extract private benefits from other stakeholders (Healy and Wahlen, 1999). Leuz et al. (2003) find a negative relation between earnings management and the strength of investor protection, consistent with their explanation that weaker investor protection enables insiders to acquire more private benefits, leading them to have greater incentives to conceal true firm performance from outsiders through earnings management. We hypothesize that institutional investors play a more prominent role in countries in which insiders extract more private benefits, because in that environment, institutional investors gain larger benefits from monitoring opportunistic financial reporting. Consistent with our hypothesis, we find that institutional investors are more effective in restraining bank earnings management in countries with higher prevalence of insider trading. The second test is premised on the vast literature that finds blockholders as more effective monitors than nonblockholders because large equity holdings offer greater

monitoring benefits that offset the free-rider problem in modern corporations with diffuse ownership structures. Consistent with our hypothesis, we find that institutional blockholders reduce earnings management more than institutional nonblockholders.

This paper makes five contributions. First, it is the first paper to examine whether and under which conditions institutional investors affect bank earnings management using a broad international sample. In contrast to the abundant evidence on the impact of institutional investors on earnings management at nonfinancial firms, evidence on their impact on bank earnings management is sparse and mixed. To the best of our knowledge, Yust (2015) and Elyasiani et al. (2017) are the only exceptions. Yust (2015) examines the roles of financial analysts and residual institutional ownership (residuals from cross-sectional regressions on the determinants of institutional ownership) and finds that residual institutional ownership reduces bank earnings management. Elyasiani et al. (2017) find that only the dedicated and independent institutional investors, per the definition of Bushee (2001) and Brickley et al. (1988) respectively, consistently constrain bank earnings management. Notably, both Yust (2015) and Elyasiani et al. (2017) study only U.S. banks. This paper extends the literature by examining whether and under which conditions institutional investors constrain bank earnings management for a broad international sample of banks and institutional investors.

Second, our study contributes to the growing literature on bank governance and, importantly, the fledging literature on the role of institutional investors in bank governance and the stability of the banking system.[3] As the influence of institutional investors grows exponentially around the world, researchers and policymakers have begun to pay closer attention to the effect of institutional investors on bank governance and systemic risks and consequently the appropriate regulatory response. Our findings contribute to this discussion and offer significant policy implications especially given that bank earnings management can serve as an early warning sign for crash risk in financial crises (Cohen et al., 2014).

Third, our paper extends the market discipline literature for banks, which has primarily focused on the disciplinary role of debtholders and depositors (see, e.g., Bliss and Flannery, 2002; Covitz and Harrison, 2004; Goyal, 2005; Ashcraft, 2008; Fonseca and González, 2010). The role of equityholders has received scant attention. Fourth, this paper lays the foundation for future research on the interplay between bank regulations and market discipline. Whether these forces are complements or substitutes is a question of ongoing interest and debate to both researchers and policymakers. Lastly, the paper adds to the growing literature on the impact of institutional investors on corporate governance and information environment around the world (see, e.g., Aggarwal et al., 2011; Tsang et al., 2019).

2. Related literature and hypothesis development

2.1. Institutional investors and earnings management at nonfinancial firms

The earnings management literature dates back to Smith (1976). The literature on institutional investors as corporate monitors largely originates with Pound (1988). While each of these literature streams has a long history with rich empirical findings, scholars have only recently begun to combine them and examine the role of institutional investors in restraining earnings management. Chung et al. (2002) analyze U.S. nonfinancial firms and find that the presence of large institutional holdings inhibits managers from managing reported profits toward a desired target. Mitra and Cready (2005) study industrial firms listed on the NYSE and find that institutional ownership is negatively related to the standard deviation of discretionary accruals estimated using the modified Jones model. For a sample of very large U.S. firms (i.e., S&P 100 firms), Cornett et al. (2008) document a negative effect of institutional ownership on the absolute value of discretionary accruals based on the modified Jones model.

Economic theory predicts that more monitoring is produced when monitoring benefits exceed monitoring costs. Consistent with this notion, Ayers et al. (2011) and Chhaochharia et al. (2012) find that local institutional investors, who enjoy lower monitoring costs due to their geographic proximity to monitoring information, have a larger deterrent effect on earnings management than distant counterparts. Chhaochharia et al. (2012) use a broad sample of U.S. nonfinancial firms. Ayers et al. (2011) analyze S&P1500 firms. Kim et al. (2016) extend the U.S. evidence from these two studies to an international setting and find a negative relation between institutional ownership and earnings management for a sample of nonfinancial firms from 29 non-U.S. countries.

2.2. Heterogeneity in bank regulations and monitoring tactics of institutional investors

Bank regulations are heterogeneous across countries. Particularly relevant to our analysis are the different rules that restrict the size of equity investment in banks. To illustrate, in 2011 the World Bank surveyed 131 countries regarding the extent to which nonfinancial firms may own and control banks. On a 1–4 scale with four being the most restrictive, one country (Namibia) was rated four because it prohibited any equity investment in banks, 44 countries (e.g., Australia, Canada, and the United States) were rated three because they imposed ownership limits such as a maximum percentage of a bank's capital or shares, 69 countries (e.g., Switzerland and the United Kingdom) were rated two because they permitted investment in banks without prior authorization or approval, and 17 countries (e.g., Ireland and Thailand) were rated one because they allowed a nonfinancial firm to own 100% of bank equity (Barth et al., 2013a).

Adding to the heterogeneity in bank regulations is the extent of discretion that regulators exercise in applying them. Consequently, even for countries with similar banking regulations, institutional investors face differing costs or abilities in using common governance channels, resulting in heterogeneous monitoring tactics across countries. To give an example, Australia and Canada have remarkably similar banking environments (Garvey and Giammarino 1998). Australia has four major banks, while Canada has five. Although both countries restrict a single shareholder from owning more than 10% of their large banks, Australian bank regulators can exercise discretion in relaxing the threshold if the acquisition is deemed to be in the national interest. As a result, in 1992, Australia's largest institutional investor (AMP) was able to secure a 15% of stake in Westpac, one of the four largest banks in the country, with the goal of implementing governance changes and improving bank performance. Additionally, Australian banking regulations limit an individual shareholder to two representatives on boards of more than seven members. This restriction was relaxed to allow AMP four board seats (Garvey and Giammarino 1998). For comparison, Canadian bank regulators supervise a stricter 10% ownership rule. Not surprisingly, Canadian institutional investors prefer to engage banks by forming coalitions as opposed to acting individually (Doidge et al., 2019).

Given the importance of a healthy banking sector to an economy, public policy impinges more on banks than on most other private sectors (Barth et al., 2002). For this reason, institutional investors tend to employ unconventional governance channels in banks that are idiosyncratic to a country's regulatory and institutional environment. For example, in the United States, the U.S. Bank Holding Company Act mandates that any company controlling more than 25% of a bank's voting shares shall be regulated as a bank holding company. This mandate leads institutional investors to voluntarily hold bank shares under certain minimum levels. Alternatively, institutional investors enter into agreements with regulators to ensure that when an ownership threshold is crossed, they will not exert influence over management through many of the common monitoring channels such as nominating directors or soliciting proxies.[4] Anecdotal evidence shows that U.S. institutional investors use behind-the-scenes channels, such as private meetings and letter writing, to engage in bank governance (BlackRock Investment Stewardship, 2018).

2.3. Hypothesis development

As discussed in Section 2.2, bank regulations are heterogeneous across countries and complex within a country. Further, the knowledge of the interaction between bank regulations and private sector monitoring is still incomplete. Therefore, it would be premature to develop hypotheses for the interaction between bank regulations and institutional investors regarding bank earnings management, although we provide some exploratory tests in Section 4.3 to aid future research. Instead, our objective is to address a more fundamental question: does a negative relation between institutional ownership and bank earnings management exist in a broad international sample after controlling for international differences in bank regulations?

Three arguments suggest that bank managers have stronger incentives to manage earnings than managers of nonfinancial firms. First, because of the illiquidity of bank assets, investor confidence is critically important for bank stability (Barth et al., 2004). To keep depositors from losing confidence in banks, bank managers may have a stronger incentive to manage their loan loss provisions to meet capital requirements or to manage earnings to prevent them from becoming negative (Ahmed et al., 1999; Beatty et al., 2002). Second, banks are more opaque than nonfinancial firms (Greenawalt and Sinkey, 1988; Allen and Saunders, 1992). Therefore, bank managers may have stronger incentives to opportunistically report earnings to signal information (Wahlen, 1994). Finally, because banks are highly regulated, bank managers may be more inclined to manage financial reports to circumvent regulation (Kim and Kross, 1998; Allen and Saunders, 1992).

Despite the voluminous evidence that institutional investors deter earnings management in nonfinancial firms and the preceding arguments for bank managers' propensity to opportunistically report earnings, the evidence on the monitoring role of institutional investors in bank earnings management is scarce. More importantly, two arguments suggest that institutional investors may have fewer incentives to monitor bank earnings management. First, banks are opaque, leading to higher information acquisition and processing costs associated with monitoring bank financial reports. When these costs become too high, institutional investors might be less effective in monitoring bank earnings management or in the extreme case shy away from this monitoring task. As Ayers et al. (2011) argue, information acquisition and processing costs are a crucial determinant of effectiveness in monitoring earnings management. Using samples of U.S. firms, Ayers et al. (2011) and Chhaochharia et al. (2012) find that because of lower information acquisition and processing costs, local institutional investors are more effective than their distant peers in monitoring earnings management. Using an international sample of nonfinancial firms, Kim et al. (2016) find that due to their comparative advantages in information acquisition and processing costs, domestic, but not foreign, institutional investors curb earnings management. Second, monitoring by bank regulators may serve as a substitute for monitoring by institutional investors, lowering the benefits associated with monitoring bank financial reports by institutional investors. Consistent with this view, Prowse (1997) finds that regulatory intervention is the most important corporate control mechanism for U.S. banks because many market-based mechanisms, such as hostile takeovers or the monitoring function of the board of directors, are precluded or weakened by bank regulations. Flannery and Rangan (2008) also find that when regulatory changes in the United States in the 1990s weakened government guarantees and removed restrictions on bank activities, banks dramatically increased their capital ratios due to enhanced market discipline. Therefore, we view the relation between institutional ownership and bank earnings management as an empirical question.

In the case that we detect a negative relation between institutional ownership and bank earnings management, we propose four hypotheses to gain a deeper understanding of the relation. Specifically, we draw from the existing literature that has identified conditions under which the costs and benefits of monitoring earnings management exhibit systematic differences. Economic theory predicts that institutional investors have a stronger incentive to monitor and monitor more effectively when net monitoring costs are lower or net monitoring benefits are higher (Gillan and Starks, 2003). As information asymmetry between firms and outside

stakeholders is a necessary condition for earnings management, information acquisition and processing costs are the main drivers of monitoring costs (Ayers et al., 2011). Moreover, these costs should be of greater concern to bank investors than to investors of nonfinancial firms because banks are more opaque and bank investors face higher levels of information asymmetry. Consistent with this idea, in recent years, bank regulators, such as the Basel Committee on Banking Supervision, have adopted initiatives that require more and better disclosures by banks so that the market has the necessary information to monitor banks effectively (Huang, 2006). Therefore, we propose the following hypothesis:

H1.a

Institutional investors play a larger role in deterring bank earnings management when bank disclosure requirements are higher.

Extending the insights of Ayers et al. (2011) and Chhaochharia et al. (2012) to an international setting, Kim et al. (2016) posit that domestic institutional investors have a comparative advantage over their foreign peers in deterring earnings management because domestic institutions' proximity to monitoring information in terms of geographical distance, language, and cultural and business norms allows them to acquire and process the requisite monitoring information more effectively. Consistent with this prediction, Kim et al. (2016) find that domestic, but not foreign, institutional investors are more effective in constraining earnings management. Therefore, we propose the following hypothesis:

H1.b

Domestic institutional investors play a larger role in deterring bank earnings management than foreign institutional investors.

