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Essays on Earnings Management: International Evidence

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최 아 름

Abstract

Essays on Earnings Management: International Evidence

Ahrum Choi
College of Business Administration
The Graduate School
Seoul National University

This dissertation is comprised of two essays on earnings management. The first essay, entitled "*The Effect of Earnings Management and Legal Regime on Audit Fee Decisions: International Evidence*", investigates whether the auditors incorporate their clients' real earnings management (REM) in addition to accrual-based earnings management (AEM) into their pricing decisions. Using 79,904 firm-year observations from 24 countries, I find a positive association between audit fees and the magnitude of both AEM and REM, suggesting that auditors perceive that AEM and REM increase audit complexity and audit risk, thus exerting more effort on the clients that manage earnings through AEM or REM. This positive relation between AEM/REM and audit fees is more pronounced in countries with a stronger legal regime due to the heightened litigation risk in these countries. Furthermore, the association between AEM and audit fees is greater than that between REM and audit fees, suggesting that auditors are more cautious in detecting and restricting AEM than they are in detecting and restricting REM. Additional analyses show that these findings are more pronounced for Big 4

clients or risky clients. Overall, the results provide valuable insights into how auditors behave when their clients engage in risk-increasing earnings manipulations.

The second essay, entitled "*The Effect of Ownership Divergence and Legal Regime on Cost Stickiness: International Evidence*", examines whether the degree of cost stickiness depends on the ownership divergence of ultimate owners and the strength of country-level legal regime. Using 52,361 firm-year observations from 22 countries, I find that the magnitude of cost stickiness decreases as the ownership divergence increases. It is because firms with large ownership divergence are more likely to engage in earnings management. Second, the magnitude of cost stickiness decreases as country-level legal regime gets stronger. Since strong legal regime restricts managers' empire building incentives, it renders a decrease in cost stickiness in strong legal regime countries. And the degree of cost stickiness is the smallest in firms with large ownership divergence and in countries with strong legal regime. This paper, by examining the effect of ownership structure and legal regime on cost behavior as well as its underlying mechanism, broadens the understanding of sticky costs behavior and contributes to the growing body of literatures on convergence of financial and managerial accounting.

Keywords: Accrual-based earnings management, Real earnings management, Audit fees, Legal regime, Cost Stickiness, Ownership Divergence, Empire Building

Student Number: 2012-30142

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Essay 1

The Effect of Earnings Management and Legal Regime on Audit Fee Decisions: International Evidence

1. Introduction

Firms can opportunistically manage reported earnings in two different ways (Healy and Wahlen 1999; Graham et al. 2005). First, firms can use discretionary accrual choices which we call "accruals-based earnings management (hereafter AEM)". Second, earnings management can be conducted through an adjustment of real business activities, such as production, sales, and investment activities, which we call "real earnings management (hereafter REM)". Both types of earnings management increase the assessment of audit risk and complexity, which lead to extra audit effort. Heninger (2001), Palmrose and Scholz (2004), and Kim and Park (2014) suggest that litigation risk of auditors is positively associated with clients' use of either type of earnings management. Auditors take into account the increased audit risk induced by earnings management in their audit planning stage by expanding the scope of audit. In addition, auditors need to exert more effort for clients engaging in aggressive earnings management if such earnings management activities increase the complexity of the audit. As a result, auditors are likely to charge higher audit fees for their clients that engage in more extensive earnings management to compensate for the increased audit risk and audit effort.

While many studies investigate the effect of AEM on audit fees in a single country, there are no papers that examine this association in an international setting. Moreover, there is no clear and systematic evidence of whether REM influences audit pricing decisions, despite its detrimental impacts on the financial reporting quality and audit risk. This study aims to provide answers for three interrelated questions with regard to auditors' incorporation of clients' AEM and REM into their audit fee decisions in an international setting: (1) Are AEM and REM associated with audit fees? (2) Is the association between audit fees and AEM/REM more pronounced among countries with a stronger legal regime due to the more stringent

legal liabilities that auditors face? (3) Does AEM influence the audit fees more than REM does in a given level of legal regime stringency?

I first investigate whether AEM/REM is priced in audit fees. While the importance of investigating the relation between REM and audit fees is noted, prior studies on earnings management and auditing have mostly focused on the effect of AEM on auditor behavior in a single country. For example, Becker et al. (1998) report that high-quality Big 4 auditors restrict their clients' use of excessive AEM.[1] Abbott et al. (2006) and Krishnan et al. (2013) show that AEM is positively associated with audit fees and the association is more pronounced when managers use income-increasing discretionary accruals. In contrast, only a few studies examine REM and its relation to auditor behavior due to the belief that REM is under the jurisdiction of managers, and detecting and restricting REM are not the direct duty of auditors (Roychowdhury 2006; Chi et al. 2011). As a result, "little is known about how auditors view the use of REM, and how they respond to REM when they are aware of it" (Commerford et al. 2014b) until recently.

However, as REM significantly increases audit effort for the following reasons, auditors have legitimate incentives to care about REM. REM is defined as an intentional activity that causes a deviation from optimal business transactions (Roychowdhury 2006; Gunny 2010). Thus, REM adds complexity to business activities (Kim and Sohn 2013), requiring auditors to put forth additional effort in their audit processes (Choi et al. 2015). Studies also document that REM is more detrimental than AEM in firms' long-term sustainability (Mizik and Jacobson 2007; Cohen and Zarowin 2010) and firms that conduct REM extensively are more likely to experience crash risk in the following period (Francis et al. 2014). As a result, REM is closely connected to heightened litigation risk of both clients and auditors

[1] For simplicity, previous Big 8, 6, and 5 auditors (i.e., large auditors) are collectively called Big 4 in this study.

(Mizik and Jacobson 2007; Kim and Park 2014). In addition, REM, a proxy for managerial opportunism in financial reporting, is considered as an outcome of poor managerial integrity (AICPA 2007). Despite these important implications of REM on auditor behavior, there is little evidence on how auditors respond to REM (Commerford et al. 2014b). This study expands the auditing literature by investigating AEM and REM simultaneously and examining how they are related to the auditors' effort level measured by audit fees.

I next investigate how the country-level legal regime influences the association between the magnitude of earnings management and audit fees. As suggested by DeFond and Francis (2005), it is imperative to understand the role of country-level legal strength in determining auditor behavior. Auditors face greater legal liability in countries with a strong legal enforcement (Choi et al. 2008; Brown et al. 2014). Thus, they are required to exert more audit effort to decrease litigation risk in such a case (Gul et al. 2003; Choi et al. 2008). Following this logic, I examine whether the pricing effect of AEM/REM varies according to the strength of legal regime. I expect that audit fees are expected to increase for a given level of AEM or REM as a country's legal liability becomes more stringent.

I further explore the differential role of auditors in detecting and restricting AEM *versus* REM. Even though auditors have incentives to reflect both types of earnings management in their audit fee decisions, the degree of reflecting AEM and REM on audit fees may not equal. Detecting and restricting opportunistic AEM are auditor's main duty, while it is not clear whether detecting and restricting REM are auditors' main responsibility (Chi et al. 2011). Moreover, since REM is more difficult for outsiders to detect (Roychowdhury 2006), it may be more difficult for auditors to observe their clients' REM and charge higher fees for that than they do with regard to AEM. As a result, if auditors are likely to pay more attention to detecting and restricting AEM than REM, the positive association between audit fees

and the magnitude of earnings management would be more pronounced for AEM than for REM.

I test these predictions using a sample of 79,904 firm-year observations from 24 countries over the period 2000-2013. Financial and auditor identity data are available from *Compustat Global*, and audit fees data are available from *Worldscope*. In the empirical analyses, I regress audit fees on the main interest variables: AEM, REM, and the strength of legal regime. I also include previously known determinants of audit fees, such as client size, profitability, and complexity as well as country-level control variables (Simunic 1984; Choi et al. 2008).

The empirical findings are summarized as follows. First, auditors consider both AEM and REM when they determine audit fees. Auditors increase their audit fees when clients are engaged in AEM or REM. Second, this positive association becomes stronger in countries with a stronger legal regime. Third, the association between audit fees and AEM is stronger than that between audit fees and REM. These findings are consistent with my predictions. In additional analyses, I also find that the abovementioned findings are more pronounced for clients audited by Big 4 auditors, compared to non-Big 4 auditors, and for risky clients, compared to non-risky clients. The former results are possibly due to the higher reputational costs for Big 4 auditors. The latter results imply that auditors pay extra precautions in auditing risky clients than non-risky clients.

This study contributes to the literature in the following ways. First, this study is the first to show that auditors take into account both AEM and REM when making their audit pricing decisions to compensate for their increased audit risk. Although the association between AEM and audit pricing has been investigated by several prior studies (Abbott et al. 2006; Krishnan et al. 2013), there are no studies that examine this association in an international setting. Also, the association between audit fees and REM has not been looked into yet. The findings in this study indicate

that REM is an additional and incremental audit risk factor when the auditors determine their audit fees. Thus, this paper expands the extant audit fees and REM research by providing insightful implications on the effect of REM on audit fees and thus audit quality. Relatedly, the findings in this study complement the survey results documented in Commerford et al. (2014b) that auditors also care about clients' REM.

Second, even though the country-level institutional factors are important in clients' reporting incentives and auditors' assessment of audit risk (Arens et al. 2003; Choi et al. 2008), majority of prior studies have only focused on client-specific factors in determining their audit fee models. Along the same lines, DeFond and Francis (2005) emphasize the need to understand the role of country-level legal strength in determining auditor behavior. This study answers this call by showing that auditors' incentives to reflect AEM and REM on their audit fees are moderated by the strength of country-level legal regime.

Third, this study also provides important implications for investors and practicing auditors by suggesting that clients that engage in excessive REM, in addition to AEM, especially in countries with a strong legal regime, can be exposed, and make auditors exposed to high litigation risk. Furthermore, regulators need to develop a way to increase the monitoring role of auditors and thus increase audit quality in countries with a weak legal regime.

Despite several contributions, this paper is subject to certain limitations. First, AEM/REM can be determined endogenously. For example, managers can use AEM and REM as substitutes or complements depending on their relative costs. Second, there could be unknown measurement errors or other correlated omitted variables that affect the levels of both earnings management and audit fees. It may be difficult to control for many unknown country-level differences in an international setting (e.g., Peek et al. 2013). Nevertheless, the robust results after controlling for

these endogeneity and correlated omitted variable problems in various ways reassure the reliability of my main findings.

The remainder of the paper is organized as follows: Section 2 introduces the theoretical model for audit pricing and discusses prior studies in the context of hypotheses development; Section 3 explains variable measurement and research design used in this paper; Section 4 discusses sample and data, and presents main empirical results; Section 5 summarizes the results for additional and robustness tests; Section 6 concludes the paper.

2. Summary of prior studies and hypotheses development

2.1. Theoretical model for audit pricing

Choi et al. (2008) develop a theoretical model that explains the determinants of audit fees in an international setting. According to the paper, auditors choose a level of audit effort, denoted as *a*, to minimize their expected total audit costs. The expected total audit costs are defined as the sum of the expected legal liability costs ($(1-p)(1-a)[r(1-a)]L$) and the effort costs associated with audit engagement (ka):

$$\underset{a\in[0,1]}{Min}(1-p)(1-a)[r(1-a)]L + ka \qquad (1)$$

where $(1-p)$ is the probability of a bad project, $(1-a)$ is the probability of an audit failure, $[r(1-a)]$ is the probability of incurring a legal liability cost conditional on an audit failure (*r* is the strictness of the legal regime), L is the legal payment from auditors given audit failure, and ka is the cost of audit effort. Solving the objective function in Eq. (1) using first-order condition, the optimal level of audit effort is determined as follows:

$$a^* = \frac{2(1-p)rL-k}{2(1-p)rL} \qquad (2)$$

Auditors put more effort into auditing their clients if the probability of a bad project $(1-p)$ is higher, the legal regime (r) is stronger, and the legal liability payment (L) is larger, while they put in less effort if the marginal cost of the audit effort (k) is larger. Given the optimal level of audit effort, the equilibrium of audit fees is expressed as follows:

$$Audit\ Fees = (1-p)r(1-a^*)^2L + ka^* \quad (3)$$

Eq. (3) indicates that audit fees 1) increase with the probability of a bad project, $(1-p)$, 2) increase with the strength of country's legal liability, r, 3) increase with the legal liability costs in case of audit failure, L, and 4) increases with the marginal cost of audit effort, k.

2.2. AEM/REM and audit pricing

Some prior studies empirically examine how each factor that determines audit fees works in an audit pricing process. The first factor is the probability of a bad project, denoted as $(1-p)$ in the model. Auditors require higher fees if their clients are more likely to belong to a bad type (i.e., clients who desire opportunistic financial reporting). Healy and Wahlen (1999) list two different ways to opportunistically manage reported earnings: one is earnings management using discretionary accruals (i.e., AEM) and the other is earnings management by changing real activities (i.e., REM).

Prior auditing literature has mostly focused on the auditor's response to AEM but has rarely looked into REM (Commerford et al. 2014a, b). For example, Gul et al. (2003) show that discretionary accruals used for opportunistic purposes are related to the assessment of higher audit risk by auditors. The paper, using Australian listed firms, provides an evidence of positive association between discretionary accruals and audit fees. Abbott et al. (2006) also show that audit fees increase if the client engages in income-increasing earnings management. Auditors pay attention to

client's discretionary accruals because the magnitude of discretionary accruals is related to the chance of financial statement misstatements and auditor litigations (Heninger 2001; Palmrose and Scholz 2004). These findings suggest that auditors consider the level of discretionary accruals in risk assessing processes and ultimately reflect it on their audit fees.

Despite many papers that link audit fee determinations to the level of discretionary accruals (e.g., Gul et al. 2003; Abbott et al. 2006), there is a dearth of studies that relate audit pricing processes to REM. The reason for this lack of research could be ascribed to the perception that detecting or restricting REM is not a direct responsibility of auditors (Chi et al. 2011). Given the definition of REM, which is a deviation from optimal business operations, auditors have no specific reasons to consider whether their clients' business operations are optimal or not. Their responsibility is to check whether their clients' business operations are presented in the financial statements in a way of complying with existing generally accepted accounting standards (Roychowdhury 2006; Chi et al. 2011). Under this argument, audit fees should not be affected by REM.

However, auditors have legitimate incentives to care about REM since REM can significantly increase the degree of audit effort the auditor have to put in. First of all, REM could lead to more complex audit processes. In the process of verifying their client firms' compliance with accounting standards and detecting AEM (which are auditors' main duty), auditors need to exert more audit effort for their clients that engage in REM, because the effects of AEM and REM are entangled in distorting reported earnings (Choi et al. 2015). For example, overproduction and allowing lenient credit terms (i.e., REM) can lead to increased sales as well as high level of inventory and accounts receivables. Auditors need to exert more effort to judge the appropriate amount of inventory impairment and allowance for doubtful accounts (i.e., assessing AEM) in such a case. After repeated audits, therefore, "auditors may

have incentives to try to deter REM to reduce the complexity of reported earnings so that they can detect and constrain AEM more easily" (Choi et al. 2015).

Second, considering the fact that REM is closely connected to litigation risk, REM could have a nontrivial effect on auditors' behaviors. Stock prices of clients that manage their business activities to inflate current-period earnings are likely to be overvalued. The overvalued stock prices cannot be sustained forever because temporarily boosted incomes via REM are not supported by long-term cash flow generating activities. Once the investors recognize the true status of the clients' cash flow generating abilities, stock prices fall sharply. There are several papers supporting this argument. For example, Cohen and Zarowin (2010) show that seasoned equity offering (SEO) firms that engage in REM experience declines in return on assets in the post-SEO period, and the degree of declines in firm performance is more severe when the firm conducts REM than when it conducts AEM. Mizik and Jacobson (2007) find that firms boosting reported earnings via cutting marketing expenses during the time of SEO can temporarily inflate stock prices but, in the long run, stock prices drop. Francis et al. (2014) also show that the probability of stock crash is high for firms with a high level of REM.

If stock prices are boosted by the upwardly manipulated earnings through AEM and fall subsequently when firms' real fundamentals are revealed, shareholders can sue the auditors for their losses. If managers use REM along with AEM, and the extent of stock price boosting and subsequent stock price declines are greater than when they only use AEM, shareholders are more likely to sue auditors by holding them responsible for failing to restrict AEM (Choi et al. 2015). Auditors may be held liable for clients' stakeholder losses, even if the auditors are not directly responsible because investors believe that auditors provide an insurance role and they have deep pockets (Ball 2009; DeFond and Zhang 2014; Mansi et al. 2004; O'Malley 1993; Stice 1991). As a result, stock price declines caused by REM may lead to increased

probability of shareholder litigations against both firms and auditors (Ibrahim et al. 2011; Kim and Park 2014). That is why auditors are more likely to resign from the clients that engage in REM (Kim and Park 2014). Consistent with this argument, survey results by Commerford et al. (2014b) show that auditors acknowledge that REM alters their perceptions for audit risk and management integrity, which leads to the change in their audit planning.[2]

Third, REM indicates a lack of managerial integrity. REM, by definition, reflects managers' opportunistic attitude toward financial reporting (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012). And opportunistic financial reporting is considered as an outcome of poor managerial integrity (AICPA 2007). Auditing standards require auditors to explicitly consider management integrity in planning their audits and client-retention decisions (AICPA 2002; PCAOB 2002). Once auditors judge the managers as a type of low integrity, they will lower the amount materiality and provide more thorough audit procedure.

In summary, auditors have incentives to exert more audit effort for the clients that engage in REM as well as AEM. Thus, audit fees are likely to increase for firms with more AEM and REM. I formalize this prediction as the first research hypothesis:

Hypothesis 1*: Other things being equal, auditors charge higher audit fees to the client with higher levels of AEM and REM.*

2.3. AEM/REM and audit pricing subject to legal regime

The strength of country's legal regime, denoted as *r* in Eq. (3), is one of the key factors in explaining the level of audit fees in an international setting. According

[2] Relatedly, Commerford et al. (2014a) report that, in a controlled experiment, auditors who observe clients' engagement in REM are likely to perceive weaker management tone and thus exhibit greater professional skepticism. Most respondents also reply that they would, after observing the clients' engagement in REM, change materiality and risk assessment criteria used in their audit procedures. These changes would also lead to higher audit fees.

to Choi et al. (2008), the stronger the legal liability is, the more likely the audit failure will eventually lead to legal damages to auditors. This is because of the fact that the legal system of protecting shareholders is well organized and effectively enforced under the strong legal regime. Moreover, the amount of legal payment from auditors given audit failure, denoted as L in Eq. (3), is much larger in strong legal regime countries (McKnight and Hinton, 2013). Thus, auditors increase the scope of their audits to minimize audit risk, which makes audit fees increase monotonically as a country's legal liability becomes stricter (Choi et al. 2008). Consistent with this argument, Francis and Wang (2008) and Khurana and Raman (2004) report that auditors, especially Big 4 auditors, put more audit effort in countries with a stronger legal regime, leading to higher audit quality in those countries.[3]

Previous discussion suggests that both the level of AEM and the level of REM are associated with litigation risk. Combining this argument with the strength of legal liability that auditors face in different countries (Brown et al. 2014), I predict that the positive association between AEM/REM and litigation risk is intensified in countries with strong legal regimes. Auditors have stronger incentives to exert greater audit effort (Khurana and Raman 2004; Francis and Wang 2008), resulting in higher fees to their clients with high levels of AEM and REM to compensate for audit risk, especially in countries with a stronger legal regime. Referring to Eq. (3), more extensive AEM/REM increases the probability of audit failure (i.e., $(1-p)$), to which auditors respond with more audit effort (i.e., a^*) to minimize the litigation risk due to audit failure, both increasing audit fees. And this positive relation between AEM/REM and audit fees becomes more pronounced under the more stringent legal regime (i.e., r and L).

[3] In contrast, practitioners generally argue that auditors, especially large Big 4 auditors with global networks, provide relatively uniform quality audit services across the world (Khurana et al. 2011). However, as explained above, empirical results (e.g., Khurana and Raman 2004; Francis and Wang 2008) do not support this argument.

Considering the relation between REM and audit fees subject to legal regime is also important because REM is more widely conducted in countries with a stronger legal regime (Choi et al. 2015). Earnings management using accruals decreases as investor protection gets stronger because strong investor protection limits the insider's ability to manage accruals (Leuz et al. 2003; Haw et al. 2004). If managers are constrained to use AEM, they instead switch to REM to boost their earnings (Cohen et al. 2008). Compared to AEM, REM is difficult to be detected by outsiders, which provides managers with incentives to switch their earnings management method from AEM to REM when AEM is constrained (Cohen et al. 2008; Choi et al. 2015).[4] Thus, auditors who are interested in protecting their reputations by maintaining an appropriate level of audit risk have incentives to incorporate clients' REM into their audit fee decisions, especially in countries with strong legal regimes.

Based on the argument, I predict that auditors in strong legal regime countries charge higher audit fees to their clients with high levels of AEM and REM, than the auditors in weak legal regime countries do. This prediction is expressed as the second hypothesis as follows:

Hypothesis 2*: Other things being equal, the positive association between audit fees and the levels of AEM and REM is more pronounced when the country's legal regime is stronger.*

2.4. Difference in audit pricing for AEM *versus* REM

[4] This substitutive relation between AEM and REM is well documented in prior studies. For example, Cohen et al. (2008) document that firms heavily involved in AEM in the pre-SOX period significantly decreased their involvement in AEM after the passage of SOX. Cohen and Zarowin (2010) document a similar shift from AEM to REM in the post-SOX period by firms with seasoned equity offerings. Zang (2012) provides evidence of trade-off between AEM and REM based on their relative cost structure. Chan et al. (2015) report a similar substitution after firms adopt compensation clawback provisions. In an international setting, Choi et al. (2015) show that the intensity of REM increases with the strength of a country-level legal regime due to the substitutive association between AEM and REM.

I further compare the differential role of auditors in detecting and restricting AEM *versus* REM. Even though auditors have incentives to consider both types of earnings management in their audit processes to provide audit services above an acceptable level, the degree of incorporating AEM and REM into their audit fee decisions may not be equal. Auditors' main duty is to detect and restrict clients' opportunistic AEM, while it is not clear whether detecting or restricting REM is auditors' responsibility (Chi et al. 2011). Consistent with this argument, in a survey conducted by Commerford et al. (2014b), about 90 percent of the interviewed auditors respond that they are more concerned with AEM than REM. If auditors pay more attention to restricting AEM than REM, the positive association between audit fees and the magnitude of earnings management is likely to be more pronounced for AEM than for REM. Considering the fact that REM is more difficult for outsiders to detect (Roychowdhury 2006), it may be more difficult for auditors to observe their clients' REM and charge higher fees for that than they do with regard to AEM. In summary, these findings suggest that auditors are less likely to consider REM than AEM in their audit pricing decisions at a given level of legal liability.

On the other hand, there is a possibility that auditors pay more attention to restricting REM than AEM. Firms that engage in REM experience more severe declines in return on assets than the firms that conduct AEM do (Cohen and Zarowin 2010). More severe declines in firm performance indicates higher litigation risk in the subsequent period. In this case, the positive association between audit fees and the magnitude of earnings management is likely to be more pronounced for REM than for AEM. Given the countervailing predictions, I propose the third research hypothesis in a null form:

Hypothesis 3*: Other things being equal, the degree of incorporating AEM and REM into audit fee decisions is equal at a given level of legal liability.*

3. Research design

3.1. Proxy for the magnitude of AEM (*AM*) and REM (*RM*)

I first estimate the normal level of accruals by employing modified Jones (1991) model proposed by Dechow et al. (1995) for each country, year, and 2-digit SIC industry code. *AM* (the proxy for the magnitude of AEM) is defined as the difference between firm's actual accruals and the normal level of accruals. To measure the intensity of REM, I follow the method developed by Roychowdhury (2006). I focus on three methods of manipulating real operational activities: (a) offering excessive sales discounts or lenient credit terms to temporarily boost sales revenues, (b) engaging in overproductions to report a lower cost of goods sold, and (c) reducing or deferring discretionary expenditures (Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012; Chan et al. 2015).

