Earnings Management, Capital Structure, and the Role of Institutional Environments *

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Abstract

This paper examines the effect of earnings management on financial leverage and how this relation is influenced by institutional environments by employing a large panel of 25,798 firms across 37 countries spanning the years 1989 to 2009. We find that firms with high earnings management activities tend to have high corporate leverage. More importantly, this positive relation is attenuated by strong institutional environments. Our results lend strong support to the agency theory of free cash flow. Various robustness tests confirm our main conclusions.

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1   Introduction

Although many empirical studies have endeavored to use firm and industry characteristics to explain the variation of corporate leverage,[1] there is growing research that highlights the important role of institutional environments in determining capital structure decisions. These latter studies find that strong institutional environments tend to decrease financial leverage.[2] This evidence is consistent with the findings that strong investor protection and legal enforcement mitigate agency conflicts and lead to high corporate valuation (see, e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) and La Porta, Lopez-De-Silanes, Shleifer, and Vishny (2002)).

On the other hand, corporate debt, similar to institutional environments, may serve as an external control mechanism in reducing agency conflicts (see, e.g., Jensen (1986) and Jensen and Meckling (1976)). However, the costs of institutional environments and corporate debt in mitigating agency conflicts are different. Relying on institutional environments in mitigating agency conflicts does not carry incremental costs for individual firms, since institutional environments are broadly thought to be set beyond firms' control. Conversely, high leverage is associated with high expected bankruptcy costs and large agency costs of debt (i.e., debt overhang and asset substitution problems). We therefore presume the reliance on institutional environment is less costly than on corporate debt, and hypothesize that strong institutional environment reduce the demand for debt in mitigating agency conflicts. In this paper, we examine whether corporate leverage is positively correlated with agency conflicts and whether this positive relation is attenuated in countries with strong institutional environments.

We use earnings management as a proxy for agency conflicts between in-

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[1]For example, Titman and Wessels (1988), Lemmon, Roberts, and Zender (2008), and Frank and Goyal (2009), study how U.S. firms' leverage variations are explained by firm and industry characteristics.

[2]For example, Demirguc-Kunt and Maksimovic (1998), Demirguc-Kunt and Maksimovic (1999), Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001), Giannetti (2003), Antoniou, Guney, and Paudyal (2008), and Fan, Titman, and Twite (2012) examine the associations between institutional environments and capital structure by employing multi-country data.

siders and outside investors.[3] Managerial discretion/judgment in reported earnings may make firms' true underlying economic performance, e.g. operating cash flow, private information available only to insiders. Therefore, earnings management allows managers to finance *sub-optimal investments* that maximize their own utilities at the expense of some informationally disadvantaged stakeholders. Similarly, earnings management may facilitate insiders' *tunneling* activities.

Based on the agency cost of free cash flow theory, we study whether corporate leverage is higher for firms with more earnings management which exacerbates the information asymmetry of free cash flow.[4] Next, we examine how institutional environments influence the impact of earnings management on corporate leverage. We argue that strong institutional environments mitigating agency conflicts by granting investors rights in preventing managers from expropriating their investments and ensuring investors' rights can be implemented in the time of need. Thus, in order to reduce cost of debt financing, investors of firms operating in stronger institutional environments countries becomes more relying on "free"macro-level investor protection than using debt as a control mechanism. Therefore, we expect the earnings management - capital structure relation is less pronounced in the countries with strong institutional settings.

To empirically address these questions, we employ an international sample of 37 countries spanning the years 1989 to 2009 to investigate how corporate leverage choices are determined by the level of earnings management across countries. Our multi-country data sample also allows us to test how country-level characteristics can affect the relation between earnings management and capital structure decisions.

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[3]Leuz, Nanda, and Wysocki (2003) suggest that strong institutional environments can attenuate the agency conflicts by reducing managers' earnings management activities. They argue that strong institutional settings, in particular, strong investor protection and legal enforcement limit managers' ability to acquire private control benefits, thus, reduce the likelihood in earnings management activities.

[4]In addition, the above prediction is also consistent with pecking order theory (See, e.g., Myers (1984) and Myers and Majluf (1984)). That is, earnings management increases firms' external financing costs, external equity financing becomes disproportionally less desirable than debt when external funding is needed for investment.

Consistent with our hypotheses, we have two novel empirical findings. First, we show that earnings management is significantly and positively correlated with firms' leverage. Combined with the notion that a firm's earnings management reflects the agency conflicts of information asymmetry between managers and investors, this finding is consistent with the agency theory of free cash flow.

Second, we examine the role of institutional environments in shaping the relation between earnings management and capital structure decisions. We study this effect by adding an interaction term of earnings management and institutional environments to our model. We document that strong institutional environments tend to attenuate the positive relation between earnings management and corporate leverage. This evidence indicates that strong institutional environments grant and enforce investor rights in mitigating impact of earnings management on corporate decisions, which make earnings management less sensitive to capital structure decisions.

This paper contributes to the existing literature from the following aspects. First, earnings management is explicitly used to proxy information asymmetry of free cash flow in a large international sample, confirming its suitability documented by Leuz, Nanda, and Wysocki (2003). We provide novel evidence on the firm-level heterogeneity in corporate leverage that complements the extant capital structure literature (see, e.g.,Titman and Wessels (1988), Lemmon, Roberts, and Zender (2008), and Frank and Goyal (2009)). In particular, we document the positive relation between earnings management and corporate leverage which is consistent with both free cash flow and pecking order theories.

Second, the role of institutional environments in shaping earnings management - corporate leverage sensitivity is documented. This broadens the existing literature on the impact of institutional environments on corporate leverage by documenting this impact is implemented by reducing the impact of earnings management on corporate leverage. This paper emphasizes the role of institutional environments that effectively reduces the impact of information asymmetry on capital structure decisions. Thus contributes to the existing international study on corporate leverage from a new angle.

For example, Rajan and Zingales (1995), Demirguc-Kunt and Maksimovic (1998), Demirguc-Kunt and Maksimovic (1999), Demirguc-Kunt and Maksimovic (1999), Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001), Giannetti (2003), Antoniou, Guney, and Paudyal (2008), Fan, Titman, and Twite (2012) document that firms' capital structure choices are influenced by countries' institutional settings. In addition, Oztekin and Flannery (2012) find that transactions costs of external financing are lower and the speed of leverage adjustment is higher in countries with better institutional environments. Halling, Yu, and Zechner (2012) document that the speed of adjustments toward target corporate leverage decreases during recessions in an international sample containing 18 countries.

This paper is organized as follows. We discuss the theoretical motivation and empirical hypotheses in Section 2 and empirical design in Section 3; Our data and sample are reported in Section 4; Sections 5 and 6 report the empirical results and robustness tests; Finally, Section 7 concludes the paper.

2 Theoretical motivation and empirical hypotheses

This section provides a summary of predictions on how earnings management as a proxy for information asymmetry affects corporate leverage, followed by a discussion on what the role of institutional environments is in shaping the earnings management - corporate leverage sensitivity.

2.1 Earnings management in determining capital structure

Our prior discussion in Section 1 explains that earnings management may encourage corporate insiders to engage in *tunneling* activities and/or *suboptimal investment* because it makes information about cash flow private to insiders. On the other hand, agency cost of free cash flow theory indicates that increasing borrowing can serves as an external control mechanism mitigating the free cash flow problem (see, e.g., Jensen (1986) and Jensen and

Meckling (1976)). In particular, interests must be repaid to avoid default and to reduce the amount of free cash flow available to corporate managers. Controlling for deadweight costs of debt, such as bankruptcy costs and agency cost of debt, higher earnings management activities increase the demand for debt as an external control mechanism.

H1. *Firms with higher level of earnings management are expected to have higher financial corporate leverage, ceteris paribus.*

2.2   The role of institutional environments

Jensen (1993) argues that institutional environments, including legal, political, or regulatory system, is one of the effective external control mechanisms to resolve agency conflicts. In addition, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) document that capital markets are more developed in countries with more sophisticated legal systems. Capital markets competition, such as hostile takeover, is another external control mechanism that alleviates agency problem. Thus, institutional environments can mitigate the agency conflicts.

In addition, there are no incremental costs for individual firms to mitigate agency conflicts by relying on institutional environments, since institutional environments are broadly thought to be set beyond firms' control. In contrast, debt serves as an external control mechanism in reducing agency conflicts, is associated with expected bankruptcy costs and agency costs of debt. Therefore, in order to reduce cost of debt financing, investors of firms operating in countries with stronger institutional environments become more reliant on "cheaper"macro-level investor protection than using debt as a control mechanism.

In particular, we hypothesize that, in determining capital structure, strong institutional settings mitigate the agency conflicts by reducing its sensitivity to corporate leverage. That is, strong investor protection grants investors rights in preventing managers from expropriating their investments; and strong legal enforcement ensures investors' rights can be implemented

in the time of need. Consequently, investors rely more on institutional environments and demand less debt in mitigating the free cash flow problem.