Studies show that institutional investors monitor more and are more effective monitors when the net monitoring benefits are higher (Iliev and Lowry, 2015). Leuz et al. (2003) argue that earnings management should be more pervasive in countries with weaker investor protection because insiders in those countries are able to extract more private benefits. Therefore, we expect institutional investors to play a more prominent role in countries in which insiders can extract more private benefits through earnings management because in this environment, institutional investors gain larger benefits from monitoring opportunistic reporting of financial performance.

H1.c

Institutional investors play a larger role in deterring bank earnings management in countries in which insiders extract more private benefits.

Institutional investors are more effective monitors than average investors because their large equity holdings avail them greater economic benefits that overcome the free-rider problem associated with atomistic shareholders (Gillan and Starks, 2003; Morgan et al., 2011). Consistent with this argument, using a sample of Korean nonfinancial firms, Liu et al. (2018) find that institutional blockholders reduce earnings management more than institutional nonblockholders. Therefore, we propose the following hypothesis:

H1.d

Institutional blockholders play a larger role in deterring bank earnings management than institutional nonblockholders.

3. Empirical proxies, regression models, and the sample

3.1. Bank regulation, bank disclosure, and private benefits

To control for international differences in bank regulations, we follow the literature (see, e.g., Karolyi and Taboada, 2015) and construct five indices that measure a country's bank regulatory and supervisory policies. Specifically, we use the Barth et al. (2013b) database and the Bank Regulation and Supervision Survey (BRSS) sponsored by the World bank.[5]Barth et al. (2013b) quantify banking policies of 180 countries based on the 2001, 2003, 2007, and 2011 BRSSs. We follow Barth et al. (2013b)'s methodology and quantify banking policies as of year-end 2016 based on the BRSS completed in 2019.

The first index, *Restrictions on Bank Activities*, measures regulations that restrict banks from engaging in: securities market activities including underwriting, brokering, dealing, and all aspects of the mutual fund industry; insurance activities that involve underwriting and selling; and real estate activities including investment, development, and management. Higher values indicate tighter regulatory restrictions. The second index, the *Capital Regulatory Index*, measures the amount of capital that banks must hold, as well as the nature and source of funds that regulators consider capital. Higher values indicate more stringent bank capital regulations. The third index, *Official Supervisory Power*, measures whether bank supervisors have the power to obtain information from banks, to act to change bank behaviors, and to act as they see fit to prevent or correct bank problems. Higher values indicate greater official supervisory power. The fourth index, the *Private Monitoring Index,* measures the incentives and ability of private investors to monitor banks. This index considers information such as the percent of the ten largest banks rated by international rating agencies and whether the country has an explicit deposit insurance system. Higher values indicate greater regulatory empowerment of private sectors to monitor banks. We also construct a composite index, *Overall Bank Regulation*, to measure the overall stringency of a country's bank regulations. Following Karolyi and Taboada (2015), *Overall Bank Regulation* is the first principal component of the above-mentioned four indices from Barth et al. (2013b).

To proxy for the level of bank disclosure requirements, we use the Bank Disclosure Index (*Bank Disclosure*) developed by Huang (2006). The index measures on a yearly basis the actual disclosure practices of commercial banks for 178 countries in relation to their assets, liabilities, funding, incomes, and risk profiles. Higher values indicate a greater level of detail provided by banks in their published reports.

To proxy for the extent to which insiders may extract private benefits through earnings manipulation, we use *Prevalence of Insider Trading* from La Porta et al. (2006) because a large body of theoretical and empirical work has documented the link between insider trading and earnings manipulation (see, e.g., Elitzur and Yaari 1995; Park and Park, 2004; Chowdhury et al., 2018). Additionally, a fundamental characteristic of strong investor protection is the reduced capability of insiders to extract private benefits through insider trading (Beny, 2005; DeFond et al., 2007).

3.2. Bank earnings management measures and regression models

Following the literature, we use two main empirical proxies to measure opportunistic financial reporting by banks—discretionary loan loss provisions (*DLLP*) and the ability of current loan loss provisions to predict future net loan charge-offs (*Pred_NCO*). To test the role of institutional investors in deterring bank earnings management, we estimate the following ordinary least squares (OLS) models:

(1)

$$DLLP_{it} = \alpha + \eta_1 IO_{it-1} + \kappa REG_{kt-1} + \gamma CONTROLS + d_i + d_t$$

(2)

$$NCO_{it} = \alpha + \eta_1 IO_{it-1} * LLP_{it-1} + \eta_2 IO_{it-1} + \eta_3 LLP_{it-1} + \kappa REG_{kt-1} + \gamma CONTROLS + d_i + d_t$$

where IO_{it-1} is the percent of stockholdings by institutional investors in bank *i* in year *t*-1. *LLP* is the loan loss provisions scaled by lagged total assets. *REG* denotes the proxies for a country's bank regulations, namely *Restrictions on Bank Activities*, *Capital Regulatory Index*, *Official Supervisory Power*, and *Private Monitoring Index*. *CONTROLS* is a vector of bank- and country-level characteristics that according to the literature potentially impact bank earnings management (see, e.g., Cornett et al., 2009; Bushman and Williams, 2012). To mitigate endogeneity concerns, we lag the independent variables by one year. d_i and d_t are bank and year fixed effects, respectively. d_i should not only control for time-invariant firm characteristics that potentially influence bank earnings management but also absorb time-invariant country factors such as national culture that may impact bank financial reporting (Kanagaretnam et al., 2011). Standard errors are adjusted for heteroscedasticity and firm-level clustering. If institutional investors play a monitoring role in constraining bank earnings management, we should expect to find $\eta_1 < 0$ in Eq. (1) and $\eta_1 > 0$ in Eq. (2).

For robustness, we also consider two alternative bank earnings management measures—the likelihood of banks reporting small positive earnings changes (Beatty et al., 2002; Altamuro and Beatty, 2010; Kanagaretnam et al., 2014) and income smoothing (Bushman and Williams, 2012; Beatty and Liao, 2014; Osma et al., 2019). Appendix II provides more detail about the suitability of each earnings management measure, the construction of the measures, and related regression models.[6]

3.3. Sample

We start the sample construction process with the intersection of Orbis BankFocus and FactSet for the period of 2007 to 2018. Bureau van Dijk publishes Orbis BankFocus, which replaced BankScope in 2017. BankScope (or BankFocus) is the standard database for financial data for non-U.S. banks (Bushman and Williams, 2012; Overesch and Wolff, 2021). We use FactSet (formerly LionShares) institutional ownership database as it is the common source for global institutional ownership data (Ferreira and Matos, 2008). We merge the two databases using ISIN as common bank identifier. When ISIN is not available, we first use fuzzy matching by bank name and country after carefully inspecting all matches, and then manually match remaining banks in the sample. Following Thibaut and Mathias (2015), we include the following bank types in our sample: bank holding and holding companies, commercial banks, cooperative banks, finance companies (credit card, factoring, and leasing), investment and trust corporations, investment banks, microfinancing institutions, real estate and mortgage banks, and savings banks. As data requirements vary considerably by earnings management measures, to maximize the available information, we allow the sample size to vary: when *DLLP* (*Pred_NCO*) is the measure of bank earnings management, the sample size is 753 (821) unique banks or 6863 (8075) firm-year observations.

Table 1 lists by country (45 in total) the number of firm-year observations for *DLLP* and *Pred_NCO*, the mean values of *DLLP* and *NCO*, the mean values of *Overall Bank Regulation*, *Bank Disclosure*, and *Prevalence of Insider Trading*, and the mean values of total, domestic, and foreign institutional ownership (*IO_TOTAL*, *IO_DOM*, and *IO_FOR*, respectively).[7] Consistent with the notion that capital flows to countries that have sound disclosure policies, Sweden, which ranks second highest in *Bank Disclosure*, ranks third highest in terms of mean foreign institutional ownership (16%). Consistent with the notion that the relation between institutional ownership and bank regulatory environment is complex and nuanced, Hong Kong, which ranks the lowest in bank regulation stringency but highest in *Bank Disclosure*, has one of the lowest level of mean foreign institutional ownership (4.4%).[8]

Table 1. Descriptive statistics.

Country	DLLP		NCO		Overall Bank Regulation	Bank Disclosure	Prevalence of Insider Trading	IO_ TOTAL	IO_ DOM	IO_ FOR
	N	Mean	N	Mean						
Australia	119	0.003	175	0.003	2.597	73	5.7	0.130	0.046	0.083
Austria	48	0.007	43	0.000	2.424	78	5.5	0.091	0.009	0.082
Belgium	17	0.002	17	0.000	2.488	70	5.1	0.148	0.009	0.139
Brazil	269	0.021	340	0.011	2.755	74	4.0	0.077	0.017	0.060
Canada	72	0.002	124	0.001	2.599	75	5.2	0.499	0.353	0.133
Chile	59	0.005	82	0.007	2.705	62	4.3	0.089	0.005	0.084
China	152	0.006	258	0.003	2.512	59	–	0.048	0.028	0.020
Columbia	66	0.007	76	0.004	2.730	63	4.0	0.019	0.000	0.019
Czech Republic	33	0.005	36	0.007	2.603	65	–	0.117	0.005	0.111
Denmark	108	0.009	147	0.001	2.353	79	5.5	0.105	0.033	0.072
Egypt	62	0.013	99	0.001	2.814	55	–	0.058	0.000	0.058
Finland	21	0.001	11	0.001	2.507	85	5.5	0.120	0.075	0.046
France	150	0.007	187	0.001	2.492	66	5.1	0.105	0.031	0.074
Germany	115	0.007	161	0.000	2.573	74	4.9	0.120	0.033	0.087
Greece	74	0.015	98	0.010	2.542	67	3.2	0.099	0.002	0.097
Hong Kong SAR, China	82	0.003	114	0.003	2.242	91	4.4	0.055	0.011	0.044
Hungary	24	0.016	15	0.004	2.575	73	–	0.178	0.004	0.174
India	340	0.007	346	0.006	2.808	74	3.5	0.164	0.052	0.105
Indonesia	175	0.011	252	0.009	2.811	69	2.8	0.063	0.002	0.060
Ireland	12	0.004	20	0.005	2.437	70	5.4	0.014	0.000	0.014
Israel	74	0.003	88	0.001	2.702	79	4.9	0.073	0.019	0.055
Italy	393	0.009	495	−0.003	2.703	89	4.2	0.107	0.013	0.094
Japan	2221	0.003	2210	0.000	2.741	81	5.1	0.062	0.018	0.044
Luxembourg	5	0.004	2	0.000	2.573	61	–	0.000	0.000	0.000
Malaysia	90	0.004	157	0.001	2.754	72	4.4	0.064	0.004	0.060
Mexico	68	0.018	44	0.009	2.732	75	3.8	0.156	0.020	0.125
Morocco	61	0.004	87	0.006	2.617	62	–	0.005	0.000	0.005
Netherlands	25	0.005	30	0.001	2.522	86	5.8	0.311	0.039	0.261
New Zealand	1	0.000	3	0.000	2.161	79	5.6	0.155	0.051	0.104
Norway	180	0.003	265	0.001	2.564	84	4.1	0.111	0.067	0.044
Peru	84	0.006	53	0.000	2.736	57	3.5	0.002	0.001	0.001

Philippines	136	0.007	140	0.003	2.605	71	2.9	0.074	0.001	0.073
Poland	133	0.005	160	0.004	2.451	71	–	0.172	0.124	0.048
Portugal	41	0.007	47	0.005	2.662	73	4.9	0.042	0.008	0.034
Korea	90	0.003	152	0.004	2.832	68	4.4	0.061	0.002	0.059
Russia	139	0.016	201	0.008	2.464	62	–	0.041	0.000	0.040
Singapore	47	0.004	66	0.001	2.723	71	5.5	0.143	0.028	0.115
South Africa	45	0.043	57	0.012	2.619	78	4.3	0.152	0.090	0.062
Spain	106	0.008	91	0.000	2.537	81	4.1	0.124	0.016	0.108
Sweden	50	0.001	51	0.001	2.596	90	5.0	0.380	0.221	0.160
Switzerland	132	0.004	55	0.001	2.555	48	5.3	0.129	0.031	0.095
Taiwan, China	108	0.004	212	0.000	2.877	72	4.2	0.082	0.004	0.078
Thailand	155	0.007	204	0.007	2.720	75	3.3	0.152	0.004	0.144
Turkey	290	0.007	352	−0.001	2.737	80	3.8	0.096	0.002	0.095
United Kingdom	191	0.007	252	0.004	2.564	71	6.2	0.181	0.102	0.078

This table reports by country the number of bank-year observations and the mean values of *DLLP* and *NCO* and the key country characteristics. There are a total of 45 countries, 753 unique banks or 6863 bank-year observations for the *DLLP* sample and 821 unique banks or 8075 bank-year observations for the *Pred_NCO* sample, in which *NCO* is the dependent variable. See Appendix I for all variable definitions and descriptions.