I first estimate the normal level of operating cash flows, production costs, and discretionary expenses as follows:[5]

$$\frac{CFO_t}{AT_{t-1}} = a_0 + a_1\frac{1}{AT_{t-1}} + a_2\frac{S_t}{AT_{t-1}} + a_3\frac{\Delta S_t}{AT_{t-1}} + \varepsilon_t \quad (4)$$

$$\frac{PROD_t}{AT_{t-1}} = a_0 + \frac{1}{AT_{t-1}} + a_2\frac{S_t}{AT_{t-1}} + a_3\frac{\Delta S_t}{AT_{t-1}} + a_4\frac{\Delta S_{t-1}}{AT_{t-1}} + \varepsilon_t \quad (5)$$

$$\frac{DISX_t}{AT_{t-1}} = a_0 + a_1\frac{1}{AT_{t-1}} + a_2\frac{S_{t-1}}{AT_{t-1}} + \varepsilon_t \quad (6)$$

where CFO_t is cash flow from operating activities in year *t*; AT_{t-1} is total assets at the end of year *t-1*; S_t is the amount of sales in year *t*; ΔS_t is the change in sales amount from year *t-1* to *t*; $PROD_t$ is the sum of cost of goods sold and change in inventory in year *t*; ΔS_{t-1} is the change in sales amount from year *t-2* to *t-1*; and $DISX_t$ is

[5] I include intercepts in the estimation models following Gunny (2010), Zang (2012) and Chan et al. (2015). The empirical results are qualitatively similar when the intercepts are not included in these estimation models.

discretionary expenditures defined as the sum of selling, general and administrative expenses, research and development expenses, and advertising expenses in year *t*.[6] I estimate the above regressions cross-sectionally for each country-industry-year and get the residuals from the regressions to capture the intensity of REM, denoted as *AB_CFO*, *AB_PROD*, and *AB_DISX*, respectively. I then multiply (-1) to *AB_CFO* and *AB_DISX* such that higher values of these variables indicate greater amount of REM.[7]

In order to capture total effect of REM, I compute a single comprehensive variable, *RM*, by combining three individual proxies, (-1)**AB_CFO*, *AB_PROD*, and (-1)**AB_DISX* (Cohen et al. 2008). Furthermore, to compare the relative effect of AEM and REM on audit fees directly, I standardize both *AM* and *RM* to have a mean of zero and a standard deviation of one.[8]

3.2. Proxy for country-level legal regime (*LAW*)

I measure the strength of legal regime (*LAW*) following Brown et al. (2014). They present two indices designed to capture the country-level legal regime, specifically focusing on auditors' perspective. First index is *AUDENV* which measures the quality of the public company auditors' working environment.[9] High score on this comprehensive index means that the country puts a high value on

[6] As long as selling, general and administrative expenses is available, research and development expenses and advertising expenses are set to zero if they are missing (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010). If selling, general and administrative expenses is missing, it is excluded from our sample.
[7] I select the observations that have at least 10 observations in each country-industry-year.
[8] Specifically, I subtract the country-industry-year mean value of the variable and divide it by the standard deviation of the variable in each country-industry-year.
[9] This index includes the following items: factors that are related to obtain auditor license and to complete activities to maintain a license; the quality of auditor training programs; the existence of a professional quality assurance program (e.g., peer review program); the existence of an auditor or auditor partner rotation system; the presence of an auditor oversight board with power to sanction auditors (e.g., cancel their licenses or report them to another body for disciplinary sanctions); the intensity of audit activity in a country; and the risk of litigation against auditors.

auditors, has a well-established system to maintain a high audit quality, and has effective regulations on imposing a penalty when audit failure occurs. Thus, the higher value on this comprehensive index, the greater effort the auditors are likely to put in their auditing process. Second index is *ENFOR* which captures the degree of enforcement activity against accounting and auditing professions by independent enforcement bodies. Thus, countries with higher *ENFOR* are regarded as stronger legal regime countries.[10]

Both *AUDENV* and *ENFOR* are converted into the minimum (maximum) value of 0 (1). Since Brown et al. (2014) provide indices for the years 2002, 2005, and 2008, I match the indices based on the closest year. For example, I match 2002 index for the period from 2000 to 2003, 2005 index for the period from 2004 to 2006, and 2008 index for the later period.[11]

Among the various proxies developed in prior studies to capture the strength of legal regimes (e.g., La Porta et al. 1998, 2006; Djankov et al. 2008), I choose to use the indices developed by Brown et al. (2014) due to the following two reasons. First, Brown et al. (2014) develop indices using factors that are specifically related to the strength of audit and auditor oversight body. Since this study is about the determination of audit fees, the indices developed by Brown et al. (2014) are more relevant than those developed by other studies. Second, Brown et al. (2014) provide indices for each of 2002, 2005, and 2008, allowing to capture time-series variation in country-level legal regimes. Many prior studies that examine the effect of country-level differences use time-invariant indices. However, enactment of SOX and the

[10] *ENFOR* includes the following items: whether the country has a body that is responsible for monitoring and promoting compliance with accounting and auditing standards; how active the regulatory body works (e.g., review of financial statements, require companies to revise and reissue financial statements); and the extent of resources devoted to enforcement review of financial statements.

[11] I generate the third proxy (*TOTAL*) for country-level legal regime by calculating the average of *AUDENV* and *ENFOR*. Because the empirical results using *TOTAL* are almost identical to those using the other two measures, I do not separately tabulate them for simplicity.

adoption of International Financial Reporting Standards in some countries, for example, make the strength of legal regimes significantly change during my sample period. Thus, employing measures that allow a time-series variation is better in capturing the strength of legal regimes.

3.3. Model specification and other variables

To examine whether auditors reflect clients' AEM and REM on their audit pricing processes, I develop the following audit fee model based on prior studies (Simunic 1984; Ashbaugh et al. 2003; Ghosh and Lustgarten 2006; Choi et al. 2008; Ghosh and Pawlewicz 2009):

$$\begin{aligned} AUDFEE_{ijt} = {} & \beta_0 + \beta_1 AM_{ijt} + \beta_2 RM_{ijt} + \beta_3 LAW_{jt} + \beta_4 SIZE_{ijt} + \beta_5 LEV_{ijt} \\ & + \beta_6 ROA_{ijt} + \beta_7 BIG4_{ijt} + \beta_8 FSALE_{ijt} + \beta_9 NBS_{ijt} + \beta_{10} INVREC_{ijt} \\ & + \beta_{11} MB_{ijt} + \beta_{12} ISSUE_{ijt} + \beta_{13} LOSS_{ijt} + \beta_{14} GDP_{jt} + \beta_{15} MKTCAP_j \\ & + \beta_{16} DISCL_j + Fixed\ \ effect + \varepsilon_{ijt.} \end{aligned} \quad (7)$$

for firm *i* in country *j* in year *t*. The dependent variable is *AUDFEE*, the natural logarithm of audit fees measured in million U.S. dollars. The main test variables are *AM*, *RM*, and *LAW* (either *AUDENV* or *ENFOR*). If auditors respond to AEM and REM as a way to be compensated for increased risk, β_1 and β_2 will be positive (Hypothesis 1). Moreover, if auditors are likely to charge higher audit fees to clients engaging in AEM than those engaging in REM, the magnitude of β_1 is significantly larger than that of β_2 (Hypothesis 3). In addition, the coefficient on *LAW* (β_3) is expected to have a positive sign because litigation risk imposed on auditors is heightened in strong legal regime countries (Choi et al. 2008), which leads to higher audit fees.

The second hypothesis is to examine whether the positive association between audit fees and the levels of AEM and REM is more pronounced when the

country's legal regime is stronger. To test this prediction, I interact *LAW* with *AM* and *RM* in the regression model as follows:

$$\begin{aligned} AUDFEE_{ijt} = {} & \beta_0 + \beta_1 AM_{ijt} + \beta_2 AM_{ijt} * LAW_{jt} + \beta_3 RM_{ijt} + \beta_4 RM_{ijt} * LAW_{jt} \\ & + \beta_5 LAW_{jt} + \beta_6 SIZE_{ijt} + \beta_7 LEV_{ijt} + \beta_8 ROA_{ijt} + \beta_9 BIG4_{ijt} + \beta_{10} FSALE_{ijt} \\ & + \beta_{11} NBS_{ijt} + \beta_{12} INVREC_{ijt} + \beta_{13} MB_{ijt} + \beta_{14} ISSUE_{ijt} + \beta_{15} LOSS_{ijt} + \beta_{16} GDP_{jt} \\ & + \beta_{17} MKTCAP_j + \beta_{18} DISCL_j + Fixed\ effect + \varepsilon_{ijt.} \end{aligned} \quad (8)$$

If auditors charge higher audit fees for their clients' AEM and REM in countries with strong legal regimes than in countries with weak legal regimes, β_2 and β_4 will be positive (Hypothesis 2).

In Eqs. (7) and (8), I include client-specific control variables that represent size, profitability, and complexity. *SIZE* is defined as the natural logarithm of market value of equity in million U.S. dollars; *LEV* is the ratio of total liabilities to total assets; *ROA* is the return on assets; *BIG4* is an indicator variable that equals one if the client is audited by one of the Big 4 auditors, and zero otherwise; *FSALE* is an indicator variable that equals one if the client reports foreign sales, and zero otherwise; *NBS* is the number of business segments; *INVREC* is the sum of inventory and receivables divided by total assets; *MB* is the ratio of market value to book value of equity; *ISSUE* is an indicator variable that equals one if a client has issued long-term debt or new shares to outside capital suppliers with total amounts exceeding 5% of the beginning-year total assets, and zero otherwise; and *LOSS* is an indicator variable that equals one if the client reports a loss in the year, and zero otherwise. More detailed definitions of all the variables used in this study are summarized in the Appendix.

SIZE is expected to have a positive sign because auditors put additional effort to audit larger clients. I expect the coefficients on variables related to client-specific financial status (e.g., *LEV* and *ISSUE*) and complexity (e.g., *FSALE*, *NBS*, and *INVREC*) to have a positive sign. In addition, if a client makes a lot of profit,

then the level of perceived audit risk is low, resulting in a negative sign on *ROA* and positive sign on *LOSS*. The coefficient on *BIG4* is expected to be positive given the existence of Big 4 premium (Craswell et al. 1995; DeFond et al. 2000; Choi et al. 2008).

I also include three macro-economic variables in Eqs. (7) and (8) to control for factors that may cause variations in audit fees across countries: *GDP*, *MKTCAP*, and *DISCL*. I include *GDP* to capture the cross-country differences in living standards and thus the reservation compensation for audit partners and staff (Choi et al. 2008). It is defined as gross domestic product per capita expressed as U.S. dollars. *MKTCAP* is the importance of each country's equity market development measured by the ratio of stock market capitalization held by minority shareholders to gross domestic product (Choi et al. 2008; Francis et al. 2013). *DISCL* is a proxy for the level of required disclosure in each country (Choi et al. 2008; Francis et al. 2013). Finally, I include year and industry fixed effects to control for potential variations in audit fees across industries and over time.[12]

4. Sample, data, and empirical results

4.1. Sample and data

Table 1 describes the sample selection procedures. To construct the sample dataset, I retrieve all non-financial firms from *Compustat Global* from 2000 to 2013, with the initial sample size of 463,330 firm-years. From this sample, firm-year observations from the counties without the data necessary to measure the strength of legal regime are deleted, leaving 378,677 firm-years from 44 countries. These

[12] I do not include country fixed effects in the equation because they are linearly dependent on the time invariant country-level variables (i.e., *MKTCAP* and *DISCL*) (Haw et al. 2012). When I run the regression with country fixed effects, country-level control variables are automatically dropped due to the multicollinearity. In addition, the empirical results without country-level control variables, not tabulated for brevity, are similar to the tabulated results.

countries are those included both in Brown et al. (2014) and in La Porta et al. (2006).[13] Four countries with a potential miscoding of auditor identification variable in *Compustat Global* are deleted (Francis and Wang, 2008; Francis et al. 2013),[14] reducing the sample size to 292,819 from 40 countries. Firm-year observations with non-positive total assets or sales are eliminated, further reducing the sample size to 291,764. I further omit firm-years that do not have the audit fee data in *Worldscope*, resulting in a significant sample reduction to 131,960 over 37 countries. Finally, I discard the observations that do not have all the necessary data to calculate the test variables and control variables used in this study. Final sample comprises 79,904 firm-year observations (13,652 firms) from 24 countries. I winsorize observations falling in top and bottom 1% of each continuous variable by year as outliers.

Insert Table 1 about here.

Table 2 shows country-by-country sample sizes as well as the mean values of *AUDFEE*, *AM*, and *RM*. Variables that capture the strength of legal regime (*AUDENV* and *ENFOR*) and other country-level controls variables (*GDP*, *MKTCAP*, and *DISCL*) are also reported. The bottom row of Table 2 reports the statistics calculated from the full sample used in main analyses. The second column (Column (2)) reports the sample size per country. Of the 79,904 total number of observations, U.S sample is the largest, which accounts for 45% of the total sample. The next largest countries in the sample are Australia, the United Kingdom, Hong Kong, and Malaysia, and these countries account for about 8% to 11 % of the total sample. On the other hand, Belgium, Ireland, the Netherlands, and Thailand have very small number of observations. The third column shows the mean value of audit fees represented in the unit of natural logarithm of million U.S. dollars (*AUDFEE*). The

[13] Brown et al. (2014) provide an audit and enforcement proxy data for 51 countries, while La Porta et al. (2006) provide the county-level data for 49 countries. Because I use *MKTCAP* and *DISCL* provided by La Porta et al. (2006) as control variables, I select the countries in the intersection of Brown et al. (2014) and La Porta et al. (2006) for my sample.

[14] These four countries are India, Japan, South Korea, and Pakistan.

average value of *AUDFEE* is 0.523, which is equivalent to approximately 1.7 million U.S. dollars. Mean value of audit fees of U.S. observations is 2.1 million U.S. dollars, greater than the mean value of the total sample. Generally, audit fees are higher in European countries than other countries (e.g., France, Ireland, the Netherlands, Norway, Spain, and Switzerland). The next two columns show the mean values of the main interest variables, *AM* (Column (4)) and *RM* (Column (5)) for each country. Because I use cross-sectional version of regressions to estimate *AM* and *RM* within each country, the average values of the earnings management variables both for each country and for the total sample are very close to zero.[15] The remaining columns (Columns (6) to (10)) show the mean value of country-level legal regime proxies and other country-level control variables. *AUDENV*, *ENFOR*, and *GDP* are the average value over the total sample period, while *MKTCAP* and *DISCL* is a constant value over the sample period.

Insert Table 2 about here.

The descriptive statistics on the firm-level variables are summarized in Table 3. The mean values of non-standardized *AM* and *RM* are both 0.015.[16]

Insert Table 3 about here.

4.2. Results for the effect of AEM/REM on audit fees

[15] In Tables 2 and 3, I report the non-standardized *AM* and *RM*. Compared to *RM*, *AM* is distributed over a narrow range. Thus, I use standardized *AM* and *RM* in the regression analysis to compare the coefficient between the two variables directly. However, in most analyses, the results using unstandardized measures are qualitatively identical.

[16] Mean value of *SIZE* is 5.015, indicating that the average size of the sample firms is about 151 million U.S. dollars. Mean value of *LEV* is 0.431 and average firms report -4.7% loss on their assets (*ROA*) during the sample period. Average Big 4 market share (*BIG4*) around the world is 63.9%. Among the total sample, 82% of firm-years report foreign sales (*FSALE*), and the average number of business segments is 2.407 (*NBS*). The sum of accounts receivables and inventories (*INVREC*) accounts for 25.9% of total assets, and mean value of the market-to-book ratio is 3.204 (*MB*). In addition, 21% of sample firm-years issue long-term debt or equity with total amounts exceeding 5% of total assets (*ISSUE*), and about 36.9% of firms report losses (*LOSS*) during the sample period.

To test whether auditors charge higher audit fees to their clients with higher levels of AEM and REM, I run the ordinary least squares (OLS) regressions using Eq. (7) and report the empirical results in Table 4. Columns (1) to (3) of Table 4 show the results when *LAW* is measured using *AUDENV*, and Columns (4) to (6) are the results when *LAW* is measured using *ENFOR*. Using each *LAW* measure, I first test the pricing effect of AEM and REM, separately. Columns (1) and (4) are the results for the effect of AEM on audit fees while Columns (2) and (5) are the results for the effect of REM on audit fees. In Columns (3) and (6), I report the results including both *AM* and *RM*.

In Column (1), the coefficient on *AM* is 0.019, statistically significant at less than the 1% level. The result indicates that earnings management using discretionary accruals generally increases audit fees. In Column (2), the coefficient on *RM* is 0.013, significant at the 1% level. In summary, the empirical results support the first hypothesis (Hypothesis 1) that auditors charge higher audit fees to their clients with higher levels of AEM and REM. In economic terms, a one standard deviation increase in *AM* (*RM*) is associated with approximately 1.9% (1.3%) increase in average audit fees. It corresponds to about $32,361 ($22,075) increase in audit fees and about 66% (46%) of Big 4 audit fee premium, indicating that the effect of AEM and REM on audit fees is economically important.

In the third column, I report the results including both *AM* and *RM* in the model at the same time. The coefficient on *AM* is 0.016 (t-statistics = 8.769) and that on *RM* is 0.009 (t-statistics = 3.493). These results imply that auditors incorporate both AEM and REM into their pricing decisions. In Columns (4) to (6), I report the results when *LAW* is measured by *ENFOR*. Similar to the results in Columns (1) to (3), the coefficients on *AM* and *RM* are positively significant in all columns.

The coefficients on control variables are generally significant with expected signs. The coefficients on *LAW* are always positive and significant, supporting the

argument in Choi et al. (2008). As legal regime becomes stronger, auditors are more likely to bear legal liability in case of an audit failure, thereby increasing audit fees to compensate for the increased legal liability and audit efforts.

The coefficient on *SIZE* is positive due to the wide range of audit (Carcello et al. 2002; Abbott et al. 2006). The coefficient on *LEV* is positively, and that on *ROA* (*LOSS*) is negatively (positively) related to audit fees. These signs are consistent with the predictions based on client-specific risks. The coefficient on *BIG4* is positive, providing additional evidence that Big 4 auditors enjoy audit fee premiums due to their higher brand value and audit quality (Choi et al. 2008). The coefficients on all complexity measures, such as *FSALE*, *NBS*, and *INVREC* are positive and statistically significant. Since it takes auditors more time and effort to audit financial statements of the clients with more complex operations, auditors charge higher fees on such clients. *MB* is negatively associated with audit fees. Considering that *MB* is a proxy for growth potentials (Ashbaugh et al. 2003), it can be interpreted as clients with greater future growth pay less audit fees. *ISSUE* is not significantly related to audit fees in general. Three country-level control variables, whenever they are significant, have the same signs as in Choi et al. (2008). These results generally confirm the empirical findings in prior studies and show that my dataset is comparable to those used in earlier studies. Also, the adjusted R^2*s* in the regressions are above 60% in all specifications, indicating a good model fit.

Insert Table 4 about here.

4.3. Results for the effect of AEM/REM on audit fees subject to legal regime

To test whether the pricing of AEM and REM depends on the strength of legal regime, I run Eq. (8), which includes interaction terms between *AM/RM* and *LAW*. The OLS regression results are reported in Table 5. Similar to Table 4,

Columns (1) to (3) of Table 5 show the results when *LAW* is measured using *AUDENV*, while Columns (4) to (6) are the results when *LAW* is measured using *ENFOR*. In each *LAW* measure, the first column shows the results for the effect of AEM on audit fees and the second column shows the results for the effect of REM on audit fees. Finally, the third column presents the results when both *AM* and *RM* are included.

In Column (1), the coefficient on *AM* is insignificant but the coefficient on *AM*LAW* is 0.025 and statistically significant at the 1% level.[17] This suggests that the effect of AEM on audit fees is intensified as the country-level legal regime strengthens. The sum of the coefficients on *AM* and *AM*LAW* is also positive and significant (F-statistics = 127.48, p-value = 0.000) as shown at the bottom of Column (1).

In Column (2), the coefficient on *RM* is insignificant but the coefficient on *RM*LAW* is 0.022 and statistically significant at the 1% level. This indicates that the effect of REM on audit fees is more pronounced in countries with stronger legal regimes. The sum of the coefficients on *RM* and *RM*LAW* is also positive and significant (F-statistics = 34.56, p-value = 0.000) as reported at the bottom of Column (2). In summary, the results in these two columns suggest that the positive association between audit fees and the levels of AEM and REM is more pronounced when the country's legal regime is more stringent, supporting Hypothesis 2.

[17] The insignificant coefficient on *AM* may be driven by multicollinearity between *AM* and *AM*LAW*. VIF (Variance Inflation Factor) of *AM* (*AM*LAW*) is 9.06 (9.02). Though it is below the commonly acceptable level of VIF (a value of 10 has been recommended as the maximum level of VIF (Kennedy 1992)), it is quite high. Another reason could be enforcing a linearity to the variable of *LAW*. When *AM*LAW* is included in the model, the coefficient on *AM* captures the effect of *AM* on *AUDFEE* when *LAW* is equal to zero. The observations whose *AUDENV* (*ENFOR*) is equal to zero account for only 1.8% (0.1%) of total sample, which makes it difficult to interpret the coefficient on *AM.* To address this problem, I divide the sample into the weak, medium, and strong legal regime countries and run the regressions for each subsample separately. The results for this subsample analysis are reported in Table 6.

In Column (3), I include *AM* and *RM* together with their respective interaction terms with *LAW*. The coefficients on *AM*LAW* and *RM*LAW* are 0.021 and 0.019, respectively. This means that the effect of AEM (REM) on audit fees is more prominent when a country's legal regime is stronger, reconfirming Hypothesis 2. The sum of the coefficients on *AM* and *AM*LAW* (*RM* and *RM*LAW*) are also positive and significant as shown at the bottom of Column (3).

When *LAW* is measured using *ENFOR* in Columns (4) to (6), the results are qualitatively similar to those in Columns (1) to (3). I omit further explanations on control variables in this table (and subsequent ones) because they are self-explanatory and qualitatively similar to those explained in Table 4.

Insert Table 5 about here.

Until now, I include interaction terms between *AM/RM* and *LAW* to examine whether the effect of earnings management on audit fee pricing is affected by the strength of legal regime. This method implicitly assumes that the effects of control variables on audit fees are constant across countries with different levels of legal regime stringency. Moreover, this specification enforces a linearity to the variable of *LAW* with respect to the association between *AM/RM* and audit fees. To address these concerns, I first divide the total sample into the weak, medium, and strong legal regime countries based on the magnitude of *LAW* and then regress audit fees on *AM* and *RM* for each subsample separately.[18] The results are reported in Table 6, Panel A. Note that I report the results for test variables only and do not tabulate the results of control variables in Table 6 (and the subsequent tables) for brevity.

[18] The sample is divided into three similar-sized subgroups based on the average of *AUDENV* and *ENFOR*. Belgium, Finland, Germany, Ireland, Malaysia, the Netherlands, Singapore, South Africa, Spain, Sweden, Taiwan, and Thailand are generally classified as weak legal regime countries. Australia, Denmark, France, Hong Kong, Israel, Italy, Norway, and Switzerland are generally regarded as medium legal regime countries, and Canada, the U.K., and the U.S. belong to countries with strong legal regime.

Column (1) presents the results for pooled sample. Column (2) presents the results for the weak legal regime countries, and Columns (3) and (4) show the results for medium and strong legal regime countries, respectively. As shown in Column (2), the coefficient on *AM* is positive and significant even for weak legal regime countries, which is contrasted with the results in Columns (1) and (3) of Table 5.[19] The coefficient on *AM* is also positively significant for medium and strong legal regime countries as seen in Columns (3) and (4), respectively. The coefficient on *RM* is positively significant only in medium and strong legal regime countries. Moreover, the coefficient on *AM* increases monotonically as legal regime gets stronger: It increases from 0.010 in weak legal regime to 0.019 in medium legal regime, and to 0.029 in strong legal regime countries. This pattern is observed for the coefficient on *RM* as well: It increases from -0.001 in weak legal regime to 0.008 in medium legal regime, and to 0.014 in strong legal regime countries.

To test whether the coefficients on *AM* among weak, medium, and strong legal regime countries are significantly different, I employ a seemingly unrelated estimation method (Campello 2006; Fresard 2010; Haw et al. 2014). The test results are reported in Panel B. The Chi^2 statistics to test the equality of the coefficients on *AM* between the weak and medium legal regime subsamples is 7.21 and statistically significant at the 1% level. The Chi^2 statistics to test the equality of the coefficients on *AM* between medium and strong legal regime countries is 8.00 and significant at the 1% level as well. The test statistics to test the differences in the coefficients on *RM* between weak and medium (medium and strong) legal regime countries is 6.25 (3.12) and significant at the 5% (10%) level. These results indicate that the effects of AEM and REM on audit fees become more pronounced as the country-level legal regime becomes stronger, again supporting Hypothesis 2.

[19] Note that the coefficient on *AM* is negative and significant in Columns (4) and (6) of Table 5. The differential signs of the coefficients on *AM* in Tables 5 and 6 could be due to enforcing a linearity to *LAW* in Table 5.

To show the difference in the audit pricing effects of AEM *versus* REM, I compare the coefficients on *AM* and *RM* for the full sample and each subsample. The difference between the coefficients on *AM* and *RM* in the full sample is statistically significant at the 5% level, with F-statistics (p-value) of 5.04 (0.025), which is reported at the bottom of Column (1) in Panel B, Table 6. These results imply that auditors incorporate both AEM and REM into their pricing decisions, but the effect of AEM on audit fees is stronger than that of REM. This is consistent with Hypothesis 3 and the argument in Commerford et al. (2014b). Moreover, in all subsamples, the coefficient on *AM* is significantly larger than that on *RM*: F-statistics to test the differences are 4.05, 3.51 and 8.22 in weak, medium, and strong legal regime countries, respectively. These results provide additional evidence that auditors are more likely to concern about AEM than REM in their audit pricing decisions regardless of the strength of legal liability, reconfirming Hypothesis 3.[20] In summary, the results in Table 6 are qualitatively similar to the full sample results tabulated in Tables 4 and 5 in terms of testing Hypotheses 1 and 2, and supportive in terms of testing Hypothesis 3.

Insert Table 6 about here.

5. Additional analyses and robustness tests

5.1. Additional analysis: Auditor characteristics

I conduct two additional analyses to test whether there is a cross-sectional variation in the intensity of reflecting AEM and REM on audit fees. First, I consider auditor characteristics. The amount of legal payment from auditors to client's stakeholders given audit failure and the marginal cost of audit effort, denoted as *L*

[20] In addition, in Columns (3) and (6) of Table 4, I find that the coefficient on *AM* is significantly larger than that on *RM*. Furthermore, in Columns (3) and (6) of Table 5, the sum of coefficients on *AM* and *AM*LAW* is significantly larger than the sum of coefficients on *RM* and *RM*LAW*. Both findings also support Hypothesis 3.

and *k* in Eq. (3), depends on auditor type. Choi et al. (2008) assume two types of auditors, Big 4 and non-Big 4 auditors. Big 4 auditors usually have deep pockets than non-Big 4 auditors. In addition, the economic consequences of audit failure by Big 4 clients are more severe than those by non-Big 4 clients. As a result, Big 4 auditors are more likely to end up with greater legal liability costs in case of an audit failure (Choi et al. 2008). Therefore, they have incentives to be compensated for these larger legal liability costs by increasing their audit fees.

In addition, broadly defined legal payment includes not only the explicit court-ordered legal payment from auditors but also their cracked reputations due to the lawsuit. Since Big 4 auditors care about their reputations to a greater extent than non-Big 4 auditors do (Craswell et al. 1995), implicit costs such as damaged reputations following lawsuits should not be ignored. Craswell et al. (1995) show that the development of brand name reputations is costly and therefore auditors with higher brand name reputations are compensated by increased audit fees. They show that, in Australia, Big 4 auditors' brand name premium over non-Big 4 auditors is around 30%. Choi et al. (2008) also show the existence of significant Big 4 audit fee premium in a cross-country setting.

