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Real Earnings Management, Institutional Environment, and Future Operating Performance: An International Study

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ABSTRACT

This paper investigates the association between firms' engagement in real activities manipulation (hereafter REM) on future firm performance in an international setting, and whether the association is conditional upon country-level institutional factor. Our inquiry is motivated by a paucity of research on the consequences of REM in an international setting. Using a large sample over the period of 2001 to 2015, we find that current-period REM is positively associated with future performance: a finding that is consistent with Gunny (2010) in the US. Importantly, we find that the positive performance effect is driven by firms operating in countries with strong institutional environments. Finally, we find that future operating performance improves when REM is undertaken by firms in strong institutional environments only during a non-economic crisis period, but not during an economic crisis period. The paper adds to the existing REM literature by showing a non-monotonic effect of REM on future performance that is conditional on the strength of a country's institution. We also contribute to the accounting information and crisis literature by documenting a time-variant effect of REM on future performance.

1. Introduction

This paper investigates the association between firms' engagement in real activities manipulation (hereafter REM) on future firm performance in an international setting, and whether the association, if any, is conditional upon country-level institutional factors. A sizable volume of academic research has shown that managers manipulate reported earnings by changing accounting methods or estimates (also known as accrual–based earnings management, hereafter AEM) (Dechow, Ge, & Schrand, 2010). However, the opportunistic reporting behaviour of firms is not limited to AEM alone. To boost short-term reported earnings artificially, managers also manipulate the timing or structure of real operations. Increasingly, recent REM studies in the US explore the mechanisms of REM (Roychowdhury, 2006); managerial trade-offs between REM and AEM (e.g., Cohen, Dey, & Lys, 2008; Zang, 2012); and the consequences of REM for firm operating performance (e.g., Ewert & Wagenhofer, 2005; Gunny, 2010).

A recent stream of research has started to investigate the determinants of REM in an international setting, incorporating legal regimes and country-level investor protections as likely determinants of the degree of REM activities, as well the extent to which REM substitutes for AEM (Braam, Nandy, Weitzel, & Lodh, 2015; Choi, Choi, Kim, & Sohn, 2012; Enomoto, Kimura, & Yamaguchi, 2015; Ipino & Parbonetti, 2017). However, the consequence of REM for future performance internationally has remained unexplored, and this is the focus of our study.

Competing hypotheses exist regarding the association between REM and future firm performance. On one hand, engagement in

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REM can impact firms' long-term productivity and performance adversely, because these practices deviate from normal business operations, alter firm's future cash flow patterns, and may hamper innovation (Roychowdhury, 2006). For instance, cutting R&D expenditure, a major means of REM, boosts earnings temporarily but harms the firm's long term competitiveness and is detrimental to its performance in the long run. On the other hand, firms may conduct REM strategically to avoid both immediate loss and failure to reach the current period's earnings targets, thereby signalling the firm's potential for better performance in the future. Thus, REM can be associated with relatively better subsequent performance (Gunny, 2010). Using US data, Gunny (2010) finds evidence consistent with this hypothesis. Zhao, Chen, Zhang, and Davis (2012) find that, although abnormal real activities in general are associated with a weaker future performance, abnormal real activities intended to just meet earnings targets are associated with a higher future performance.

We propose that the investigation of the performance effects of REM internationally is very significant, given the wide variation in country-level institutional features, e.g., investor protection, enforcement of law, and ownership concentration. Specifically, we argue that strong institutional factors inhibit value-destroying REM activities and discipline managers to conduct REM more efficiently, resulting in enhanced future performance. As an additional test, we also examine whether the association between REM and future operating performance, conditional on institutional features, responds to changes in business cycles (contraction versus expansion cycle). We undertake this analysis in order to complement a growing literature that investigates the effect of the business cycle on various facets of financial reporting in a single country setting (e.g., Ahmad-Zaluki, Campbell, & Goodacre, 2011; Jenkins, Kane, & Velury, 2009; Saleh & Ahmed, 2005).