Panels A and B of Table 2 report descriptive statistics for the key variables used to estimate the impact of institutional investors on *DLLP* and *Pred_NCO*, respectively. To mitigate the influence of extreme outliers, all variables except for bank size and bank regulation variables, which are normalized using logarithm, are winsorized at the 1% level at each tail. As Panel A shows, the mean values of total (*IO_TOTAL*), domestic (*IO_DOM*), and foreign (*IO_FOR*) institutional ownership are 0.096, 0.029, and 0.067, respectively, for 753 banks from 2007 to 2018. For perspectives, Ferreira and Matos (2008) report mean values of 0.074, 0.038, and 0.036 for total, domestic, and foreign institutional ownership, respectively, for a sample of 11,224 nonfinancial, non-U.S. firms from 27 countries during 2000–2005, while Kim et al. (2016) report mean values of 0.094, 0.049, and 0.046 for total, domestic, and foreign institutional ownership, respectively, for a sample of 11,403 nonfinancial, non-U.S. firms from 29 countries during 2001–2013.

Table 2. Summary statistics.

Variables	**Mean**	**Median**	**25th Pct'l**	**75th Pct'l**	**Std. Dev.**
Panel A: Summary statistics for the key variables in the DLLP regression (n = 6863)					
DLLP	0.006	0.003	0.001	0.007	0.009
IO_TOTAL	0.096	0.061	0.004	0.136	0.114
IO_DOM	0.029	0.012	0.000	0.029	0.056
IO_FOR	0.067	0.037	0.001	0.097	0.082
IO_BLOCK (1%)	0.041	0.017	0.000	0.056	0.064
IO_BLOCK (5%)	0.006	0.000	0.000	0.000	0.023
LLP	0.006	0.003	0.001	0.008	0.008
Loan	0.639	0.654	0.546	0.752	0.187
Equity	0.081	0.068	0.052	0.097	0.050
Growth	0.074	0.047	0.010	0.113	0.133
Bank size	15.207	14.687	12.580	17.696	3.157
IFRS	0.394	0.000	0.000	1.000	0.489
Overall Bank Regulation	2.605	2.727	2.585	2.727	0.455
Restrictions on Banking Activities	1.864	2.079	1.792	2.079	0.419
Capital Regulatory Index	1.596	1.609	1.609	1.792	0.401
Official Supervisory Power	2.177	2.197	2.197	2.303	0.399
Private Monitoring Index	2.177	2.197	2.079	2.485	0.412
GDP growth	0.020	0.017	0.005	0.039	0.030
Inflation	0.022	0.013	0.000	0.033	0.029
EBLLP	0.009	0.006	0.003	0.014	0.015
LLA	0.019	0.010	0.005	0.023	0.024
NCO	0.002	0.000	0.000	0.002	0.006
ΔNPL	0.001	0.000	−0.002	0.003	0.011
Mortgage loans	0.047	0.000	0.000	0.000	0.132
Consumer loans	0.051	0.000	0.000	0.035	0.128
Corporate loans	0.081	0.000	0.000	0.026	0.170
Other loans	0.477	0.564	0.171	0.717	0.302
Panel B: Summary statistics for the key variables in the Pred_NCO regression (n = 8075)					
NCO	0.002	0.001	0.000	0.003	0.007
IO_TOTAL	0.094	0.056	0.001	0.134	0.115
IO_DOM	0.028	0.009	0.000	0.026	0.060
IO_FOR	0.065	0.034	0.000	0.096	0.082

IO_BLOCK (1%)	0.042	0.017	0.000	0.058	0.067
IO_BLOCK (5%)	0.007	0.000	0.000	0.000	0.024
LLP	0.006	0.002	0.001	0.008	0.009
Loan	0.638	0.651	0.541	0.754	0.198
Equity	0.088	0.072	0.054	0.104	0.070
Growth	0.079	0.050	0.012	0.117	0.140
Bank size	15.160	14.730	12.597	17.632	3.029
IFRS	0.428	0.000	0.000	1.000	0.495
Overall Bank Regulation	2.581	2.719	2.573	2.727	0.502
Restrictions on Banking Activities	1.856	2.079	1.792	2.079	0.443
Capital Regulatory Index	1.573	1.609	1.609	1.792	0.449
Official Supervisory Power	2.151	2.197	2.197	2.303	0.437
Private Monitoring Index	2.151	2.197	2.079	2.303	0.445
GDP growth	0.023	0.020	0.005	0.042	0.028
Inflation	0.023	0.014	0.003	0.032	0.028

Panels A and B report summary statistics for the key variables used in estimating the impact of institutional ownership on discretionary loan loss provisions (*DLLP*) and the ability of loan loss provisions to predict future net loan charge-offs (*Pred_NCO*), respectively. All variables except for bank size and bank regulation variables, which are normalized using logarithm, are winsorized at the 1% level at each tail. See Appendix I for variable definitions and descriptions.

4. Results

4.1. Base results

Table 3 reports the regression results from estimating the impact of total institutional ownership (*IO_TOTAL*) on bank earnings management as proxied by *DLLP* and *Pred_NCO*. As Column (1) shows, after controlling for relevant bank characteristics, the strength of a country's bank regulations, and bank and year fixed effects, *IO_TOTAL* is significantly and negatively related to *DLLP*. The negative coefficient estimate of 0.006 means that an increase of one percentage point (one standard deviation) in *IO_TOTAL* results in a reduction of 0.006% (0.068%) in *DLLP.* (Panel A of Table 2 reports a standard deviation of 0.114 for *IO_TOTAL.*) For perspectives, Cornett et al. (2008) find that an increase of one percentage point (one standard deviation) in total institutional ownership results in a reduction of 0.032% (0.447%) in the absolute value of discretionary accruals, the equivalent of *DLLP* for nonfinancial firms. Therefore, institutional investors seem to exert a smaller economic effect in banks. This interpretation is consistent with Prowse (1997), who finds that while market-based mechanisms of corporate control operate in the same broad fashion in banks as in nonfinancial firms, regulatory intervention weakens their impact. As Column (4) shows, we find corroborating results using *Pred_NCO* as the earnings management measure.

Table 3. Impact of institutional ownership on bank earnings management.

Dependent variable =	**$DLLP_t$**			**NCO_t**		
	Baseline (1)	**(2)**	**(3)**	**Baseline (4)**	**(5)**	**(6)**
$IO\_TOTAL_{t-1} \times LLP_{t-1}$				0.528*	0.522*	0.196***
				(1.95)	(1.93)	(3.44)
IO_TOTAL_{t-1}	−0.006**	−0.006**	−0.007***	−0.006***	−0.006**	−0.001
	(−2.17)	(−2.18)	(−6.37)	(−2.64)	(−2.58)	(−0.87)
LLP_{t-1}	0.106***	0.105***	0.124***	0.181***	0.179***	0.382***
	(2.64)	(2.63)	(3.04)	(5.08)	(5.10)	(10.00)
$Loan_{t-1}$	−0.003*	−0.002	−0.003***	−0.001	−0.001	−0.000

	(−1.69)	(−1.57)	(−3.00)	(−1.21)	(−1.09)	(−0.04)
$Equity_{t-1}$	0.040***	0.040***	0.059***	−0.008	−0.008	0.009***
	(4.06)	(3.98)	(10.87)	(−0.96)	(−0.98)	(3.39)
$Growth_{t-1}$	−0.000	−0.000	0.000	−0.003***	−0.003***	−0.002***
	(−0.05)	(−0.19)	(0.24)	(−3.34)	(−3.58)	(−2.84)
Bank $size_{t-1}$	−0.001	−0.001	−0.000***	0.000	0.000	−0.000
	(−0.74)	(−0.77)	(−5.30)	(0.18)	(0.06)	(−0.30)
$IFRS_{t-1}$	−0.005	−0.005	−0.001*	−0.003	−0.003	−0.000
	(−1.15)	(−1.14)	(−1.80)	(−1.14)	(−1.14)	(−0.06)
Overall Bank $Regulation_{t-1}$		0.001			−0.002***	
		(0.68)			(−2.98)	
Restrictions on Bank $Activities_{t-1}$	0.000			0.001		
	(0.26)			(0.43)		
Capital Regulatory $Index_{t-1}$	−0.000			−0.000		
	(−0.04)			(−0.29)		
Official Supervisory $Power_{t-1}$	0.002			0.000		
	(1.17)			(0.01)		
Private Monitoring $Index_{t-1}$	−0.001			−0.003***		
	(−0.38)			(−3.27)		
GDP $growth_{t-1}$	0.000	−0.002		0.010	0.007	
	(0.03)	(−0.27)		(1.50)	(1.12)	
$Inflation_{t-1}$	0.006	0.004		0.011*	0.010	
	(0.79)	(0.51)		(1.67)	(1.45)	
Observations	6863	6863	6863	8075	8075	8075
Year FE	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Bank FE	**YES**	**YES**	NO	**YES**	**YES**	NO
Bank Type FE	NO	NO	**YES**	NO	NO	**YES**
Country × Year FE	NO	NO	**YES**	NO	NO	**YES**
Adj. R-squared	0.690	0.690	0.553	0.648	0.648	0.457

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

For robustness, we estimate two additional regression models. In the first model, we use *Overall Bank Regulation* to replace *Restrictions on Bank Activities*, *Capital Regulatory Index*, *Official Supervisory Power*, and *Private Monitoring Index*. As the literature (Karolyi and Taboada, 2015) has used this aggregate measure to proxy for the overall quality or stringency of a country's bank regulations, it is instructive to examine the effect of institutional ownership after controlling for this variable. As Columns (2) and (5) show, we find qualitatively similar results using this alternative model specification. In the second model, we drop proxies for bank regulations and use instead *Country×Year* fixed effects. These multiplicative fixed effects allow us to examine the relation between institutional ownership and bank earnings management in a given country and given year and have the advantage of controlling for time-varying country-specific bank regulations as well as other unobserved macroeconomic factors that may impact bank earnings management. To avoid multicollinearity, we replace bank fixed effects with bank-type fixed effects in the second model. As Columns (3) and (6) show, we find qualitatively similar results using this alternative model specification.

In terms of control variables, our results are consistent with the literature. For example, *DLLP* is significantly and positively related to *LLP* and *Equity* and is significantly and negatively related to *Loan* (see, e.g., DeBoskey and Jiang, 2012; Jin et al., 2019; Fan et al., 2020). *NCO* is significantly and positively related to *LLP* (Kim and Kross, 1998; Altamuro and Beatty, 2010). None of the bank regulation variables enters the *DLLP* regressions with any statistical significance. *Private Monitoring Index* and *Overall Bank Regulation* are significantly and negatively related to *NCO* in Columns (4) and (5), respectively.