Based on these arguments, I test whether there exists any difference in charging higher audit fees to the clients with higher levels of AEM and REM between Big 4 and non-Big 4 auditors. The results are shown in Columns (1) and (2) of Table 7, Panel A.[21] Both Big 4 and non-Big 4 auditors take into account AEM and REM in their audit fee decisions, but the degree of reflecting AEM on audit fees by Big 4 auditors is much higher than by non-Big 4 auditors.[22] The coefficient on *RM*

[21] For the analyses reported from now on, I use the average of *AUDENV* and *ENFOR* as the proxy for *LAW* for simplicity. The results using either *AUDENV* or *ENFOR* are qualitatively similar to those tabulated.

[22] In Panel A of Table 7, the coefficient on *AM* is 0.014 for the clients of Big 4 auditors while that on *AM* is 0.006 for the clients of non-Big 4 auditors. As reported in Panel B of Table 7, the former is significantly greater than the latter (Chi^2-statistics = 9.49).

in the Big 4 subsample is larger than that in non-Big 4 subsample, but the difference between the two subsamples is statistically insignificant.[23]

In Columns (3) and (4), I test whether the abovementioned findings are sensitive to changes in legal regimes. The empirical results show that the extent that Big 4 auditors charge higher audit fees to their clients' AEM and REM than non-Big 4 auditors do is more pronounced in countries with a stronger legal regime The total pricing effect of AEM in strong legal regime countries (i.e., the summed coefficients on *AM* + *AM*LAW*) is significantly greater in Big 4 than non-Big 4 subsample (Chi^2-statistics = 10.57 and p-value = 0.001, as reported in Panel B). The summed coefficients on *RM* + *RM*LAW* are also significantly different between the Big 4 and non-Big 4 subsamples (Chi^2-statistics = 18.58 and p-value = 0.000, as reported in Panel B). These findings in Columns (3) and (4) indicate that Big 4 auditors in strong legal regime countries are more likely to incorporate their clients' AEM and REM into their audit fees than non-Big 4 auditors do.[24] In summary, the findings in Table 7 imply that, compared to non-Big 4 auditors, Big 4 auditors exert an additional effort to avoid higher legal liability costs and protect more valuable reputations, both of which are affected by potential audit failures arising from clients' earnings management.[25]

Insert Table 7 about here.

[23] In Panel A of Table 7, the coefficient on *RM* is 0.007 for the clients of Big 4 auditors while that on *RM* is 0.004 for the clients of non-Big 4 auditors. As reported in Panel B of Table 7, these two coefficients are not statistically different (Chi^2-statistics = 1.46).

[24] In Panel A of Table 7, the unexpected sign of the coefficient on *RM* and the insignificant coefficient on *RM*LAW* could be due to enforcing a linearity to the variable of *LAW* with respect to the association between AM/RM and audit fees. To reduce this assumption, I divided the sample based on the strength of legal regime and auditor type. For Big 4 subsample, the coefficient on *RM* is insignificant in weak legal regime countries, but they are positively significant in medium and strong legal regime countries. For Non-Big 4 subsample, the coefficient on *RM* is positively significant only in strong legal regime countries.

[25] Ghosh and Pawlewicz (2009) document that Big 4 auditors respond more strongly to the changes in legal regime caused by the enforcement of SOX. The findings in Table 7 are consistent with Ghosh and Pawlewicz (2009) and thus generalize their findings in an international setting of earnings management.

5.2. Additional analysis: Client characteristics

I also examine whether the pricing effects of AEM and REM on audit fees depend on client characteristics. If auditors respond to AEM/REM due to the increased audit risk, there could be a cross-sectional variation depending on the level of client-specific risk. For example, the positive associations between AEM/REM and audit fees could be more pronounced for firms with higher expected litigation risks. To test this prediction, I employ a model that predicts securities litigation risk developed by Kim and Skinner (2012). They develop a firm-specific summary measure (i.e., *KS*) that predicts litigation risk more precisely using both market and accounting variables. The detailed definition of the proxy is reported in the Appendix.[26]

Table 8 shows the results. I run Eqs. (7) and (8) for each subsample partitioned by the litigation risk measured by *KS*. If the magnitude of *KS* of a firm is above the median for each country, year, and industry, it is classified as a client with high litigation risk.[27] Columns (1) and (2) of Panel A show the results without legal regime interaction variables for the high and low litigation risk subsamples, respectively. As predicted, the positive associations between AEM/REM and audit fees are more pronounced for clients with high litigation risks than for clients with low litigation risks,[28] and this difference is statistically significant as reported in Panel B of Table 8 (Chi^2-statistics for comparing the coefficients on *AM* (*RM*) between high and low litigation risk clients is 3.66 (20.23)).

[26] As an alternative measure for litigation risk, I employ a proxy developed by Shu (2000). This proxy incorporates a plaintiff's incentives to bring lawsuits represented by client size, stock performance, and financial distress. The empirical results (*untabulated*) are similar to those using Kim and Skinner's (2012) measure.

[27] Note that sample size decreases slightly in Table 8 due to the requirement of additional variables that are used to estimate *KS* following Kim and Skinner (2012).

[28] In Column (1), the coefficient on *AM* (0.010) is smaller than that on *RM* (0.016), inconsistent with Hypothesis 3, but the difference is not statistically significant (F-statistics = 0.72, p-value = 0.396). A similar explanation applies to the comparison of the summed coefficients between *AM* + *AM*LAW* and *RM* + *RM*LAW* in Column (3).

As legal regime gets stronger, there is an incremental pricing effect of AEM, and this is more pronounced for clients in high litigation risk subsample than for those in low litigation risk subsample. This is manifested by the coefficient difference for *AM*LAW* in Columns (3) and (4). Moreover, the sum of the coefficients on *AM* and *AM*LAW* in Column (3) is significantly larger than that in Column (4), as reported in Panel B (Chi^2-statistics = 3.95). A similar result emerges for REM. The coefficient on *RM*LAW* is significant only for clients with high litigation risk. The sum of the coefficients on *RM* and *RM*LAW* is significantly different (Chi^2-statistics = 24.98) between clients with high and low litigation risks, suggesting that auditors, for a given level of REM, charge higher audit fees to risky clients than otherwise similar ones, especially in strong legal regime countries.

Prior literature also suggests that lawsuits tend to be filed against auditors of financially distressed clients (Lys and Watts 1994). Because financially distressed firms have strong incentives to opportunistically manage their earnings to get an additional financing, they are more likely to face future litigations (Kim and Skinner 2012). Thus, the association between AEM/REM and audit fees may be stronger for firms with a financial distress. When I divide the sample based on Zmijewski's (1984) financial distress score, the results (*untabulated*) show that audit fees are positively related to both AEM and REM in financially distressed firms. However, for firms without a financial distress, audit fees are positively related to AEM but not to REM. These results imply that, making audit fee decisions, auditors pay less attention to clients' REM when their risk levels are low, while they always consider clients' AEM regardless of clients' risk levels. These results are similar to those tabulated in Table 8.

Insert Table 8 about here.

5.3. Robustness checks

Controlling for endogeneity

There could be a possibility that AEM/REM is determined endogenously. Managers use discretionary accruals and real earnings management as substitutes. For example, when managerial discretion is more constrained for one type of earnings management (e.g., AEM), managers are more likely to use another type of earnings management (e.g., REM) (Cohen et al. 2008; Zang 2012; Chan et al. 2015).

To control for this endogeneity concern, I employ two methods. First, I adopt the 2SLS approach. Specifically, I instrument *AM* and *RM* in the first stage regressions and calculate their predicted values. These predicted values of *AM* and *RM* are then used in the second stage regressions. Following Zang (2012), I use lagged net operating assets (*NOA*) and lagged operating cycles (*OC*) as the instrumental variables for *AM*. For the instrumental variables for *RM*, I use lagged Herfindahl-Hirschman Index (*HHI*) and lagged Altman (1968) Z-score (*ALTZ*).[29]

The second stage results are reported in Column (1) of Table 9.[30] Specifically, Column (1-1) reports the results without the legal regime interaction terms while Column (1-2) reports those with the interaction terms. The coefficient on *AM* and *RM* are both positively significant in Column (1-1) and there is an incremental pricing effect of earnings management as legal regime gets stronger in Column (1-2). The results support that auditors incorporate both AEM and REM into their pricing decisions, but the effect of AEM on audit fees is stronger than that of REM at any level of legal liability (the difference is not significant, though).

[29] The coefficients on *NOA* and *OC* in the first stage regressions are -0.024 (p-value = 0.000) and 0.004 (p-value = 0.001), respectively, and the coefficients on *HHI* and *ALTZ* are 0.631 (p-value = 0.009) and 0.001 (p-value = 0.898), respectively. The sign of each coefficient is consistent with the expected sign in Zang (2012). I compute the predicted values of *AM* and *RM* to be used on the second stage regressions based on these coefficients and other control variables' coefficients.

[30] Note that the sample size decreases to 56,786 for this analysis due to the missing values on instrumental variables.

Second, to mitigate the effect of correlations between AEM and REM on the regression results, following Eun et al. (2015), I create an orthogonal variant of *AM_OTH* (*RM_OTH*) by regressing *AM* (*RM*) on *RM* (*AM*). Then, I repeat the analyses in Tables 4 and 5 after replacing *AM* (*RM*) in Eqs. (7) and (8) with *AM_OTH* (*RM_OTH*). The main thrust of the results is unaltered (*untabulated*).

Alternative measures of main test variables

To calculate alternative proxy for AEM, I include the return on assets (ROA) when I estimate the normal level of accruals following Kothari et al. (2005). I regress Eqs. (7) and (8) using a newly defined measure of AEM, *AM2*. When I regress Eq. (7), the coefficient on *AM2* is 0.014 (p-value = 0.000) and that on *RM* is 0.009 (p-value = 0.001) (*untabulated*). The results of regressing Eq. (8) suggest that the association between *AM2/RM* and audit fees is more pronounced in countries with stronger legal regimes (*untabulated*). I additionally use performance matched discretionary accruals, defined as *AM3*. I match each firm-year discretionary accruals with another firms' discretionary accruals from the same two-digit SIC code, year, and country with the closest ROA in the previous year. *AM3* is computed as firm *i*'s discretionary accruals minus matched firm's discretionary accruals. The results using *AM3* are consistent with main analysis results (*untabulated*).

I also define an alternative measure of REM as the sum of *AB_PROD* and *AB_DISX* following Cohen and Zarowin (2010), Zang (2012), and Chan et al (2015). This variable is called *RM2*. As discussed in Roychowdhury (2006), the effects of various real activities manipulations on operating cash flows may have different directions and thus their net effects are ambiguous. For example, price discounts, channel stuffing, and overproductions all decrease cash flows from operations, while cutting discretionary expenditures increases cash flows. Thus, I exclude *AB_CFO* in computing *RM2*. The results using *RM2* is reported in Columns (2-1) and (2-2) of

Table 9. They are consistent with the previous results. Specifically, the coefficient on *AM* is 0.017 (p-value = 0.000) while that on *RM2* is 0.012 (p-value = 0.000), and the coefficients on *AM*LAW* and *RM2*LAW* are both positively significant. I also define *RM3* as the sum of *AB_CFO* and *AB_DISX*, following Cohen and Zarowin (2010) and Chan et al. (2015). When I regress Eqs. (7) and (8) using *RM3* as the REM proxy, the empirical results are qualitatively similar to those of main analyses (*untabulated*).

To show whether the results are robust to different proxies for legal regime stringency, I employ several alternative proxies for the strength of legal regime. For example, I use *CLASS* (an indicator variable that equals one if class action lawsuits are available in a prospectus liability case), *RULE_LAW* (an assessment of the law and order tradition in the country), and *WINGATE* (auditor's legal liability score from Wingate (1997)). They are widely used in prior studies as a proxy for the strength of legal regime (La Porta et al. 1998, 2006; Dyck and Zingales 2004; Hail and Leuz 2006; Choi et al. 2008). The results using *CLASS* is reported in Columns (3-1) and (3-2) of Table 9. They are consistent with the previously reported results. For example, the coefficient on *AM* is 0.017 (p-value = 0.000) while that on *RM* is 0.009 (p-value = 0.000) in Column (3-1), and the coefficient on *CLASS* is positively significant (coefficient = 0.129, p-value = 0.000) in Columns (3-1) and (3-2). The coefficients on *AM*LAW* and *RM*LAW* are 0.027 and 0.016, respectively in Column (3-2). Because the results using other proxies (i.e, *RULE_LAW* and *WINGATE*) are qualitatively similar in most cases, they are not separately tabulated.

Insert Table 9 about here.

Controlling for potential problems arising from cross country analysis

I check whether the findings are sensitive to various problems that can arise in international studies. First, I consider cross-country variations on *AM* and *RM*

measures in capturing the true degree of earnings management. Peek et al. (2013) show that estimated abnormal accruals are not good at predicting and detecting earnings management in countries with a lower sales growth persistence, a stronger earnings timeliness, a higher accruals intensity, and a higher earnings smoothing, and a smaller sample size. Since the estimation process of REM is similar with that of AEM, this problem may also be present in REM estimations. To address this concern, I repeat the main analyses excluding countries that belong to the top (bottom) quintile of earnings timeliness, accruals intensity, and earnings smoothing (sales growth persistence and sample size), which are likely to cause greater measurement errors in *AM* or *RM*.[31] I regress Eqs. (7) and (8) for each subsample, and the results are reported in Table 10.

Column (1) reports the results for the subsample without countries that belong to the bottom quintile of sales growth persistence. The coefficient on *AM* and *RM* are both positively significant in Column (1-1), and there is an incremental pricing effect of earnings management as legal regime gets stronger in Column (1-2). Column (2) presents the results for the subsample without countries that belong to the top quintile of earnings timeliness. The results are similar to those reported in Column (1). Since the other two proxies that capture the cross-country variations in accounting practices (e.g., accruals intensity and earnings smoothing) show qualitatively similar results, I do not separately tabulate them in Table 10. When I exclude four countries with smallest sample size, all results are consistent with those reported in the main analyses (Column (3)).

[31] For example, I remove observations from Finland, Germany, the Netherlands, and Spain, which have the smallest values of sales growth persistence. The Philippines, South Africa, Spain, and Taiwan are classified as countries with greater earnings timeliness, while Belgium, Finland, Hong Kong, Malaysia, and the Netherlands are classified as countries with greater accruals intensity. Ireland, the Netherlands, the Philippines, and South Africa belong to countries with top quintile of earnings smoothing, and Belgium, Ireland, the Netherlands, and Thailand belong to countries with bottom quintile of sample size.

Second, I control for different sample size of each country. There is a huge difference in the number of observations of each country: 28 observations for Israel *versus* 36,041 observations for the U.S. Simple OLS regression estimates may be distorted by over-representing some countries (Solon et al. 2015). Thus, I run the weighted least square (WLS) regression by assigning an equal weight to each country. This method, by minimizing the sum of squared residuals weighted by the inverse probability of selection, can partially cure the problems that may arise from differences in sample sizes across our sample countries (Choi et al. 2008, 2009; Solon et al. 2015). Results using WLS show that the coefficients on *AM* and *RM* are both positively significant and the association between AEM/REM and audit fees are more pronounced in stronger legal regime countries (*untabulated*).

Insert Table 10 about here.

Other sensitivity tests

Audit fees, in some cases, may be determined in the middle of the year or at the beginning of the year. In this case, it is impossible for auditors to reflect clients' earnings management in year *t* in their audit fees in year *t*. So, I use audit fees of next year (*t+1*) as an alternative dependent variable and test whether auditors reflect the levels of AEM and REM in the previous year (*t*). The empirical results are qualitatively similar to those in Table 4, 5, and 6 (*untabulated*). When I run Eq. (7), using *AUDENV* as a proxy for *LAW*, the coefficient on *AM* (*RM*) is 0.017 (0.008) and it is statistically significant at less than 1% level. When I included interaction terms between *LAW* and *AM* (*RM*), the coefficient on *AM*LAW* (*RM*LAW*) is 0.019 (0.012) and it is statistically significant at less than 1% (10%) level. In addition, results for legal regime subsample show that the effects of AEM and REM on audit fees become more pronounced as the country-level legal regime becomes stronger.

Francis et al. (2013) argue that audit market structure appears to affect the quality of earnings over and above other important country-level characteristics. To control for the effect of audit market structure on auditors behavior, I additionally include *B4SHARE* and *CONCEN* in the Eqs. (7) and (8). *B4SHARE* is the Big 4 market share relative to non–Big 4 accounting firms within country-industry-year and *CONCEN* is Herfindahl index based on total client sales audited by each Big 4 firm in a country-industry-year. The results including *B4SHARE* and *CONCEN* are qualitatively similar to those tabulated in the main Tables.

Next, I consider the different variations in audit fees of each country. There is a positive correlations between the level of audit fees and the standard deviation of audit fees. Furthermore, the level of audit fees in strong legal regime is usually larger than those in weak legal regime countries. Thus, stronger effects of earnings management on audit fees in strong legal regime countries may be due to the large variation in audit fees, not due to the stronger effect. To consider this issue, I standardize audit fees with a mean of zero and standard deviation of one for each country and year. When I run the regression using the standardized audit fees, the results are same to the previous ones. The coefficient on *AM* is insignificant in weak legal regime countries, but it is positively significant in medium (0.032) and strong legal regime countries (0.035). The coefficient on *RM* is positively significant only in strong legal regime countries (0.018). (*untabulated*)

6. Conclusion

This study investigates whether auditors take into account their clients' REM in addition to AEM when making their audit fee pricing decisions, and whether these positive relations are more pronounced in countries with a stronger legal regime. I find that auditors charge higher audit fees for their clients' AEM and REM, and this pricing effect is stronger for AEM than for REM. I also find that the positive

relation between client firms' earnings management and audit fees is more pronounced as the country-level legal regimes become more stringent.

Although the association between AEM and auditor behavior, especially audit fees, is explored extensively, the association in an international setting is neglected until now. Furthermore, prior studies do not pay adequate attention to the association between REM and audit fees. Thus, this study provides a comprehensive picture on the association between two different types of earnings management and auditor behavior across countries with different levels of legal regime stringency. In these respects, this study contributes to accounting researchers, regulators, as well as audit practitioners. Specifically, this study responds to the call of DeFond and Francis (2005) on more international research to reveal the effect of different country-level legal regimes in an auditing setting.

I call for caveats in interpreting the results of this study because it is subject to certain limitations. For example, this study focuses on audit fees as a measure of auditors' effort level. However, it is possible that audit fees do not adequately represent the effort level. Auditors may charge higher fees per audit hour rather than increase their effort level (i.e., audit hours) as perceived legal burden increases. They could also adopt both approaches. Because I do not have the direct proxy for auditors' efforts, I am not able to fully tease out these two possibilities. Furthermore, audit fees represent only one aspect of auditors' behaviors. It is possible that there are other changes in auditor behavior, such as the decisions related to audit opinions, client retention/resignation, or audit procedures. Additionally, as explained previously, this study may not completely control for the endogenous nature of AEM/REM and international environmental differences. Given the scope of this study, I leave the preceding issues to future research.

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Appendix
Variable Definitions

Variables		Definitions	Sources
Dependent variable			
AUDFEE	=	The natural logarithm of audit fees (in million U.S. dollars).	*Worldscope*
Test variables			
AM	=	Proxy for accrual-based earnings management calculated using the modified Jones (1991) model per each country-industry-year, in the way proposed by Dechow et al. (1995);	*Compustat*
RM	=	Proxy for real earning management calculated following Roychowdhury (2006) model: the sum of three individual variables, *AB_CFO* (abnormal cash flow from operating activities), *AB_PROD* (abnormal production costs) and *AB_DISX* (abnormal discretionary expenditures). *AB_CFO* and *AB_DISX* are multiplied by (-1) to make higher values represent more extensive real earnings management;	*Compustat*
AUDENV	=	An index to capture the quality of the public company auditors' working environment. The index includes the following items: factors that are related to obtain an auditor license and to complete activities to maintain a license, reflecting the quality of auditor training program; the existence of a professional quality assurance program (e.g., peer review program); the existence of an auditor or auditor partner rotation system; the presence of an auditor oversight board with power to sanction auditors (e.g., cancel their licenses or report them to another body for disciplinary sanctions); the intensity of audit activity in a country; and the risk of litigation against auditors. The index is converted into the minimum (maximum) value of 0 (1);	*Brown et al. (2104)*
ENFOR	=	An index to capture the degree of enforcement activity by independent enforcement bodies. The index includes the following items: whether the country has a body that is responsible for monitoring and promoting compliance with accounting and auditing standard; how active the regulatory body works (e.g., review of financial statements, require companies to revise and reissue financial statements); and the extent of resources devoted to enforcement review of financial statements. The index is converted into the minimum (maximum) value of 0 (1);	*Brown et al. (2104)*

TOTAL	=	The average of *AUDENV* and *ENFOR* to capture the comprehensive strength of country-level legal regime that is related to the auditing process. The index is converted into minimum (maximum) value of 0 (1).	*Brown et al. (2104)*
Firm-level control variables			
SIZE	=	The natural logarithm of market value of equity;	*Compustat*
LEV	=	The ratio of total liabilities to total assets;	*Compustat*
ROA	=	The return on assets, calculated as income before extraordinary items divided by lagged total assets;	*Compustat*
BIG4	=	Equals 1 when a client is audited by one of the Big 4 (5, 6, or 8) auditors, and 0 otherwise.	*Compustat*
FSALE	=	Equals 1 if the client reports foreign sales, and 0 otherwise;	*Worldscope*
NBS	=	The number of business segments;	*Worldscope*
INVREC	=	The sum of inventory and receivables divided by total assets;	*Compustat*
MB	=	The ratio of market value to book value of equity;	*Compustat*
ISSUE	=	Equals 1 when a client has issued long-term debt or new shares to outside capital suppliers with total amounts exceeding 5% of beginning-year total assets, and 0 otherwise;	*Compustat*
LOSS	=	Equals 1 if the client reports a loss in the year, and 0 otherwise.	*Compustat*
Country-level control variables			
GDP	=	Gross domestic product per capita expressed as U.S. dollars;	*IMF*
MKTCAP	=	The importance of each country's equity market development, measured by the ratio of stock market capitalization held by minority shareholders to gross domestic product;	*La Porta et al. (2006)*
DISCL	=	The index of disclosure, computed by the arithmetic mean of (1) prospectus; (2) compensation; (3) shareholders; (4) inside ownership; (5) contracts irregular; and (6) transactions.	*La Porta et al. (2006)*
Variables used in additional analysis			
KS	=	Securities litigation risk calculated as -7.718 + 0.180*Dummy for biotech, computer or retail industry + 0.463*Log of total assets at year *t-1* + 0.553*Sales growth at *t-1* - 0.498*Market-	*Compustat*

		adjusted stock return - 0.359*Skewness of stock returns + 14.437*Standard deviation of stock returns + 0.0000004*Trading volume;	
SHU	=	An auditors' legal exposure probability calculated as -10.049 + 0.276*Log of total assets + 1.153*Inventories + 2.075*Receivables + 1.251*Return on assets - 0.088*Current ratio + 1.501*Financial leverage + 0.301*Sales growth - 0.371*Stock return - 2.309*Stock volatility + 0.235*Beta + 1.464*Stock turnover + 1.060*Delist dummy + 0.928*Technology dummy + 0.463*Qualified opinion dummy;	*Compustat*
ZMIJ	=	The probability of financial distress calculated as -4.336 - 4.513*Return on assets + 5.679*Leverage + 0.004*Current ratio;	*Compustat*
NOA	=	Net operating assets at the beginning of the year divided by lagged sales. Net operating assets are defined as shareholders' equity less cash and marketable securities plus total debt;	*Compustat*
OC	=	The days receivable plus the days inventory less the days payable at the beginning of the year;	*Compustat*
HHI	=	The level of market concentration calculated by summing the squares of the market share of each firm competing in the same 2-digit SIC industry at the beginning of the year;	*Compustat*
ALTZ	=	Altman's (1968) Z-score at the beginning of the year calculated as 0.3*(Income before extraordinary items/Total assets) + 1.0*(Sales/Total assets) + 1.4*(Retained earnings/Total assets) + 1.2*(Working capital/Total assets) + 0.6*(Market value of equity/Total liabilities).	*Compustat*

TABLE 1
Sample selection procedures

Sample Selection Procedures	Number of firm-years [countries] reduced	Number of firm-years [countries] remaining
All non-financial firms from *Compustat Global* from 2000 to 2013		463,330 [122]
Delete firm-year observations other than those from 44 countries for which prior studies provide data for the strength of legal regime	(84,653) [78]	378,677 [44]
Delete firm-year observations with auditor identification miscoded in *Compustat Global*	(85,858) [4]	292,819 [40]
Delete firm-year observations with non-positive total assets or sales	(1,055) [0]	291,764 [40]
Delete firm-year observations that do not have the audit fee data in *Worldscope*	(159,804) [3]	131,960 [37]
Delete firm-year observations that do not have all the necessary data to calculate test variables and control variables	(52,056) [13]	79,904 [24]

TABLE 2
Descriptive statistics by country

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country	***N***	***AUDFEE***	***AM***	***RM***	***AUDENV***	***ENFOR***	***GDP***	***MKTCAP***	***DISCL***
Australia	9,094	0.215	0.021	-0.029	0.811	0.909	4.445	0.631	0.750
Belgium	97	0.474	0.008	0.013	0.600	0.909	4.633	0.327	0.417
Canada	196	0.351	-0.019	0.052	0.923	0.909	4.090	0.608	0.917
Denmark	250	0.641	-0.002	-0.048	0.633	0.751	4.946	0.307	0.583
Finland	275	0.642	0.000	-0.049	0.520	0.455	4.688	0.931	0.500
France	1,947	0.710	0.001	-0.030	0.863	0.666	4.223	0.487	0.750
Germany	2,008	0.516	0.001	-0.010	0.640	0.848	4.271	0.264	0.417
Hong Kong	6,660	0.329	0.007	0.008	0.773	0.677	3.081	1.390	0.917
Ireland	28	0.795	0.008	0.003	0.709	0.357	5.781	0.423	0.667
Israel	229	0.946	-0.024	-0.070	0.680	0.976	2.861	0.236	0.667
Italy	586	0.517	0.004	-0.005	0.790	0.773	3.704	0.195	0.667
Malaysia	6,321	0.088	0.007	0.002	0.326	0.548	0.705	0.781	0.917
Netherlands	71	0.844	0.004	0.068	0.680	0.773	5.183	0.878	0.500
Norway	767	0.792	0.013	0.005	0.658	0.839	8.027	0.247	0.583
Philippines	101	0.230	-0.004	-0.070	0.160	0.636	0.237	0.276	0.833
Singapore	2,922	0.214	0.008	-0.003	0.456	0.413	3.849	0.805	1.000
South Africa	667	0.634	0.005	0.030	0.417	0.306	0.597	0.780	0.833
Spain	149	0.887	0.001	-0.004	0.760	0.600	3.139	0.317	0.500
Sweden	1,275	0.532	0.003	-0.007	0.653	0.247	4.816	0.903	0.583
Switzerland	834	0.838	-0.003	-0.006	0.745	0.860	6.837	1.443	0.667
Taiwan	729	0.135	0.003	-0.007	0.120	0.273	2.187	0.828	0.750
Thailand	47	0.196	-0.019	0.008	0.160	0.455	0.404	0.178	0.917
United Kingdom	8,610	0.424	0.006	0.003	0.995	0.906	4.206	1.196	0.833
United States	36,041	0.741	0.023	0.040	0.870	0.931	4.531	1.178	1.000
Total	**79,904**	**0.523**	**0.015**	**0.015**	**0.782**	**0.818**	**4.012**	**1.013**	**0.892**

Notes: This table presents the descriptive statistics for the key variables by country. Column (2) shows the number of observations. Column (3) shows the mean value of audit fees. Columns (4) and (5) show the mean value of two types of earnings management, AEM (*AM*) and REM (*RM*). Note that unstandardized values of *AM* and *RM* are reported here for the comparison purpose while standardized values are used in the subsequent regression analyses. Columns (6) to (7) show the proxies for the strength of legal regime (*LAW*) variables. Columns from (8) to (10) show the country-level control variables. See the Appendix for variable definitions.