In this paper, we use six macro-level institutional environment variables which measure the level of legal origin (*LegCom*), enforcement (*P_Enfor*), shareholder protection (*P_SH*), accounting information quality (*P_Acct*), governance (*P_K09*), and ethics (*P_K04*) of the country. We expect that the impact of earnings management on corporate leverage is lower in the countries with common law legal system, stronger legal enforcement, better shareholder protection and accounting information quality, higher governance and ethic indices. So, the second hypothesize is as follows.

H2. *The positive association between earnings management and leverage ratio is attenuated in countries with strong institutional environments (IE), ceteris paribus.*

3 Empirical design

3.1 Empirical model

Empirical capital structure research shows that leverage ratio is a function of various firm, industry and country characteristics. In this paper, we focus on the effect of earnings management on firms' capital structure decisions. Moreover, we examine how this relation is influenced by macro-level institutional environments.

Specifically, we regress realized actual leverage ratio on earnings management measure and on its interaction with macro-level institutional environment variable. Our empirical model is given as follows,

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\begin{aligned}
L_{j,i,t} = \beta_0 + \beta_1 EM_{j,i,t-1} + \beta_2 EM_{j,i,t-1} \times IE_j + \boldsymbol{\gamma} \mathbf{X}_{j,i,t-1} \\
+ \boldsymbol{\delta} \mathbf{X}_{j,i,t-1} \times IE_j + \boldsymbol{\lambda} \mathbf{Y}_{j,t-1} + f_i + y_t + e_{j,i,t},
\end{aligned}
\tag{1}
$$

where country is indexed by j, firm by i, and time by t. We use either market leverage ratio (*ML*) or book leverage ratio (*BL*) as dependent variable (i.e. $L \in \{ML, BL\}$). *EM* is our earnings management variable.

Macro-level institutional environment variable is denoted by *IE*. $\mathbf{X}_{j,i,t}$ is a vector of firm and industry control variables, including Tangibility (*Tang*), Firm Size (*Size*), Profitability (*Prof*), Market to Book ratio (*MTB*) and Industry Median Leverage (*IndMed*). $\mathbf{Y}_{j,t}$ is a vector of country control variables, including GDP per capita (*GDPC*), Stock Market Capitalization to GDP (*MCAP*) and GDP Growth (*GGDP*). In order to capture the unobserved heterogeneity across firm and time, we control for firm fixed effects f_i and year fixed effects y_t in equation (1).[5] Standard errors are robust to clustering within each country.

3.2 Earnings management measures

Healy and Wahlen (1999) define earnings management as

> *"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers"(p.6).*

Conflict of interest exists between inside managers and outside investors in a corporate context. Managers have incentives to use their control to extract private benefits at expense of other stakeholders. Outsiders monitor managers' behavior and take discipline actions if such extractions are detected. Thus, managers also have incentives to mask their private control benefits from outsiders by reducing the variability of reported earnings. For example, in years of good performance, managers use financial reporting accruals to understate earnings which creates reserves for the years of bad performance. It smoothens financial earnings and hides managers' private control benefits, in consequence, creates information asymmetry about free cash flow between insiders and outsiders. Therefore, managerial discretion

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[5]Time-invariant measures have no explanatory power in a firm-fixed effects framework, so we do not include *IE* variable itself in the model (see, e.g., Mclean, Zhang, and Zhao (2012), *p.317*).

and/or smoothing activities in financial earnings can lead to information asymmetry about cash flow between inside managers and outside existing and/or potential investors.

In this paper, we use earnings management as a proxy for information asymmetry of free cash flow. Our earnings management measures are based on Leuz, Nanda, and Wysocki (2003) that develop several variables that capture various dimensions along which insiders can exercise discretion in reporting earnings and reduce variability of reported earnings by altering accounting accruals.

Our first earnings management variable is earnings discretion ($Accr$). It captures the extent that insiders can exercise discretion in reporting earnings. Leuz, Nanda, and Wysocki (2003) define the magnitude of accruals as the absolute value of firms' accruals scaled by the absolute value of firms' cash flow from operations. Dechow, Sloan, and Sweeney (1996) argue that accruals increase as the alleged year of earnings manipulation approaches, and then experience a sharp decline. The increase in accruals is consistent with managerial manipulation. The following decline is consistent with the reversal of prior accrual overstatements. In addition, Dechow, Sloan, and Sweeney (1996) also suggest that it usually takes several years to detect managerial manipulation. Thus, our $Accr$ is computed as the 5 year moving average of the magnitude of accruals. [6]

Our second ($Smth$) and third ($Corr$) earnings management variables capture earnings smoothing. In particular, $Smth$ measures the extent that insiders reduce the variability of reported earnings by altering accounting accruals. It is computed as the standard deviation of firms' operating income scaled by the standard deviation of firms' cash flow from operations.[7] $Corr$ captures the extent that insiders conceal economic shocks to firms'

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[6]$Accr_{j,i,t} = 1/5 \sum_{t}^{t+4} |Accruals_{j,i,t} /CF_{j,i,t}|$, $Accruals = (\Delta Assets - \Delta Cash$ and $equivalent) - (\Delta Current\ liability - \Delta Short\ term\ debt - \Delta Income\ taxes\ payable) - Depreciation\ and\ amortization\ expense$, Cash flow from operations $(CF) = Operating\ income - Accruals$. When short-term debt and taxes payable are not available for a firm, then their changes are assumed zero. All accounting variables are scaled by lagged total assets. A minimum of 3 years is required.

[7]$Smth = - \sigma\ (Operating\ income)\ /\ \sigma\ (CF)$ over the last 5 years. A minimum of 3 years is required.

operating cash flow by using their accounting discretion. It is computed as the correlation between changes in accruals and changes in cash flow from operations.[8] [9] We multiply *Smth* and *Corr* by -1. In such a way, higher values of *Accr*, *Smth*, and *Corr* imply higher level of earnings management of the firms. Finally, the first principle component of *Accr*, *Smth*, and *Corr* (*P_EM*) is used as an aggregate measure of earnings management.

3.3   Proxies for institutional environments

In order to study how institutional environments affect the impact of earnings management on firms' capital structure decisions, we firstly draw several macro-level variables from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998), covering different aspects of institutional environments. In particular, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) suggest that countries with legal systems based on common law provide better investor protection than civil law countries. We use the English common law dummy (*LegCom*) as a measure of investor protection. It equals 1 if the country's legal system is based on common law, and 0 otherwise. In addition, strong legal enforcement ensures investors' rights can be implemented at the time of need and protects their investments from managers' expropriation. As a consequence, we also examine an enforcement variable (*P_Enfor*) which is the first principle of the following five legal enforcement proxies: efficiency of judicial system (*RulLaw*), rule of law (*EffJud*), level of corruption (*Corruption*), risk of expropriation (*RisExp*), and repudiation of contracts by government (*Repudiation*).

In robustness section, we examine a number of alternative macro-level institutional environment measures. In particular, we use macro-level variables that measure shareholder rights (*P_SH*) and accounting information quality (*P_Acct*). *P_SH* is the first principle component of anti-director index (*AntiD*) and anti-self-dealing index (*AntiSelf*); and *P_Acct* is the first

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[8] *Corr* = - ρ ($\Delta Accr$, ΔCF) over the last 5 years. A minimum of 3 years is required.

[9] In the robustness tests, we recalculate *Accr*, *Smth* and *Corr* by restricting the data has to be available at least 3 out of the last 4 (6) years . The results are qualitatively consistent.

principle component of accounting standards (*AccStd90*) and auditing practices (*Audit*).

In addition, as alternatives to institutional environments, we also use the Worldwide Governance Indicators (*WGI*) developed by Kaufmann, Kraay, and Mastruzzi (2009). They define *WGI* as a series of indicators that measure "the traditions and institutions by which authority in a country is exercised". This includes six broad aspects of governance: accountability, political instability, government effectiveness, regulatory burden, rule of law, and control of corruption. [10] We compute the first principal component of these six WGIs and denote this variable by *P_K09*. In addition, Kaufmann (2004) develops six ethics indices that cover various dimensions of corporate and public sector ethics and governance. These indices include corporate illegal corruption component, corporate legal corruption component, corporate ethics index, public sector ethics index, judicial/legal effectiveness index, and corporate governance index. We compute the first principal component of these six ethics indices and use it as a single ethics index. This variable is denoted by *P_K04*. In order to avoid possible muticollinearity between the macro-level *IE* variables, we use one *IE* variable in one regression.

4   Data and sample

We collect firm-level accounting data from Worldscope which contains annual financial data of publicly traded firms around the world. We extract macro-level institutional environment variables from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998), Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008), Bushman, Piotroski, and Smith (2004), Kaufmann, Kraay, and Mastruzzi (2009), and Kaufmann (2004). Country-level control variables (*GDPC, MCAP* and *GGDP*) are obtained from World development indicators (WDI).[11]

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[10]The six Worldwide Governance Indicators (*WGI*) cover 212 countries and territories for the years of 1996, 1998, 2000, and annually for 2002 to 2009. We obtain the cross-sectional *WGIs* by taking the time-series mean of each WGI.

[11]The data of Taiwan is collected from the websites of National Statistic of Taiwan and Taiwan Stock Exchange.