4.1.1. Endogeneity checks

To address endogeneity concerns, we conduct 2SLS-IV and reverse causality tests. We use as IVs membership in the Morgan Stanley Capital International All Country World Index (MSCI ACWI) and the industry average of institutional ownership. The literature shows that institutional investors prefer to hold banks in MSCI ACWI, but the inclusion of banks in the Index should be independent of institutional ownership (Ferreira and Matos, 2008; Aggarwal et al., 2011). It is common to use the industry average of the endogenous variable as the instrument (Bonaimé et al., 2013) because the average should highly correlate with the endogenous variable but be orthogonal to factors that drive the response variable in individual firms. The specification tests confirm the validity of the IVs. As Panel A of Table 4 shows, our base results hold in this endogeneity check.

Table 4. Endogeneity checks.

Panel A: 2SLS-IV					
Earnings management measure =	**$DLLP_t$**		**$Pred\_NCO_t$**		
Dependent variable =	**IO_total_t**	**$DLLP_t$**	**$IO\_total_{t-1} \times LLP_{t-1}$**	**IO_total_{t-1}**	**NCO_t**
	1st Stage	**2nd Stage**	**1st Stages**		**2nd Stage**
	(1)	**(2)**	**(3)**		**(4)**
$IO\_total_{t-1} \times LLP_{t-1}$					0.993**
					(2.11)
IO_total_{t-1}		−0.013*			−0.011**
		(−1.70)			(−1.97)
LLP_{t-1}	−0.232*	0.114***	−0.019***	−0.231	0.147***
	(−1.79)	(3.73)	(−3.55)	(−0.88)	(3.48)
$Loan_{t-1}$	0.010	−0.002*	0.000	0.014**	−0.001
	(1.52)	(−1.65)	(1.44)	(2.11)	(−1.22)
Equity $_{t-1}$	0.133***	0.035***	0.002***	0.076*	−0.009
	(3.29)	(4.57)	(3.08)	(1.99)	(−1.02)
Growth $_{t-1}$	−0.009**	−0.001	0.000	−0.010*	−0.003***
	(−2.01)	(−0.61)	(−1.48)	(−1.95)	(−3.31)
Bank $size_{t-1}$	−0.004	−0.001	0.000**	0.001	0.000
	(−0.93)	(−1.17)	(2.37)	(0.32)	(0.08)
$IFRS_{t-1}$	0.002	−0.005**	0.000	0.010	−0.003
	(0.97)	(−2.04)	(0.56)	(1.50)	(−1.12)
Restrictions on Banking $Activities_{t-1}$	−0.024**	−0.002	0.000	−0.018	0.001
	(−2.31)	(−1.60)	(−0.50)	(−0.87)	(0.52)
Capital Regulatory $Index_{t-1}$	−0.002	−0.001	0.000	0.002	−0.000
	(−0.25	(−1.16)	(−0.50)	(0.17)	(−0.22)
Official Supervisory $Power_{t-1}$	0.006	0.001	0.000	0.011	0.000
	(0.76)	(1.03)	(0.22)	(0.54)	(0.06)
Private Monitoring $Index_{t-1}$	0.022	0.003	0.000	−0.009	−0.003***
	(0.88)	(1.39)	(0.22)	(−0.60)	(−3.40)
GDP $growth_{t-1}$	0.090**	0.010	0.000	−0.038	0.010

	(2.18)	(1.54)	(0.02)	(−0.66)	(1.51)
$Inflation_{t-1}$	−0.007	0.017**	0.000	0.011	0.013**
	(−0.12)	(2.28)	(0.25)	(0.24)	(1.97)
MSCI	0.018***		−0.000**	0.028***	
	(4.96)		(−2.83)	(5.86)	
Bank_IO_Industry	0.603***		0.000	0.851***	
	(10.51)		(−0.46)	(10.35)	
MSCI × LLP			0.058***	−0.491	
			(4.97)	(−1.63)	
Bank_IO_Industry × LLP			0.884***	0.824	
			(10.82)	(0.25)	
Observations	6863	6863	8075	8075	8075
Bank FE and Year FE	YES	YES	YES	YES	YES
F-statistics	16.35		14.15	15.33	
(*p*-value)	(<0.01)		(<0.01)	(<0.01)	
Hansen overidentification test: *J*-statistic		1.982			5.963
(*p*-value)		(0.159)			0.202

Panel B: Reverse causality analysis			
Dependent variable =	**$\Delta DLLP_t$**	**ΔIO_TOTAL_{t-1}**	**ΔNCO_t**
	(1)	**(2)**	**(3)**
$\Delta IO\_TOTAL_{t-1} \times \Delta LLP_{t-1}$			0.799**
			(2.03)
ΔIO_TOTAL_{t-1}	−0.008**		−0.007
	(−2.09)		(−1.61)
$\Delta DLLP_t$		−0.093	
		(−0.89)	
ΔLLP_{t-1}	−0.062	−0.046	0.044
	(−1.39)	(−0.34)	(0.99)
$\Delta Loan_{t-1}$	−0.003**	−0.005	−0.002**
	(−2.17)	(−1.28)	(−2.03)
$\Delta Equity_{t-1}$	0.034**	0.100**	−0.031*
	(2.17)	(2.46)	(−1.85)
$\Delta Growth_{t-1}$	0.000	−0.001	−0.002**
	(0.36)	(−0.30)	(−1.99)
$\Delta Bank\ size_{t-1}$	0.002**	−0.003	0.003***
	(2.50)	(−1.22)	(4.19)
$\Delta IFRS_{t-1}$	−0.005	0.008	0.000
	(−1.30)	(1.14)	(0.02)
$\Delta Restrictions\ on\ Bank\ Activities_{t-1}$	−0.001	0.007	−0.006***
	(−0.30)	(0.81)	(−3.64)
$\Delta Capital\ Regulatory\ Index_{t-1}$	0.000	0.013*	0.000
	(0.37)	(1.89)	(0.74)
$\Delta Official\ Supervisory\ Power_{t-1}$	0.002	0.005	0.004*
	(1.29)	(0.42)	(1.76)
$\Delta Private\ Monitoring\ Index_{t-1}$	−0.001	−0.024**	−0.000
	(−0.50)	(−2.56)	(−0.26)
$\Delta GDP\ growth_{t-1}$	−0.009	−0.079**	0.013*
	(−1.47)	(−2.48)	(1.82)

$\Delta Inflation_{t-1}$	0.013	−0.163***	0.023***
	(1.34)	(−3.73)	(3.38)
Observations	5240	5297	6319
Year FE	YES	YES	YES
Bank FE	YES	YES	YES
Adj. R-squared	0.199	0.491	0.167

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

The reverse causality analysis is also known as a change-on-change test (Chhaochharia et al., 2012). If institutional investors play a monitoring role in mitigating earnings management, we should find similar patterns when we regress changes in earnings management on changes in institutional ownership, but the reverse should not hold. As first-differencing eliminates time-invariant effects, the change-on-change test also serves as an additional robustness check for unobserved bank heterogeneities. As Panel B of Table 4 shows, our base results hold in this endogeneity check. (Because the variable of interest for the second earnings management measure is *IO_TOTAL×LLP*, we cannot perform the full reverse causality test for *Pre_NCO*.)

4.2. Hypothesis tests

To test H1a, we partition the sample based on the median value of Huang (2006)'s Bank Disclosure Index and estimate the baseline model for each subsample and for each measure of earnings management. As Table 5 shows, we find results consistent with H1a. Both *IO_TOTAL* and *IO_TOTAL×LLP* are statistically significant with the expected sign only in the subsample of high bank disclosure. Additionally, the test of coefficient equality rejects the null that the coefficient estimates of *IO_TOTAL* and *IO_TOTAL×LLP* are equal across the two subsamples, suggesting that the monitoring effect of institutional investors is stronger in the subsample of high bank disclosure than in the subsample of low bank disclosure.[9] Results in Table 5 support the view that greater bank disclosure enhances the ability of market participants to monitor and exert discipline on bank behavior. The results also lend empirical support to the initiatives by international financial institutions, including the Basel Committee, the World Bank, and the International Monetary Fund, to promote banking stability via better disclosure requirements of banking sectors (Tadesse, 2006; Bushman, 2016).

Table 5. Does financial disclosure matter for monitoring by institutional investors (H1a)?

Dependent variable =	**$DLLP_t$**		**NCO_t**	
	High Bank Disclosure	**Low Bank Disclosure**	**High Bank Disclosure**	**Low Bank Disclosure**
	(1)	**(2)**	**(3)**	**(4)**
(A) $IO\_TOTAL_{t-1} \times LLP_{t-1}$			**0.967***	−0.079
			(1.85)	(−0.45)
(B) IO_TOTAL_{t-1}	**−0.004****	0.001	−0.007***	−0.001
	(−2.03)	(0.80)	(−3.13)	(−0.27)
LLP_{t-1}	0.035	0.033*	0.019	0.087***
	(1.53)	(1.68)	(0.71)	(2.75)
$Loan_{t-1}$	−0.000	0.001	0.002	−0.002
	(−0.05)	(1.22)	(1.13)	(−1.17)
$Equity_{t-1}$	0.012	0.007	−0.042***	0.006
	(1.25)	(0.93)	(−3.60)	(0.73)
$Growth_{t-1}$	0.000	0.000	−0.002	−0.003***

	(0.35)	(0.04)	(−1.56)	(−3.01)
Bank size$_{t-1}$	−0.000	0.001*	0.000	0.000
	(−0.49)	(1.71)	(0.62)	(0.31)
IFRS$_{t-1}$	0.000	412.083	−0.003**	−0.003
	(0.01)	(0.00)	(−1.98)	(−1.00)
Restrictions on Bank Activities$_{t-1}$	0.001	−0.002	−0.007	−0.001
	(0.73)	(−0.71)	(−1.63)	(−0.69)
Capital Regulatory Index$_{t-1}$	0.001	0.001	−0.001	0.001
	(0.84)	(0.82)	(−0.64)	(0.68)
Official Supervisory Power$_{t-1}$	−0.004*	0.000	−0.003	−0.004
	(−1.90)	(0.11)	(−0.95)	(−1.12)
Private Monitoring Index$_{t-1}$	0.001	−0.003	0.000	0.002
	(0.73)	(−0.92)	(0.12)	(0.80)
GDP growth$_{t-1}$	0.009	0.020***	0.016	0.003
	(1.55)	(3.35)	(1.35)	(0.33)
Inflation$_{t-1}$	0.015**	0.012*	0.005	0.019**
	(1.97)	(1.82)	(0.47)	(1.99)
Observations	3644	3219	3957	4118
Year FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Adj. R-squared	0.796	0.598	0.646	0.599
Test of coefficient equality	(B) in (1) = (B) in (2)		(A) in (3) = (A) in (4)	
F-statistics	2.07		1.73	
(*p*-value)	(0.04)		(0.09)	

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. The bolded coefficients indicate that the sign and statistical significance are consistent with the hypothesis. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

Table 6 reports the regression results from testing H1b. As Column (1) shows, only domestic institutional ownership (*IO_DOM*) is significantly and negatively related to *DLLP*. Foreign institutional ownership (*IO_FOR*) enters the regression with a negative and insignificant sign. Further, the Wald test rejects the null that the coefficient estimates of *IO_DOM* and *IO_FOR* are equal. Additionally, the economic magnitude of *IO_DOM* is 50% larger than that of *IO_TOTAL* in Table 3. As column (2) shows, only *IO_DOM×LLP* is significantly and positively related to *NCO*. Further, the Wald test rejects the null of coefficient equality for *IO_DOM×LLP* and *IO_FOR×LLP*. These results also corroborate Kim et al. (2016), who find for a sample of nonfinancial firms that total institutional ownership reduces earnings management, and domestic but not foreign institutional ownership drives this effect.

Table 6. Do domestic institutional investors play a larger role than foreign institutional investors (H1b)?