TABLE 3

Descriptive statistics for firm-level variables

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
AUDFEE	79,904	0.523	0.635	0.091	0.267	0.721
AM	79,904	0.015	0.164	-0.041	0.018	0.080
RM	79,904	0.015	0.451	-0.169	0.023	0.222
SIZE	79,904	5.015	2.161	3.375	4.833	6.499
LEV	79,904	0.431	0.228	0.248	0.431	0.600
ROA	79,904	-0.047	0.258	-0.065	0.026	0.074
BIG4	79,904	0.639	0.480	0.000	1.000	1.000
FSALE	79,904	0.820	0.384	1.000	1.000	1.000
NBS	79,904	2.407	1.595	1.000	2.000	3.000
INVREC	79,904	0.259	0.199	0.088	0.228	0.393
MB	79,904	3.204	5.230	0.960	1.731	3.223
ISSUE	79,904	0.210	0.407	0.000	0.000	0.000
LOSS	79,904	0.369	0.483	0.000	0.000	1.000

Notes: This table presents descriptive statistics for firm-level variables used in our main regression analyses. See the Appendix for variable definitions. Note that unstandardized values of *AM* and *RM* are reported here for the comparison purpose while standardized values are used in the subsequent regression analyses.

TABLE 4

The effect of AEM/REM on audit fees

LAW =	*AUDENV*			*ENFOR*		
	(1) AEM	(2) REM	(3) AEM & REM	(4) AEM	(5) REM	(6) AEM & REM
Section A: Test variables						
AM	0.019***		0.016***	0.019***		0.017***
	(10.330)		(8.769)	(10.481)		(9.008)
RM		0.013***	0.009***		0.013***	0.009***
		(5.141)	(3.493)		(5.001)	(3.315)
LAW	0.330***	0.335***	0.331***	0.208***	0.211***	0.209***
	(15.978)	(16.178)	(16.016)	(13.237)	(13.418)	(13.266)
Section B: Firm-specific control variables						
SIZE	0.209***	0.208***	0.209***	0.210***	0.209***	0.210***
	(68.372)	(68.367)	(68.174)	(67.967)	(67.975)	(67.795)
LEV	0.528***	0.515***	0.524***	0.533***	0.520***	0.529***
	(36.236)	(35.980)	(36.151)	(36.451)	(36.207)	(36.388)
ROA	-0.163***	-0.123***	-0.152***	-0.168***	-0.128***	-0.157***
	(-14.148)	(-11.937)	(-13.114)	(-14.479)	(-12.322)	(-13.517)
BIG4	0.029***	0.028***	0.029***	0.024***	0.023***	0.024***
	(4.974)	(4.856)	(5.007)	(4.078)	(3.944)	(4.106)
FSALE	0.013**	0.012**	0.013**	0.011**	0.011*	0.012**
	(2.171)	(2.150)	(2.238)	(1.985)	(1.954)	(2.046)
NBS	0.039***	0.039***	0.039***	0.039***	0.039***	0.039***
	(15.902)	(15.728)	(15.760)	(15.757)	(15.585)	(15.619)
INVREC	0.058***	0.057***	0.054***	0.062***	0.062***	0.058***
	(3.282)	(3.249)	(3.050)	(3.555)	(3.544)	(3.333)
MB	-0.015***	-0.014***	-0.015***	-0.015***	-0.014***	-0.015***
	(-21.813)	(-21.290)	(-21.499)	(-21.903)	(-21.401)	(-21.620)
ISSUE	0.010	0.012*	0.010	0.006	0.009	0.007
	(1.444)	(1.783)	(1.552)	(0.960)	(1.293)	(1.062)

LOSS	0.079***	0.075***	0.078***	0.080***	0.075***	0.078***
	(15.495)	(14.645)	(15.175)	(15.598)	(14.751)	(15.294)
Section C: Country-level control variables						
GDP	0.024***	0.024***	0.024***	0.037***	0.037***	0.037***
	(6.863)	(7.008)	(6.880)	(12.299)	(12.555)	(12.337)
MKTCAP	-0.060***	-0.061***	-0.060***	0.007	0.007	0.007
	(-3.312)	(-3.356)	(-3.335)	(0.432)	(0.436)	(0.417)
DISCL	0.165***	0.164***	0.164***	0.152***	0.152***	0.151***
	(7.842)	(7.809)	(7.810)	(7.184)	(7.144)	(7.153)
Constant	-1.260***	-1.248***	-1.256***	-1.379***	-1.369***	-1.375***
	(-19.839)	(-19.724)	(-19.724)	(-21.442)	(-21.359)	(-21.335)
Observations	79,904	79,904	79,904	79,904	79,904	79,904
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.648	0.648	0.648	0.647	0.646	0.647

Note: This table presents the regression results to test H1 (the effect of AEM and REM on audit fees) using Eq. (7). Columns (1) to (3) show the results when *LAW* is measured using *AUDENV*, and Columns (4) to (6) show the results when *LAW* is measured using *ENFOR*. Using each *LAW* measure, I first test the pricing effect of AEM and REM, separately. Columns (1) and (4) show the results for the effect of *AM* on audit fees and Columns (2) and (5) show the results for the effect of *RM* on audit fees. Columns (3) and (6) include both *AM* and *RM* in the same regression. See the Appendix for variable definitions. The numbers in the parentheses represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 5

The effect of AEM/REM on audit fees subject to legal regime

LAW =	*AUDENV*			*ENFOR*		
	(1) AEM	(2) REM	(3) AEM & REM	(4) AEM	(5) REM	(6) AEM & REM
Section A: Test variables						
AM	-0.000		-0.000	-0.016***		-0.016***
	(-0.107)		(-0.077)	(-3.170)		(-3.068)
*AM*LAW*	0.025***		0.021***	0.043***		0.040***
	(5.084)		(4.331)	(7.147)		(6.512)
RM		-0.005	-0.006		-0.006	-0.005
		(-0.828)	(-1.088)		(-0.740)	(-0.584)
*RM*LAW*		0.022***	0.019***		0.023**	0.016*
		(3.376)	(2.878)		(2.328)	(1.651)
LAW	0.330***	0.335***	0.331***	0.208***	0.211***	0.208***
	(15.963)	(16.178)	(16.001)	(13.231)	(13.398)	(13.246)
Section B: Firm-specific control variables						
SIZE	0.209***	0.208***	0.209***	0.210***	0.209***	0.210***
	(68.376)	(68.378)	(68.184)	(67.983)	(67.982)	(67.808)
LEV	0.528***	0.515***	0.524***	0.533***	0.520***	0.529***
	(36.227)	(35.996)	(36.154)	(36.436)	(36.222)	(36.386)
ROA	-0.166***	-0.123***	-0.154***	-0.173***	-0.127***	-0.161***
	(-14.358)	(-11.855)	(-13.242)	(-14.818)	(-12.193)	(-13.720)
BIG4	0.029***	0.028***	0.029***	0.024***	0.023***	0.024***
	(4.979)	(4.842)	(5.000)	(4.085)	(3.926)	(4.101)
FSALE	0.012**	0.012**	0.013**	0.011**	0.011*	0.012**
	(2.155)	(2.155)	(2.229)	(1.962)	(1.948)	(2.021)
NBS	0.039***	0.039***	0.039***	0.039***	0.039***	0.039***
	(15.888)	(15.710)	(15.733)	(15.748)	(15.574)	(15.603)
INVREC	0.058***	0.057***	0.054***	0.063***	0.062***	0.060***
	(3.300)	(3.257)	(3.071)	(3.622)	(3.558)	(3.405)
MB	-0.015***	-0.014***	-0.015***	-0.015***	-0.014***	-0.015***
	(-21.800)	(-21.272)	(-21.473)	(-21.927)	(-21.374)	(-21.616)
ISSUE	0.010	0.012*	0.010	0.007	0.009	0.007
	(1.480)	(1.773)	(1.573)	(1.003)	(1.291)	(1.101)
LOSS	0.078***	0.075***	0.077***	0.079***	0.075***	0.077***
	(15.400)	(14.711)	(15.150)	(15.404)	(14.791)	(15.130)

Section C: Country-level control variables						
GDP	0.024***	0.024***	0.024***	0.037***	0.037***	0.037***
	(6.856)	(7.009)	(6.874)	(12.283)	(12.552)	(12.319)
MKTCAP	-0.060***	-0.061***	-0.060***	0.007	0.007	0.007
	(-3.309)	(-3.355)	(-3.333)	(0.432)	(0.437)	(0.418)
DISCL	0.164***	0.164***	0.164***	0.152***	0.152***	0.151***
	(7.832)	(7.811)	(7.802)	(7.174)	(7.143)	(7.143)
Constant	-1.260***	-1.249***	-1.256***	-1.379***	-1.369***	-1.375***
	(-19.889)	(-19.759)	(-19.797)	(-21.485)	(-21.378)	(-21.388)
Observations	79,904	79,904	79,904	79,904	79,904	79,904
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.648	0.648	0.648	0.647	0.646	0.647
F-statistics (p-value) for testing						
*AM+AM*LAW= 0*	127.48***		94.07***	147.79***		114.65***
	(0.000)		(0.000)	(0.000)		(0.000)
*RM+RM*LAW= 0*		34.56***	18.40***		28.37***	13.03***
		(0.000)	(0.000)		(0.000)	(0.000)

Note: This table presents the regression results to test H2 (the effect of AEM and REM on audit fees subject to legal regime) using Eq. (8). Columns (1) to (3) show the results when *LAW* is measured using *AUDENV*, and Columns (4) to (6) show the results when *LAW* is measured using *ENFOR*. Using each *LAW* measure, I test the pricing effect of AEM and REM, separately. Columns (1) and (4) show the results for the effect of *AM* on audit fees subject to legal regime, and Columns (2) and (5) show the results for the effect of *RM* on audit fees subject to legal regime. Columns (3) and (6) include *AM/RM* as well as interactions between *AM/RM* and *LAW* in the same regression. See the Appendix for variable definitions. The numbers in the parentheses represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 6

Legal regime subsample analysis

Panel A: Empirical results

LAW =	(1) *All*	(2) *Weak*	(3) *Medium*	(4) *Strong*
AM	0.017***	0.010***	0.019***	0.029***
	(9.209)	(3.587)	(5.949)	(9.991)
RM	0.009***	-0.001	0.008**	0.014***
	(3.507)	(-0.184)	(1.989)	(3.682)
LAW	0.422***			
	(27.100)			
Control variables	Included	Included	Included	Included
Observations	79,904	27,793	25,550	26,561
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.645	0.553	0.619	0.719

Panel B: Test statistics

Chi^2-statistics (p-value) for testing

	Weak vs. Medium	*Medium vs. Strong*
AM	7.21***	8.00***
	(0.007)	(0.005)
RM	6.25**	3.12*
	(0.012)	(0.078)

F-statistics (p-value) for testing

	All	*Weak*	*Medium*	*Strong*
AM – RM = 0	5.04**	4.05**	3.51*	8.22***
	(0.025)	(0.044)	(0.061)	(0.004)

Note: This table presents the regression results using subsamples based on the strength of legal regime to test H2 (the effect of AEM and REM on audit fees subject to legal regime) and H3 (the relative pricing effect of AEM versus REM). The sample is divided into similar sample sizes of the weak, medium, and strong legal regime countries, based on the strength of legal regime. *LAW* is the average of *AUDENV* and *ENFOR* in this analysis. And then audit fees (*AUDFEE*) are regressed on AEM and REM for each subsample. Panel A shows the regression results and Panel B shows the test statistics. See the Appendix for variable definitions. The numbers in the parentheses in Panel A represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 7

The effect of AEM/REM on audit fees subject to auditor type

Panel A: Empirical results

	(1) Big 4	(2) Non-Big 4	(3) Big 4	(4) Non-Big 4
AM	0.014***	0.006***	-0.001	-0.007
	(4.909)	(3.957)	(-0.102)	(-1.604)
*AM*LAW*			0.021**	0.016***
			(2.426)	(3.273)
RM	0.007*	0.004**	-0.027***	0.005
	(1.862)	(2.079)	(-2.889)	(0.816)
*RM*LAW*			0.045***	-0.001
			(3.761)	(-0.166)
LAW	0.260***	0.171***	0.261***	0.170***
	(11.053)	(9.212)	(11.109)	(9.183)
Constant	-1.516***	-0.670***	-1.516***	-0.670***
	(-24.333)	(-7.848)	(-24.234)	(-7.878)
Control variables	Included	Included	Included	Included
Observations	51,025	28,879	51,025	28,879
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.656	0.420	0.656	0.420

Panel B: Test statistics

Chi^2-statistics (p-value) for comparing coefficients between clients of Big4 and Non-Big4 auditors

AM	9.49***	0.77
	(0.002)	(0.379)
*AM + AM*LAW*		10.57***
		(0.001)
RM	1.46	18.50***
	(0.228)	(0.000)
*RM + RM*LAW*		18.58***
		(0.000)

Note: This table presents the regression results to test whether there exists any difference between Big 4 and non-Big 4 auditors in the extent of charging higher audit fees to the clients with higher levels of AEM and REM. Panel A shows the regression results and Panel B shows the test statistics. In Panel A, Columns (1) and (2) include only *AM/RM*, while Columns (3) and (4) include *AM/RM* as well as interactions between *AM/RM* and *LAW*. *LAW* is the average of *AUDENV* and *ENFOR*. Panel B shows the Chi^2-statistics (p-value) for comparing coefficients between clients of Big 4 and non-Big4 auditors. See the Appendix for variable definitions. The numbers in the parentheses in Panel A represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 8

The effect of AEM/REM on audit fees subject to client type

Panel A: Empirical results

	(1) High Litigation risk	(2) Low Litigation risk	(3) High Litigation risk	(4) Low Litigation risk
AM	0.010***	0.004*	-0.012	-0.013***
	(2.880)	(1.702)	(-1.489)	(-2.789)
*AM*LAW*			0.030***	0.021***
			(2.900)	(3.742)
RM	0.016***	0.001	-0.008	-0.000
	(3.209)	(0.465)	(-0.622)	(-0.016)
*RM*LAW*			0.030**	0.002
			(2.006)	(0.216)
LAW	0.319***	0.224***	0.317***	0.224***
	(10.914)	(14.778)	(10.874)	(14.731)
Constant	-1.691***	-0.955***	-1.689***	-0.955***
	(-14.932)	(-21.030)	(-15.007)	(-20.926)
Control variables	Included	Included	Included	Included
Observations	33,207	33,206	33,207	33,206
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.684	0.570	0.685	0.570

Panel B: Test statistics

Chi^2-statistics (p-value) for comparing coefficients between clients with high and low litigation risks

AM	3.66*	0.00
	(0.056)	(0.974)
*AM + AM*LAW*		3.95**
		(0.047)
RM	20.23***	0.66
	(0.000)	(0.418)
*RM + RM*LAW*		24.98***
		(0.000)

Note: This table presents the regression results to test whether there exists any difference between the clients with high and low litigation risks in the extent that auditors charge higher fees when their clients engage in higher levels of AEM and REM. Panel A shows the regression results and Panel B shows the test statistics. In Panel A, Columns (1) and (2) include only *AM/RM*, while Columns (3) and (4) include *AM/RM* as well as interactions between *AM/RM* and *LAW*. *LAW* is the average of *AUDENV* and *ENFOR*. Panel B shows the Chi^2-statistics (p-value) for comparing coefficients between clients with high and low litigation risks. See the Appendix for variable definitions. The numbers in the parentheses in Panel A represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 9
Robustness checks

	(1) *2SLS regressions*		(2) *Alternative measure (RM2)*		(3) *Alternative measure (CLASS)*	
	(1-1)	(1-2)	(2-1)	(2-2)	(3-1)	(3-2)
AM	0.120***	0.056***	0.017***	-0.008*	0.017***	-0.005
	(9.791)	(2.930)	(9.636)	(-1.781)	(8.975)	(-1.243)
*AM*LAW*		0.066***		0.032***		0.027***
		(4.494)		(5.912)		(6.701)
RM	0.106**	0.017	0.012***	-0.012*	0.009***	-0.004
	(2.113)	(0.323)	(5.036)	(-1.861)	(3.424)	(-0.590)
*RM*LAW*		0.095***		0.031***		0.016**
		(6.308)		(3.879)		(2.213)
LAW	0.197***	0.190***	0.298***	0.297***	0.129***	0.129***
	(7.884)	(7.597)	(16.371)	(16.335)	(14.240)	(14.268)
Constant	-1.168***	-1.160***	-1.312***	-1.311***	-1.390***	-1.390***
	(-8.946)	(-8.926)	(-20.544)	(-20.642)	(-20.997)	(-20.910)
Control variables	Included	Included	Included	Included	Included	Included
Observations	56,786	56,786	79,904	79,904	79,904	79,904
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.679	0.679	0.648	0.649	0.649	0.649

Note: This table presents the regression results of robustness checks. Column (1) shows the 2SLS regression results to consider endogeneity of AEM and REM. Column (2) shows the results using an alternative proxy for REM (*RM2*). *LAW* is the average of *AUDENV* and *ENFOR* in Columns (1) and (2). Column (3) shows the results using an alternative proxy for *LAW* (*CLASS*). See the Appendix for variable definitions. The numbers in the parentheses represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 10

Control for potential problems arising from cross country analysis

	(1) *Excluding countries with small sales growth persistence*		(2) *Excluding countries with large earnings timeliness*		(3) *Excluding countries with small sample size*	
	(1-1)	(1-2)	(2-1)	(2-2)	(3-1)	(3-2)
AM	0.016***	-0.009*	0.017***	-0.007	0.016***	-0.008*
	(8.484)	(-1.843)	(9.006)	(-1.471)	(8.838)	(-1.654)
*AM*LAW*		0.031***		0.030***		0.031***
		(5.594)		(5.182)		(5.522)
RM	0.009***	-0.008	0.009***	-0.009	0.009***	-0.008
	(3.499)	(-1.116)	(3.271)	(-1.313)	(3.366)	(-1.142)
*RM*LAW*		0.021***		0.022***		0.021**
		(2.578)		(2.615)		(2.531)
LAW	0.316***	0.316***	0.303***	0.302***	0.302***	0.301***
	(17.412)	(17.390)	(15.237)	(15.213)	(16.513)	(16.489)
Constant	-1.293***	-1.293***	-1.324***	-1.324***	-1.313***	-1.313***
	(-20.009)	(-20.084)	(-20.837)	(-20.920)	(-20.590)	(-20.667)
Control variables	Included	Included	Included	Included	Included	Included
Observations	77,401	77,401	78,258	78,258	79,661	79,661
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.649	0.649	0.652	0.652	0.649	0.649

Note: This table presents the regression results to control for potential problems arising from cross-country analysis. Column (1) shows the regression results using the subsample excluding countries with small sales growth persistence. Column (2) shows regression results using the subsample excluding countries with large earnings timeliness, while Column (3) shows the results using the subsample excluding countries with small sample size. *LAW* is the average of *AUDENV* and *ENFOR* in these analyses. See the Appendix for variable definitions. The numbers in the parentheses represent the t-statistics calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed)

Essay 2

The Effect of Ownership Divergence and Legal Regime on Cost Stickiness: International Evidence

1. Introduction

There has been voluminous literature which documents a strong evidence of asymmetric cost behavior (Anderson and Lanen 2007; Balakrishnan and Gruca 2008; Balakrishnan and Soderstrom 2009; Banker et al. 2010). Asymmetric cost behavior indicates that costs increase more rapidly when activities increase than costs decrease when activities decrease (Anderson et al. 2003). Since costs are more resistant to change compared to activities are, this phenomenon is usually called "*cost stickiness*".[32]

Many prior studies have predominantly explained cost stickiness based on economic factors. According to these papers, asymmetric cost behavior is an efficient way for responding adjustment costs because adjustment costs for downward adjustment process are usually higher than those for upward adjustment process (Anderson et al. 2003). However, since many costs are determined by managers' deliberate resource commitment decisions, it is important to consider managerial incentives in understanding cost stickiness (Chen et al. 2012). There are two ways to explain cost stickiness based on managerial incentives. One of the potential explanations for sticky costs is related to the empire building incentives. Self-interested managers are more likely to retain unutilized resources when activities decline due to the empire building incentives (Anderson et al. 2003; Chen et al. 2012). Amihud and Lev (1981, 1999) present a theory of "*managerialism*", which argues that managers have an incentive to grow the firm beyond the optimal size to avoid unemployment risk, create additional middle manager promotions, and make them more indispensable to the firm. If managers have empire building incentives, they are willing to expand the resources under their control when activities increase, but they are reluctant to reduce the resources under their control

[32] Figure 1 graphically shows the concept of cost stickiness.

when activities decrease, which results in sticky cost. This explanation is referred to as '*Empire building explanation for sticky costs*'.

The other way to explain cost stickiness is related to the earnings management. More recently, some studies try to integrate a typical management accounting research topic, cost stickiness, with a financial accounting topic, earnings management (Dierynck et al. 2012; Kama and Weiss 2013; Koo et al. 2015). These studies basically assume that managers have strong incentives to manipulate reported earnings upward to receive higher compensation (Bergstresser and Philippon, 2006), to avoid penalties from capital market, or to maintain their own reputation (Francis et al. 2008). If managers have strong incentives to manipulate earnings, they are more likely to reduce costs when activities decline to report higher income. This tendency results in less sticky cost behavior. This explanation is referred to as '*earnings management explanation for sticky costs*'.

In this study, I investigate three interrelated questions about the effect of ownership divergence and the legal regime on cost stickiness. First, I examine whether the degree of cost stickiness changes depending on the ownership divergence of ultimate owners. Second, employing an international setting, I examine whether the cost stickiness behavior is mitigated or intensified when there is a strong external governance. Finally, I test the effect of ownership divergence of ultimate owners and governance on the degree of cost stickiness.

Divergence of ownership (i.e., the difference between control rights and cash flow rights) creates serious agency problems and thus provides a significant implication in explaining managerial behavior. According to Haw et al. (2004), a smaller fraction of cash flow rights relative to control rights of ultimate shareholders fails to align their incentives with those of minority shareholders. Under this situation, ultimate owners are likely to be protected from takeover or replacement threats (i.e., entrenchment). As a results, they have a stronger incentive and ability to extract

private benefits that are not shared by minority shareholders (Shleifer and Vishny 1997; Claessens et al. 2002).[33] These entrenchment incentives will result in conflicting effect on cost stickiness.

On the one hand, firms with high ownership divergence are more likely to push excessive expansion due to the entrenchment effect (Kim et al. 2010; Kim and Yoon 2010; Seo et al. 2013), as demonstrated by empire building incentives. In this case, ultimate owners' ownership divergence is positively related to the cost stickiness. On the other hand, if ultimate owners with high divergence are more likely to engage in earnings management (Kim and Yi 2006), cost asymmetry is less prevalent in these firms. It is because managers are more likely reduce expenses (and thereby increase earnings) when sales decline (Haw et al. 2004; Dierynck et al. 2012; Lee et al. 2012; Kama and Weiss 2013). Based on these two conflicting arguments, I first examine whether the degree of cost stickiness increase or decrease as ownership divergence becomes large.

Next, I turn to the focus on the effect of country-level legal regime on the cost stickiness. Empire building explanation for sticky costs suggests that empire building incentives are expected to decrease in countries where the country-level legal regime to protect minority shareholders is effectively enforced. Thus, the degree of cost stickiness will decrease in countries with strong legal regime. According to earnings management explanation for cost stickiness, on the other hand, the degree of cost stickiness will increase in countries with strong legal regime. As legal regime gets stronger, managers' incentive to manipulate earnings are restricted by effectively enforced legal regime.