We apply several filters to remove potential data errors and outliers. Observations with leverage ratios beyond the unit interval are removed. The firm level variables are winsorized at 1% and 99% level. Following Leuz, Nanda, and Wysocki (2003), we remove the countries with less than 300 firm-year observations, and observations of Argentina, Brazil and Mexico are excluded from our sample since these countries experienced hyperinflation over the sample period. In addition, we remove financial or utility firms from the sample since their capital structures are presumably regulated and hence different from capital structures of firms in other industries. Firm-year observations with missing financial data are excluded from our sample. Finally, there are $166,325$ firm-year observations left in the sample that contains $25,798$ firms across 37 countries spanning from 1989 to 2009.[12]

Table 1 provides a sample description that reports the number of years, firms and firm-years of each country. As shown in column 1, there are 24 out of 37 countries cover the full sample period (21 years). Column 3 reports the number of firm-year observations for each country in our sample. It shows that the data coverage of the sample is fairly different across countries. In general, developed countries tend to have better coverage than developing countries.

[Insert Table 1]

Table 2 report the summary statistics of our key firm, industry (Panel A), and country (Panel B) variables of interest. In general, our key dependent variables and explanatory variables resemble those used in the literature. In particular, the means (standard deviations) of market and book leverage ratios are 0.27(0.25) and 0.23(0.19), respectively.

[Insert Table 2]

For the earnings management variables, the sample means (standard deviations) of *Accr*, *Smth*, *Corr* and *P_EM* are 1.20(1.84), −0.66(0.42),

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[12]The sample period starts from 1989 since some accounting data are not available prior to 1989 in Worldscope.

0.77(0.34) and 0.03(1.22), respectively. Table 3 reports the country medians for each earnings management variables. These moments are similar to those reported in Leuz, Nanda, and Wysocki (2003), though they focus on a 31-country sample.

[Insert Table 3]

Panel C of Table 2 describes the statistics of macro-level institutional environment variables. Our institutional environment variables are available in most of the sample countries. In particular, P_K09 and P_K04 are available in all 37 countries. The rest of institutional environment variables are available in between 32 to 35 countries.

We present in Table 4 the correlation matrix between leverage ratios and firm and industry characteristics. This table shows how leverage ratios are correlated with firm and industry characteristics. Specifically, Table 4 exhibits that leverage ratios are positively associated with $Accr$, $Smth$, $Corr$, P_EM, $Tang$, $Size$, and $IndMed$, but negatively related to $Prof$ and MTB. On the other hand, there is no evidence that independent variables are highly correlated.

[Insert Table 4]

5   Empirical results

This section presents regressions that estimate the influence of earnings management on capital structure decisions and how this relation is affected by institutional environments.

Firstly, we regress corporate leverage ratios on earnings management measures (*Accr, Smth, Corr* and *P_EM*) to examine how firms' earnings management activities affect their capital structure decisions. The results of market (book) leverage are reported in columns 1 to 4 (5 to 8) of Table 5. Columns 1 to 4 show that the coefficient estimates of our earnings management variables are all significantly positively related to market leverage. Specifically, the coefficient estimates (t-statistics) of *Accr*,

Smth, *Corr* and *P_EM* are 0.1692(5.3464), 0.4193(3.8577), 0.3572(2.6882) and 0.1584(3.6077), respectively. These results are not only statistically but economically significant. For example, Table 2 shows that the standard deviation of *P_EM* is 1.22. Multiplying it with the coefficient estimate of *P_EM* in column 4, 0.1584, our results indicate that one standard deviation increase in *P_EM* leads to about 0.1932% (= $1.22 \times 0.1584\%$) increase in market leverage. [13] Moreover, given that the average market leverage in our sample is about 0.27, a 0.1932% increase accounts for an about 0.72% (= 0.1932%/0.27) change of market leverage for an average firm in our sample.

Columns 5 to 8 show that the results are unchanged when we use book leverage as dependent variable. Specifically, the coefficient estimates (t-statistics) of *Accr*, *Smth*, *Corr* and *P_EM* are 0.2522(5.7574), 0.6867(4.0992), 0.6105(3.1691) and 0.2494(4.0229), respectively.

[Insert Table 5]

Our results are consistent with **H1**. That is, when earnings management is used as a proxy for information asymmetry between corporate insiders and outside investors, these results indicate that higher earnings management activities increase the demand for debt as an external control mechanism in reducing agency costs of free cash flow. Moreover, our results are as well consistent with the pecking order theory that the adverse selection costs associated wit information asymmetry are higher for external equity than debt.

Table 5 also shows that the coefficient estimates of *Tang* in all regressions are positively significantly at 1% level. It indicates that the firms with more tangible assets have lower expected distress costs. Thus, tend to have higher leverage ratios. *Prof* is negatively significantly at 1% level. It is consistent with pecking order theories which argues that more profitable firms rely on

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[13]We scale *Accr, Smth, Corr and P_EM* by 100 in all multivariate regressions. Thus, the coefficient estimates of earnings management measures and their interactions with institutional environment variables should interpreted as %. For example, column 4 of Table 5 shows that the coefficient estimate of *P_EM* is 0.1584. It indicates that 1 unit increase in *P_EM* increases market leverage by 0.1584%.

internal finance over external funds. *Size* is positively significantly at 1% level. It indicates that larger firms that have lower default risk with better reputation tend to have higher leverage. *MTB* is negatively significantly at 1% level for book leverage regressions (columns 5 to 8). It shows that growth firms face higher financial distress cost. *IndMed* is positively significantly at 1% level. It indicates that managers tend to use industry median leverage as a benchmark as they build their own capital structures. In sum, the results of the firm and industry characteristics are consistent with Titman and Wessels (1988), Lemmon, Roberts, and Zender (2008), and Frank and Goyal (2009).

Next, we examine the empirical model (equation (1)) in Section 3. Our model includes an earnings management variable and its interaction with each macro-level institutional environment variable to access the following research question: whether the earnings management - corporate leverage relation is influenced by macro-level institutional environments.

Our first institutional environment variable is *Leg_Com*. *Leg_Com* is a dummy variable that measures a country's legal origin. It equals 1 if the country's legal system is based on common law, and 0 for civil law countries. In Table 6, we include 8 different specifications. Panel A (B) of Table 6 reports estimation results for market (book) leverage. In columns 1, 3, 5 and 7, we have one of our four earnings management variables (*Accr, Smth, Corr* and *P_EM*) and its interaction with *Leg_Com* in the corresponding regression. In columns 2, 4, 6 and 8, we include the interactions of *Leg_Com* and firm and industry characteristics in all regressions. By doing so, we control for the role of legal origin on the relations between firms' leverages and their firm and industry characteristics in estimating how legal origin affects the earnings management - corporate leverage relation. Control variables are included in the estimations but not reported in the tables for brevity. This structure is applied to all subsequent results tables.

[Insert Table 6]

Our regression results in columns 1, 3, 5 and 7 of Panel A show that the coefficient estimates of our earnings management variables are positively

significant at 1% level. Specifically, the coefficient estimates (t-statistics) of *Accr*, *Smth*, *Corr*, and *P_EM* are 0.3455(9.4210), 1.1904(5.2806), 1.1495(2.7682), and 0.4739(4.0878), respectively. Columns 2, 4, 6 and 8 show that results are consistent when we add the interactions of *Leg_Com* and firm and industry characteristics. In addition, the book leverage results reported in Panel B are consistent to our finding in Panel A. In sum, for different earnings management and leverage variables used above, we document significant results that are consistent with **H1** that firms with higher level of earnings management tend to have higher financial leverage ratios. [14]

Next, we turn to examine how institutional environments reshape the earnings management - corporate leverage sensitivity across countries. In particular, our focus here is the interaction of earnings management and *Leg_Com*. Panel A shows that, for market leverage, the coefficient estimates of $P\_EM \times LegCom$ in all specifications (except column 6) are negatively significant. Specifically, the coefficient estimates (t-statistics) of $P\_EM \times LegCom$ in columns 1, 3, 5 and 7 are $-0.1502(-2.0711)$, $-1.0410(-3.5639)$, $-0.8664(-1.8371)$, and $-0.4055(-2.8985)$, respectively. The results are economically significant across different earnings management measures. For example, column 7 shows that the coefficient estimate of $P\_EM \times LegCom$ is -0.4055. It indicates that, for the countries based on common law (*Leg_Com*=1), legal origin reduces the effect of *P_EM* on market leverage by 0.4055% compared to civil law countries, ceteris paribus. Thus, one standard deviation increase in *P_EM* leads to about 0.08% ($= 1.22 \times (0.4739\% - 0.4055\% \times 1)$) increase in market leverage.