Dependent variable =	**DLLP$_t$**	**NCO$_t$**
	(1)	**(2)**
IO_DOM$_{t-1}$ × LLP$_{t-1}$		**1.556*** **
		(2.67)
IO_FOR$_{t-1}$ × LLP$_{t-1}$		−0.047
		(−0.16)
IO_DOM$_{t-1}$	**−0.009*** **	−0.010***

	(−2.58)	(−2.78)
IO_FOR_{t-1}	−0.000	−0.004
	(−0.07)	(−1.07)
LLP_{t-1}	0.105***	0.183***
	(2.60)	(5.25)
$Loan_{t-1}$	−0.003*	−0.002
	(−1.72)	(−1.31)
$Equity_{t-1}$	0.041***	−0.007
	(4.10)	(−0.90)
$Growth_{t-1}$	−0.000	−0.003***
	(−0.02)	(−3.33)
Bank $size_{t-1}$	−0.000	0.000
	(−0.73)	(0.14)
$IFRS_{t-1}$	−0.005	−0.003
	(−1.15)	(−1.19)
Restrictions on Bank $Activities_{t-1}$	0.000	0.001
	(0.20)	(0.39)
Capital Regulatory $Index_{t-1}$	−0.000	−0.000
	(−0.14)	(−0.27)
Official Supervisory $Power_{t-1}$	0.002	0.000
	(1.20)	(0.09)
Private Monitoring $Index_{t-1}$	−0.001	−0.003***
	(−0.33)	(−3.34)
GDP $growth_{t-1}$	0.001	0.010
	(0.13)	(1.47)
$Inflation_{t-1}$	0.007	0.011
	(0.86)	(1.64)
Observations	6863	8075
Year FE	YES	YES
Bank FE	YES	YES
Adj. R-squared	0.763	0.720
Test of coefficient equality	$IO\_DOM_{t-1} = IO\_FOR_{t-1}$	$IO\_DOM_{t-1} \times LLP_{t-1} = IO\_FOR_{t-1} \times LLP_{t-1}$
F-statistics	2.73	5.85
(*p*-value)	(0.09)	(0.02)

This table reports estimation results from panel regressions relating earnings management to domestic institutional ownership (*IO_DOM*) and foreign institutional ownership (*IO_FOR*) using a sample of non-U.S. banks from 2007 to 2018. The bolded coefficients indicate that the sign and statistical significance are consistent with the hypothesis. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

To test H1c, we partition the sample based on the median value of *Prevalence of Insider Trading* from La Porta et al. (2006) and estimate the baseline model for each subsample and for each measure of bank earnings management. As Table 7 shows, consistent with H1c, both *IO_TOTAL* and *IO_TOTAL×LLP* are statistically significant with the expected sign only in the subsample of High Prevalence of Insider Trading. The test of coefficient equality rejects the null that the coefficient estimates of *IO_TOTAL*LLP* are equal across the subsamples, but fails to reject the null that the coefficient estimates of *IO_TOTAL* are equal. Therefore, the overall weight of the evidence is consistent with H1c that the monitoring role of institutional investors is

stronger in countries in which insiders can extract more private benefits. The results also lend confidence in the global trend of encouraging institutional investors to more actively exercise their governance responsibilities and engage with their portfolio firms.[10]

Table 7. Does the ability of insiders to extract private benefits matter for monitoring by institutional investors (H1c)?

Dependent variable =	**$DLLP_t$**		**NCO_t**	
	High Prevalence of Insider Trading	**Low Prevalence of Insider Trading**	**High Prevalence of Insider Trading**	**Low Prevalence of Insider Trading**
	(1)	**(2)**	**(3)**	**(4)**
(A) $IO\_TOTAL_{t-1} \times LLP_{t-1}$			**0.845****	0.345
			(1.99)	(1.10)
(B) IO_TOTAL_{t-1}	**−0.008***	−0.001	−0.001	−0.000
	(−1.79)	(−0.67)	(−0.19)	(−0.23)
LLP_{t-1}	0.083*	0.023	0.223***	0.055*
	(1.81)	(0.38)	(4.97)	(1.79)
$Loan_{t-1}$	−0.007***	−0.003**	−0.002	−0.001
	(−2.77)	(−2.41)	(−1.17)	(−1.02)
$Equity_{t-1}$	0.054***	0.018	−0.023**	0.002
	(4.50)	(0.73)	(−2.37)	(0.74)
$Growth_{t-1}$	0.002	0.003**	−0.002	−0.001
	(1.62)	(2.49)	(−1.56)	(−1.01)
Bank $size_{t-1}$	−0.002**	0.001	−0.000	0.002***
	(−1.96)	(1.30)	(−0.34)	(3.71)
$IFRS_{t-1}$	−0.007	0.000	−0.005	−0.000
	(−1.40)	(0.01)	(−1.35)	(−0.05)
Restrictions on Bank $Activities_{t-1}$	0.001	0.001	−0.001	0.005
	(0.17)	(0.53)	(−0.26)	(0.85)
Capital Regulatory $Index_{t-1}$	0.000	−0.002	0.001	−0.003
	(0.08)	(−0.88)	(0.30)	(−1.02)
Official Supervisory $Power_{t-1}$	−0.002	−0.001	0.001	−0.002
	(−0.75)	(−0.42)	(0.18)	(−0.48)
Private Monitoring $Index_{t-1}$	0.005	−0.005***	0.007	−0.004***
	(1.52)	(−2.82)	(1.37)	(−2.75)
GDP $growth_{t-1}$	0.013	−0.005	0.012	0.025**
	(1.55)	(−0.37)	(1.49)	(2.10)
$Inflation_{t-1}$	0.030**	0.003	0.018*	0.015***
	(2.41)	(0.29)	(1.86)	(2.65)
Observations	3090	3164	3826	3391
Year FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Adj. R-squared	0.685	0.713	0.665	0.832

Test of coefficient equality	(B) in (1) = (B) in (2)		(A) in (3) = (A) in (4)	
F-statistics	−0.70		1.79	
(*p*-value)	(0.48)		(0.07)	

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. The bolded coefficients indicate that the sign and statistical significance are consistent with the hypothesis. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

Table 8 reports the regression results from testing H1d. The literature has typically defined blockholding as ownership of more than 5% of a firm's common stock (see, e.g., Shleifer and Vishny, 1986; Morck et al., 1988; Boulton et al., 2010). As a significant fraction of banks (about 90% of bank-year observations in our sample) does not have any institutional investors owning more than 5% of a bank's shares, for robustness, we use two classifications of institutional blockholding: greater than 5% and greater than 1%.
Both *IO_BLOCK* and *IO_BLOCK×LLP*, regardless of whether the threshold for block ownership is five or 1%, enter the regressions with significant and expected signs, which is consistent with H1d and Liu et al. (2018).

Table 8. Do institutional blockholders play a larger role than institutional nonblockholders (H1d)?

Dependent variable =	**$DLLP_t$**	**NCO_t**	**$DLLP_t$**	**NCO_t**
	BLOCK = ≥5%		**BLOCK = ≥1%**	
	(1)	**(2)**	**(3)**	**(4)**
$IO\_BLOCK_{t-1} \times LLP_{t-1}$	.	**2.824***		**1.637*****
		(1.72)		(3.72)
IO_BLOCK_{t-1}	**−0.025*****	−0.017**	**−0.008****	−0.014***
	(−3.39)	(−2.05)	(−2.04)	(−3.94)
LLP_{t-1}	0.111***	0.198***	0.108***	0.159***
	(2.79)	(6.61)	(2.70)	(5.13)
$Loan_{t-1}$	−0.003*	−0.001	−0.003*	−0.001
	(−1.77)	(−1.30)	(−1.68)	(−1.19)
$Equity_{t-1}$	0.041***	−0.007	0.040***	−0.008
	(4.18)	(−0.92)	(4.05)	(−0.97)
$Growth_{t-1}$	−0.000	−0.003***	−0.000	−0.003***
	(−0.01)	(−3.31)	(−0.05)	(−3.27)
Bank $size_{t-1}$	−0.000	0.000	−0.000	0.000
	(−0.65)	(0.21)	(−0.72)	(0.14)
$IFRS_{t-1}$	−0.005	−0.003	−0.005	−0.003
	(−1.15)	(−1.17)	(−1.16)	(−1.15)
Restrictions on Bank $Activities_{t-1}$	0.000	0.000	0.000	0.000
	(0.26)	(0.35)	(0.23)	(0.27)
Capital Regulatory $Index_{t-1}$	−0.000	−0.000	0.000	−0.000
	(−0.19)	(−0.39)	(0.03)	(−0.25)
Official Supervisory $Power_{t-1}$	0.002	0.000	0.002	0.000
	(1.10)	(0.08)	(1.17)	(0.18)
Private Monitoring $Index_{t-1}$	−0.001	−0.003***	−0.001	−0.003***
	(−0.32)	(−3.09)	(−0.40)	(−3.18)
GDP $growth_{t-1}$	−0.001	0.009	−0.000	0.010
	(−0.13)	(1.29)	(−0.03)	(1.45)

$Inflation_{t-1}$	0.006	0.010	0.006	0.012*
	(0.71)	(1.51)	(0.78)	(1.87)
Observations	6863	8075	6863	8075
Year FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Adj. R-squared	0.691	0.645	0.690	0.649

This table reports estimation results from panel regressions relating earnings management to ownership by institutional blockholders (*IO_BLOCK*) using a sample of non-U.S. banks from 2007 to 2018. The bolded coefficients indicate that the sign and statistical significance are consistent with the hypothesis. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

The magnitude of *IO_BLOCK* (≥5%) is negative 0.025, which is similar to the negative 0.027 reported in Liu et al. (2018), who find that institutional investors deter earnings management at Korean nonfinancial firms and the effect is stronger for those owning at least 5% stake. Additionally, the magnitude of the coefficient estimates for *IO_BLOCK* and *IO_BLOCK×LLP* is consistently larger when the threshold used for institutional blockholding is 5% than 1%. Further, the magnitude of the coefficient estimates for *IO_BLOCK* and *IO_BLOCK×LLP* is consistently larger in Table 8 than in Table 3. These patterns are consistent with H1d and suggest that institutional investors can play a meaningful monitoring role in curbing bank earnings management when they own a sufficiently large stake.

4.3. Additional robustness tests

4.3.1. Impact of institutional ownership on signed DLLP, Small_POSΔ, and income smoothing

To gain a deeper understanding of the relation between institutional ownership and *DLLP*, we estimate Eq. (1) for positive and negative *DLLP*. A negative relation between positive *DLLP* and *IO_TOTAL* is consistent with institutional investors specializing in constraining income-decreasing earnings management, while a positive relation between negative *DLLP* and *IO_TOTAL* is consistent with institutional investors specializing in constraining income-increasing earnings management. As Column (1) of Table 9 shows, *IO_TOTAL* is significantly and negatively related to positive *DLLP*, while *IO_TOTAL* enters the regression of negative *DLLP* with the right but insignificant sign. Interestingly, *IFRS* enters the regressions of positive and negative *DLLP* with the expected sign, but is only significantly related to negative *DLLP*. Collectively, these results are indicative that different control mechanisms function in different ways in curbing bank earnings management. Specifically, it seems that monitoring by institutional investors leads to less income smoothing (Beatty and Liao, 2014). To the extent that IFRS adoption facilitates high-quality financial reporting (Daske et al., 2008; Li, 2010), the IFRS results complement the existing evidence that more reputable auditors (Kanagaretnam et al., 2010) and auditor specialization in loan loss provisions (DeBoskey and Jiang, 2012) constrain income-increasing bank earnings management. Bank regulation variables, particularly *Restrictions on Banking Activities*, appear to have an opposite effect on income-decreasing vs. income-increasing bank earnings management, which potentially explains the insignificant relation between the absolute value of *DLLP* and bank regulation variables.

Table 9. Additional robustness tests—alternative measures of bank earnings management.