Finally, I examine the joint effect of ownership divergence and legal regime on the cost stickiness. If empire building explanation is supported, costs will be the most

[33] Private benefits include perquisite consumption such as large cars or free personal insurance, excessive managerial pay, appropriation of the firm's assets, and outright theft.

(least) sticky in firms with large (small) ownership divergence and in countries with weak (strong) legal regime. Under the earnings management explanation, the degree of cost stickiness is the largest (smallest) in firms with small (large) ownership divergence and in countries with strong (weak) legal regime.

I examine the predictions using a large international sample of 52,361 firm-year observations (13,652 firms) from 22 countries over the period of 1989 to 2014. Following the empirical model used in Banker et al. (2013), I use a hierarchical linear model in which the firm-level cost behavior is formulated as a function of country-level characteristics and firm-level control variables. In addition, I control for other factors that are known to affect the degree of cost stickiness.

Empirical findings are summarized as follows. First, the magnitude of cost stickiness decreases as the ownership divergence increases. This negative relation between cost stickiness and ownership divergence supports the earnings management explanation for sticky costs with respect to ownership divergence. Second, the degree of cost stickiness decreases as country-level legal regime gets stronger. This indicates that entrenchment incentives induced by empire building are reduced when the external legal regime effectively works. Lastly, I find that the degree of cost stickiness is affected by both ownership divergence and legal regime.

This paper contributes to extant accounting research in several aspects. First, to the best of my knowledge, there are no prior studies which examine the effect of ownership structure on cost behavior in an international setting. This paper focuses on firms with high agency problems, proxied by the large ownership divergence of ultimate owners, and finds out that ownership structure can significantly affect cost adjustment process. By showing that ownership structure is one of the important factors in explaining cost behavior, this paper broadens and deepens the understanding of cost stickiness behavior.

Second, this paper contributes to the growing body of literatures on convergence of financial and managerial accounting. The number of papers which link financial reporting incentives to cost adjustment process is increasing. For example, Koo et al. (2015) show that discretionary accruals are negatively related to cost stickiness. Kama and Weiss (2013) show that managers who have strong preference to meet or beat earnings benchmark show less sticky cost behavior. Extending the findings in Koo et al. (2015) and Kama and Weiss (2013), this study shows that managers engage in REM, in addition to AEM, which influence cost stickiness. By filling this gap, this study makes both cost stickiness research and earnings management research more complete.

The paper proceeds as follows: Section 2 summarizes prior studies on cost stickiness and develops research hypotheses; Section 3 explains empirical models and variables used in this study; Section 4 describes sample construction and presents the empirical results; Section 5 represents additional analyses and sensitivity checks; and the final section concludes the paper.

2. Summary of prior studies and hypotheses development

2.1. Economic explanation for sticky costs

There are many prior studies which document a strong evidence of asymmetric cost behavior. Asymmetric cost behavior, in other words, cost stickiness indicates that costs increase more rapidly when activities increase than costs decrease when activities decline (Anderson et al. 2003). The way to explain sticky costs falls into two categories: economic explanation and agency problem explanation.

According to the economic explanation, costs asymmetry occurs due to the presence of asymmetric adjustment costs. Given adjustment costs, cost stickiness is the way of efficient response. Suppose a situation when managers face a personnel-related matter. Managers can hire more employees when activities increase, while

they can fire employees when activities decrease. In the upward adjustment process, adjustment costs, such as searching and training costs for new employees, occur. In the downward adjustment process, severance pay and loss of morale among remaining employees when their colleagues are fired could be an example of adjustment costs. Adjustment costs for downward adjustment process are usually higher than those for upward adjustment process (Anderson et al. 2003). Thus, managers are reluctant to bear additional costs when activities decrease. It leads to less reduction in costs when activities decrease, compared to the amount of increase in costs when activities increase. These asymmetric managers behavior creates asymmetric cost changes.

Banker et al. (2013) provide some empirical evidences supporting this economic perspective. Using a large sample of publicly listed companies from 19 OECD (Organization for Economic Cooperation and Development) countries, they show that firms in countries with stricter provisions of employment protection legislation, a source of considerable labor adjustment costs especially for downward adjustment, exhibit greater cost stickiness.

2.2. Empire building explanation for sticky costs

Prior studies have predominantly explained cost stickiness based on economic factors until recently (Chen et al. 2012). However, it is important to consider the impact of managerial incentives on cost behavior because many costs are determined by managers' deliberate resource commitment decisions (Anderson et al. 2003; Chen et al. 2012). For example, managers just need to increase committed resources to the extent that they can meet the high demands when the demand increase. When the demand decreases, however, managers have discretion to remove committed resources. Because demand is stochastic, managers can decide to retain the committed resource once they determine that the costs of retaining unutilized

resources are less than the costs of incurring adjustment process. On the other hand, they may remove the committed resources had the case been determined reversed. Cost stickiness occurs if managers decide to retain unutilized resources within the company rather than remove them when activities decline.

This implies that managerial decision, especially agency problem, plays a key role in cost stickiness. Relatedly, there are several papers which try to explain cost stickiness in the context of agency problem. One of the important agency problem in explaining cost stickiness is related to the empire building incentives. According to Anderson et al. (2003) and Chen et al. (2012), managers are more likely to retain unutilized resources when activities decline due to the empire building incentives.

Empire building refers to mangers' tendencies to grow the firm beyond its optimal size or to maintain unutilized resources. Agency theory in economic and management literatures explains why managers have empire building incentives. They explain that managers are likely to build their own empire with the purpose of increasing personal utility such as status, power, compensation, and prestige (Stulz 1990; Jensen 1986; Masulis et al. 2007; Hope and Thomas 2008; Chen et al. 2012). Managers may enjoy monetary and nonmonetary benefits from managing larger and more complex organization (Datta et al. 2010). Large and complex organization makes managers have more slack resources under their control, which in turn indicates stronger power. Amihud and Lev (1981, 1999) also present a theory of "*managerialism*", which argue that managers have incentives to grow the firm beyond the optimal size to avoid unemployment risk, to create additional middle manager promotions, and to make the managers more indispensable to the firm.

Another reason for engaging in empire building is due to the avoidance of downsizing. As suggested by Bertrand and Mullainathan (2003), managers have disincentive to downsize because managers prefer the quiet life and do not want to experience difficult and costly decision associated with downsizing. Downsizing

literature have used selling, general, and administrative (SG&A) costs as a proxy for slack resources that manager should otherwise cut in response to demand decline.[34] Assuming managers have disincentives to downsize the business, we can observe sticky cost behavior.

In sum, if managers have empire building incentives, they are willing to expand the resources under their control when activities increase, but they are reluctant to reduce the resources under their control when activities decrease. This explanation is referred to as '*Empire building explanation for sticky costs*'.

Chen et al. (2012) show that there is a greater SG&A cost asymmetry when managers have stronger empire building incentives. Stronger empire building incentives are proxied by high free cash flows, not in the years of CEO change or immediately preceding a CEO change, longer CEO tenure, and high percentage of at-risk pay in the CEO's total compensation. Managers with stronger empire building incentives are likely to expense more office payroll and expenses when sales go up, but they are delaying the reduction of office payroll and expenses when sales go down. And this behavior ultimately results in sticky cost behavior.

2.3. Earnings management explanation for sticky costs

Another line of literatures try to integrate a typical management accounting research topic, cost structures, with a financial accounting topic, earnings management (Dierynck et al. 2012; Kama and Weiss 2013). Managers have strong incentives to manage reported earnings upward to receive higher compensation (Bergstresser and Philippon 2006), to avoid penalties from capital market, or to maintain their own reputation (Francis et al. 2008). Given the earnings management incentives, managers are more likely to reduce costs when earnings are likely to

[34] SG&A costs capture overhead costs such as salespersons' salaries and commissions, office payroll and expenses, and travel or entertainment costs.

decline (e. g, Burgstahler and Dichev 1997), causing less sticky cost behavior. This explanation is referred to as '*earnings management explanation for sticky costs*'.

Relatedly, Dierynck et al. (2012) investigate whether the managerial incentives to meet or beat zero earnings benchmark can affect the labor cost behavior. Given the high costs associated with firing employees, including severance costs and loss of reputation in the labor market, they expect that only managers who face a strong need for reducing costs (i.e., managers who have strong incentives to meet or beat earnings benchmark) will fire employees in response to activities decrease. Using the data from private Belgian firms, they show that the incentives to meet or beat earnings benchmark make managers be more willing to cut labor costs when sales decrease, resulting in less sticky cost behavior. These findings also extend the real earnings management literature by documenting how managers adjust resources to meet earnings targets.

Kama and Weiss (2013) also support the earnings management explanation for sticky costs. They, using data from large U.S. listed firms, show that when managers face incentives to meet or beat earnings benchmark (e.g. zero earnings, analyst forecasts and so on), they are more likely to adjust their slack resources in response to the sales decrease. As a result, the degree of cost stickiness is diminished or, sometimes, washed away in the presence of earnings management incentives. They also find out that managers under strong pressure to meet or beat earnings benchmark cut slack resources even if they have optimistic demand expectations for the future period. Similarly, Koo et al. (2015) show that managers' intentional earnings management decreases the degree of cost stickiness. They find that firms with high discretionary accruals have weaker cost stickiness than others. This implies that these firms cut down costs aggressively in order to manage earnings when they face sales decline.

Since many prior studies have predominantly focused on cost stickiness in the context of efficiency, agency problem explanation is relatively ignored. Thus, in this paper, I explicitly focus on how the agency problem can affect the degree of cost stickiness.

2.4. Hypothesis development

2.4.1. Ownership divergence and cost stickiness (H1)

There are many prior studies which examine the ownership structure around the world. Claessens et al. (2000), Holderness et al. (1999), and Shleifer and Vishny (1997) suggest that widely dispersed ownership structure is not common. To examine ownership and control by large shareholders, La Porta et al. (1998, 1999) trace the ownership structure from many different countries and find out that there are significant discrepancies between control and cash flow rights of ultimate shareholders. They document that ultimate owners can achieve control rights in excess of their cash flow rights through deviations from the one-share-one-vote rule, constructing pyramiding and/or cross-holdings ownership structure. Claessens et al. (2000), focusing more on corporations in nine East Asian countries, show that the separation of ownership (i.e, cash flow rights) and control (i.e., voting rights) is the most pronounced among family-controlled firms and small firms and managers of closely held firms tend to be relatives of the controlling shareholder's family. Faccio and Lang (2002) find out that there are significant discrepancies between ownership and control of ultimate owners in some Western European countries as well.

Divergence of voting rights from cash flow rights provides a significant implication in explaining managerial behavior.[35] According to Haw et al. (2004), a

[35] I focus on the divergence of voting rights from cash flow rights of ultimate owners because agency-driven incentives to empire building and/or earnings management is intensified in this sample.

smaller fraction of firm's cash flow rights relative to voting rights, in other words large ownership divergence, fail to align controller incentives with those of minority shareholders. Under this situation, ultimate owners have a strong incentive and ability to extract private benefits that are not shared by minority shareholders (Shleifer and Vishny 1997).[36] Claessens et al. (2002) also show the negative consequence of entrenchment effect in firms with large ownership divergence. They show that the more concentrated control is in the hands of the largest shareholder, the more entrenched the shareholder is and the better he/she is to extract value to the detriment of the firm's value to minority shareholders. This happens because entrenchment incentives of largest shareholders are less restrained by their small cash-flow stake.

These incentives to extract private benefits by ultimate owners with large ownership divergence cause a conflicting effect on cost stickiness. First, if the incentives to extract private benefits increase empire building incentives, changes in costs depending on sales change will become stickier. Jensen and Meckling (1976) provide an intuition why ownership divergence leads to empire building. Assume that ultimate owner's voting right is 70% and his/her cash flow right is only 30%. Since the ultimate owner has a majority of voting rights, he/she can make an operating decision as well as can enjoy full non-pecuniary benefits from the operating decision. Under the situation, an ultimate owner will decide to invest additional one dollar, once the marginal benefits from a non-pecuniary exceed only 30 cents, because he/she only bears the 30% of non-pecuniary costs. If the cash flow right of ultimate owners is much lower, they are more easily engaged in investment decisions to enjoy non-pecuniary benefits with lower costs.

36 The primary agency costs arise from conflicts of interest between minority shareholders and controlling owners who have nearly full control over managers and who frequently possess control power in excess of their cash flow rights. Another type of agency costs occurs when the agent who is supposed to make the decisions that would best serve the principal is motivated by self-interest, and this agent's own best interests may differ from the principal's best interests (Jensen and Meckling 1976).

There are also some empirical studies which document the positive relation between ownership divergence and empire building incentives. Firms with high ownership divergence are more likely to push excessive expansion due to the entrenchment effect by largest shareholders.[37] Kim et al. (2010) show that firms with large ownership divergence are more likely to diversify their business. In addition, firms with disproportionately larger voting rights than cash flow rights of controlling shareholders are less likely pay cash dividend, but more likely to retain the money inside the firm (Kim and Yoon 2010). As suggested by free cash flow hypothesis, managers prefer to use free cash flow to their own perquisite consumption, empire building, or takeover activities. Seo et al. (2013) provide an evidence of empire building incentives of large ownership divergence in a disclosure setting. They show that the larger the ownership divergence, the larger upward bias in management sales forecast, demonstrating managerial incentives to make their firm be looked larger. Shim et al. (2010) also report that firms with large ownership divergence are less likely to make voluntary disclosures to hide managers' behaviors from outside attention.

In summary, these papers indicate that firms controlled by owners with large divergence between voting rights and cash flow rights show a stronger propensity to empire building. Combining the argument in Chen et al. (2012), which demonstrate the positive association between cost asymmetry and empire building incentives, it can be inferred that ultimate owners' ownership divergence is positively related to the sticky cost behavior.

On the other hand, if earnings management incentives induced by extracting private benefits dominate the empire building incentives, cost structure will be less sticky. Haw et al. (2004) find out a positive relation between AEM, measured by

[37] Excessive growth or excessive investment are two typical forms of empire building (Dominguez-Martines et al. 2006).

discretionary accruals, and the extent of the ownership divergence of ultimate owners. They show that voting–cash flow rights divergence provides insiders (i.e., ultimate owners and top executives) with incentives and abilities to derive private benefits of control at the expense of minority shareholders. Because minority shareholders and other external stakeholders are not likely to have the resources, incentives, or access to relevant information to monitor insiders' actions, they are unable to detect insiders' income management. Lee et al. (2012), using data from large Korean firms, show that the controlling shareholders tend to engage in opportunistic REM as ownership divergence becomes larger. If ultimate owners with high divergence are more likely to engage in earnings management behavior (Haw et al. 2004; Lee et al. 2012), cost asymmetry is less prevalent in firms with large divergence because managers are more likely to reduce costs when activities decline (Dierynck et al. 2012; Kama and Weiss 2013).

To summarize, empire building explanation for sticky costs and earnings management explanation for sticky costs predict in an opposite way with respect to the degree of cost stickiness. According to empire building explanation, agency-driven incentives to build empire building induce stickier cost behavior. On the other hand, earnings management explanation predicts that agency-driven incentives to manipulate earnings induce less sticky costs behavior. Given the two conflicting predictions on the effect of ownership divergence on cost stickiness, it is an empirical question which explanation better fits the reality. Thus, I set the first hypothesis in a null form as follows:

Hypothesis 1: *Control–cash flow divergence of the ultimate owners increase (or decrease) the degree of cost stickiness.*

2.4.2. Legal regime and cost stickiness (H2)

Second research question is to examine the effect of country-level legal regime on cost stickiness.[38] Strong governance is expected to restrain managers' incentives to pursue their own interests at the expense of the other minority shareholders (Shleifer and Vishny 1997). The effect of decreases in managerial incentives to pursue their own interests on the cost stickiness depends on which explanation, empire building versus earnings management explanation, prevails.

According to the empire building explanation for sticky costs, the degree of cost stickiness will be smaller in countries with strong legal regime because empire building incentives will be alleviated by strong governance mechanisms. Dominguez-Martines et al. (2006) state that managers are more likely to turn into empire builders if they are not reined in by strong corporate governance. Titman et al. (2004) also show that the negative association between capital expenditures, a proxy for empire building, and subsequent returns, did not exist in time period when hostile takeovers were more prevalent. Richardson (2006) show that overinvestment of free cash flow by empire builders is mitigated under the presence of activist shareholders. Furthermore, Perry and Shivdasani (2005) show that firms with independent board are more likely to engage in downsizing. Chen et al. (2012) show more direct evidence on the moderating role of corporate governance in the relation between incentives to build empire and cost stickiness. They find that the association between empire building incentives and the degree of cost asymmetry is weaker in firms with strong corporate governance, where the corporate governance is proxied by the board size, board independence, institutional shareholders and anti-takeover provisions.

[38] Country-level legal regime could be a good measure for the strength of governance. For example, La Porta et al. (1997, 1998) argue that the laws, which deals with privately negotiated arrangements or describes the rights of corporate inside and outside investors, and the quality of their enforcement by the regulators and courts are essential elements of corporate governance. Also, country-level legal investor protection can be a measure for governance because it constrains insiders' incentives to conceal their private benefits extraction (Burgstahler et al. 2006; Haw et al. 2004; Leuz et al. 2003).

Under the earnings management explanation for cost stickiness, the prediction is in the opposite direction. A strong legal regime that effectively protects outsiders reduces insiders' incentives to obfuscate their efforts to pursue private control benefits. Thus, the degree of cost stickiness will be larger in countries with strong legal regime because earnings management incentives will be alleviated by strong governance mechanisms

There are several studies which examines earnings management incentives in an international setting. Leuz et al. (2003) indicates that earnings management is expected to decrease in investor protection because strong protection limits insiders' ability to acquire private control benefits, which reduces their incentives to mask performance. In addition, some papers examine the incentives of firms with large ownership divergence. For example, Haw et al. (2004) suggest that both legal and extra-legal institution limits the income management induced by the divergence of control rights from the cash flow. Similarly, Gopalan and Jayaraman (2012) show that insider controlled firms with greater divergence between cash-flow rights and control rights are associated with more earnings management in weak investor protection countries.

Based on the predictions from both empire building and earnings management explanation for sticky costs, I set the second hypothesis as follows:

Hypothesis 2: *The strength of country-level legal regime increase (or decrease) the degree of cost stickiness.*

2.4.3. The joint effect of ownership divergence and legal regime on cost stickiness (H3)

Next, I turn to the focus on the joint effect of ownership divergence and legal regime on cost stickiness. The predictions on the effect are subject to on the predictions in the previous two hypotheses.

If the empirical results support the empire building explanation for sticky cost, cost stickiness will be more pronounced in firms with high ownership divergence. However, the degree of cost stickiness will be mitigated when the macro-level legal regime works effectively. In this case, the degree of cost stickiness is the largest in firms with high ownership divergence in weak legal regime countries. But, it is the least pronounced in firms with low ownership divergence in strong legal regime countries.

Alternatively, if empirical results support the earnings management explanation for sticky cost, cost stickiness is less likely in firms with high ownership divergence. Since insiders of firms with high entrenchment incentives have strong incentives to report earnings upward, they are more likely to cut down operating costs, resulting in less stickiness in cost structure. However, earnings management incentives are curbed by the macro-level legal regime. Thus, the degree of cost stickiness is the largest in firms with low ownership divergence in strong legal regime countries. But, it is the least pronounced where earnings are intensively manipulated (e.g., firms with large ownership divergence in weak legal regime countries).

Based on these predictions from both empire building and earnings management explanation for sticky costs, I set the third hypothesis as follows:

Hypothesis 3: *Control–cash flow divergence of the ultimate owners and the strength of country-level legal regime jointly increase (or decrease) the degree of cost stickiness.*

3. Research design

Following the empirical model used in Banker et al. (2013), I use a hierarchical linear model in which the firm-level cost behavior is formulated as a function of country-level characteristics and firm-level control variables.

First, I set the firm-level model of cost behavior following the sticky cost model of Anderson et al. (2003) and Noreen and Soderstrom (1997):

$$\Delta LnXOPR = \alpha_0 + \alpha_1 \Delta LnSALE + \alpha_2 DEC * \Delta LnSALE + u \quad (1)$$

where $\Delta LnXOPR$ is the log-change in operating costs, $\Delta LnSALE$ is the log-change in sales, and *DEC* is a dummy variable which is equal to one if sales decrease and zero otherwise. The coefficient on $\Delta LnSALE$ (α_1) captures the percentage changes in operating costs with a 1% increase in sales revenue. On the other hand, the coefficient on $\Delta LnSALE + DEC*\Delta LnSALE$ ($\alpha_1+\alpha_2$) captures the percentage changes in operating costs with a 1% decrease in sales revenue. If operating costs are asymmetry, the increases in operating costs with sales increase should be greater than those with sales decrease. Thus, empirical results supporting cost stickiness predicts that α_2 will be negative.

Second, I introduce an additional model by specifying the firm-level slopes, α_1 and α_2 in eq. (1), depends on the country-level explanatory variables and firm-level control variables.

$$\alpha_1 = \beta_0 + \beta_1 DIV + \beta_2 LAW + \beta_3 GDPG + \beta_4 AINT + \beta_5 CIV + v_1 \quad (2a)$$

$$\alpha_2 = \gamma_0 + \gamma_1 DIV + \gamma_2 LAW + \gamma_3 GDPG + \gamma_4 AINT + \gamma_5 CIV + \gamma_6 SDEC + v_2 \quad (2b)$$

In Eqs. (2a) and (2b), *DIV* and *LAW* is the main interest variables, which indicates ownership divergence and the strength of legal regime, respectively. To define *DIV*, I first focus on the ownership divergence of ultimate owners.[39] Ultimate owners are largest shareholders who have the most voting rights of the firm after considering all chains of ownership, not just direct ownership. When shares in firm A are owned by another firm B, the ownership of firm B is also examined to find out who is the '*ultimate*' owner of the firm A. Ultimate owners, compared to just largest

[39] La Porta et al. (1999) argue that, in the majority of cases, the ultimate owners are also part of the management of the firm.

shareholders who directly own the firm, better capture de facto ownership structure of the company. *DIV* captures the ultimate owners' divergence of cash flow rights versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners (Fan and Wang 2002; Haw et al. 2004). *DIV* closer to the value of 1 indicates that the ultimate owner's control rights are diverged from cash flow rights, indicating large entrenchment incentives.[40] If a company does not have any ultimate owners whose control right is more than 5%, then the company is considered to be widely held and *DIV* is set to zero (Claessens et al. 2000; Faccio and Lang 2002).

LAW is the variable capturing the strength of legal regime. Based on prior studies, I employ anti-director index (*ADIR*), disclosure index (*DISCL*), anti-self-dealing index (*ASD*), and the principal component of these three variables (*COMP*) as a proxy for *LAW*. *DIR* measures how strongly a legal regime favors minority shareholders against insiders in the corporate decision-making process, including the voting process (Haw et al. 2004; La Porta et al. 1998). Second proxy for *LAW* is disclosure index (*DISCL*) (Haw et al. 2004; La Porta et al. 2006). Stronger disclosure standard reduces information asymmetry between insiders and outsiders and thereby reduces private control benefits by large shareholders. *DISCL* is an index of ratings on disclosure standards computed from inclusion or omission of 90 items related to disclose regulation. Third measure, *ASD,* means the degree of legal protection of minority shareholders against expropriation by corporate insiders (Djankov et al. 2008). Lastly, I conduct principal component analysis and use the first principal component of anti-director rights, disclosure index, and an index of private control of self-dealing, denoted as *COMP,* as a proxy for *LAW*. The purpose of using

[40] Pyramids, holdings through multiple control chains, cross-holdings, and deviations from the one-share-one-vote rule create discrepancies between ownership and control rights.

principal component is to define a variable which accounts for as much of the variability in *LAW* variables as possible.

I also control some factors that are known to affect the degree of cost stickiness. *GDPG* captures the growth rate in gross domestic production and *AINT* is an asset intensity computed as the log ratio of assets to sales. *CIV* is a dummy variable equal to one for civil-law countries, zero for common-law countries. *SDEC* represents the successive decrease in sales, captures by a dummy variable which is equal to one if sales decreased in the prior period, zero otherwise.

I include *SDEC* and *GDPG* because cost stickiness is affected by managers' assessment of business environment. If managers assess that demand decline is permanent, then they are more likely to remove the committed resources when demand declines. In other words, if managers believe that the demand will be not recovered in the near future, it is better to bear adjustment costs, rather than retaining the committed resources within the company. In this case, the degree of cost stickiness will decrease. Thus, I include variables which capture a situation where the revenue decline is more likely to be permanent. If the revenue declined in the preceding period (*SDEC*), managers are more likely to assess that the revenue decline is rather permanent and thereby more likely to reduce the committed resources.[41] In addition, the decline in demand is more likely to persist in periods of macro-economic contraction than in periods of macro-economic growth. Thus, I also control the macroeconomic growth (*GDPG*) in the model.

Cost stickiness is also affected by the degree of expected adjustment costs. The higher the expected adjustment costs relative to the costs of carrying unutilized resources, the less managers will reduce the committed resources, resulting in sticky costs. Adjustment costs are likely to be higher when the activities heavily rely on

[41] Following Banker et al. (2013), I assume that *SDEC* only affects the relation between changes in sales and changes in costs when sales decrease. However, the results are not changed when I assume that *SDEC* can also affect the cost stickiness when sales increase.

assets owned. Compared to reducing purchased resources, disposing assets is costly because the company have to pay selling costs and be burdened with firm-specific investments such as installation and customization costs (Anderson et al. 2003). Also, downsizing typically involves a large write-down of fixed assets (Stickney and Brown 1999). Thus, I include the asset intensity (*AINT*), the ratio of total assets to sales revenue, in the main model.[42]

Following Banker et al. (2013), I include *CIV* in the model. Prior studies has found that legal origin of a country is one of the primary drivers of cross-country differences in corporate governance, access to external financing and other outcomes (La Porta et al. 1997; 1998; 2006).