The results are qualitatively unchanged in the regressions including the interactions of *Leg_Com* and firm and industry characteristics. Specifically, the coefficient estimates (t-statistics) of interactions in columns 2, 4, 6 and 8 are $-0.1562(-2.1747)$, $-0.9664(-3.2727)$, $-0.5784(-1.1770)$, and $-0.3393(-2.3089)$, respectively. Panel B reports the coefficient estimates of earnings management and its interaction with *Leg_Com* for book leverage. The book leverage results appear to confirm our finding in Panel A for

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[14]The coefficient estimates of earnings management variables remain positively significant if we use other *IE* variables. (e.g., *P_Enfor*, *P_SH*, *P_Acct*, *P_K09*, and *P_K04*)

market leverage.

The results are consistent with **H2** that financial leverage tends to be less positively correlated with earnings management in countries based on common law than civil law. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) suggest that the countries with legal systems based on common law provide better investor protection countries than in civil law countries. Thus, it is more difficulty for managers to expropriate investments from investors in common law countries. Therefore, common law legal system provides a better controlling mechanism than civil law, and reduces the demand for "costly"debt in mitigating agency conflicts.

In addition, Table 7 examine **H2** by using *P_Enfor* as an institutional environment variable. The coefficient estimates of the interactions between earnings management (*Smth*, *Corr* and *P_EM*) and *P_Enfor* are negatively significant for both market (except column 4 of Panel A) and book leverage regressions. Specifically, for market leverage regressions, the coefficient estimates (t-statistics) of interactions in columns 3, 5, and 7 of Panel A are $-0.4100(-1.7201)$, $-0.7005(-2.5279)$, and $-0.2114(-2.2146)$, respectively. Similar to *Leg_Com*, *P_Enfor* also plays an economically significant role in shaping earnings management - corporate leverage sensitivity. For example, column 7 shows that the coefficient estimates of *P_EM* and $P\_EM \times P\_Enfor$ are 0.6225 and -0.2144, respectively. Given the mean of *P_Enfor* in Table 2, 0.80. The results indicate that, on average, one standard deviation increase in *P_EM* leads to about 0.55% ($= 1.22 \times (0.6225\% - 0.2144\% \times 0.8)$) increase in market leverage. The results are qualitatively unchanged by controlling the interactions of *Leg_Enfor* and firm and industry characteristics which are reported in columns 4, 6, and 8. The $Accr \times P\_Enfor$ are not significant in columns 1 and 2. The results are qualitatively unchanged for book leverage regressions which are reported in Panel B.

[Insert Table 7]

The results confirm the role of enforcement in shaping the impact of earnings management on capital structure decisions. It shows that financial

leverage tends to be less positively correlated with earnings management in countries with stronger legal enforcement. These results are in accordance with the notions that strong legal enforcement enforce investors' rights in the time of need, and mitigate the agency conflicts with no incremental costs. Thus, the earnings management - corporate leverage relation is less pronounced in the countries with strong legal enforcement.

In sum, we document two novel findings that support our hypotheses (**H1** and **H2**) in Section 2. Precisely, we find that leverage ratios increase in earnings management activities and this positive relation is attenuated in counties with strong institutional environments, in particular, common law legal system and strong enforcement.

6   Robustness tests

6.1   Alternative measures of institutional environments

In this section, we test our hypotheses with alternative institutional environment variables. As a first robustness check of our results, we examine macro-level institutional environment measures from the aspects of shareholder protection (P_SH) and accounting information quality (P_Acct). Panel A of Table 8 shows the coefficient estimates of the interaction terms between earnings management (*Accr*, *Smth* and P_EM) and P_SH are negatively significant for market leverage regressions. In addition, Panel A of Table 9 reports the negatively significant coefficient estimates for the interaction terms between earnings management (*Smth*, *Corr* and P_EM) and P_Acct for market leverage regressions.

Panel B of Table 8 (9) reports the coefficient estimates of earnings management and its interaction with P_SH (P_Acct) for book leverage. The results are qualitatively unchanged and confirm our finding in Panel A for market leverage. In sum, we obtain qualitatively consistent results across difference earnings management and leverage measures by using P_SH or P_Acct as institutional setting measure. They suggest that strong institutional environments, in particular, better shareholder protection and ac-

counting information quality, could protect investors and reduce the earnings management - corporate leverage sensitivity.

[Insert Table 8]

[Insert Table 9]

Furthermore, we examine other alternative measures of institutional environments (governance index (P_K09) and ethics index (P_K04)), and the results are presented in Tables 10 and 11. The results with these variables are largely similar to prior results and hence consistent with our hypotheses. In particular, the earnings management variables are positively significant, and their interactions with P_K09 or P_K04 are negatively significant (except $Accr$) for both market and book leverage regressions. The results confirm our findings that presented in the previous section. They suggest that corporate leverage is less sensitive to earnings management in the countries with high governance indicator and ethic index.

[Insert Table 10]

[Insert Table 11]

In addition, we estimate our model with each sub-index of P_Enfor, P_SH, P_Acct, P_K09, and P_K04. The results are qualitatively consistent with our hypotheses and not reported for brevity. [15]

6.2 Excluding the U.S. in the sample

Since US firms account for a substantial fraction of our population of firms, our results are possibly driven by US observations, not by institutional environments. [16] To address this issue, we construct a Non-US sub-sample by removing all US firms from the full sample and examine the model across difference earnings management, leverage and institutional setting measures.

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[15]The results are available upon request.

[16]Specifically, US has $44,832$ firm-year observations and accounts for 27% of the full sample.

The results are consistent with the full sample results and not reported to save space.[17]

6.3 First-difference regression

We examine the relation between corporate leverage and earnings management by using the first-difference regression model to address the endogeneity problem. We reestimate the baseline regression models reported in Table 5 by regressing the change in leverage on the 1 year lag of the changes in earnings management, and firm, industry and country control variables. Table 12 reports the coefficient estimates of earnings management variables are positively significant at 1% level (except *Accr*). For example, column 4 shows that *P_EM* is positively associated with market leverage with coefficient estimate (t-statistic) 0.1939(4.2008). It indicates that 1 unit increase in Δ *P_EM* increases Δ *ML* by 0.1939% unit. In sum, the results confirm **H1** which higher earnings management is associated with higher corporate leverage.

[Insert Table 12]

7 Conclusion

In this paper, we shed new light on firms' capital structure choices employing a comprehensive sample of 25,798 firms across 37 countries over two decades. We focus on the relation between earnings and financial leverage and the role of institutional environments in shaping this relation. Two novel results emerge from this study.

First, we find robust evidence that firms engaging in higher earnings management activities on average have higher leverage. Combined with the notion that a firm's earnings management reflects the information asymmetry between managers and investors, this result is consistent with the agency theory of free cash flow, that is, higher earnings management activities increase the demand for debt as an external control mechanism.

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[17]Non-US results are available upon request.

Second, we document that the positive relation between earnings management and capital structure is much less pronounced in countries with better institutional environments. This finding supports the notions that investors in the countries with strong institutional environments are more reliant on "cheap"macro-level institutional settings than using debt in mitigating agency conflicts.

We conduct several robustness checks. Our results are robust to different earnings management measures, different leverage ratios, different institutional environment variables, and different samples.

There are policy implications. For firms operated in countries with strong (weak) institutional environments, managers' earnings management activities are less (more) tolerant by investors. The side effect of earnings management on leverage seems to be at least partially offset by institutional environments. So, institutional environments should be improved to maintain higher accounting credibility in firms.

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Table 1: **The sample**: This table provides a description of the sample. Number of years, firms, and firm-years of each country are reported in the table.

Market	Number of years	Number of firms	Number of firm-years
Australia	21	1021	4340
Austria	21	89	635
Belgium	21	124	977
Canada	21	1106	5513
China	16	1321	5616
Chile	19	106	746
Denmark	21	152	1391
Ireland	14	64	462
Finland	21	142	1312
France	21	862	6177
Germany	21	810	5828
Greece	21	264	1650
Hong Kong	21	781	3879
Indonesia	16	228	1447
India	13	332	1240
Israel	13	88	407
Italy	21	269	1880
Japan	21	3655	31145
South Korea	20	943	4831
Malaysia	21	728	3949
Netherlands	21	182	1748
Norway	21	199	1296
New Zealand	21	92	525
Pakistan	15	71	483
Poland	13	178	589
Portugal	21	74	548
Philippines	17	110	686
South Africa	21	300	1908
Singapore	21	558	2761
Spain	21	140	1119
Sweden	21	323	2092
Switzerland	21	202	1905
Thailand	18	400	2470
Turkey	17	172	996
Taiwan	17	1191	5150
United Kingdom	21	1976	13792
United States	21	6545	44832
Total		25,798	166,325

Table 2: **Descriptive statistics**: This table presents the descriptive statistics of firm and industry level variables (Panel A), country control variables (Panel B), and institutional environment variables (Panel C). The sample period is from 1989 to 2009. Summary statistics in Panel A are based on a panel of firm-year observations, in Panel B based on a panel of country-year observations, and in Panel C based on a cross section of countries. All variables are defined in Appendix A.