We choose four common proxies used by international studies to measure the strength of institutional environment. First, a country's legal origin has strong ramifications for financial development, including development of an efficient accounting regime (Ball, Kothari, & Robin, 2000; Habib, 2008). It is postulated that accounting information produced in common law countries is of higher quality, as manifested in earnings management lower than that produced in code law countries. This is because the common law countries enforce rules and regulations aimed at protecting minority shareholders' interests, encouraging corporate managers to provide value-relevant information to market participants (Ali & Hwang, 2000; Ball et al., 2000; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2002; Leuz, Nanda, & Wysocki, 2003).

Strong investor protection and legal enforcement give rise to high quality accounting information by mitigating the opportunities for corporate insiders to expropriate minority shareholders' interests (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Bushman & Smith, 2001). Legal enforcement also protects investors' rights through regulations and laws on accounting and disclosure rules. Finally, another country-level institutional variable, ownership concentration, is reported to be inversely associated with the quality of a country's information disclosures (Bushman, Chen, Engel, & Smith, 2004; La Porta et al., 1998). Managers would have more opportunities to expropriate outside investors via earnings management when insiders have higher private benefits of control made possible through concentrated ownership (e.g., Sanchez-Ballesta & Garca-Meca, 2007). Although the above studies find that a strong country-level institutional environment constrains opportunistic AEM, this does not necessarily imply lack of earnings manipulation. Indeed, existing research finds that managers switch to REM in countries with strong institutional environments (Choi et al., 2012; Enomoto et al., 2015).

Using 158,587 firm-year observations from 29 countries over the period of 2001–2015, we find evidence that current-period REM is positively associated with future performance: a finding that is consistent with Gunny (2010) in the US. Importantly, we find that the positive performance effect is driven by firms operating in countries with strong institutional environments. The sub-sample analysis on the effect of REM on future performance between countries with strong vs. weak institutional environments reveals a significantly positive effect of REM on future performance from firms operating in strong institutional environments but an insignificant or negative effect of REM in weak institutional environments. Finally, we find that future operating performance improves when REM is undertaken by firms in strong institutional environments only during a non-economic crisis period, but not during an economic crisis period.

We contribute to the earnings management literature in an international context in a number of ways. First, we add to the REM literature by focusing on the consequence of REM. In comparison to the literature on REM determinants, the consequences of REM are under-studied. To our knowledge, this paper is the first to investigate the performance implications of REM in an international setting. Although there appears to be a belief that REM affects future performance favourably (Gunny, 2010), we posit that such an association could vary depending on the country-level institutional environment, as strong institutions motivate efficient use of REM. Second, we also contribute to the accounting information and crisis literature internationally by documenting a varying effect of REM on future performance during a non-economic crisis period vs. an economic crisis period.

The remainder of the paper proceeds as follows: Section 2 reviews the related literature and develops the hypotheses; the next section describes the research design and sample selection procedures. Section 4 provides descriptive statistics and presents a correlation analysis. The main test results are reported in Sections 5 and 6 reports additional test. The final section concludes.

2. Literature review and the development of hypotheses

In the field of accounting, real earnings management has attracted increasing attention as an alternative to accrual-based earnings management. REM has been defined "…as departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations" (Roychowdhury, 2006, p. 337). Graham, Harvey, and Rajgopal (2005) find that managers are willing to sacrifice long-term value by cutting down on discretionary expenditures in order to meet or beat analysts' forecasts. Although the underlying incentives for firms

to engage in REM are similar to the motivations for engaging in AEM,[1] executives may prefer to manage earnings through REM, rather than AEM, for several reasons. First, managers consider REM to be more ethical, and more acceptable, than AEM (Bruns & Merchant, 1990). Second, REM draws less public attention and auditor scrutiny, since managing earnings via real activities, such as giving sales discounts and overproduction, is more difficult for outsiders to detect. For instance, Chi, Lisic, and Pevzner (2011) find that firms resort to REM when their accrual discretions are constrained by higher quality auditors.