To allow ultimate ownership structure and country-level legal regime to affect not only the degree of cost stickiness but also the slope for sales increase, I combine Eq. (1) with (2a) an (2b) and obtain the following estimation model:

$$\begin{aligned} \Delta LnXOPR = {} & \alpha_0 + (\beta_0 + \beta_1 DIV + \beta_2 LAW + \beta_3 GDPG + \beta_4 AINT + \beta_5 CIV) * \Delta LnSALE \\ & + (\gamma_0 + \gamma_1 DIV + \gamma_2 LAW + \gamma_3 GDPG + \gamma_4 AINT + \gamma_5 CIV + \gamma_6 SDEC) \\ & * DEC * \Delta LnSALE + u_2 \end{aligned} \quad (3)$$

Finally, I include country and year fixed effects to control for potential variations in cost stickiness across countries over time.[43] Standard errors are clustered by firm to consider possible correlation between observations of the same firm in different years.[44]

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[42] The employee intensity, the ratio of the number of employees to sales revenue, is positively related to the expected adjustment costs in the periods of demand decline because firing employees generates severance pay. Moreover, employers lose investments made in firm-specific training if employees leave the company and have to spend more money on recruiting new employees when the demand recovers. Thus, it is important to control employee intensity in the main model. However, I do not include the employee intensity in the main model due to the lack of employee data in some countries. When I include the employee intensity, though the number of observations drop to 36,658, the main results are same to the ones that excluding employee intensity.

[43] When I include country, year and industry fixed effect together, the results are not changed.

[44] Using alternative clustering methods, such as one-way clustering by country or two-way clustering by country and year or firm and year, do not change the empirical findings.

4. Sample, data, and empirical results

4.1. Sample and data

To construct the sample dataset, I retrieve all non-financial firm-year observations of 22 countries that have the ultimate ownership data from Compustat Global for the period of 1987 to 2014.[45] Ultimate ownership data are obtained from the *Journal of Financial and Economics* (JFE) website.[46] I use nine East Asian countries' ownership data provided by Claessens et al. (2000), and 13 European countries' ownership data provided by Faccio and Lang (2002).[47] The initial sample size is 71,973 firm-years from 22 countries.

I do not include firms in the financial industry because these firms have different cost structure. Then, I retain the observations that have all the necessary data to calculate the variables used in this study. First, I delete firm-years if (1) sales or operating costs are missing or negative for the current year or the two prior years, (2) operating costs are less than 50% or greater than 200% of sales for the current or two prior years, (3) assets are missing or negative for the current year, (4) data are reported in a non-native currency, or (5) sales increased by more than 50% or decreased by more than 33% in the current or prior year because extreme changes in sales revenue may reflect the merger or divestitures.

Final sample comprises 52,361 firm-year observations (13,652 firms) from 22 countries over the period of 1989 to 2014. I winsorize observations falling in top and bottom 1% of each continuous variable by year as outliers. Table 1 describes the sample selection procedures.

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[45] I retrieved the data from 1987 because Compustat Global provides financial data starting from the year.

[46] Ultimate ownership data is available from *http://jfe.rochester.edu/data.htm*.

[47] I use a 5% of cutoff to identify ultimate ownership. Thus, if a firm's largest ownership is less than 5%, we define the firm as a widely held firm and set *DIV* to zero. Since the ultimate ownership data is available for one year, I assume that ownership structure does not change during the sample period.

Insert Table 1 about here.

The descriptive statistics by country are presented in Table 2. Column (2) of Table 2 shows the number of observations of each country. There are wide variations in the number of observations. Among the 52,361 observations, about 30% of the sample is from Japan, followed by 18% of the sample from United Kingdom. In contrast, the number of observations from Israel, Philippines and Portugal accounts for are less than 1% of the sample, respectively. Column (3) shows the mean value of ownership divergence (*DIV*) of each country. The country with the highest ownership divergence is Japan, followed by Sweden and Singapore. Thailand, France, and Portugal show relatively low level of ownership divergence. From Columns (4) to (6), I represent the mean value of each *LAW* measure, anti-director right (*ADIR*), disclosure index (*DISCL*), and anti-self-dealing index (*ASD*). Hong Kong, Singapore, and United Kingdom are considered as countries with strong legal regime. Column (7) shows the average value of the dependent variable, which is the log-change in operating costs (Δ*LnXOPR*). And the log-change in sales (Δ*LnSALE*) and other variables such as growth in gross domestic product (*GDPG*) and asset intensity (*AINT*), are represented in Columns (8) to (10). Last column shows the origin of legal regime, civil versus common law, the country follows.

Insert Table 2 about here.

4.2. Empirical results for H1

I present the results of estimating first hypothesis, which examines the effect of ownership divergence on cost stickiness, in Table 3. I initially estimate the basic cost stickiness model. The basic model includes Δ*LnSALE* and the interaction term between Δ*LnSALE* and a dummy variable (*DEC*) that captures sales decrease in the current period. Column (1) of Table 3 shows the results. The coefficient on Δ*LnSALE*

is 0.942, indicating that operating costs increase 0.942% per 1% increases in sales revenue. The negative coefficient on *DEC**Δ*LnSALE*, -0.039, supports for the sticky cost behavior. The combined value of Δ*LnSALE* + *DEC**Δ*LnSALE*, which is 0.903, indicates that operating costs decrease 0.903% per 1% decrease in sales revenue.

In Column (2), I include other factors that are known to affect cost stickiness. Controlling the factors such as economic growth, asset intensity, legal origin, and successive decrease, does not change the basic results. The coefficient on control variables show the expected sign. The coefficient on *GDPG*DEC**Δ*LnSALE* is negative, which suggests that the degree of cost stickiness is high in high-growth period. It means that managers consider the decline in sales revenue to be temporary when the general economy has been experiencing a boom and thereby they are less likely to decrease operating costs when sales decline. A similar explanation can be applied in interpreting the positive coefficient on *SDEC*DEC**Δ*LnSALE*. Positive sign indicates that the degree of cost stickiness is lower when the firm experiences successive decline in sales revenue. Managers consider the reduction in demand to be more permanent when the firm experiences successive decline in sales revenue. Negative coefficient on *AINT*DEC**Δ*LnSALE* suggest that cost stickiness increases in firms with high asset intensity, consistent with the adjustment costs explanation. However, *CIV*DEC**Δ*LnSALE* show insignificant coefficient.

Columns (3) and (4) show the results of main model by allowing *DIV* and additional control variables to affect not only the degree of cost stickiness but also the slope of sales increase. I include the two-way and three-way interactions terms in Column (3), and I additionally control for standalone variables in Column (4).[48] Same to the previous results, the coefficient on Δ*LnSALE* is positively significant, and the coefficient on *DEC**Δ*LnSALE* is negatively significant, supporting sticky

[48] Since the results in Columns (3) and (4) are same, I report the results without stand-alone variables in the following tables. However, the results are robust when I include stand-alone variables.

cost behavior. Main interest variable is *DIV*DEC*ΔLnSALE.* If the variable turns out to be positive, it indicates the firm with high ownership divergence are less likely to have sticky cost, supporting earnings management explanation. On the other hand, negative coefficient on *DIV*DEC*ΔLnSALE* means that cost stickiness is greater for firms with high ownership divergence, which supports the empire building explanation. The empirical results show that the coefficient on *DIV*DEC*ΔLnSALE* in Columns (3) and (4) are 0.024, and 0.042, respectively. Positive coefficient indicates that firms with high ownership divergence have strong incentives to manipulate earnings and thus managers in these firms are more likely to reduce operating costs when they experience sales decline. This explanation is consistent with the earnings management explanation for sticky costs.

Insert Table 3 about here.

To provide more solid evidence on which mechanism, empire building versus earnings management explanation, better explains sticky cost behavior, I employ the mediation analysis suggested by Holzhacker et al. (2015).

Mediation analysis is based on estimating a system of seemingly unrelated regression (SUR) equations. To show the mediation effect of empire building incentives, I run the two equations using SUR. In the first equation, I regress a variable which captures an empire building incentives on ownership divergence (*DIV*). As a proxy for empire building incentives, I use free cash flow (*FCF*), defined as the operating income before depreciation, minus total taxes, minus the gross interest expenses on short-term and long-term debt, and minus total dividend on preferred shares and ordinary shares divided by total book value of equity in previous years (Gul and Tsui 1998). In the second regression, I regress cost stickiness model with an inclusion of *FCF* and its interaction terms with *ΔLnSALE* and *DEC*.

I obtain the coefficient on *DIV* from the first equation and the coefficient on *FCF*DEC*ΔLnSALE* from the second equation. Using the obtained coefficients from the first and second equation, I calculate the product of the coefficients, which represents the mediation effect of empire building on cost stickiness. The statistical significance of the mediation effect is tested using a Sobel (1982) test.

I test the mediation effect of earnings management on cost stickiness in a similar way. Since there are two types of earnings management, which are AEM and REM, I run three equations in a SUR system. In the first and second equation, I regress each variable which captures earnings management incentives on ownership divergence (*DIV*). As a proxy for earnings management, I employ each proxies of AEM and REM. I first estimate the normal level of accruals by employing modified Jones (1991) model proposed by Dechow et al. (1995) for each year and 2-digit SIC industry code. *AEM* is defined as the difference between firm's actual accruals and the normal level of accruals. As a proxy for REM, I use a measure developed by Roychowdhury (2006). *REM* is defined as the sum of three variables to capture real earnings management: abnormal operating cash flow (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DISEXP*) (Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012; Chan et al. 2015).[49] Each variable captures offering excessive sales discounts or lenient credit terms to temporarily boost sales revenues, engaging in overproduction to report a lower cost of goods sold per unit, or reducing or deferring discretionary expenditures, respectively. In the second regression, I regress cost stickiness model with an inclusion of *AEM* (*REM*) and its interaction terms with Δ*LnSALE* and *DEC*.

The mediation effect of earnings management on cost stickiness is captured by the product of *DIV* in the first equation and *AEM*DEC*ΔLnSALE*

[49] I multiply (-1) for *AB_CFO* and *AB_DISEXP* to represent higher value represents more earnings management.

(*REM*DEC*ΔLnSALE*) in the second (third) equation.[50] The empirical results of mediation analysis are represented in Table 4.

First two columns show the results to test for the mediation effect of ownership divergence on cost stickiness via empire building. Column (1) shows the results of first equation, which regresses *FCF* on *DIV* along with other control variables. The coefficient on *DIV* is insignificant (coefficient = -0.001; p-value = 0.835), indicating that firms with high ownership divergence does not show strong empire building incentives. Column (2) shows the results of second equation. The coefficient on *FCF*DEC*ΔLnSALE* is negatively significant (coefficient = -0.153; p-value = 0.000). Negative coefficient means that cost structure of firms with large *FCF* are stickier than firms with small FCF. To show whether the firms with high ownership divergence are more likely to have sticky costs due to the empire building, I conduct the Sobel test. The Sobel test statistics to test the mediation effect of empire building is 0.200, but it is insignificant (p-value = 0.842). Thus, empire building explanation fails to explain cost behavior regarding ultimate owners' ownership divergence.

Columns (3) and (5) are the result to test for the mediation effect of ownership divergence on cost stickiness via earnings management. Columns (3) and (4) show the results of first and second equation, which regresses *AEM* and *REM* on *DIV* along with other control variables. In Column (3), the coefficient on *DIV* is positively significant (coefficient = 0.007; p-value = 0.000). In Column (4), the coefficient on *DIV* is also positively significant (coefficient = 0.031; p-value = 0.000). The results indicate that firms with high ownership divergence are more likely to engage in both AEM and REM. In Column (5), the coefficient on *AEM*DEC*ΔLnSALE* is 0.164 (p-value = 0.000) and the coefficient on *REM*DEC*ΔLnSALE* is coefficient = 0.047

[50] The number of observations in the mediation analysis is reduced to 31,345 due to the data requirement in calculating *FCF*, *AEM* and *REM*. In calculating *FCF* variable, 19 observations is deleted due to the missing data. Additional 20,997 observations is not used in the analysis because at least 10 observations in each year and SIC 2 digit industry is required to calculate *AEM* and *REM*.

(p-value = 0.001). Positive coefficients suggest that firms that engage in earnings management activities, via either AEM or REM, are less likely to show sticky costs behavior. Sobel test supports that earnings management explanation can explain less sticky cost behavior regarding ultimate owners' ownership divergence. Z-statistics for AEM channel is 2.804 (p-value = 0.005) and that for REM channel is 2.815 (p-value = 0.005).[51]

Insert Table 4 about here.

4.3. Empirical results for H2

To test whether the degree of cost stickiness depends on the country-level legal regime, I include the interaction terms between each *LAW* variable and *DEC**Δ*LnSALE*. The results are reported in Table 5. The *LAW* is measured by one of the following proxies: anti-director index (*ADIR*), disclosure index (*DISCL*), anti-self-dealing index (*ASD*), and their first principal components (*COMP*).

In Column (1), where *LAW* is proxied by *ADIR*, the coefficient on *LAW*DEC**Δ*LnSALE* is positive and significant (coefficient = 0.012; p-value = 0.000). This indicates that the degree of cost stickiness is less pronounced in countries where the voting process is more likely to accommodate to the rights of minority shareholders or contain minority protection provisions. The results are induced by the decrease in empire building incentives in strong legal regime.

In Column (2), when *DISCL* is used as a proxy for *LAW*, the coefficient on three-way interaction term, *LAW*DEC**Δ*LnSALE,* is 0.100 with a p-value of 0.001. The results also indicate that operating costs decrease more in countries with highest disclosure requirement by 0.1%, compared to the amount of decreases in operating costs in countries with lowest disclosure requirement, per 1% decreases in sales. The

[51] I omit further explanations on other economic factor variables in this table (and subsequent tables) because they are similar to those explained in Table 3.

results in Columns (3) and (4) are same to the ones in the previous columns. In summary, the results in Table 5 suggest that strong legal regime makes the cost structure more symmetry due to the decreases in empire building incentives.[52]

Insert Table 5 about here.

I additionally conduct the mediation analysis to provide more solid evidence on which mechanism, empire building versus earnings management explanation, better explains sticky cost behavior with regard to the strength of legal regime. As with the previous analysis, I employ SUR equations.

To show the mediation effect of empire building incentives, I regress *FCF* on the strength of legal regime (*COMP*) and obtain the coefficient on *COMP*. At the same time, I regress cost stickiness model with an inclusion of *FCF*DEC*ΔLnSALE* and get the coefficient on the variable. The empirical results of mediation analysis via empire building are represented in Columns (1) and (2) of Table 6. The coefficient on *COMP* is negatively significant (coefficient = -0.030; p-value = 0.000), indicating that firms in strong legal regime countries have lower empire building incentives. And the coefficient on *FCF*DEC*ΔLnSALE* is negatively significant (coefficient = -0.150; p-value = 0.000). Negative coefficient means that cost structure of firms with large *FCF* are stickier than firms with small *FCF*. To show whether the firms in strong legal regime countries are more likely to have sticky costs due to the empire building, I conduct the Sobel test. The Sobel test statistics to test the mediation effect of empire building is 7.624, and it is statistically significant (p-value = 0.000). Thus, empire building explanation successfully explains cost behavior regarding the strength of legal regime.

[52] In Table 5, I report the results that do not include stand-alone variables (i.e. *LAW, GDPG, AINT, CIV, DEC* or *SDEC*). When I include the stand-alone variables of each economic factors, the coefficient to capture the degree of cost stickiness is positively significant in three out of four cases (untabulated). The coefficient on *LAW*DEC*ΔLnSALE* is 0.011 (p-value = 0.057) when *LAW* is measured by *ADIR*, 0.054 (p-value = 0.294) when *LAW* is measured by *DISCL*, 0.162 (p-value = 0.026) when *LAW* is measured by *ASD*, and 0.013 (p-value = 0.031) when *LAW* is measured by *COMP*.

Columns (3) and (5) are the result to test for the mediation effect of legal regime on cost stickiness via earnings management. In Column (3), the coefficient on *COMP* is negatively significant (coefficient = -0.002; p-value = 0.003). In Column (4), the coefficient on *COMP* is positively significant (coefficient = 0.039; p-value = 0.000). The results indicate that firms in strong legal regime countries are less (more) likely to engage in AEM (REM). In Column (5), the coefficient on *AEM*DEC*ΔLnSALE* is 0.271 (p-value = 0.000) and the coefficient on *REM*DEC*ΔLnSALE* is coefficient = 0.026 (p-value = 0.001). Positive coefficients suggest that firms that engage in earnings management activities, via either AEM or REM, are less likely to show sticky costs behavior. And Z-statistics for AEM channel is -3.198 (p-value = 0.002) and that for REM channel is 1.729 (p-value = 0.084).

In Columns (3) and (4), the sign on *COMP* is in the opposite direction. And thus, Sobel test statistics also show opposite sign with respect to AEM channel and REM channel in explaining the relation between legal regime and cost stickiness. It means that the effect of AEM offsets that of REM on cost stickiness. In sum, the results in Columns (3) to (5) indicate that earnings management explanation fails to explain cost behavior regarding strength of legal regime.

Insert Table 6 about here.

In Table 7, I examine whether the degree of cost stickiness depends on the direction of sales change. The results in Tables 3 and 4 suggest that the relation between ownership divergence and cost stickiness is better explained by earnings management explanation. Literatures on earnings management suggest that managers are more likely to reduce costs when earnings are likely to decline (e. g, Burgstahler and Dichev 1997). Thus, the decreases in cost stickiness in firms with large ownership divergence are more likely to be originated from the situation where sales decrease.

On the other hand, the results in Tables 5 and 6 suggest that the relation between legal regime and cost stickiness is better explained by empire building explanation. Empire building incentives indicates a tendency to grow the firm beyond its optimal size. Since these incentives are more closely related to make the firm bigger, the decreases in cost stickiness in countries with strong legal regime are more likely to be originated from the situation where sales increase.

To test these prediction, I test the first and the second hypothesis by dividing the sample into two situation where sales increase or decrease. The empirical results are shown in Table 7.

As predicted, large ownership divergence decreases cost stickiness by conducting more earnings management when sales decrease. In Column (2), where sales decrease, the coefficient on *DIV**Δ*LnSALE* is positively significant (coefficient = 0.026; p-value = 0.026). The coefficient on *DIV**Δ*LnSALE* is not statistically significant when sales increases. It means that there is a stronger relation between changes in sales and changes in costs when sales decrease.

On the other hand, strong legal regime decreases cost stickiness by restricting empire building incentives when sales increase. In Column (3), where sales increase, the coefficient on *COMP**Δ*LnSALE* is negative and statistically significant (coefficient = -0.013; p-value = 0.000). Negative coefficient indicates that the relation changes in sales and changes in costs is weaker in strong legal regime countries, indicating that empire building incentives restricted by strong legal regime, especially when sales increase.

Insert Table 7 about here.

4.4. Empirical results for H3

In Table 8, I present the results which show the joint effect of ownership structure and legal regime on cost stickiness.[53] I divide the sample into the weak legal regime countries and strong legal regime countries based on the median value of each *LAW* variable.[54]

Panel A of Table 8 show the subsample results. Columns (1) and (2) show the results when the sample is divided based on *ADIR*. In weak legal regime countries, where *ADIR* is below the median value, there is no significant relation between ownership divergence and the degree of cost stickiness. It is because of the fact that, earnings management incentives force the degree of cost stickiness to decrease, but empire building incentives are not fully restricted by legal regime in weak legal regime countries, leading to increase in cost stickiness in weak legal regime countries. These countervailing effects lead to insignificant results in Column (1).

However, the coefficient on *DIV*DEC**Δ*LnSALE* is positive and statistically significant at less than 10% level. It indicates that firms with large ownership divergence are more likely to engage in earnings management when sales decline, leading to less sticky costs. Since the empire building incentives are fully restricted by strong legal regime, earnings management incentives dominantly explain the effect of ownership divergence on cost stickiness in strong legal regime countries.

The results are same when I use alternative proxies for *LAW*. When I divided the sample based on disclosure index (*DISCL*), the coefficient on *DIV*DEC**Δ*LnSALE* is positively significant (coefficient = 0.027; p-value = 0.020) in the subsample where *DISCL* is above the median (Column (4)). But it is

[53] Joint effect test assumes that the two factors, ownership divergence and strength of legal regime, are independent. In the dataset, the correlation between *DIV* and *LAW*, measured by *COMP*, is -0.024, which is relatively small.

[54] Including a four-way interaction term, *DIV*LAW*DEC**Δ*LnSALE* could be an alternative way to examine the joint effect. However, it is not easy to interpret the four-way interaction term. In addition, this method requires to add additional two-way and three-way interaction terms in the model, which increases multi-collinearity problem. Thus, dividing the sample based on one dimension and comparing the differences between subgroups is a superior way to examine the joint effect.

insignificant in the subsample where *DISCL* is below the median (Column (3)). The results are qualitatively same when I measure *LAW* using *ASD* or *COMP*.

I also divide the sample based on the two dimension, both on *LAW* and *DIV* and compare the degree of cost stickiness by looking at the coefficient on *DEC**Δ*LnSALE*. The expected size of the coefficient differs depending on which explanation empirical results follow. If empirical results support the empire building explanation for sticky cost, the degree of cost stickiness is the largest in firms with high ownership divergence in weak legal regime countries. However, under the earnings management explanation for sticky cost, the degree of cost stickiness is the largest in firms with low ownership divergence in strong legal regime countries.

The results are reported in Panel B of Table 8. The coefficient on *DEC**Δ*LnSALE* is the smallest in the subsample of firms with zero ownership divergence in weak legal regime countries (coefficient = -0.073; p-value = 0.000), while it is the largest in the subsample of firms with big ownership divergence in strong regime countries (coefficient = -0.018; p-value = 0.222). And the difference between the two coefficients is statistically significant (Chi^2 statistics = 5.76; p-value = 0.016). In summary, the results in Table 8 suggest that ownership divergence and the strength of legal regime jointly make cost structure be more symmetric.

To show which factor, ownership divergence versus legal regime, have a stronger effect on the degree of coefficient I compare the coefficient on *DEC**Δ*LnSALE* for each subsample. I first compare the effect of legal regime on cost stickiness, given the degree of ownership divergence. When there is no ownership divergence, the strength to legal regime has no significant effect on the degree of coefficient. The difference between two coefficients in Columns (1) and (2) is insignificant (Chi^2 statistics = 0.28; p-value = 0.600). The results are same when there is positive ownership divergence.

Next, I compare the effect of ownership divergence on cost stickiness given the strength of legal regime. In weak legal regime, the effect of ownership divergence on cost stickiness is insignificant. When I compare the coefficients on *DEC**Δ*LnSALE* in Columns (1) and (3), Chi^2 statistics is 0.48 and it is statistically insignificant. However, there is a significant effect of ownership divergence on cost stickiness in strong legal regime countries. Chi^2 statistics to test the difference in coefficients on *DEC**Δ*LnSALE* in Columns (2) and (4) is 3.51 with a p-value of 0.061. Thus, the results in Table 8 suggest that the effect of ownership divergence is bigger than that of the strength of legal regime with regard to the degree of cost stickiness.[55]

Insert Table 8 about here.

5. Additional analyses and robustness tests

5.1. Each REM proxy

In Table 4, I conduct a mediation analysis to show which mechanism, empire building versus earnings management explanation, better explains cost behavior in firms with large ownership divergence. The empirical results support that an incentive to manage earnings via earnings management better explains why firms with large ownership divergence show less sticky costs.

In the additional analysis, I decompose REM measure into three parts and use each individual proxy of REM in the mediation analysis: abnormal cash flow

[55] To compare the effect of ownership divergence on cost stickiness and the effect of legal regime on cost stickiness, I include both *DIV*DEC*ΔLnSALE* and *LAW*DEC*ΔLnSALE* in a regression and compare the coefficients. The coefficient on *DIV*DEC*ΔLnSALE* is 0.038 and that on *LAW*DEC*ΔLnSALE* is 0.013. F-statistics for testing the difference between these coefficients is 3.55 (p-value = 0.060). These results also support that the effect of ownership divergence is bigger than that of the strength of legal regime with regard to the degree of cost stickiness.

(*AB_CFO*), abnormal production costs (*AB_PROD*) and abnormal discretionary expenses (*AB_DISEXP*). The results using SUR are reported in Table 9.

Columns (1) and (2) of Table 9 are the results when REM is proxied by *AB_CFO*. I regress REM proxy, *AB_CFO*, on ownership divergence (*DIV*) in the first equation. In the second equation, I regress cost stickiness model including *AB_CFO*DEC*ΔLnSALE*. In the first regression (Column (1)), the coefficient on *DIV* is insignificant indicating that the magnitude of ownership divergence does not relate to the abnormal cash flows. Even though the coefficient on *AB_CFO*DEC*ΔLnSALE* is positively significant in Column (2), the Sobel test statistics suggests that ownership divergence does not reduce cost asymmetry via increasing abnormal cash flow. The insignificant results in *AB_CFO* may be due to the ambiguous net effect on abnormal cash flow (Roychowdhury 2006). Price discounts, channel stuffing, and overproduction have a negative effect on contemporaneous abnormal cash flow, while reduction of discretionary expenditures has a positive effect.

The results using *AB_PROD* as a proxy for REM are reported in Columns (3) and (4). In the first regression, the coefficient on *DIV* is positively significant (coefficient = 0.144; p-value = 0.000), indicating that firms with high ownership divergence are more likely to engage in real earnings management activities via over production. In Column (4), the coefficient on *AB_PROD*DEC*ΔLnSALE* is also positively significant (coefficient = 0.009; p-value = 0.044). Positive coefficient means that cost structure of firms with large *AB_PROD* are less sticky than firms with small *AB_*PRDO. The Sobel test statistics to test the mediation effect of abnormal production costs is 2.183 and it is statistically significant (p-value = 0.029). Thus, the results indicates that over production activities can partially explain the negative relation between ownership divergence and cost stickiness.

Last two columns show the results using *AB_DISEXP* as a proxy for REM. The coefficient on *DIV* is positively significant (coefficient = 0.107; p-value = 0.000) and that on *AB_DISEXP*DEC*ΔLnSALE* is also positively significant (coefficient = 0.020; p-value = 0.000). Sobel test statistics is 3.826 which is statistically significant at less than 1% level. In summary, the results in Table 9 indicate that firms with large ownership divergence show less sticky costs because they are more likely to engage in real earnings management behavior via producing more inventories to reduce the cost of goods sold per unit and abnormally reducing discretionary expenses.