Panel A: Firm and industry variables

	N	Mean	Median	Std. Dev.	Minimum	Maximum
Leverage ratios :						
ML	166325	0.27	0.22	0.25	0.00	1.00
BL	166325	0.23	0.21	0.19	0.00	1.00
Earnings management measures :						
Accr	166163	1.20	0.70	1.84	0.10	22.93
Smth	166163	-0.66	-0.59	0.42	-2.97	-0.04
Corr	145470	0.77	0.93	0.34	-0.89	1.00
P_EM	145470	0.03	0.37	1.22	-6.75	1.55
Firm and industry control variables :						
Tang	166325	0.32	0.29	0.22	0.00	0.94
Prof	166325	0.09	0.10	0.14	-0.69	0.47
Size	166325	12.52	12.43	1.90	4.87	17.92
MTB	166325	1.30	0.93	1.48	0.09	26.88
IndMed (M)	166325	0.23	0.21	0.16	0.00	0.98
IndMed (B)	166325	0.20	0.20	0.10	0.00	0.86

Panel B: Country control variables

	N	Mean	Median	Std. Dev.	Minimum	Maximum
GDPC	712	4.10	4.31	0.53	2.57	4.98
MCAP	712	79.74	59.30	71.48	4.47	617.05
GGDP	712	3.65	3.53	3.08	-13.13	14.20

Panel C: Institutional environment variables

	N	Mean	Median	Std. Dev.	Minimum	Maximum
LegCom	35	0.40	0.00	0.50	0.00	1.00
P_Enfor	35	0.80	1.53	1.88	-3.61	2.80
P_SH	35	0.35	0.24	1.24	-1.64	2.44
P_Acct	32	0.16	0.48	1.14	-2.34	1.76
P_K09	37	1.87	2.30	1.42	-1.35	3.46
P_K04	37	1.57	1.95	2.28	-3.05	4.70

Table 3: **Earnings management measures**: This table provides a description of the country median of earnings management measures (*Accr*, *Smth*, *Corr* and *P_EM*). All variables are defined in Appendix A.

Market	Accr	Smth	Corr	P_EM
Australia	0.60	-0.69	0.90	0.14
Austria	0.83	-0.36	0.98	0.90
Belgium	0.73	-0.50	0.96	0.62
Canada	0.64	-0.66	0.90	0.19
China	0.90	-0.35	0.98	0.90
Chile	0.52	-0.49	0.96	0.63
Denmark	0.63	-0.45	0.96	0.72
Ireland	0.50	-0.54	0.94	0.53
Finland	0.64	-0.55	0.94	0.52
France	0.71	-0.52	0.95	0.55
Germany	0.88	-0.48	0.95	0.63
Greece	0.91	-0.35	0.98	0.93
Hong Kong	0.80	-0.60	0.92	0.34
Indonesia	0.76	-0.57	0.94	0.42
India	0.65	-0.48	0.96	0.59
Israel	0.74	-0.57	0.93	0.42
Italy	0.77	-0.46	0.96	0.70
Japan	0.70	-0.53	0.94	0.52
South Korea	0.84	-0.54	0.94	0.50
Malaysia	0.89	-0.49	0.95	0.58
Netherlands	0.58	-0.47	0.96	0.68
Norway	0.83	-0.63	0.89	0.24
New Zealand	0.54	-0.51	0.96	0.58
Pakistan	0.59	-0.49	0.95	0.64
Poland	0.84	-0.51	0.95	0.52
Portugal	0.95	-0.40	0.98	0.84
Philippines	0.85	-0.50	0.95	0.55
South Africa	0.46	-0.62	0.92	0.34
Singapore	0.82	-0.52	0.95	0.55
Spain	0.66	-0.49	0.96	0.61
Sweden	0.67	-0.68	0.90	0.17
Switzerland	0.59	-0.47	0.96	0.66
Thailand	0.74	-0.56	0.94	0.41
Turkey	0.72	-0.59	0.92	0.36
Taiwan	0.78	-0.53	0.94	0.52
United Kingdom	0.58	-0.64	0.91	0.27
United States	0.64	-0.74	0.86	-0.04
Mean	0.72	-0.53	0.94	0.52
Median	0.72	-0.52	0.95	0.54
Std.Dev.	0.13	0.09	0.03	0.22
Min	0.46	-0.74	0.86	-0.04
Max	0.95	-0.35	0.98	0.93

Table 4: **Correlation matrix – firm and industry variables:** This table provides the correlation matrix for pairs of leverage ratios and firm and industry variables. All variables are defined in Appendix A.

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
ML	[1]	1.00											
BL	[2]	0.81	1.00										
$Accr$	[3]	0.09	0.06	1.00									
$Smth$	[4]	0.12	0.07	-0.02	1.00								
$Corr$	[5]	0.10	0.05	-0.02	0.60	1.00							
P_EM	[6]	0.12	0.07	-0.06	0.90	0.89	1.00						
$Tang$	[7]	0.22	0.26	-0.06	-0.02	-0.03	-0.03	1.00					
$Prof$	[8]	-0.11	-0.07	-0.12	0.08	0.09	0.09	0.13	1.00				
$Size$	[9]	0.19	0.20	-0.12	0.08	0.07	0.09	0.16	0.25	1.00			
MTB	[10]	-0.30	-0.11	-0.04	-0.11	-0.11	-0.12	-0.10	-0.01	-0.15	1.00		
$IndMed(ML)$	[11]	0.44	0.30	0.01	0.13	0.13	0.15	0.24	0.03	0.18	-0.29	1.00	
$IndMed(BL)$	[12]	0.37	0.37	-0.02	0.12	0.12	0.14	0.30	0.12	0.22	-0.19	0.80	1.00

Table 5: **Leverage on earnings management determinants:** This table presents the coefficient estimates of market leverage (Columns 1 to 4) and book leverage (Columns 5 to 8) on earnings management variables. Firm- and industry-level variables including *Tang, Prof, Size, MTB* and *IndMed*, and country-level variables including *GDPC, MCAP,* and *GGDP* are controlled in each regression. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

	Market leverage (*ML*)				Book leverage (*BL*)			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1692***				0.2522***			
	(5.3464)				(5.7574)			
Smth		0.4193***				0.6867***		
		(3.8577)				(4.0992)		
Corr			0.3572**				0.6105***	
			(2.6882)				(3.1691)	
P_EM				0.1584***				0.2494***
				(3.6077)				(4.0229)
Tang	0.1093***	0.1096***	0.1073***	0.1076***	0.1276***	0.1279***	0.1263***	0.1267***
	(14.6830)	(14.7423)	(15.7172)	(15.7692)	(8.8416)	(8.7918)	(9.5538)	(9.5809)
Prof	-0.1503***	-0.1516***	-0.1499***	-0.1501***	-0.2012***	-0.2030***	-0.2081***	-0.2085***
	(-10.2700)	(-10.1470)	(-10.4442)	(-10.4362)	(-10.2405)	(-10.1768)	(-10.8645)	(-10.8560)
Size	0.0433***	0.0427***	0.0425***	0.0424***	0.0728***	0.0720***	0.0722***	0.0720***
	(6.4217)	(6.4265)	(6.0872)	(6.0997)	(7.4374)	(7.4142)	(7.0258)	(7.0504)
MTB	-0.0006	-0.0006	-0.0009	-0.0009	-0.0071***	-0.0071***	-0.0085***	-0.0085***
	(-0.5643)	(-0.5990)	(-0.9051)	(-0.8946)	(-8.8226)	(-8.8019)	(-9.4184)	(-9.3798)
IndMed	0.3427***	0.3426***	0.3299***	0.3297***	0.3171***	0.3177***	0.3048***	0.3049***
	(14.1253)	(14.1230)	(15.1906)	(15.1799)	(16.5434)	(16.6900)	(16.8914)	(16.9079)
GDPC	0.0232	0.0244	0.0297	0.0298	-0.0952*	-0.0934*	-0.0726	-0.0724
	(0.9140)	(0.9668)	(1.1344)	(1.1432)	(-1.7879)	(-1.7632)	(-1.4466)	(-1.4469)
MCAP	-0.0000	-0.0000	-0.0000	-0.0000	-0.0002***	-0.0002***	-0.0002***	-0.0002***
	(-1.2121)	(-1.2134)	(-0.9422)	(-0.9370)	(-3.9262)	(-3.9155)	(-3.6730)	(-3.6662)
GGDP	-0.0002	-0.0002	-0.0004	-0.0004	0.0011	0.0011	0.0008	0.0008
	(-0.3325)	(-0.3591)	(-0.8722)	(-0.8860)	(0.7963)	(0.7879)	(0.5713)	(0.5656)
Intercept	-0.4630***	-0.4574***	-0.4846***	-0.4810***	-0.3146	-0.3056	-0.4024**	-0.3965**
	(-4.3115)	(-4.2962)	(-4.0134)	(-4.0019)	(-1.6058)	(-1.5624)	(-2.1763)	(-2.1423)
Adj.R2	0.1073	0.1070	0.1048	0.1049	0.1903	0.1899	0.1906	0.1907
N	166163	166163	145470	145470	166163	166163	145470	145470