Dependent variable =	**DLLP>0**	**DLLP≤0**	**Small_POSΔ**	**LLP_t**
	(1)	**(2)**	**(3)**	**(4)**
$IO\_TOTAL_{t-1} \times EBLLP_{t-1}$				**−0.500****
				(−2.10)
IO_TOTAL_{t-1}	**−0.013****	0.001	**−2.328****	0.002

	(−2.51)	(0.31)	(−2.40)	(0.35)
LLP_{t-1}	0.255***	−0.072	−35.262***	
	(3.76)	(−1.22)	(−3.62)	
$Loan_{t-1}$	−0.013***	−0.005*	−1.060**	
	(−5.67)	(−1.75)	(−2.53)	
$EBLLP_{t-1}$				0.023
				(0.88)
ΔNPL_{t+1}				−0.097***
				(−2.84)
ΔNPL_{t}				0.283***
				(9.30)
ΔNPL_{t-1}				0.208***
				(3.99)
ΔNPL_{t-2}				0.106***
				(3.09)
$Equity_{t-1}$	−0.029	−0.080***	2.572	−0.047*
	(−1.08)	(−5.25)	(1.04)	(−1.74)
$Growth_{t-1}$	−0.000	−0.001	0.767**	−0.012***
	(−0.12)	(−0.57)	(2.06)	(−3.12)
Bank $size_{t-1}$	−0.003**	−0.002	−0.479***	−0.003**
	(−2.45)	(−1.58)	(−3.23)	(−2.27)
$IFRS_{t-1}$	−0.012	0.005**	0.880	−0.004
	(−1.15)	(2.32)	(1.42)	(−0.55)
Restrictions on Banking $Activities_{t-1}$	−0.011***	−0.005***	−1.279***	−0.010***
	(−3.45)	(−2.79)	(−2.77)	(−3.47)
Capital Regulatory $Index_{t-1}$	−0.005*	−0.001	−0.779**	−0.004***
	(−1.96)	(−0.84)	(−2.25)	(−2.59)
Official Supervisory $Power_{t-1}$	0.014***	0.002	−0.406	0.010***
	(4.03)	(0.71)	(−0.74)	(2.65)
Private Monitoring $Index_{t-1}$	−0.001	0.002	2.267***	0.008**
	(−0.37)	(0.76)	(4.50)	(2.50)
GDP $growth_{t-1}$	0.007	0.012	4.070*	0.012
	(0.56)	(0.84)	(1.65)	(0.82)
$Inflation_{t-1}$	−0.010	−0.017	−2.875	−0.040*
	(−0.66)	(−1.26)	(−1.16)	(−1.90)
Observations	3570	3293	8073	6960
Year FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Adj. R-squared/Pseudo R-squared	0.682	0.765	0.050	0.882

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. Columns (1) and (2) report the OLS regression results from examining signed *DLLP*. Column (3) reports the logistic regression results when the dependent variable, *Small_POSΔ*, equals one if the bank has a change in income before taxes scaled by total assets from year *t-1* to year *t* in the interval between 0 and 0.002. Column (4) reports the OLS regression results from examining income smoothing (Bushman and Williams, 2012). The bolded coefficients indicate that the sign and statistical significance are consistent with our expectation. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

To test more robustly the relation between institutional ownership and bank earnings management, we examine two alternative proxies for bank earnings management—the likelihood of banks reporting small positive earnings changes (*Small_POSΔ*) and income smoothing. As Column (3) of Table 9 shows, *IO_TOTAL* is significantly and negatively related to *Small_POSΔ*, suggesting that institutional investors are effective in curbing bank managers' incentives to manipulate earnings to beat benchmarks. As Column (4) shows, *IO_TOTAL*EBLLP* is significantly and negatively related to *LLP*, suggesting that institutional investors are effective in curbing bank managers' incentives to smooth earnings. This result also corroborates Column (1) that institutional investors curb bank earnings smoothing as measured by positive *DLLP*.

To summarize, our base results hold when using alternative measures of bank earnings management.

4.3.2. Excluding Japan, excluding the 2008 Financial Crisis, and controlling for government ownership

As Panel A of Table 1 shows, Japan represents a larger share of our sample than any other countries (32% of the total number of the firm-year observations). To mitigate the concern that our results may be driven by a single country, we estimate the baseline models after excluding Japan from the sample, similar to DeFond et al., 2007. As Columns (1) and (2) of Table 10 show, our results remain qualitatively similar in this robustness check.

Table 10. Additional robustness tests—excluding Japan, excluding the 2008 Global Financial Crisis, and controlling for government ownership.

Dependent variable =	**$DLLP_t$**	**NCO_t**	**$DLLP_t$**	**NCO_t**	**$DLLP_t$**	**NCO_t**
	Excluding Japan		**Excluding the 2008 Global Financial Crisis**		**Controlling for Government Ownership**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
$IO\_TOTAL_{t-1} \times LLP_{t-1}$		**0.595****		**0.532***		**0.566***
		(2.16)		(1.88)		(1.94)
IO_TOTAL_{t-1}	**−0.006****	−0.006**	**−0.005****	−0.006**	**−0.006***	−0.003
	(−2.06)	(−2.27)	(−2.09)	(−2.32)	(−1.75)	(−1.08)
LLP_{t-1}	0.106**	0.184***	0.107***	0.175***	0.123***	0.202***
	(2.46)	(5.01)	(2.61)	(4.67)	(2.71)	(5.14)
$Loan_{t-1}$	−0.003*	−0.002	−0.002	−0.001	−0.005**	−0.002*
	(−1.75)	(−1.25)	(−1.48)	(−1.07)	(−2.35)	(−1.72)
Equity $_{t-1}$	0.044***	−0.008	0.041***	−0.008	0.045***	−0.007
	(4.21)	(−0.95)	(4.10)	(−0.99)	(4.14)	(−0.85)
Growth $_{t-1}$	−0.000	−0.003***	−0.001	−0.003***	0.000	−0.002**
	(−0.06)	(−2.98)	(−0.74)	(−3.43)	(0.25)	(−2.06)
Bank size $_{t-1}$	−0.001	0.000	−0.000	0.000	−0.000	0.000
	(−0.74)	(0.16)	(−0.72)	(0.01)	(−0.44)	(0.26)
IFRS $_{t-1}$	−0.005	−0.003	−0.005	−0.003	−0.005	−0.003
	(−1.20)	(−1.24)	(−1.17)	(−1.14)	(−1.23)	(−1.30)
Restrictions on Bank $Activities_{t-1}$	−0.000	−0.000	0.002	−0.001	−0.001	0.000
	(−0.00)	(−0.18)	(1.40)	(−0.82)	(−0.28)	(0.06)
Capital Regulatory $Index_{t-1}$	0.001	0.001	0.001	0.000	0.002	0.001
	(0.65)	(0.55)	(0.79)	(0.33)	(1.37)	(0.81)

Official Supervisory Power$_{t-1}$	−0.000	−0.002	0.002	0.000	0.000	−0.006**
	(−0.21)	(−1.05)	(1.50)	(0.20)	(0.03)	(−2.32)
Private Monitoring Index$_{t-1}$	0.002	−0.000	−0.002	−0.002**	0.001	0.002
	(0.77)	(−0.09)	(−1.37)	(−2.34)	(0.50)	(0.62)
Government ownership$_{t-1}$					0.015	0.017
					(1.42)	(1.32)
GDP growth$_{t-1}$	0.007	0.013*	−0.000	0.009	0.006	0.009
	(0.90)	(1.84)	(−0.01)	(1.22)	(0.78)	(1.15)
Inflation$_{t-1}$	0.020*	0.018**	0.009	0.011	0.020*	0.020**
	(1.89)	(2.26)	(1.06)	(1.61)	(1.83)	(2.27)
Observations	4642	5865	6490	7644	4316	5430
Year FE	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES
Adj. R-squared	0.652	0.636	0.701	0.653	0.662	0.648

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. Sample years from 2007 to 2009 are classified as the period of the 2008 Global Financial Crisis. The bolded coefficients indicate that the sign and statistical significance are consistent with our expectation. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

Our sample period of 2007–2018 encompasses the 2008 Global Financial Crisis. Following Flannery et al. (2013), we define 2007–2009 as the crisis period and estimate the baseline models after excluding this special time. As Columns (3) and (4) show, our results continue to hold.

La Porta et al. (2002) document that government ownership of banks was still prevalent around the world in 1995, although this ratio has declined dramatically in recent years due to bank privatizations (Taboada, 2011). To allow for the possibility that government ownership influences bank earnings management, we estimate the baseline models after explicitly controlling for the extent of government ownership of banks (*government ownership*), which measures the percent of a banking system's assets that are 50% or more government owned. As Columns (5) and (6) show, the results remain qualitatively similar in this robustness check.

4.3.3. Controlling for the potential interaction effects with bank regulations

As discussed in Section 2, given the complexity of bank regulations, the discretion employed by regulators, and a lack of theoretical guidance, we do not test directional predictions regarding the relation between bank regulations and monitoring by institutional investors. Nevertheless, we present explorative tests to shed light on this subject. As this paper is the first to conduct a large international analysis of the monitoring role of institutional investors regarding bank earnings management, we desire to provide some preliminary evidence on this important issue, which will hopefully aid future research.

More specifically, we control for the potential interaction between bank regulations and monitoring by institutional investors in the baseline models by adding the interactions between *IO_TOTAL* and the four indices that measure the stringency of a country's bank regulations. For proper inferences of lower order regressors, we centered *IO_TOTAL* and the four regulation indices. Therefore, the coefficient estimates

of *IO_TOTAL* and *IO_TOTAL×LLP* are their effects on *DLLP* and *NCO*, respectively, when holding *IO_TOTAL* and the bank regulation variables at their mean (Aiken and West, 1991). As Table 11 shows, our results hold after controlling for the interaction between *IO_TOTAL* and bank regulations. While we find no significant interaction between *IO_TOTAL* and bank regulations, the economic magnitudes of the impact of *IO_TOTAL* on *DLLP* and *IO_TOTAL*LLP* on *NCO* become larger in this specification than in the specification without controlling for the interactions as reported in Table 3. For example, an increase of 1%age point in *IO_TOTAL* results in a reduction of 0.039% in *DLLP* as opposed to 0.006% in Table 3. Consistent with Table 9, we find that some dimensions of bank regulations (e.g., *Restrictions on Banking Activities*) reduce earnings management as measured by *Pred_NCO*, while some (e.g., *Capital Regulatory Index*) increase it.

Table 11. Additional robustness tests—controlling for the potential interaction effects with bank regulations.