Insert Table 9 about here.

5.2. Meeting or beating earnings benchmark

Roychowdhury (2006) defines earnings management action as a deviation from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds. His empirical results also show that firms relying on real activities manipulation to meet the zero earnings threshold. Kama and Weiss (2013) show that, when managers face incentives to avoid losses or earnings decreases, earnings forecasts, they expedite downward adjustment of slack resources for sales decreases. And these deliberate decisions lessen the degree of cost stickiness rather than induce cost stickiness.

Based on these prior studies, I examine whether the incentives to meet or beat earnings benchmark by owners with large divergence can affect the degree of cost stickiness. Firm-years reporting small profits are regarded as firms with strong incentives to meet or beat earnings benchmark. Thus, the magnitude of decreases in cost stickiness is larger for firms that actually meet or beat earnings benchmark. I define a variable, *SP*, which is set equal to one if net income scaled by total assets is between 0 and 0.005, and is set equal to zero otherwise (Roychowdhury 2006). The results are reported in Table 10.

The Column (1) shows the results of firms whose *SP* is equal to zero. The coefficient on *DIV*DEC*ΔLnSALE* is 0.037 and it is marginally significant. Column (2) represents the results of firms that report small profit (*SP*=1). The coefficient on *DIV*DEC*ΔLnSALE* is 0.200. The difference between these two coefficients is statistically significant (Chi^2 statistics = 3.30; p-value = 0.069). The result indicates that when firms with large ownership divergence face greater incentives to avoid losses, they speed up downward adjustment of slack resources for sales decreases, leading to lessen the degree of cost stickiness.

Insert Table 10 about here.

5.3. Robustness tests

Alternative proxies for empire building

The results in Table 5 and 6 suggest that empire building explanation successfully explains cost behavior regarding the strength of legal regime. In the analysis, I use *FCF* as a proxy for empire building incentives. However, *FCF* is not a perfect measure to capture empire building incentives. Thus, I use alternative proxies for empire building.

Since empire builders prefer to hold cash in their hands, they are reluctant to pay dividend. That is, lower dividend indicates strong empire building incentives. I define *DVD* as the amount of cash dividend divided by total assets. I multiply (-1) to have higher *DVD* indicate stronger empire building incentives. I also use the number of business segment (*SEG*) because empire builders are likely to expand their business area. To alleviate measurement errors, I define *AVG*, which is the average of the three standardized empire building proxies, *FCF*, *DVD* and *SEG*. The results using these alternative proxies are reported in Table 11.

In Model A where empire building incentive is proxies by *DVD*, the coefficient on *COMP* and that on *DVD*DEC*ΔLnSALE* are both negatively significant. It

means that the degree of cost stickiness is lower in strong legal regime countries because strong legal regime restricts empire building incentives. The Sobel test statistics to test the mediation effect of empire building is also positive and it is statistically significant (Z-statistics = 2.114; p-value = 0.034). When I use *SEG*, however, it fails to explain the reduced cost stickiness in strong legal regime countries. The number of segment is found to have no relation with the degree of cost stickiness. Lastly, when I use an aggregate proxy, *AVG*, the empirical results show that empire building explanation successfully explains declined cost stickiness in countries with strong legal regime. In sum, Table 11 shows that empire building explanation is generally applicable in the relation between legal regime and cost stickiness.

Insert Table 11 about here.

Time-series models

Even though cost stickiness contains a time-series concept, empirical estimations in the previous models are done on a cross-sectional basis. However, there could exist a cross-sectional heterogeneity in the degree of cost stickiness because there are many unmeasured variables that affect the degree of cost stickiness of each firm. Thus, I employ two ways to consider this firm effect.

First, I run a random effect model.[56] This model postulates a different intercept for each firm and the different intercepts are interpreted as random and treated as a part of the error term. The results are reported in Panel A of Table 12. The coefficient on *DIV*DEC**Δ*LnSALE* is 0.047 and it is statistically significant. It means that, after controlling for firm effect, ownership divergence still increases the degree of cost

[56] In the fixed effect model, the observations for each firm have subtracted from the averages of all the observations for that firm. This transformation wipes out all variables that do not vary within a firm. Since the main variables in this paper, *DIV* and *LAW*, are time-invariant, I do not use fixed effect model.

stickiness by engaging in earnings management. In Column (2), the coefficient on *COMP*DEC**Δ*LnSALE* is also positively and significant. (coefficient = 0.013; p-value = 0.006). The results are consistent with the previous ones.

Second, I conduct a firm-by-firm estimation. I estimate individual time-series models for each firm that has at least 10 observations and at least 3 reductions in sales decrease during the sample period (Anderson et al. 2003). The number of firms used in the analysis is 2,020. The results are reported in Panel B of Table 12. The coefficient on *DEC**Δ*LnSALE* is the negative in zero ownership divergence subsample, but it is insignificant in positive ownership divergence subsample. It indicates that firms with large ownership divergence show less sticky costs because they are more likely to engage in earnings management. However, I cannot find any significant difference in the subgroups between weak and strong legal regime.

Insert Table 12 about here.

Controlling for potential problems arising from cross country analysis

I check whether the findings are sensitive to various problems that can arise in international studies. First, I control for different sample size of each country. There is a huge difference in the number of observations of each country: 368 observations for Portugal versus 15,673 observations for the Japan. Simple OLS regression estimates may be distorted by over-representing some countries (Solon et al. 2015). Thus, I run the weighted least square (WLS) regression by assigning an equal weight to each country. This method, by minimizing the sum of squared residuals weighted by the inverse probability of selection, can partially cure the problems that may arise from differences in sample sizes across the sample countries (Choi et al. 2008, 2009; Solon et al. 2015). Results using WLS is reported in Columns (1) and (2) of Table 13. The coefficients on *DIV*DEC**Δ*LnSALE* and *COMP*DEC**Δ*LnSALE* are both

positively significant, indicating that the degree of cost stickiness is small in firms with large ownership divergence and in firms with strong legal regime.

To avoid the concerns that certain country derives the results, I repeat all the analyses with OLS method after excluding Japan, which takes the largest portion of the total sample. I represent the results excluding Japan in Columns (3) and (4). The coefficients on *DIV*DEC**Δ*LnSALE* and *COMP*DEC** Δ*LnSALE* are 0.035 and 0.017 respectively and they are marginally significant at less than 10% level. The result indicates that the main results are not driven by a results from single country. I also exclude both Japan and United Kingdom, which takes the second largest portion, but the empirical results are same to those reported in previous ones (untabulated).

Alternative proxies for LAW

When I use alternative proxies to capture the strength of country-level legal regime, the results are qualitatively same to the main results. Following La Porta et al. (2006), I measure *LAW* using liability standard (*LIAB*) and the degree of investor protection (*INV*). Liability standard equals the arithmetic mean of liability standard for the issuer and its directors, liability standard for distributors, and liability standard for accountants. I also use investor protection index from La Porta et al. (2006). It is a first principal component of the indices of disclosure requirements, liability standards, and anti-director rights. The coefficients on *LIAB*DEC**Δ*LnSALE* and *INV*DEC**Δ*LnSALE* are 0.017 and 0.007 and they are statistically significant at less than 1% level. Additionally, I employ an index which captures the adoption of minority shareholders' legal protections (*SHR*) developed by Guillén and Capron (2016). When I use this index, the number of observations is reduced to 44,997, since it does not provide data for Israel and Taiwan and sample period ends in 2011. But the empirical result are not changed. The coefficient on

*SHR*DEC*ΔLnSALE* is 0.012, which is statistically significant at less than 1%. The results when *LAW* is measured by *SHR* are reported in Column (5) of Table 13.

Alternative sample period

Ownership data of East Asian countries are derived from 1996 to 1998 and that of European countries are derived from 1996 to 2000. Since the ultimate ownership data is available just for one year by each country, I assume that ownership structure does not change during the sample period. This study, however, contains late 2000s and early 2010s, which is far from the period when the ownership structure is measured. If ownership structure changes significantly as time goes by, the results in this paper may be biased. So I test whether the results are robust to alternative time periods. For example, I set the sample period ending 2010 or 2005. When I use these alternative time period, the results are qualitatively same to the main results in previous Tables. I report the results using the sample ending 2010 in Columns (6) and (7) of Table 13.

Insert Table 13 about here.

6. Conclusion

This study investigates whether the degree of cost stickiness changes depending on the ownership divergence of ultimate owners and country-level legal regime. I first investigate whether the degree of cost stickiness are affected by the divergence between control rights and cash flow rights of ultimate owners. Second, employing an international setting, I examine whether the cost stickiness behavior is affected by the strength of the external governance. Finally, I test the joint effect of ownership divergence of ultimate owners and governance on the degree of cost stickiness.

Using 52,361 firm-year observations from 22 countries, I find that the magnitude of cost stickiness decreases as the ownership divergence increases. It is

because firms with large ownership divergence are more likely to engage in earnings management. Second, the magnitude of cost stickiness decreases as country-level legal regime gets stronger. Since strong legal regime effectively reduces the empire building incentives induced by entrenched managers, the degree of cost stickiness is higher in weak legal regime countries. Furthermore, I find that the degree of cost stickiness is affected by both ownership divergence and country-level legal regime.

This paper, by examining the effect of ownership structure on cost behavior broadens the understanding of cost stickiness behavior. It also contributes to the growing body of literatures on convergence of financial and managerial accounting by showing the underlying mechanism.

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Appendix
Variable Definitions

Variables		Definitions	Source
Test variables			
DIV	=	the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners;	*JFE website*
LAW	=	the strength of the legal regime of a country, measured by one of the following variables: *DIR, DISCL, ASD,* and *COMP*;	
ADIR	=	An index of anti-director rights measures how strongly a legal system favors minority shareholders against insiders in the corporate decision-making process including the voting process. It is formed by adding one when: (1) the country allows shareholders to mail their proxy vote, (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting, (3) cumulative voting or proportional representation of minorities on the board of directors is allowed, (4) an oppressed minorities mechanism is in place, (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10% , or (6) shareholders have preemptive rights that can be waived only by a shareholders' vote. The range for the index is from 0 to 6;	*La Porta et al. (1998, 2006)*
DISCL	=	An index of disclosure equals the arithmetic mean of (1) prospectus; (2) compensation; (3) shareholders; (4) insider ownership; (5) irregular contracts; and (6) transactions. (1) Prospectus equals one if the law prohibits selling securities that are going to be listed on the largest stock exchange of the country without delivering a prospectus to potential investors, and zero otherwise. (2) Compensation is an index of disclosure requirements regarding the compensation of the issuer's directors and key officers. (3) Shareholders indicates an index of disclosure requirements regarding the issuer's equity ownership structure, while (4) Insider ownership means an index of disclosure requirements regarding the equity ownership by its directors and key officers. (5) Irregular contracts is an index of disclosure requirements regarding the issuer's contracts outside the ordinary course of business. Lastly, (6) Transactions is an index of the disclosure requirements regarding transactions between the issuer and its directors, officers, and/or large shareholders (i.e., "related parties");	*La Porta et al. (2006)*

ASD	=	An index of legal protection of minority shareholders against expropriation by corporate insiders. It is computed as an average of ex ante and ex post private control of self-dealing. Ex ante private control of self-dealing is an average of approval by disinterested shareholders (equals 1 if the transaction must be approved by disinterested shareholders, and zero otherwise) and ex ante disclosure (disclosures by company, disclosures by ultimate owners, and the requirement of positive review before the transaction can be approved). Ex post private control of self-dealing is an average of disclosure in periodic filings and ease of proving wrongdoing;	*Djankov et al. (2008)*
COMP	=	First principal component of (1) anti-director rights, (2) disclosure index, and (3) an index of private control of self-dealing.	*La Porta et al. (1998, 2006), Djankov et al. (2008)*

Dependent and control variables

$\Delta LnXOPR$	=	the log-change in operating costs;	*Compustat*
$\Delta LnSALE$	=	log-change in sales;	*Compustat*
CIV	=	dummy variable equal to one for civil-law countries, zero for common-law countries;	*La Porta et al. (1998)*
GDPG	=	real GDP growth;	*IMF*
AINT	=	asset intensity computed as the log ratio of assets to sales;	*Compustat*
DEC	=	dummy variable equal to one for if sales decrease in the current period, zero otherwise;	*Compustat*
SDEC	=	dummy variable equal to one if sales decreased in the prior period, zero otherwise;	*Compustat*

FCF	=	the operating income before depreciation, minus total taxes, minus the gross interest expenses on short-term and long-term debt, and minus total dividend on preferred shares and ordinary shares divided by total book value of equity in previous years;	*Compustat*
AEM	=	abnormal accruals calculated using the modified Jones (1991) model per each year-industry in the way proposed by Dechow et al. (1995);	*Compustat*
REM	=	the sum of three variables to capture real earnings management: abnormal operating cash flow (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DISEXP*). *AB_CFO* and *AB_DISEXP* are multiplied by (-1) to represent higher value represents more earnings management;	*Compustat*

TABLE 1
Sample selection procedures

Sample Selection Procedures	Number of firm-years reduced	Number of firm-years remaining
All non-financial firm-year observations from 22 countries that have the ultimate ownership data in JFE website from 1987 to 2014		71,973
Delete firm-year observations if		
(1) sales or operating costs are missing or negative for the current year or the two prior years	(9,888)	62,085
(2) operating costs are less than 50% or greater than 200% of sales for the current or two prior years	(1,997)	60,088
(3) assets are missing or negative for the current year	(23)	60,065
(4) data are reported in a non-native currency	(953)	59,112
(5) sales increased by more than 50% or decreased by more than 33% in the current or prior year	(6,751)	52,361

This table show the sample selection procedures. The sample countries consist of 9 from East Asia (Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand) and 13 from Western Europe (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom) for which there are the necessary data on the ownership and control structures of ultimate shareholders and on the cost stickiness model.

TABLE 2

Descriptive statistics by country

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Country	*Observations*	*DIV*	*ADIR*	*DISCL*	*ASD*	Δ*LnXOPR*	Δ*LnSALE*	*GDPG*	*AINT*	*CIV*
Austria	711	0.123	2	0.250	0.212	0.047	0.044	0.037	0.106	1
Belgium	536	0.194	0	0.417	0.544	0.029	0.029	0.038	-0.069	1
Finland	1,145	0.180	3	0.500	0.457	0.050	0.048	0.046	-0.128	1
France	4,480	0.062	3	0.750	0.379	0.046	0.044	0.035	0.027	1
Germany	4,646	0.177	1	0.417	0.282	0.036	0.034	0.038	-0.184	1
Hong Kong	1,845	0.122	5	0.917	0.963	0.041	0.036	0.046	0.448	0
Indonesia	963	0.199	2	0.500	0.653	0.083	0.075	0.115	0.044	1
Israel	380	0.206	4	0.667	0.789	0.070	0.069	0.087	-0.029	0
Italy	866	0.154	1	0.667	0.421	0.039	0.036	0.034	0.379	1
Japan	15,673	0.396	4	0.750	0.499	0.017	0.018	0.017	0.076	1
Malaysia	1,371	0.154	4	0.917	0.950	0.062	0.058	0.098	0.469	0
Norway	744	0.213	4	0.583	0.421	0.050	0.048	0.064	0.170	1
Philippines	424	0.130	3	0.833	0.215	0.042	0.037	0.086	0.565	1
Portugal	368	0.081	3	0.417	0.444	0.049	0.047	0.050	0.328	1
Singapore	1,418	0.268	4	1.000	1.000	0.051	0.048	0.088	0.580	0
South Korea	1,811	0.118	2	0.750	0.469	0.061	0.058	0.070	0.142	1
Spain	1,048	0.068	4	0.500	0.374	0.044	0.045	0.048	0.324	1
Sweden	1,275	0.294	3	0.583	0.333	0.051	0.051	0.045	-0.089	1
Switzerland	1,132	0.254	2	0.667	0.267	0.036	0.035	0.045	0.088	1
Taiwan	1,091	0.173	3	0.750	0.565	0.050	0.048	0.043	0.446	1
Thailand	881	0.050	2	0.917	0.813	0.062	0.058	0.072	0.165	0
United Kingdom	9,553	0.102	5	0.833	0.950	0.046	0.043	0.050	-0.192	0
Total	52,361	0.216	3.483	0.718	0.583	0.038	0.037	0.042	0.055	0.705

This table presents the descriptive statistics for the key variables by country. Column (2) shows the number of observations. Column (3) shows the mean value of ownership divergence (*DIV*). Columns (4) to (6) show the proxies for the strength of legal regime (*LAW*) variables. *ADIR* indicates anti-director index, *DISCL* indicates disclosure index, and *ASD* means anti-self-dealing index. Columns (7) to (11) show the mean value of key variables of cost stickiness model. Δ*LnXOPR* is the log-change on operating costs, Δ*LnSALE* is the log-change in sales, *GDPG* is real GDP growth rate, *AINT* is log ratio of assets to sales; *CIV* is a dummy variable equal to one for civil-law countries, zero for common-law countries. See the Appendix for detailed variable definitions.

TABLE 3

The effect of ownership divergence on cost stickiness

VARIABLES	(1) Basic Model ΔLnXOPR	(2) Extended Model ΔLnXOPR	(3) Main Model A ΔLnXOPR	(4) Main Model B (w/ standalone) ΔLnXOPR
ΔLnSALE	0.942***	0.939***	0.939***	0.958***
	(0.000)	(0.000)	(0.000)	(0.000)
DIV*ΔLnSALE			-0.002	-0.011
			(0.756)	(0.338)
GDPG*ΔLnSALE		0.156***	0.157***	-0.167***
		(0.000)	(0.000)	(0.000)
AINT*ΔLnSALE		-0.051***	-0.051***	-0.065***
		(0.000)	(0.000)	(0.000)
CIV*ΔLnSALE		-0.010	-0.009	-0.017**
		(0.201)	(0.220)	(0.027)
DEC*ΔLnSALE	-0.039***	-0.049***	-0.051***	-0.076***
	(0.000)	(0.001)	(0.000)	(0.000)
DIV*DEC*ΔLnSALE			**0.024****	**0.042****
			(0.036)	**(0.047)**
GDPG*DEC*ΔLnSALE		-0.540***	-0.537***	0.241**
		(0.000)	(0.000)	(0.011)
AINT*DEC*ΔLnSALE		-0.029***	-0.029***	0.006
		(0.002)	(0.002)	(0.726)
CIV* DEC*ΔLnSALE		0.010	0.007	0.027*
		(0.526)	(0.642)	(0.091)
SDEC* DEC*ΔLnSALE		0.037***	0.036***	-0.003
		(0.000)	(0.000)	(0.757)
DEC				0.001
				(0.449)
DIV				0.001
				(0.201)
GDPG				0.074***
				(0.000)
AINT				0.003***
				(0.005)
CIV				0.006**
				(0.014)
SDEC				-0.007***
				(0.000)
Constant	0.004***	0.003**	0.003**	-0.004
	(0.001)	(0.031)	(0.037)	(0.117)
Observations	52,361	52,361	52,361	52,361
Country FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.868	0.869	0.869	0.870

This table presents the regression results to test H1 (the effect of ownership divergence on the degree of cost stickiness). Column (1) of this table shows the results for basic model and Column (2) shows the results for extended model, including economic factors that determines the degree of cost stickiness. Column (3) represents the main results to test H1. Last Column show the results for the main model including all stand-alone variables. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for

common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 4

The effect of ownership divergence on cost stickiness (Mediation analysis)

	Model A		Model B		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	*FCF*	Δ*LnXOPR*	*AEM*	*REM*	Δ*LnXOPR*
Δ*LnSALE*		0.899***			0.929***
		(0.000)			(0.000)
*DIV*Δ*LnSALE*		0.000			-0.013
		(0.963)			(0.129)
*GDPG*Δ*LnSALE*		0.084**			0.163***
		(0.018)			(0.000)
*AINT*Δ*LnSALE*		-0.036***			-0.044***
		(0.000)			(0.000)
*CIV*Δ*LnSALE*		-0.008			-0.005
		(0.355)			(0.403)
*FCF*Δ*LnSALE*		0.119***			
		(0.000)			
*AEM*Δ*LnSALE*					0.012
					(0.550)
*REM*Δ*LnSALE*					-0.012*
					(0.065)
*DEC*Δ*LnSALE*		0.348			0.299
		(0.685)			(0.729)
DIV*DEC*Δ*LnSALE		**0.030***			**0.045*****
		(0.056)			**(0.003)**
*GDPG*DEC*Δ*LnSALE*		-0.470***			-0.577***
		(0.000)			(0.000)
*AINT*DEC*Δ*LnSALE*		-0.029***			-0.030***
		(0.001)			(0.001)
CIV DEC*Δ*LnSALE*		-0.006			0.000
		(0.702)			(0.993)
SDEC DEC*Δ*LnSALE*		0.041***			0.045***
		(0.000)			(0.000)
FCF* DEC*Δ*LnSALE		**-0.153*****			
		(0.000)			
AEM* DEC*Δ*LnSALE					**0.164*****
					(0.000)
REM* DEC*Δ*LnSALE					**0.047*****
					(0.001)
DIV	**-0.001**		**0.007*****	**0.031*****	
	(0.835)		**(0.000)**	**(0.000)**	
GDPG	-0.032		-0.051***	-0.094***	
	(0.196)		(0.000)	(0.001)	
AINT	-0.048***		0.014***	0.091***	
	(0.000)		(0.000)	(0.000)	
CIV	0.053*		-0.003**	-0.401***	
	(0.060)		(0.023)	(0.000)	
DEC	0.059**		-0.001	-0.041***	
	(0.033)		(0.429)	(0.000)	
SDEC	-0.077***		0.002	-0.006	
	(0.000)		(0.124)	(0.159)	
Constant	0.296***	0.006	-0.012	0.012	0.002
	(0.000)	(0.622)	(0.613)	(0.858)	(0.888)

Sobel Test:					
Z-statistics	0.200		2.804***	2.815***	
(p-value)	(0.842)		(0.005)	(0.005)	
Observations	31,345	31,345	31,345	31,345	31,345
Country FE	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included
Adjusted R^2	0.107	0.876	0.010	0.328	0.874

This table presents the results of seemingly unrelated regression to show the mediation effect in the relation between ownership divergence and cost stickiness. Columns (1) and (2) show the results whether the free cash flow (*FCF*) works as a mediation factor in the relations between ownership divergence and cost stickiness. Columns from (3) and (5) represent the results whether the AEM and REM work as a mediation factor in the relations between ownership divergence and cost stickiness. The variable definitions used in the model is as follows: *FCF* = the operating income before depreciation, minus total taxes, minus the gross interest expenses on short-term and long-term debt, and minus total dividend on preferred shares and ordinary shares divided by total book value of equity in previous years; *AEM* = abnormal accruals calculated using the modified Jones (1991) model per each year-industry in the way proposed by Dechow et al. (1995); *REM* = the sum of three variables to capture real earnings management: abnormal operating cash flow (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DISEXP*). *AB_CFO* and *AB_DISEXP* are multiplied by (-1) to represent higher value represents more earnings management; Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 5

The effect of legal regime on cost stickiness

	(1)	(2)	(3)	(4)
LAW =	*ADIR*	*DISCL*	*ASD*	*COMP*
VARIABLES	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*
Δ*LnSALE*	0.996***	0.970***	1.002***	0.963***
	(0.000)	(0.000)	(0.000)	(0.000)
*LAW**Δ*LnSALE*	-0.011***	-0.031*	-0.063***	-0.010***
	(0.000)	(0.064)	(0.009)	(0.000)
*GDPG**Δ*LnSALE*	0.158***	0.184***	0.188***	0.171***
	(0.000)	(0.000)	(0.000)	(0.000)
*AINT**Δ*LnSALE*	-0.051***	-0.050***	-0.050***	-0.049***
	(0.000)	(0.000)	(0.000)	(0.000)
*CIV**Δ*LnSALE*	-0.034***	-0.022***	-0.047***	-0.044***
	(0.000)	(0.000)	(0.000)	(0.000)
*DEC**Δ*LnSALE*	-0.113***	-0.145***	-0.172***	-0.088***
	(0.000)	(0.000)	(0.000)	(0.000)
LAW*DEC*ΔLnSALE	**0.012*** **	**0.100*** **	**0.121*** **	**0.016*** **
	(0.000)	**(0.001)**	**(0.004)**	**(0.000)**
*GDPG*DEC*ΔLnSALE*	-0.585***	-0.607***	-0.615***	-0.592***
	(0.000)	(0.000)	(0.000)	(0.000)
*AINT*DEC*ΔLnSALE*	-0.031***	-0.034***	-0.032***	-0.033***
	(0.001)	(0.000)	(0.000)	(0.000)
CIV DEC*ΔLnSALE*	0.041***	0.045***	0.085***	0.066***
	(0.000)	(0.000)	(0.000)	(0.000)
SDEC DEC*ΔLnSALE*	0.038***	0.038***	0.038***	0.038***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.001	-0.001	-0.001	-0.001
	(0.199)	(0.186)	(0.172)	(0.246)
Observations	52,361	52,361	52,361	52,361
Country FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.869	0.869	0.869	0.869

This table presents the regression results to test H2 (the effect of country-level legal regime on the degree of cost stickiness). Each Column shows the results when the strength of legal regime (*LAW*) is proxied by anti-director index (*ADIR*), disclosure index (*DISCL*), anti-self-dealing index (*ASD*), or principal component of these three variables (*COMP*). The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 6

The effect of legal regime on cost stickiness (Mediation analysis)