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Panel A: Market leverage (*ML*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.3455***	0.3407***						
	(9.4210)	(10.4745)						
Accr × LegCom	-0.1502**	-0.1562**						
	(-2.0711)	(-2.1747)						
Smth			1.1904***	1.1200***				
			(5.2860)	(5.3264)				
Smth × LegCom			-1.0410***	-0.9664***				
			(-3.5639)	(-3.2727)				
Corr					1.1495***	0.9112**		
					(2.7682)	(2.3246)		
Corr × LegCom					-0.8664*	-0.5784		
					(-1.8371)	(-1.1770)		
P_EM							0.4739***	0.4198***
							(4.0878)	(3.8011)
P_EM × LegCom							-0.4055***	-0.3393**
							(-2.8985)	(-2.3089)
Intercept	-0.5021***	-0.5007***	-0.4857***	-0.4849***	-0.5617***	-0.5565***	-0.5504***	-0.5455***
	(-3.4652)	(-3.0674)	(-3.3208)	(-2.9609)	(-3.9850)	(-3.5609)	(-3.8810)	(-3.4837)
Adj.R2	0.1917	0.1956	0.1913	0.1952	0.1919	0.1961	0.1921	0.1963
N	159969	159969	159969	159969	140580	140580	140580	140580

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Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.2424***	0.2390***						
	(6.6615)	(7.1402)						
Accr × LegCom	-0.1276***	-0.1326***						
	(-3.1344)	(-3.4701)						
Smth			0.8041***	0.7528***				
			(5.1993)	(5.5071)				
Smth × LegCom			-0.7127***	-0.6493***				
			(-3.7900)	(-3.7541)				
Corr					0.9718***	0.8027**		
					(2.8997)	(2.6501)		
Corr × LegCom					-0.9450***	-0.7345**		
					(-2.7694)	(-2.3452)		
P_EM							0.3532***	0.3172***
							(4.1874)	(4.2397)
P_EM × LegCom							-0.3347***	-0.2880***
							(-3.7232)	(-3.4782)
Intercept	-0.5248***	-0.4995***	-0.5140***	-0.4893***	-0.5324***	-0.5067***	-0.5258***	-0.5004***
	(-4.9501)	(-4.7189)	(-4.8665)	(-4.6431)	(-4.3056)	(-4.3561)	(-4.2439)	(-4.3027)
Adj.R2	0.1072	0.1099	0.1069	0.1096	0.1047	0.1078	0.1049	0.1080
N	159969	159969	159969	159969	140580	140580	140580	140580

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Table 7: **Enforcement**: This table presents the coefficient estimates of market leverage (Panel A) and book leverage (Panel B) on earnings management variable and its interaction with institutional environment variable. Firm- and industry-level variables including *Tang, Prof, Size, MTB* and *IndMed* (Columns 2, 4, 6 and 8 include the interactions of firm and industry control variables and institutional environment variable), and country-level variables including *GDPC, MCAP,* and *GGDP* are controlled in each regression but their coefficients are omitted for brevity. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

Panel A: Market leverage (*ML*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1980**	0.1976**						
	(2.1637)	(2.2437)						
Accr × P_Enfor	0.0384	0.0375						
	(0.9119)	(0.9509)						
Smth			1.3383***	1.2107**				
			(2.7574)	(2.6407)				
Smth × P_Enfor			-0.4100*	-0.3448				
			(-1.7201)	(-1.5509)				
Corr					1.9127***	1.7020***		
					(3.1793)	(3.2295)		
Corr × P_Enfor					-0.7005**	-0.5945**		
					(-2.5279)	(-2.3934)		
P_EM							0.6225***	0.5697***
							(3.1153)	(3.1047)
P_EM × P_Enfor							-0.2114**	-0.1845**
							(-2.2146)	(-2.1031)
Intercept	-0.5023***	-0.4645***	-0.4919***	-0.4542***	-0.5667***	-0.5331***	-0.5604***	-0.5268***
	(-3.4724)	(-3.1753)	(-3.3592)	(-3.0601)	(-4.0061)	(-3.6422)	(-3.9260)	(-3.5646)
Adj.R2	0.1916	0.1927	0.1912	0.1923	0.1920	0.1928	0.1922	0.1930
N	159969	159969	159969	159969	140580	140580	140580	140580

Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1780***	0.1663***						
	(3.0842)	(3.0122)						
Accr × P_Enfor	-0.0031	0.0023						
	(-0.1143)	(0.0873)						
Smth			0.9293***	0.8307***				
			(3.2220)	(3.3062)				
Smth × P_Enfor			-0.2944*	-0.2406*				
			(-1.9758)	(-1.9117)				
Corr					1.6983***	1.5533***		
					(3.7704)	(4.1489)		
Corr × P_Enfor					-0.7080***	-0.6305***		
					(-3.2421)	(-3.5359)		
P_EM							0.4811***	0.4430***
							(3.5323)	(3.8061)
P_EM × P_Enfor							-0.1773**	-0.1566***
							(-2.6149)	(-2.7702)
Intercept	-0.5252***	-0.5531***	-0.5183***	-0.5465***	-0.5380***	-0.5598***	-0.5340***	-0.5558***
	(-4.9472)	(-4.5979)	(-4.8852)	(-4.5639)	(-4.2702)	(-4.0583)	(-4.2597)	(-4.0450)
Adj.R2	0.1071	0.1084	0.1069	0.1082	0.1049	0.1057	0.1049	0.1058
N	159969	159969	159969	159969	140580	140580	140580	140580

Table 8: **Shareholder protection**: This table presents the coefficient estimates of market leverage (Panel A) and book leverage (Panel B) on earnings management variable and its interaction with institutional environment variable. Firm- and industry-level variables including *Tang*, *Prof*, *Size*, *MTB* and *IndMed* (Columns 2, 4, 6 and 8 include the interactions of firm and industry control variables and institutional environment variable), and country-level variables including *GDPC*, *MCAP*, and *GGDP* are controlled in each regression but their coefficients are omitted for brevity. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

Panel A: Market leverage (ML)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.3013***	0.3011***						
	(5.6431)	(5.8683)						
Accr × P_SH	-0.0422	-0.0465*						
	(-1.3885)	(-1.7077)						
Smth			0.9274***	0.8678***				
			(3.5875)	(3.3769)				
Smth × P_SH			-0.3381*	-0.3035*				
			(-1.9808)	(-1.6945)				
Corr					1.1825**	1.0266**		
					(2.2896)	(2.1052)		
Corr × P_SH					-0.5337	-0.4229		
					(-1.5164)	(-1.2009)		
P_EM							0.4071***	0.3720***
							(3.0210)	(2.8181)
P_EM × P_SH							-0.1727*	-0.1484
							(-1.8168)	(-1.5037)
Intercept	-0.5025***	-0.4984***	-0.4902***	-0.4866***	-0.5635***	-0.5588***	-0.5561***	-0.5516***
	(-3.4691)	(-3.2209)	(-3.3604)	(-3.1330)	(-4.0061)	(-3.7093)	(-3.9300)	(-3.6468)
Adj.R2	0.1916	0.1938	0.1912	0.1933	0.1919	0.1942	0.1921	0.1943
N	159969	159969	159969	159969	140580	140580	140580	140580

Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.2000***	0.1995***						
	(4.1888)	(4.4127)						
Accr × P_SH	-0.0304	-0.0337						
	(-1.0545)	(-1.3024)						
Smth			0.6354***	0.6009***				
			(3.9538)	(3.7809)				
Smth × P_SH			-0.2440**	-0.2232**				
			(-2.2586)	(-2.0495)				
Corr					0.7600*	0.6670*		
					(2.0322)	(1.8929)		
Corr × P_SH					-0.3591	-0.2912		
					(-1.4181)	(-1.2050)		
P_EM							0.2752***	0.2563***
							(3.2007)	(3.0851)
P_EM × P_SH							-0.1199*	-0.1064*
							(-1.9864)	(-1.7787)
Intercept	-0.5252***	-0.5250***	-0.5170***	-0.5171***	-0.5359***	-0.5347***	-0.5311***	-0.5299***
	(-4.9444)	(-4.7612)	(-4.8985)	(-4.7302)	(-4.3125)	(-4.2071)	(-4.2798)	(-4.1802)
Adj.R2	0.1072	0.1088	0.1068	0.1085	0.1046	0.1065	0.1048	0.1066
N	159969	159969	159969	159969	140580	140580	140580	140580

Table 9: **Accounting information quality:** This table presents the coefficient estimates of market leverage (Panel A) and book leverage (Panel B) on earnings management variable and its interaction with institutional environment variable. Firm- and industry-level variables including *Tang, Prof, Size, MTB* and *IndMed* (Columns 2, 4, 6 and 8 include the interactions of firm and industry control variables and institutional environment variable), and country-level variables including *GDPC, MCAP,* and *GGDP* are controlled in each regression but their coefficients are omitted for brevity. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