Dependent variable =	**$DLLP_t$**	**NCO_t**
	(1)	**(2)**
$IO\_TOTAL_{t-1} \times LLP_{t-1}$		**0.742****
		(2.14)
IO_TOTAL_{t-1}	**−0.039*****	−0.009
	(−2.80)	(−1.62)
$IO\_TOTAL_{t-1} \times LLP_{t-1} \times$ Restrictions on Banking $Activities_{t-1}$		−0.233
		(−0.54)
$IO\_TOTAL_{t-1} \times LLP_{t-1} \times$ Capital Regulatory $Index_{t-1}$		0.731
		(1.54)
$IO\_TOTAL_{t-1} \times LLP_{t-1} \times$ Official Supervisory $Power_{t-1}$		−0.340
		(−0.42)
$IO\_TOTAL_{t-1} \times LLP_{t-1} \times$ Private Monitoring $Index_{t-1}$		−0.112
		(−0.19)
$IO\_TOTAL_{t-1} \times$ Restrictions on Banking $Activities_{t-1}$	−0.009	−0.001
	(−1.33)	(−0.17)
$IO\_TOTAL_{t-1} \times$ Capital Regulatory $Index_{t-1}$	−0.001	−0.004
	(−0.16)	(−1.09)
$IO\_TOTAL_{t-1} \times$ Official Supervisory $Power_{t-1}$	0.001	0.003
	(0.08)	(0.63)
$IO\_TOTAL_{t-1} \times$ Private Monitoring $Index_{t-1}$	0.013	0.002
	(1.42)	(0.66)
$LLP_{t-1} \times$ Restrictions on Banking $Activities_{t-1}$		0.118**
		(2.29)
$LLP_{t-1} \times$ Capital Regulatory $Index_{t-1}$		−0.120**
		(−2.54)
$LLP_{t-1} \times$ Official Supervisory $Power_{t-1}$		−0.019
		(−0.22)
$LLP_{t-1} \times$ Private Monitoring $Index_{t-1}$		0.057
		(0.66)
Restrictions on Banking $Activities_{t-1}$	0.002	−0.001
	(0.89)	(−1.44)
Capital Regulatory $Index_{t-1}$	0.000	0.000
	(0.10)	(0.24)
Official Supervisory $Power_{t-1}$	0.001	0.001
	(0.72)	(1.19)
Private Monitoring $Index_{t-1}$	−0.001	−0.002***
	(−0.50)	(−2.85)

Other controls: LLP_{t-1}, $Loan_{t-1}$, $Equity_{t-1}$, $Growth_{t-1}$, Bank $size_{t-1}$, $IFRS_{t-1}$, GDP $growth_{t-1}$, $Inflation_{t-1}$	YES	YES
Observations	6863	8075
Year FE	YES	YES
Bank FE	YES	YES
Adj. R-squared	0.714	0.680

This table reports estimation results from panel regressions relating earnings management to institutional ownership (*IO_TOTAL*) using a sample of non-U.S. banks from 2007 to 2018. The bolded coefficients indicate that the sign and statistical significance are consistent with our expectation. All variable definitions are given in Appendix I. We report in parentheses *t*-values adjusted for heteroscedasticity and bank-level clustering. *, **, and *** indicate significance levels of less than 0.10, 0.05, and 0.01, respectively, based on a two-tailed test.

We argue that the lack of evidence for an interactive effect between institutional investors and bank regulations should not be interpreted as a lack of interaction. Rather, it behooves researchers to delve into this subject at a more micro level. The currently available data at the international level are too coarse to capture the nuances in bank regulations across countries. At this stage of the literature, an international analysis of this issue likely introduces too much noise. Instead, micro-level studies within individual countries that account for a country's institutional details will likely yield greater insights.

5. Conclusion and discussion

Despite the growing importance of institutional investors in global capital markets and the link between bank earnings management and financial crash risk, prior literature offers incomplete knowledge about the role of institutional investors in mitigating bank earnings management. This paper is the first to employ a broad international sample of banks and institutional investors to shed light on this issue. We find a consistently negative relation between institutional ownership and bank earnings management. Our results hold when accounting for endogeneity concerns and international differences in bank regulations.

In recent years, a global trend has emerged toward encouraging institutional investors to more actively exercise their governance responsibilities and engage with their portfolio firms (OECD, 2015). After the 2008 Global Financial Crisis, U.S. Federal Reserve Governor Daniel K. Tarullo called for “special corporate governance measures…as part of an effective prudential regulatory system” (Tarullo, 2014). Cohen et al. (2014) find that bank earnings management has little bearing on downside risk during tranquil periods but exacerbates such risk during financial crises. They argue that earnings management, whatever its motivation, helps to predict bank performance during crises. Our paper contributes to these policy initiatives and debates by highlighting the conditions under which institutional investors, a key market force, can play a stronger governance role at banks—a sector that is of central importance to an economy but is subject to weaker market discipline than most other sectors (Prowse, 1997; Barth et al., 2002).

One limitation of our study is that due to the lack of the necessary data, we do not identify the specific channels through which institutional investors influence bank earnings management. As discussed in Section 2.2, because of the unique characteristics of banks, institutional investors tend to employ unconventional governance channels at banks that are idiosyncratic to a country's regulatory and institutional environment. There is also evidence that institutional investors deploy a multipronged engagement scheme with banks. For example, one way for institutional investors to influence earnings management is through promoting better corporate governance. Previous studies show that banks with better corporate governance, such as a more independent board or a higher governance rating, manage earnings less (Cornett et al., 2009; Leventis and Dimitropoulos, 2012). Institutional investors can promote bank governance by *directly* engaging banks or voting in support of

other shareholders' governance initiatives. Using proprietary data, Doidge et al. (2019) find that a coalition of Canadian institutional investors use behind-the-scenes channels such as letter writing, phone calls, and private meetings to push for governance changes at major Canadian banks. In its 2018 Stewardship Report, BlackRock, one of the world's largest institutional investors, highlighted its engagement campaigns with banks around the globe. BlackRock discussed various channels through which it encouraged changes, including meetings with management and board representatives, letter writing, voting, and hosting seminars and conferences. Institutional investors can also *indirectly* influence bank governance through negative screening or selling shares. Although voting with feet can be a powerful governance tool (Parrino et al. 2003; Edmans, Levit, and Reilly 2019), divesting shares may be a less useful approach for certain types of investors such as indexers and activists. BlackRock emphasized that private engagement was its preferred channel to influence firms.

The myriad ways through which institutional investors can influence banks likely vary by country and by the type of investors. According to the Financial Stability Board (2017), an international body that reviews international financial sector practices, some countries encourage institutional investors to engage directly with bank boards and other shareholders regarding financial performance. A global survey shows that although pension funds generally vote their shares in emerging and developing countries, they vote more frequently in advanced economies (World Bank, 2016). Doidge et al. (2019) also note that the use of shareholder collective action differs dramatically across Canada, the United States, and the United Kingdom. As the monitoring effectiveness likely varies by engagement channels, exploring the channels through which institutional investors influence bank decisions should be a fruitful area for future research and generate further important policy implications.

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Appendix I. Variable definitions and data sources

This table provides in alphabetical order definitions for all variables used in this study and the corresponding data sources used to build the variables.

Variable	**Definition**	**Data source**
Panel A: Main earnings management measures		
DLLP	Absolute value of abnormal loan loss provisions	BankFocus
Pred_NCO	Estimated slope coefficient in a regression of future net loan charge-offs on current loan loss provisions	BankFocus
Panel B: Other bank-level variables.		

Bank size	Natural logarithm of total assets in U.S. dollars	BankFocus
Consumer loans	The amount of consumer loans scaled by total assets at the beginning of the year	BankFocus
Corporate loans	The amount of corporate loans scaled by total assets at the beginning of the year	BankFocus
EBLLP	Earnings before loan loss provisions and taxes scaled by total loans at the beginning of the year	BankFocus
Equity	Total equity over total assets at the beginning of the year	BankFocus
Growth	Annual growth rate in total assets	BankFocus
IO_BLOCK	The sum of stockholdings of all block institutions in a firm's stock divided by market capitalization at the end of each calendar year; set to zero if a stock is not held by any block institution	FactSet
IO_DOM	Percent of stockholdings by all institutions domiciled in the same country in which the stock is issued at the end of a calendar year; set to zero if a stock is not held by any domestic institution	FactSet
IO_FOR	Percent of stockholdings by all institutions domiciled in a country different from the country in which the stock is issued at the end of a calendar year; set to zero if a stock is not held by any foreign institution	FactSet
IO_TOTAL	The sum of stockholdings of all institutions in a firm's stock divided by market capitalization at the end of each calendar year; set to zero if a stock is not held by any institution	FactSet
LLA	Loan loss allowance scaled by total assets at the beginning of the year	BankFocus
LLP	Loan loss provisions scaled by total assets at the beginning of the year	BankFocus
Loan	Year-end total loans scaled by total assets at the beginning of the year	BankFocus
Mortgage loans	The amount of mortgage loans scaled by total assets at the beginning of the year	BankFocus
MSCI	An indicator variable that equals one if a bank is a member of the Morgan Stanley Capital International All Country World Index (MSCI ACWI) in a given year and zero otherwise	MSCI
NCO	Net loan charge-offs during the year scaled by total assets at the beginning of the year	BankFocus
ΔNPL	Change in nonperforming loans scaled by total assets at the beginning of the year	BankFocus
Other loans	The amount of other types of loans scaled by total assets at the beginning of the year	BankFocus
Small_POSΔ	An indicator variable that equals one if the bank has a change in income before taxes scaled by total assets from year *t-1* to year *t* in the interval between 0 and 0.002	BankFocus
Panel C: Country-level variables.		
Bank Disclosure Index	An index, constructed by Huang (2006), which measures the actual disclosure practices of commercial banks around the world in relation to their assets, liabilities, funding, incomes, and risk profiles. Higher values indicate greater levels of detail that banks provide in their published reports.	Huang (2006)
Bank_IO_ Industry	The average institutional ownership in banks in a given country in a given year	FactSet

Capital Regulatory Index	Natural logarithm of an index that measures the amount of capital that banks must hold, as well as the nature and source that are considered as capital by regulators. Higher values indicate more stringent bank capital regulations.	Barth et al. (2013b) and World Bank
GDP growth	Annual growth rate in GDP per capita obtained from the WDI database	World Bank
Government ownership	Percent of a nation's banking system's assets that are 50% or more government owned. The variable is based on the World Bank's guide question 3.7: What fraction of the banking system's assets is in banks that are 50% or more government owned?	BankFocus
Inflation	Annual rate of inflation obtained from the WDI database	World Bank
Official Supervisory Power	Natural logarithm of an index that measures the power of supervisors to obtain information from banks, take action to change bank behaviors, and act as they see fit to prevent or correct bank problems. Higher values indicate greater official supervisory power.	Barth et al. (2013b) and World Bank
Overall Bank Regulation	Natural logarithm of the first principal component of Restrictions on Banking Activities, Capital Regulatory Index, Official Supervisory Power Index, and Private Monitoring Index	Barth et al. (2013b) and World Bank
Prevalence of insider trading	An ordinal variable from 1 to 7 with 1 being pervasive and 7 extremely rare	La Porta et al. (2006)
Private Monitoring Index	Natural logarithm of an index that measures the incentives and ability of private investors to monitor banks. Some examples of the measures used to construct the index include whether a licensed or certified external audit is required of the financial statements of a bank; the percent of the 10 biggest banks rated by international rating agencies; whether an explicit deposit insurance scheme exists; and whether subordinated debt is allowable (required) as a part of regulatory capital. Higher values indicate greater regulatory empowerment of the monitoring of banks by private investors.	Barth et al. (2013b) and World Bank
Restrictions on Bank Activities	Natural logarithm of an index that measures regulatory restrictions on nontraditional bank activities (securities, insurance, and real estate). Higher values indicate more restrictions on bank activities.	Barth et al. (2013b) and World Bank

Appendix II. Additional details on bank earnings management measures

A. DLLP

Loans are banks' largest asset (Barth et al., 1996). Loan loss provisions (LLP) are typically banks' largest operating accrual (Beatty and Liao, 2014). Bank regulators view accumulated LLP—the loan loss allowance (or reserve) account—on the balance sheet as a type of capital that can be used to absorb losses. Additionally, LLP average more than a quarter of net income for most banks (Basu et al., 2020). The recording of LLP reduces net income, reflecting management's judgment of the expected level of future losses for the loan portfolio in the current period (Cohen et al., 2014). In sum, bank managers exercise considerable discretion in setting LLP levels and can use LLP to smooth earnings and/or meet capital requirements by underprovisioning during bad times and overprovisioning during good times (Beatty and Liao, 2014).