	Model A		Model B		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	*FCF*	Δ*LnXOPR*	*AEM*	*REM*	Δ*LnXOPR*
Δ*LnSALE*		0.908***			0.938***
		(0.000)			(0.000)
*COMP*Δ*LnSALE*		-0.004			-0.011***
		(0.232)			(0.003)
*GDPG*Δ*LnSALE*		0.083**			0.105***
		(0.020)			(0.004)
*AINT*Δ*LnSALE*		-0.035***			-0.048***
		(0.000)			(0.000)
*CIV*Δ*LnSALE*		-0.020			-0.020
		(0.129)			(0.128)
*FCF*Δ*LnSALE*		0.118***			
		(0.000)			
*AEM*Δ*LnSALE*					-0.029
					(0.167)
*REM*Δ*LnSALE*					0.003
					(0.643)
*DEC*Δ*LnSALE*		0.329			0.014
		(0.702)			(0.967)
COMP*DEC*Δ*LnSALE		**0.014***			**0.022****
		(0.050)			**(0.002)**
*GDPG*DEC*Δ*LnSALE*		-0.469***			-0.444***
		(0.000)			(0.000)
*AINT*DEC*Δ*LnSALE*		-0.031***			-0.012
		(0.000)			(0.195)
CIV DEC*Δ*LnSALE*		0.035			0.032
		(0.162)			(0.211)
SDEC DEC*Δ*LnSALE*		0.041***			0.035***
		(0.000)			(0.000)
FCF* DEC*Δ*LnSALE		**-0.150*****			
		(0.000)			
AEM* DEC*Δ*LnSALE					**0.271*****
					(0.000)
REM* DEC*Δ*LnSALE					**0.026***
					(0.080)
COMP	**-0.030*****		**-0.002*****	**0.039*****	
	(0.000)		**(0.003)**	**(0.000)**	
GDPG	-0.033		0.002	-0.083***	
	(0.195)		(0.744)	(0.004)	
AINT	-0.048***		0.016***	0.093***	
	(0.000)		(0.000)	(0.000)	
DEC	-0.032***		0.002***	-0.044***	
	(0.000)		(0.001)	(0.000)	
SDEC	-0.076***		0.000	-0.006	
	(0.000)		(0.496)	(0.131)	
Constant	0.252***	0.004	0.032***	-0.182***	0.014
	(0.000)	(0.725)	(0.006)	(0.004)	(0.223)

Sobel Test:					
Z-statistics	7.624***		-3.198***	1.729*	
(p-value)	(0.000)		(0.002)	(0.084)	
Observations	31,345	31,345	31,345	31,345	31,345
Country FE	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included
Adjusted R^2	0.107	0.876	0.065	0.326	0.883

This table presents the results of seemingly unrelated regression to show the mediation effect in the relation between country-level legal regime and cost stickiness. Columns (1) and (2) show the results whether the free cash flow (*FCF*) works as a mediation factor in the relations between legal regime and cost stickiness. Columns from (3) and (5) represent the results whether the AEM and REM work as a mediation factor in the relations between legal regime and cost stickiness. The variable definitions used in the model is as follows: *FCF* = the operating income before depreciation, minus total taxes, minus the gross interest expenses on short-term and long-term debt, and minus total dividend on preferred shares and ordinary shares divided by total book value of equity in previous years; *AEM* = abnormal accruals calculated using the modified Jones (1991) model per each year-industry in the way proposed by Dechow et al. (1995); *REM* = the sum of three variables to capture real earnings management: abnormal operating cash flow (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DISEXP*). *AB_CFO* and *AB_DISEXP* are multiplied by (-1) to represent higher value represents more earnings management; Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *LAW* = the strength of legal regime, measured by one of the following variables: anti-director index (*ADIR*), disclosure index (*DISCL*), anti-self-dealing index (*ASD*), or principal component of these three variables (*COMP*); *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 7
The source of decreases in cost stickiness

VARIABLES	(1) Sales Increase ΔLnXOPR	(2) Sales Decrease ΔLnXOPR	(3) Sales Increase ΔLnXOPR	(4) Sales Decrease ΔLnXOPR
ΔLnSALE	0.937***	0.900***	0.962***	0.902***
	(0.000)	(0.000)	(0.000)	(0.000)
DIV*ΔLnSALE	**-0.001**	**0.026****		
	(0.841)	**(0.026)**		
COMP*ΔLnSALE			**-0.013*****	**0.000**
			(0.000)	**(0.984)**
GDPG*ΔLnSALE	0.154***	-0.329***	0.148***	-0.331***
	(0.000)	(0.000)	(0.000)	(0.000)
AINT*ΔLnSALE	-0.050***	-0.081***	-0.050***	-0.082***
	(0.000)	(0.000)	(0.000)	(0.000)
CIV*ΔLnSALE	-0.019**	-0.013	-0.056***	-0.010
	(0.024)	(0.356)	(0.000)	(0.617)
Constant	0.008***	-0.001	0.003	-0.000
	(0.002)	(0.803)	(0.203)	(0.912)
Observations	32,800	19,561	32,800	19,561
Country FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.752	0.665	0.752	0.665

This table shows whether the degree of cost stickiness depends on the direction of sales change. Columns (1) and (2) estimate the effect of ownership divergence on cost stickiness depending on the direction of sales changes. Columns (3) and (4) show the effect of legal regime on cost stickiness depending on the direction of sales changes. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *COMP* = the principal component of *ADIR*, *DISCL*, and *ASD*; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 8

The joint effect of ownership structure and legal regime on cost stickiness

Panel A Subsample by the country-level legal regime

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LAW = ADIR		*LAW = DISCL*		*LAW = ASD*		*LAW = COMP*	
	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
VARIABLES	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*
Δ*LnSALE*	0.940***	0.942***	0.981***	0.940***	0.958***	0.946***	0.869***	0.951***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
*DIV**Δ*LnSALE*	0.007	-0.001	0.008	-0.008	-0.004	-0.002	0.002	0.002
	(0.528)	(0.954)	(0.549)	(0.338)	(0.773)	(0.782)	(0.879)	(0.841)
*GDPG**Δ*LnSALE*	0.103*	0.123**	0.069	0.135***	0.063	0.160***	0.109**	0.113**
	(0.055)	(0.013)	(0.359)	(0.001)	(0.226)	(0.001)	(0.032)	(0.029)
*AINT**Δ*LnSALE*	-0.040***	-0.057***	-0.040***	-0.056***	-0.037***	-0.057***	-0.040***	-0.057***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
*CIV**Δ*LnSALE*	-0.001	-0.025***	-0.052**	-0.005	-0.016	-0.032***	0.067	-0.043***
	(0.978)	(0.007)	(0.015)	(0.564)	(0.929)	(0.000)	(0.678)	(0.000)
*DEC**Δ*LnSALE*	-0.107**	-0.045***	-0.115*	-0.048***	-0.310	-0.060***	-0.364	-0.064***
	(0.046)	(0.004)	(0.080)	(0.002)	(0.152)	(0.000)	(0.114)	(0.000)
DIV*DEC*ΔLnSALE	**0.023**	**0.024***	**0.005**	**0.027****	**0.026**	**0.032*****	**0.020**	**0.028****
	(0.354)	**(0.061)**	**(0.884)**	**(0.020)**	**(0.290)**	**(0.008)**	**(0.455)**	**(0.022)**
*GDPG*DEC*ΔLnSALE*	-0.527***	-0.444***	-0.520***	-0.437***	-0.480***	-0.530***	-0.590***	-0.420***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
*AINT*DEC*ΔLnSALE*	-0.014	-0.036***	-0.011	-0.035***	-0.003	-0.043***	-0.007	-0.044***
	(0.327)	(0.003)	(0.578)	(0.001)	(0.855)	(0.000)	(0.630)	(0.000)
CIV DEC*ΔLnSALE*	0.041	0.017	0.053	0.007	0.248	0.038***	0.309	0.052***
	(0.455)	(0.328)	(0.437)	(0.671)	(0.263)	(0.000)	(0.191)	(0.000)
SDEC DEC*ΔLnSALE*	0.061***	0.025**	0.065***	0.027***	0.055***	0.029***	0.065***	0.023**
	(0.000)	(0.016)	(0.000)	(0.003)	(0.000)	(0.005)	(0.000)	(0.026)
Constant	0.009***	0.000	0.009***	0.004*	0.018	-0.001	0.017	-0.001
	(0.000)	(0.834)	(0.002)	(0.088)	(0.216)	(0.340)	(0.234)	(0.462)
Observations	20,329	32,032	13,814	38,547	18,650	33,711	21,240	31,121
Country FE	Included	Included	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Adjusted R^2	0.868	0.870	0.858	0.874	0.870	0.870	0.867	0.872

Panel B Comparing coefficient

	(1)	(2)	(3)	(4)
	Weak legal regime Zero divergence	Strong legal regime Zero divergence	Weak legal regime Positive divergence	Strong legal regime Positive divergence
VARIABLES	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*	Δ*LnXOPR*
DECΔ**LnSALE***	**-0.073*** (0.000)**	**-0.060*** (0.000)**	**-0.051** (0.036)**	**-0.018 (0.222)**
Chi^2 statistics (p-value)				
(1) = (2)		0.28 (0.600)		
(3) = (4)		1.22 (0.270)		
(1) = (3)		0.48 (0.489)		
(2) = (4)		3.51*(0.061)		
Observations	14,089	16,921	7,151	14,200
Controls	Included	Included	Included	Included
Country FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm
Adjusted R^2	0.869	0.855	0.861	0.894

This table presents the regression results to test H3 (the join effect of ownership divergence and country-level legal regime on the degree of cost stickiness). Panel A show the results when the sample is divided into weak versus strong legal regime countries based on the median value of each *LAW* variable. *LAW* variable is one of the following variables: anti-director index (*ADIR*), disclosure index (*DISCL*), anti-self-dealing index (*ASD*), or principal component of these three variables (*COMP*). Panel B shows the results for the subgroups when the sample is divided into four groups based on two mentions, both on *LAW* and *DIV*. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 9

The effect of ownership divergence on cost stickiness (Mediation analysis – Each component of REM)

	Model A		Model B		Model C	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*AB_CFO*	Δ*LnXOPR*	*AB_DISEXP*	Δ*LnXOPR*	*AB_DISEXP*	Δ*LnXOPR*
Δ*LnSALE*		0.939***		0.932***		0.931***
		(0.000)		(0.000)		(0.000)
*DIV*ΔLnSALE*		-0.014		-0.013		-0.010
		(0.285)		(0.316)		(0.416)
DIV*DEC*ΔLnSALE		**0.049****		**0.045***		**0.044***
		(0.048)		**(0.069)**		**(0.077)**
AB_CFO* DEC*ΔLnSALE		**0.009*****				
		(0.006)				
AB_PROD* DEC*ΔLnSALE				**0.009****		
				(0.044)		
AB_DISEXP* DEC*ΔLnSALE						**0.020*****
						(0.000)
DIV	**0.000**		**0.144*****		**0.107*****	
	(0.998)		**(0.000)**		**(0.000)**	
Constant	0.591**	0.006	0.179	0.001	-0.429*	0.008
	(0.011)	(0.657)	(0.331)	(0.914)	(0.054)	(0.543)
Sobel Test:						
Z-statistics	0.001		2.183**		3.826***	
(p-value)	(0.998)		(0.029)		(0.000)	
Observations	31,345	31,345	31,345	31,345	31,345	31,345
Controls	Included	Included	Included	Included	Included	Included
Country FE	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.020	0.874	0.310	0.878	0.105	0.878

This table presents the results of seemingly unrelated regression to show the mediation effect of each REM proxy. Each column shows the results whether each REM proxy works as a mediation factor in the relations between ownership divergence and cost stickiness. Columns (1) and (2) is the results for the medication effect of abnormal cash flow (AB_CFO). Columns (3) and (4) show the mediation effect of abnormal production costs (*AB_PROD*) and Columns (5) and (6) show the mediation effect of abnormal discretionary expenses (*AB_DISEXP*). The

variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 10

The effect of meeting or beating earnings benchmark on cost stickiness

VARIABLES	(1) SP=0 Δ*LnXOPR*	(2) SP=1 Δ*LnXOPR*
Δ*LnSALE*	0.966***	0.778***
	(0.000)	(0.000)
*DIV**Δ*LnSALE*	-0.010	-0.109**
	(0.379)	(0.046)
*GDPG**Δ*LnSALE*	-0.193***	0.388*
	(0.000)	(0.055)
*AINT**Δ*LnSALE*	-0.064***	-0.110***
	(0.000)	(0.000)
*CIV**Δ*LnSALE*	-0.023***	0.186***
	(0.004)	(0.000)
*DEC**Δ*LnSALE*	-0.102***	0.182***
	(0.000)	(0.002)
DIV*DEC*ΔLnSALE	**0.037***	**0.200****
	(0.093)	**(0.031)**
*GDPG*DEC*ΔLnSALE*	0.285***	-0.250
	(0.003)	(0.507)
*AINT*DEC*ΔLnSALE*	0.002	0.065
	(0.889)	(0.214)
CIV DEC*ΔLnSALE*	0.036**	-0.290***
	(0.025)	(0.000)
SDEC DEC*ΔLnSALE*	0.032***	0.088***
	(0.000)	(0.000)
Constant	-0.004*	0.034
	(0.067)	(0.271)
Chi^2-statistics (p-value) for testing: *DIV*DEC*ΔLnSALE*	3.30* (0.069)	
Observations	50,382	1,979
Country FE	Included	Included
Year FE	Included	Included
Clustered by	Firm	Firm
Adjusted R^2	0.869	0.888

This table presents the regression results to test whether the incentives to meet or beat earnings benchmark can affect the degree of cost stickiness. Column (1) shows the results of firms that do not report small profit (*SP*=0). Column (2) represents the results of firms that report small profit (*SP*=1). *SP* is a dummy variable equal to one if net income scaled by total assets is between 0 and 0.005, and zero otherwise. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *GDPG* =real GDP growth; *AINT* = asset intensity computed as the log ratio of assets to sales; *CIV* = dummy variable equal to one for civil-law countries, zero for common-law countries; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise; *SDEC* = dummy variable equal to one if sales decreased in the prior period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 11
Alternative proxies for empire building

	Model A		Model B		Model C	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*DVD*	Δ*LnXOPR*	*SEG*	Δ*LnXOPR*	*AVG*	Δ*LnXOPR*
Δ*LnSALE*		1.001***		0.926***		0.990***
		(0.000)		(0.000)		(0.000)
*DEC*Δ*LnSALE*		-0.063		-0.052		-0.130
		(0.227)		(0.793)		(0.467)
*COMP*DEC*Δ*LnSALE*		0.008		0.023***		0.023***
		(0.236)		(0.001)		(0.005)
DVD*DEC*Δ*LnSALE		**-0.411****				
		(0.030)				
SEG*DEC*Δ*LnSALE				**0.003**		
				(0.210)		
AVG*DEC*Δ*LnSALE						**-0.064*****
						(0.000)
COMP	**-0.002*****		**-0.151*****		**-0.098*****	
	(0.000)		**(0.000)**		**(0.000)**	
Sobel Test:						
Z-statistics	2.114**		-0.993		6.520***	
(p-value)	(0.034)		(0.321)		(0.000)	
Observations	31,345	31,345	31,345	31,345	31,345	31,345
Controls	Included	Included	Included	Included	Included	Included
Country & Year FE	Included	Included	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.258	0.891	0.084	0.874	0.145	0.895

This table presents the results of seemingly unrelated regression to show the effect of legal regime on cost stickiness via empire building incentives. I use several alternative proxies for empire building. In Model A and B, I use the amount of cash dividend (*DVD*) and the number of business segment (*SEG*) to capture the empire building incentives. In Model C, I measure empire building incentives by calculating the average of the standardized *FCF*, *DVD*, and *SEG*. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *COMP* = the principal component of *ADIR*, *DISCL*, and *ASD*; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 12
Time series models

Panel A Random effect model

VARIABLES	(1) Δ*LnXOPR*	(2) Δ*LnXOPR*
Δ*LnSALE*	0.940***	0.959***
	(0.000)	(0.000)
*DEC**Δ*LnSALE*	-0.058***	-0.078***
	(0.000)	(0.000)
DIV*DEC*ΔLnSALE	**0.047*** **	
	(0.006)	
COMP*DEC*ΔLnSALE		**0.013*** **
		(0.006)
Constant	0.001	0.001
	(0.750)	(0.792)
Observations	52,361	52,361
Number of Firms	4,073	4,073
Controls	Included	Included
Adjusted R2	0.850	0.850

Panel B Firm-by-firm estimation

	(1)	(2)	(3)	(4)
VARIABLES	Weak legal regime Zero divergence Δ*LnXOPR*	Strong legal regime Zero divergence Δ*LnXOPR*	Weak legal regime Positive divergence Δ*LnXOPR*	Strong legal regime Positive divergence Δ*LnXOPR*
DEC*ΔLnSALE	**-0.030***	**-0.030****	**0.014**	**-0.001**
	(0.077)	**(0.036)**	**(0.541)**	**(0.990)**
Number of Firms	524	638	269	589
Controls	Included	Included	Included	Included
Adjusted R^2	0.897	0.897	0.890	0.919

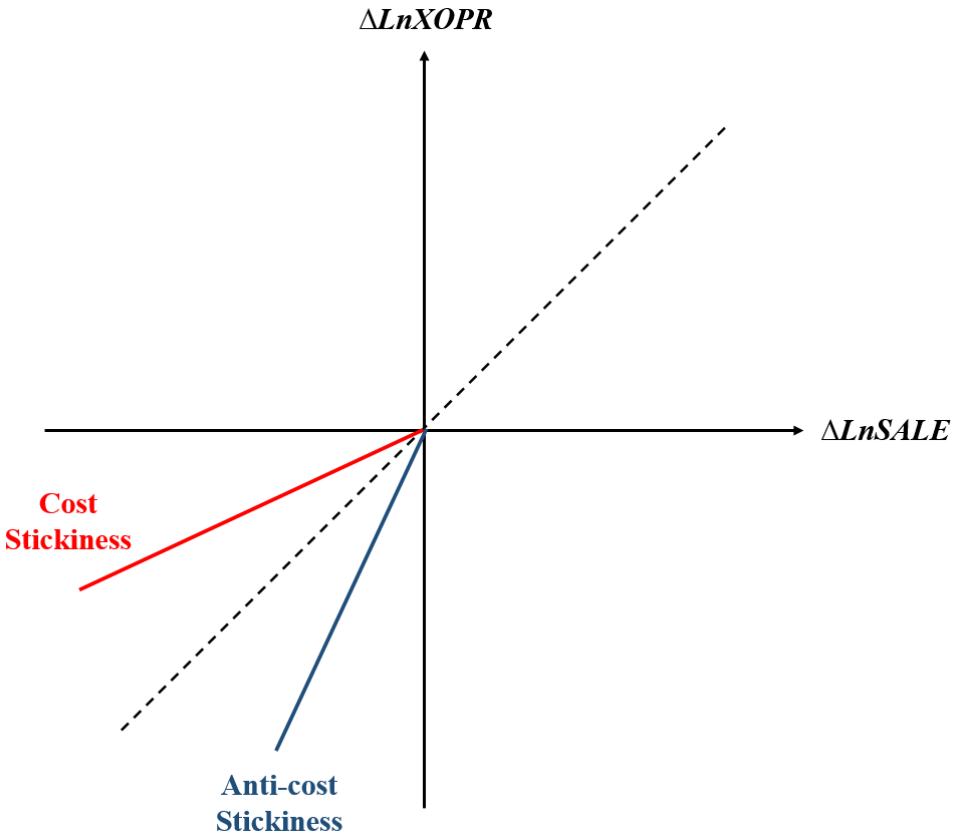
This table presents the results of time-series models. Panel A is the results using random effect model. Column (1) is the test result of ownership divergence, while Column (2) is the test result of legal regime. Panel B shows the result of firm-by-firm estimation of each subgroups where the sample is divided into four groups based on *LAW* and *DIV*. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *COMP* = the principal component of *ADIR*, *DISCL*, and *ASD*; *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

TABLE 13
Robustness Checks

VARIABLES	(1) WLS ΔLnXOPR	(2) WLS ΔLnXOPR	(3) Exclude Japan ΔLnXOPR	(4) Exclude Japan ΔLnXOPR	(5) LAW=SHR ΔLnXOPR	(6) Ending 2010 ΔLnXOPR	(7) Ending 2010 ΔLnXOPR
ΔLnSALE	0.934***	0.962***	0.938***	0.955***	0.955***	0.944***	0.966***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
*DIV*ΔLnSALE*	0.009		0.035*			-0.001	
	(0.504)		(0.093)			(0.876)	
*LAW*ΔLnSALE*		-0.017***		-0.008*	-0.002		-0.011***
		(0.009)		(0.053)	(0.431)		(0.000)
*DEC*ΔLnSALE*	-0.049**	-0.077***	-0.057***	-0.087***	-0.138***	-0.058***	-0.085***
	(0.024)	(0.010)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIV*DEC*ΔLnSALE	**0.057****		**0.035***			**0.029****	
	(0.037)		**(0.093)**			**(0.015)**	
COMP* DEC*ΔLnSALE		**0.023***		**0.017***	**0.012*****		**0.015****
		(0.067)		**(0.064)**	**(0.000)**		**(0.016)**
Constant	0.003**	-0.000	-0.007	0.002	-0.002**	0.003*	0.000
	(0.037)	(0.934)	(0.248)	(0.632)	(0.049)	(0.063)	(0.890)
Observations	52,361	52,361	36,688	36,688	44,997	44,644	44,644
Controls	Included	Included	Included	Included	Included	Included	Included
Country FE	Included	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included	Included
Clustered by	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	0.836	0.836	0.849	0.849	0.868	0.869	0.869

This table presents the regression results of robustness checks. Columns (1) and (2) show the estimated results for H1 and H2, respectively, using WLS (Weighted Least Square). Columns (3) and (4) are the results based on the samples excluding Japan. Column (5) show the results when LAW is measured by an index which captures the adoption of minority shareholders' legal protections (*SHR*) developed by Guillén and Capron (2016). Columns (6) and (7) show the results using alternative sample period, which ends in 2010. The variable definitions used in the model is as follows: Δ*LnXOPR* = the log-change in operating costs; Δ*LnSALE* = log-change in sales; *DIV* = the ultimate owners' divergence of cash flow- versus control rights, computed as one minus the ratio of cash flow rights to voting rights of the ultimate owners; *COMP* = the principal component of anti-director index, disclosure index, and anti-self-dealing index (*COMP*) in Columns (2), (4) and (7); *DEC* = dummy variable equal to one for if sales decrease in the current period, zero otherwise. See the Appendix for detailed variable definitions. The numbers in the parentheses represent the p-value calculated based on the robust standard errors clustered by firm. ***, **, and * indicate statistical significances at the 1%, 5%, and 10% levels, respectively (two tailed).

FIGURE 1
Cost stickiness and anti-cost stickiness



This figure represents the relation between changes in sales and changes in operating costs. The dotted line are a benchmark, where changes in costs is symmetric to the changes in sales. If costs increase more rapidly when activities increase than costs decrease when activities decrease, we call it '*cost stickiness*' (red line). On the other, if costs increase less rapidly when activities increase than costs decrease when activities decrease, we call it '*anti-cost stickiness*' (blue line).

국문초록

이익조정에 대한 국가 간 비교 연구

본 논문은 이익조정에 대한 두 개의 독립적인 논문으로 구성되어 있다. 첫 번째 논문은 이익조정과 국가별 법적 환경이 감사 보수에 어떤 영향을 미치는지에 대해 연구하였다. 구체적으로 감사인이 피감사회사의 발생액을 이용한 이익조정과 실물활동을 이용한 이익조정을 감사 보수에 반영하는지를 연구하였다. 24 개 국가의 79,904 기업-년도 관측치를 이용하여 실증 분석한 결과, 감사 보수는 발생액을 이용한 이익조정과 실물활동을 이용한 이익조정과 모두 양의 관계를 가지는 것으로 나타났다. 이는 피감사회사가 이익조정을 하면, 감사 과정이 더욱 복잡하게 되고, 감사 위험도 높아지기 때문에 감사인이 감사 과정에 더 많은 노력을 투입한다는 것을 의미한다. 감사보수와 이익조정 사이의 양의 관계는 법적 환경이 강할수록 소송 위험이 높아지기 때문에 더 강해지는 것으로 나타났다. 또한 발생액을 이용한 이익조정과 감사보수와의 관계가 실물활동을 이용한 이익조정과 감사보수와의 관계보다 더 강하게 나타났다. 이러한 관계는 Big 4 감사인으로부터 감사를 받을수록, 또한 피감사회사가 소송을 당할 위험이 더 높을수록 더 강하게 나타났다. 이러한 결과들은 피감사회사가 이익조정을 통해 감사 위험을 증가시킬 때, 감사인이 어떻게 대응을 하는지를 보여준다는 점에서 중요한 시사점을 제공한다.

두 번째 논문은 지배주주의 소유-지배 괴리도와 법적 환경이 비대칭적 원가행태에 미치는 영향에 대해 연구하였다. 22 개 국가의 52,361 기업-년도 관측치를 이용하여 실증 분석을 한 결과, 소유-지배 괴리도가

클수록 원가의 비대칭성은 줄어드는 것으로 나타났다. 소유-지배 괴리도가 큰 경우, 대리인 문제가 크기 때문에 이익조정의 유인이 크다. 이 때 회사의 성과가 좋지 않으면 경영자는 가능한 비용을 많이 줄이려고 하기 때문에 원가의 비대칭성 정도는 줄어든다. 한편, 법적 환경이 강한 나라에서는 경영자들의 제국건설의 유인이 효과적으로 억제되기 때문에 원가의 비대칭성 정도는 줄어드는 것으로 나타났다. 소유-지배 괴리도와 법적 환경의 결합 분석 결과, 원가의 비대칭성 정도는 강한 법적 환경에 있으면서 소유-지배 괴리도가 큰 기업에서 가장 작았다. 본 논문은 소유지배구조와 법적 환경이 원가의 비대칭성에 미치는 영향 및 그 경로(예: 이익조정, 제국건설 등)에 대해 연구를 함으로써 원가 행태와 관련한 연구를 풍부하게 하고 있으며, 또한 최근 관심이 증가하고 있는 재무회계와 관리회계의 융합에도 기여하고 있다.

주요어: 발생액이익조정, 실물이익조정, 감사보수, 법적 환경, 원가의 비대칭성, 소유-지배 괴리도, 제국건설

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