Panel A: Market leverage (*ML*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.2600***	0.2540***						
	(4.2029)	(4.2646)						
Accr × P_Acct	-0.0008	0.0023						
	(-0.0157)	(0.0491)						
Smth			1.0204***	0.9645***				
			(4.1796)	(3.8357)				
Smth × P_Acct			-0.6102**	-0.5496**				
			(-2.5882)	(-2.2347)				
Corr					1.1852***	1.0234***		
					(3.2907)	(3.1027)		
Corr × P_Acct					-0.7693**	-0.5999*		
					(-2.2267)	(-1.7650)		
P_EM							0.4466***	0.4174***
							(4.9628)	(4.7276)
P_EM × P_Acct							-0.2899***	-0.2584***
							(-3.1932)	(-2.7477)
Intercept	-0.4774***	-0.4468***	-0.4656***	-0.4354**	-0.5371***	-0.5064***	-0.5300***	-0.4993***
	(-3.1823)	(-2.7688)	(-3.0702)	(-2.6770)	(-3.6145)	(-3.1207)	(-3.5444)	(-3.0638)
Adj.R2	0.1903	0.1914	0.1899	0.1910	0.1907	0.1919	0.1908	0.1920
N	157577	157577	157577	157577	138476	138476	138476	138476

Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1739***	0.1607***						
	(4.1021)	(3.8251)						
Accr × P_Acct	-0.0119	0.0019						
	(-0.3376)	(0.0536)						
Smth			0.6483***	0.6240***				
			(3.9352)	(3.8566)				
Smth × P_Acct			-0.3718**	-0.3518**				
			(-2.3234)	(-2.2845)				
Corr					1.0284***	0.9427***		
					(3.6399)	(3.4798)		
Corr × P_Acct					-0.8401***	-0.7540***		
					(-2.9603)	(-2.8198)		
P_EM							0.3282***	0.3138***
							(4.9499)	(4.9289)
P_EM × P_Acct							-0.2354***	-0.2217***
							(-3.3791)	(-3.3693)
Intercept	-0.5425***	-0.5331***	-0.5353***	-0.5261***	-0.5529***	-0.5413***	-0.5489***	-0.5373***
	(-4.8597)	(-4.6331)	(-4.8285)	(-4.6129)	(-4.2255)	(-4.0192)	(-4.2084)	(-4.0027)
Adj.R2	0.1034	0.1040	0.1031	0.1037	0.1012	0.1017	0.1013	0.1019
N	157577	157577	157577	157577	138476	138476	138476	138476

Table 10: **Governance indicator:** This table presents the coefficient estimates of market leverage (Panel A) and book leverage (Panel B) on earnings management variable and its interaction with institutional environment variable. Firm- and industry-level variables including *Tang, Prof, Size, MTB* and *IndMed* (Columns 2, 4, 6 and 8 include the interactions of firm and industry control variables and institutional environment variable), and country-level variables including *GDPC, MCAP,* and *GGDP* are controlled in each regression but their coefficients are omitted for brevity. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

Panel A: Market leverage (*ML*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1255	0.1360						
	(0.9828)	(1.1171)						
Accr × P_K09	0.0565	0.0508						
	(1.1654)	(1.1170)						
Smth			2.4339***	2.3758***				
			(4.1803)	(4.2586)				
Smth × P_K09			-0.7661***	-0.7430***				
			(-3.3980)	(-3.4325)				
Corr					3.1821***	2.9243***		
					(3.9942)	(4.3287)		
Corr × P_K09					-1.0631***	-0.9635***		
					(-3.3866)	(-3.4874)		
P_EM							1.0626***	1.0159***
							(4.2865)	(4.5488)
P_EM × P_K09							-0.3433***	-0.3250***
							(-3.4699)	(-3.5777)
Intercept	-0.3144	-0.2870	-0.3051	-0.2770	-0.3993**	-0.3746*	-0.3930**	-0.3679*
	(-1.6043)	(-1.3295)	(-1.5905)	(-1.3064)	(-2.1964)	(-1.8734)	(-2.1762)	(-1.8503)
Adj.R2	0.1903	0.1915	0.1902	0.1914	0.1909	0.1918	0.1911	0.1921
N	166163	166163	166163	166163	145470	145470	145470	145470

Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1759**	0.1687**						
	(2.0635)	(2.1135)						
Accr × *P_K09*	-0.0030	-0.0011						
	(-0.0916)	(-0.0350)						
Smth			1.4518***	1.3387***				
			(3.3094)	(3.4215)				
Smth × *P_K09*			-0.4527**	-0.4054**				
			(-2.6329)	(-2.6641)				
Corr					2.5278***	2.2430***		
					(3.4486)	(3.5159)		
Corr × *P_K09*					-0.8973***	-0.7827***		
					(-3.0984)	(-3.0961)		
P_EM							0.7599***	0.6935***
							(3.9651)	(4.1868)
P_EM × *P_K09*							-0.2539***	-0.2266***
							(-3.2890)	(-3.3922)
Intercept	-0.4630***	-0.4677***	-0.4573***	-0.4618***	-0.4820***	-0.4873***	-0.4786***	-0.4836***
	(-4.3103)	(-4.0144)	(-4.3568)	(-4.0525)	(-4.0575)	(-3.8835)	(-4.0538)	(-3.8783)
Adj.R2	0.1073	0.1093	0.1072	0.1092	0.1052	0.1067	0.1053	0.1069
N	166163	166163	166163	166163	145470	145470	145470	145470

Table 11: **Ethics index**: This table presents the coefficient estimates of market leverage (Panel A) and book leverage (Panel B) on earnings management variable and its interaction with institutional environment variable. Firm- and industry-level variables including *Tang, Prof, Size, MTB* and *IndMed* (Columns 2, 4, 6 and 8 include the interactions of firm and industry control variables and institutional environment variable), and country-level variables including *GDPC, MCAP,* and *GGDP* are controlled in each regression but their coefficients are omitted for brevity. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

Panel A: Market leverage (ML)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.2001*	0.1936**						
	(2.0102)	(2.0668)						
Accr × P_K04	0.0241	0.0262						
	(0.6274)	(0.7347)						
Smth			1.5500***	1.5079***				
			(3.7032)	(3.4724)				
Smth × P_K04			-0.3936**	-0.3786**				
			(-2.5873)	(-2.3849)				
Corr					2.1611***	2.0420***		
					(4.7937)	(4.7421)		
Corr × P_K04					-0.6656***	-0.6204***		
					(-3.6162)	(-3.5017)		
P_EM							0.6904***	0.6700***
							(4.3454)	(4.1554)
P_EM × P_K04							-0.1927***	-0.1855***
							(-3.1049)	(-2.9343)
Intercept	-0.3146	-0.3058	-0.3053	-0.2964	-0.4000**	-0.3929**	-0.3946**	-0.3875**
	(-1.6054)	(-1.4900)	(-1.5788)	(-1.4613)	(-2.1889)	(-2.0656)	(-2.1680)	(-2.0434)
Adj.R2	0.1903	0.1909	0.1901	0.1907	0.1908	0.1913	0.1910	0.1915
N	166163	166163	166163	166163	145470	145470	145470	145470

Panel B: Book leverage (*BL*)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Accr	0.1786***	0.1649***						
	(3.0614)	(3.1062)						
Accr × *P_K04*	-0.0043	0.0008						
	(-0.1926)	(0.0411)						
Smth			0.9040***	0.8548***				
			(3.5135)	(3.4790)				
Smth × *P_K04*			-0.2210**	-0.2016**				
			(-2.3548)	(-2.2843)				
Corr					1.5038***	1.3990***		
					(3.6654)	(3.7634)		
Corr × *P_K04*					-0.4922***	-0.4501***		
					(-2.9752)	(-3.0485)		
P_EM							0.4480***	0.4268***
							(3.7179)	(3.8090)
P_EM × *P_K04*							-0.1265***	-0.1181***
							(-2.7210)	(-2.7735)
Intercept	-0.4630***	-0.4763***	-0.4574***	-0.4708***	-0.4829***	-0.4933***	-0.4799***	-0.4903***
	(-4.3111)	(-4.2840)	(-4.3389)	(-4.3155)	(-4.0323)	(-4.0623)	(-4.0428)	(-4.0705)
Adj.R2	0.1073	0.1084	0.1071	0.1082	0.1050	0.1058	0.1051	0.1059
N	166163	166163	166163	166163	145470	145470	145470	145470

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Table 12: **Leverage on earnings management determinants (First-difference regression):** This table presents the coefficient estimates of change in market leverage (Columns 1 to 4) and change in book leverage (Columns 5 to 8) on change in earnings management variable. All explanatory variables are 1 year lag changes (denoted by Δ) in the following. Firm- and industry-level variables including $\Delta Tang$, $\Delta Prof$, $\Delta Size$, ΔMTB and $\Delta IndMed$, and country-level variables including $\Delta GDPC$, $\Delta MCAP$, and $\Delta GGDP$ are controlled in each regression. Variable definitions are given in Appendix A. All regressions include firm and year fixed effects. Adjusted R^2 and number of observations are reported. Standard errors are robust to clustering within each country. T-statistics are given in parentheses. ***, ** or * next to coefficients indicate that coefficients are significantly different from zero at the 1%, 5%, or 10% levels, respectively.