Although there is vast literature on banks' use of LLP to opportunistically report financial performance, the results on the direction of earnings management are mixed. For example, Beatty et al. (1995) and Ahmed et al. (1999) find a negative relation between LLP and capital ratios, but no relation between LLP and earnings. For comparison, Leventis et al. (2011) find no relation between LLP and capital ratios, but a positive relation

between LLP and earnings. The mixed evidence likely results from the fact that LLP consists of both a discretionary component and a nondiscretionary component that bring loan loss reserves to an acceptable level. Therefore, to better capture bank managers' discretion in reporting financial statements, we follow the literature (see, e.g., Cornett et al., 2009; Bushman and Williams, 2012) and calculate *DLLP* by estimating the following OLS model:

(3)

$$LLP_{it} = \alpha + \beta_1 EBLLP_{it} + \beta_2 \Delta NPL_{it+1} + \beta_3 \Delta NPL_{it} + \beta_4 \Delta NPL_{it-1} + \beta_5 \Delta NPL_{it-2} + \beta_6 Equity_{it-1} + \beta_7 Size_{it-1} + \beta_8 LLA_{it-1} + \beta_9 NCO_{it-1} + \beta_{10} \Delta NPL_{it} * D_{it} + \beta_{11} D_{it} + \beta_{12-15} < Loans\ Categories_{it} > + \beta_{16} GDP_{growth_{tk}} + d_b + d_k + d_t$$

where LLP_{it} is the loan loss provisions scaled by lagged total assets in bank *i* in year *t*. *EBLLP* is earnings before loan loss provisions and taxes scaled by lagged total assets. *ΔNPL* is the change in nonperforming loans scaled by lagged total assets. *Equity* is the equity capital scaled by lagged total assets. *Size* is the natural logarithm of total assets in U.S. dollars. *LLA* is loan loss allowance scaled by lagged total assets. *NCO* is net loan charge-offs scaled by lagged total assets. *D* is an indicator variable that equals one if ΔNPL_t is positive, and zero otherwise. $\Delta NPL_{it} * D_{it}$ and D_{it} control for the asymmetric changes in LLP with respect to increases vs. decreases in NPLs (Basu et al., 2020). We also control for loan composition because the proportions of heterogenous (e.g., corporate) or homogenous (e.g., consumer) loans impact LLP (Liu and Ryan, 1995 and 2006; Beatty and Liao, 2014; Acharya and Ryan, 2016). More specifically, we include four loan categories—mortgage loans, consumer loans, corporate loans, and other loans; each loan category is modeled as the loan amount of each category scaled by lagged total assets. GDP_growth_{tk} is the annual growth rate in GDP per capita in country *k* in year *t.* d_b, d_k, and d_t denote bank type, country, and year fixed effects, respectively.

DLLP is the absolute value of the residual from Eq. (3). While managers may prefer accounting choices that increase earnings (Kanagaretnam et al., 2010 and 2014), following Cohen et al. (2014) and Beatty and Liao (2014), we use the absolute values of both negative and positive residuals because both directional values capture provision manipulation and because "discretionary accounting choices that artificially enhance reported earnings in one period eventually must be reversed" (Cohen et al., 2014, 182). Consistent with the idea that earnings manipulation can be both income increasing and decreasing, survey evidence from Dichev et al. (2013) shows that of firms that manage earnings, 60% misrepresent by increasing earnings and 40% by decreasing earnings. In addition, Dechow et al. (2012) use accrual reversal to identify earnings management. Nonetheless, in Table 9, we examine the impact of institutional ownership on directional *DLLP* (i.e., signed *DLLP*).

B. Pred_NCO

Pred_NCO measures the ability of current LLP to predict future net loan charge-offs. A tighter association between current LLP and future net loan charge-offs indicates less earnings management.

Loan charge-offs are asset write-offs. When bad loans are charged off, the offsetting entry is a reduction in the loan loss reserve. In some cases, the bank will find that it can recover part or all of the value of a loan that has been previously written off. The offsetting entry for these recoveries is an increase in the loan loss reserve. Net loan charge-offs are loans determined to be uncollectible minus recoveries on previously written-off loans. Therefore, *Pred_NCO* is closely related to *DLLP*, because less opportunistic reporting of LLP enhances the ability of LLP to predict future net loan charge-offs. Consistent with this idea, in 2001, with the goal of preventing earnings management, the U.S. Securities and Exchange Commission focused on the relation between LLP and loan charge-offs in its Staff Accounting Bulletin 102 (Beck and Narayanamoorthy, 2013). Altamuro and Beatty

(2010) also find that this measure of earnings management is strongly associated with the effectiveness of internal controls at commercial banks.

C. Small_POSΔ

As an alternative measure of bank earnings management, we consider the likelihood of banks reporting small positive earnings changes. Prior literature (see, e.g., Beatty et al., 2002; Altamuro and Beatty, 2010; Kanagaretnam et al., 2014) finds that bank managers have an incentive to opportunistically report earnings to just-meet-or-beat the prior period's earnings. We investigate the impact of institutional ownership on this measure of bank earnings management by estimating the following logistic model:

(4)

$$Small\_POS\Delta_{it} = \alpha + \eta_1 IO_{it-1} + \kappa REG_{kt-1} + \gamma CONTROLS + d_i + d_t$$

where $Small\_POS\Delta_{it}$ is an indicator variable that equals one if the bank has a change in income before taxes scaled by total assets from year *t-1* to year *t* in the interval between 0 and 0.002 (Kanagaretnam et al., 2010). IO_{it-1} is the percent of stockholdings by institutional investors in bank *i* in year *t*-1. *REG* denotes the proxies for a country's bank regulations, namely *Restrictions on Bank Activities*, *Capital Regulatory Index*, *Official Supervisory Power*, and *Private Monitoring Index*. *CONTROLS* is a vector of bank- and country-level characteristics that according to the literature potentially impact bank earnings management. d_i and d_t denote bank and year fixed effects, respectively. If institutional investors play a monitoring role in constraining bank earnings management, we should find $\eta_1 < 0$.

D. Income smoothing

As an alternative measure of bank earnings management, we consider bank income smoothing (Bushman and Williams, 2012; Beatty and Liao, 2014; Osma et al., 2019). Leuz et al. (2003), Fonseca and González (2008), and Bouvatier et al. (2014) show that insiders smooth income to obfuscate true corporate financial performance for private benefits. Following Bushman and Williams (2012), we estimate the impact of institutional ownership on this measure of bank earnings management by estimating the following OLS model:

(5)

$$\begin{aligned} LLP_{it} = \alpha &+ \eta_1 IO_{it-1} * EBLLP_{it-1} + \eta_2 IO_{it-1} + \eta_3 EBLLP_{it-1} + \beta_1 \Delta NPL_{it+1} + \beta_2 \Delta NPL_{it} + \beta_3 \Delta NPL_{it-1} \\ &+ \beta_4 \Delta NPL_{it-2} + \beta_5 Equity_{it-1} + \beta_6 Size_{it-1} + \kappa REG_{kt-1} + \beta_7 GDP_{growth_{tk-1}} \\ &+ \beta_8 Inflation_{tk-1} + d_i + d_t \end{aligned}$$

where LLP_{it} is the loan loss provisions scaled by lagged total assets in bank *i* in year *t*. *IO* is the percent of stockholdings by institutional investors. *EBLLP* is earnings before LLP and taxes scaled by lagged total assets. *ΔNPL* is the change in nonperforming loans scaled by lagged total assets. *Equity* is the equity capital scaled by lagged total assets. *Size* is the natural logarithm of total assets in U.S. dollars. *REG* denotes the proxies for a country's bank regulations, namely *Restrictions on Bank Activities*, *Capital Regulatory Index*, *Official Supervisory Power*, and *Private Monitoring Index*. *GDP_growth* is the annual growth rate in GDP per capita. *Inflation* is the annual rate of inflation. d_i and d_t denote bank and year fixed effects, respectively. Since LLP reduces net income, a positive relation between *EBLLP* and *LLP* indicates incomes smoothing because it suggests that LLP are high when earnings are high. Therefore, if institutional investors play a monitoring role in constraining bank earnings management, we should find $\eta_1 < 0$.

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Notes

[1] International Monetary Fund (2011) and "*Institutional Investors: The Unfulfilled $100 Trillion Promise*," June 18, 2015, available at: http://www.worldbank.org/en/news/feature/2015/06/18/institutional-investors-the-unfulfilled-100-trillion-promise. World Bank (2016) also reports that assets under management by mutual funds represent about 200% of GDP in high-income OECD countries and 70% of GDP in high-income non-OECD countries.

[2] See Section 2.2 for anecdotal evidence of barriers that the U.S. regulators impose on institutional investors in influencing U.S. banks.

[3] See Barajas and Catalán (2015) for evidence of the market disciplinary role of pension funds in Argentinian banks; Yust (2015) and Elyasiani et al. (2017) for evidence of the role of certain types of institutional investors in mitigating earnings management at U.S. banks; and Iselin et al. (2018) and De George et al. (2018) for evidence of the effect of institutional ownership on the systemic risks of U.S. banks.

[4] An example of such an agreement between Vanguard and the Federal Reserve Board can be found at https://www.federalreserve.gov/supervisionreg/legalinterpretations/bhc_changeincontrol20130413.pdf. last accessed on May 3, 2021.

[5] http://faculty.haas.berkeley.edu/ross_levine/Regulation.htm and https://www.worldbank.org/en/research/brief/BRSS, last accessed on May 3, 2021.

[6] *DLLP* and discretionary securities gains and losses (DSGL) are arguably the two most popular proxies for bank earnings management (see, e.g., Beatty and Liao, 2014; Cohen et al., 2014). We are unable to construct DSGL because Orbis BankFocus does not have the requisite data. Further, it is worth noting that one objective of this paper is to investigate whether the negative relation between institutional ownership and earnings management established for industrial firms extends to banks. As seen in Section 2, *DLLP* parallels better than DSGL to the common earnings management measure used for industrial firms—discretionary accruals. There is a strand of literature on window dressing by banks. We do not examine the relation between institutional ownership and this bank activity for three reasons. First, the main driver behind window dressing may not be insiders' desire to extract private benefits, which is the focus of this study. Allen and Saunders (1992) conducted the first analysis of window dressing by banks. They defined window dressing as "the use of short term financial transactions to manipulate accounting

values around quarter-end reporting dates" (Allen and Saunders, 1992, 586). In contrast to *DLLP*, which is manipulated both upward and downward, window dressing is a systematic upward adjustment of bank assets, partly for the purpose of inflating bank size to be viewed as "too-big-too-fail" (Allen and Saunders, 1992). Kotomin and Winters (2006) also find that the turn-of-the-quarter bank activities are more consistent with customers' preferred habitats than window dressing. Second, because the prevailing evidence on the role of institutional investors in curbing earnings management is based on discretionary accruals, by using *DLLP*, we can better engage our findings with the existing literature. However, in our effort to provide a portfolio of evidence, we compute alternative measures of bank earnings management including the ability of current loan loss provisions to predict future net loan charge-offs (*Pred_NCO*), the likelihood of banks reporting small positive earnings changes, and income smoothing. Third, BankFocus does not have quarterly data, rendering computing window dressing measures unfeasible.

[7] Following the literature (see, e.g., Fonseca and González, 2008; Kanagaretnam et al., 2014), we exclude the United States from our analysis for two main reasons: 1) the potential bias caused by the high percentage of U.S. banks in the sample (greater than 70% for our study); and 2) U.S. banks operate in a very different environment from other countries and it is more appropriate to construct earnings management measures using a U.S.-specific data source (the Federal Reserve's Y-9C reports) and U.S.-specific earnings management models (see, e.g., Cohen et al., 2014; Elyasiani et al., 2017). In nonbank studies, researchers also frequently exclude U.S. firms from their international samples (see, e.g., Ferreira and Matos, 2008; Kim et al., 2016; Miletkov et al., 2017). We also follow the literature norm when defining countries (see, e.g., Leuz et al., 2003; World Bank BRSSs).

[8] In this ranking exercise, we do not consider Luxembourg and New Zealand because they have less than five firm-year observations for the *DLLP* and *Pred_NCO* regressions.

[9] Huang, (2006) constructs the Bank Disclosure Index only for commercial banks. Therefore, to test the robustness of our results, we re-run the regressions and the coefficient equality tests only for commercial banks and obtain qualitatively similar results.

[10] In recent years, many countries including the United Kingdom, Australia, Canada, Denmark, Germany, France, Italy, Luxembourg, Malaysia, the Netherlands, South Africa, Switzerland, and Turkey have issued stewardship codes to encourage institutional investors to more actively exercise their governance responsibilities and engage with their portfolio firms (OECD, 2015).