	Market leverage (ML)				Book leverage (BL)			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
$\Delta Accr$	0.0171				0.0021			
	(1.5515)				(0.2182)			
$\Delta Smth$		0.4446***				0.2025**		
		(4.2620)				(2.6990)		
$\Delta Corr$			0.5628***				0.2944***	
			(5.1591)				(4.2441)	
ΔP_EM				0.1939***				0.0952***
				(4.2008)				(2.8473)
$\Delta Tang$	0.0296**	0.0293**	0.0234	0.0236	0.0309***	0.0302***	0.0263***	0.0263***
	(2.0905)	(2.1414)	(1.4570)	(1.4619)	(3.9281)	(3.9919)	(3.1889)	(3.1951)
$\Delta Prof$	0.0127*	0.0117*	0.0144**	0.0139*	0.0041	0.0042	0.0070	0.0068
	(2.0214)	(1.8783)	(2.0702)	(2.0213)	(0.9450)	(0.9560)	(1.0961)	(1.0720)
$\Delta Size$	0.0350***	0.0346***	0.0344***	0.0344***	0.0083*	0.0082	0.0059	0.0059
	(4.5153)	(4.5146)	(4.2501)	(4.2583)	(1.7080)	(1.6856)	(1.1324)	(1.1307)
ΔMTB	0.0040***	0.0040***	0.0046***	0.0046***	-0.0009*	-0.0009*	-0.0016***	-0.0016***
	(3.3624)	(3.3525)	(3.4205)	(3.4198)	(-2.0253)	(-1.9959)	(-3.1596)	(-3.1551)
$\Delta IndMed$	-0.0590***	-0.0591***	-0.0694***	-0.0694***	-0.0222*	-0.0218*	-0.0257**	-0.0257**
	(-3.1305)	(-3.1451)	(-3.6792)	(-3.6779)	(-1.9305)	(-1.8814)	(-2.2800)	(-2.2790)
$\Delta GDPC$	0.1063*	0.1078*	0.1202**	0.1203**	0.1005***	0.1010***	0.1005***	0.1005***
	(1.8398)	(1.8622)	(2.4724)	(2.4723)	(3.8151)	(3.8352)	(3.8912)	(3.8883)
$\Delta MCAP$	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001
	(0.5004)	(0.4990)	(0.8290)	(0.8315)	(0.9095)	(0.9019)	(1.3089)	(1.3114)
$\Delta GGDP$	0.0007	0.0007	0.0006	0.0006	-0.0003	-0.0003	-0.0004	-0.0004
	(0.4748)	(0.4724)	(0.4049)	(0.3979)	(-0.7203)	(-0.6954)	(-0.8536)	(-0.8609)
$Intercept$	0.0430***	0.0427***	0.0415***	0.0415***	-0.0008	-0.0010	-0.0017	-0.0018
	(7.6839)	(7.7158)	(7.7331)	(7.7157)	(-0.1725)	(-0.2231)	(-0.3924)	(-0.3960)
$Adj.R2$	0.1069	0.1069	0.1115	0.1115	0.0099	0.0100	0.0108	0.0108
N	138832	139010	121235	121235	138680	138858	121119	121119

A Appendix: Variable definitions

A.1 Firm and industry variables

A.1.1 Leverage ratios

- Market leverage (ML): Book value of debt divided by market value of assets. Market value of assets is defined as the sum of book value of debt, market value of equity and book value of preferred stock, (*Source*: Worldscope)

- Book Leverage (BL): Book value of debt divided by book value of assets, (*Source*: Worldscope)

A.1.2 Earnings management measures

- Earnings discretion $-$ magnitude of accruals ($Accr$): $Accr_{j,i,t} = 1/5 \sum_{t}^{t+4} |Accruals_{j,i,t} / CF_{j,i,t}|$, $Accruals = (\Delta Assets - \Delta Cash$ *and equivalent*$) - (\Delta Current$ *liability* $- \Delta Short$ *term debt* $- \Delta Income taxes payable$) $- Depreciation$ *and amortization expense*, Cash flow from operations (CF) $=Operating$ *income* $- Accruals$. When short-term debt and taxes payable are not available for a firm, then their changes are assumed zero. All accounting variables are scaled by lagged total assets (A minimum of 3 years is required), (*Source*: Worldscope)

- Earnings smoothing $-$ standard deviation ($Smth$): $Smth = - \sigma$ (*Operating income*) $/ \sigma$ (CF) over the last 5 years, (A minimum of 3 years is required). (*Source*: Worldscope)

- Earnings smoothing $-$ correlation ($Corr$): $Corr = - \rho$ ($\Delta Accr$, ΔCF) over the last 5 years. (A minimum of 3 years is required), (*Source*: Worldscope)

- Earnings management $-$ (P_EM): The first principle component of $Accr$, $Smth$, and $Corr$, (*Source*: Worldscope)

A.1.3 Firm and industry control variables

- Tangibility (*Tang*): Net property, plant and equipment dividend by book value of assets, (*Source*: Worldscope)

- Profitability (*Prof*): Earnings before interest, taxes, depreciation and amortization divided by book value assets, (*Source*: Worldscope)

- Size (*Size*): Natural Log of book value of assets which deflated to 2005 U.S. dollars by using the U.S. GDP deflator, (*Source*: Worldscope)

- Growth opportunity (*MTB*): Ratio of market value of assets to book value of assets, (*Source*: Worldscope)

- Industry median of leverage ratio(*IndMed*): The median leverage ratio of an industry to which firms belong. Industry is classified based on Industry Classification Benchmark, (*Source*: Worldscope)

A.2 Country control variables

- GDP per capita (*GDPC*): Natural log of GDP per capita measured in U.S. dollar, (*Source*: World development indicator)

- Stock market capitalization to GDP (*MCAP*): Stock market capitalization scaled by GDP, (*Source*: World development indicator)

- GDP growth (*GGDP*): Annual GDP growth rate, (*Source*: World development indicator)

A.3 Institutional environment variables

- English common law (*LegCom*): Dummy variable equals 1 if a country adopts the common law system, zero otherwise, (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Enforcement (*P_Enfor*): The first principle component of *EffJud*, *RulLaw*, *Corruption*, *RisExp* and *Repudiation*.

- Efficiency of judicial system (*EffJud*): Measures the efficiency and integrity of the countries' legal environment. The index is scaled from 0 (lowest efficiency) to 10 (highest efficiency), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Rule of law (*RulLaw*): Measures the law and order tradition in the country. The index is scaled from 0 (lowest tradition) to 10 (highest tradition), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Corruption (*Corruption*): Measures the corruption level of the government in the country. The index is scaled from 0 (lowest level of corruption) to 10 (highest level of corruption), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Risk of expropriation (*RisExp*): Measures the risk of "outright conscation" or "forced nationalization". The index is scaled from 0 (highest risk) to 10 (lowest risk), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Repudiation of contracts by government (*Repudiation*): Measures the risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down due to budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities. The index is scaled from 0 (highest risk) to 10 (lowest risk), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Shareholder protection (*P_SH*): The first principle component of *AntiD* and *AntiSelf*.

  - Anti-director rights index (*AntiD*): An aggregated shareholder right index which including six dimensions. The index is formed by adding 1 when the country allows proxy the vote by mail; shareholders are not required to deposit their shares prior to the general shareholders' meeting; cumulative voting or proportional representation of minorities on the board of directors is allowed;

an oppressed minorities mechanism is in place; the country requires the shareholder to hold at least 10 percent of share capital to call for an extraordinary shareholders' meeting; or shareholders have preemptive right that can be waived only by a shareholders' vote. This index is scaled from 0 (weakest shareholder protection) to 6 (strongest shareholder protection), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

- Anti-self-dealing index (*AntiSelf*): Quality of shareholder right enforcement. It computed as the average of ex-ante and ex-post private control of self-dealing. Higher value indicate better quality of shareholder right enforcement of the country, (*Source*: Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008))

- Accounting information quality (*P_Acct*): The first principle component of *AccStd90* and *Audit*.

  - Accounting standards (*AccStd90*): Average inclusion or omission of the 90 accounting and non-accounting items by examining 1990 annual reports of the companies. Higher value indicate a more transparency information environment of the country. This items fall into seven categories (general information, income statements, balance sheets, fund of flow statements, accounting standards, stock data, and special items), (*Source*: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998))

  - Auditing practices (*Audit*): The percentage of firms in the country audited by the big 5 accounting firms. It equals 1, 2, 3 or 4 if the percentage ranges between [0, 25%], (25%, 50%], (50%, 75%] and (75%, 100%], (*Source*: Bushman, Piotroski, and Smith (2004))

- Governance indicator (*P_K09*): The first principle component of 6 variables that measure various dimensions of governance. These variables include voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and

control of corruption. Higher value indicate better institutional environment of the country, (*Source*: Kaufmann, Kraay, and Mastruzzi (2009))

- Ethics index (*P_K04*): The first principle component of 6 ethics and governance indices that measure various dimensions of corporate and public sector ethics and governance. These indices include corporate illegal corruption component, corporate legal corruption component, corporate ethics index, public sector ethics index, judicial/legal effectiveness index, and corporate governance index. Higher value indicate better institutional environment of the country, (*Source*: Kaufmann (2004))