An increasing number of studies in the US have explored the mechanisms of REM (Roychowdhury, 2006); managerial trade-off decisions between REM and AEM (Chi et al., 2011; Cohen et al., 2008; Cohen & Zarowin, 2010; Ewert & Wagenhofer, 2005; Zang, 2012); as well as the consequences of REM for firm operating performance (Ewert & Wagenhofer, 2005; Gunny, 2010; Taylor & Xu, 2010; Zhao et al., 2012). The overall findings from this literature suggest that managers use a number of REM strategies (e.g., acceleration of sales; overproduction to lower the overall costs of goods sold, and reducing the level of discretionary expenses) to meet or beat analyst forecasts.[2] There is a trade-off between REM and AEM. Managers switch to REM when the relative costs of engaging in AEM outweigh the costs of REM (Zang, 2012). Managers have responded to SOX by engaging more in REM as opposed to AEM in the post-SOX regime in order to manage earnings (Cohen et al., 2008).

A recent stream of cross-country studies extends research on REM by investigating the determinants of REM in an international context. Seifert and Gonenc (2011) find that managers in countries with strong creditor rights have more incentive to reduce cash flow risks and, therefore, limit expenditures on R&D. Using data from 25 countries, Choi et al. (2012) find that the intensity of REM and the relative intensity of REM to AEM is related to the strength of the legal regime positively, as firms tend to switch from AEM to REM in countries with a high relative cost of AEM (e.g., countries with strong institutional environment for financial reporting). Using data from 38 countries covering 1991 to 2010, Enomoto et al. (2015) show that managers in countries with stronger investor protection tend to engage in REM instead of AEM. Ipino and Parbonetti (2017) find that earnings management through REM, instead of AEM, became more prevalent in countries with strong legal enforcement regimes after the adoption of International Financial Reporting Standards (IFRS). Braam et al. (2015) report that politically connected firms are more likely to substitute REM for AEM than non-connected firms, because the high secrecy of REM can be used to mask political favors. Although insightful, these studies do not investigate the performance consequences of REM in an international context.

Two competing arguments exist regarding the future performance effects of REM. On one hand, it is contended that earnings manipulation through REM is inefficient from the firm's perspective, as these practices deviate from normal business operations, alter firm's future cash flow patterns, and hamper innovation, thereby affecting future value-creation adversely (Roychowdhury, 2006). For example, R&D is argued to be extremely important to firms so that they may innovate more efficient and effective ways of production and operation, develop new products and services that increase competitiveness and, hence, enhance future cash flow and profitability (Seifert & Gonenc, 2011). R&D expenditures are also important for economic growth at an aggregated level (Corrado, Hulten, & Sichel, 2009; Goel & Ram, 1994). If cutting R&D expenditure is used for REM purposes, this action is detrimental to firms' performance in the long run.

On the other hand, REM to improve firms' financial performance is not always sub-optimal or detrimental to firm value, especially when certain conditions require managers to take action in order to avoid immediate loss. Taylor and Xu (2010) find that firms undertaking REM do not experience a significant negative decline in their subsequent operating performance. Zhao et al. (2012) find that although abnormal real activities in general are associated with a weaker future performance, abnormal real activities intended to just meet earnings targets are associated with a higher future performance. Gunny (2010) finds that REM is associated with relatively better subsequent performance, because engaging in REM allows firms to attain the current period's targets, and this signals firms' potential for performing better in the future. In a more recent study, Gunny and Zhang (2014) find firms with many patent citations that just meet analyst forecasts perform significantly better than firms with relatively few patent citations: a finding consistent with the signalling hypothesis. This contrary evidence indicates that REM could be either beneficial or detrimental to firm performance, and calls for a better understanding of the circumstances under which REM is used efficiently or opportunistically. We argue that country-level institutional factors such as investor protection and legal enforcement modify the effect of REM on firm performance.

We posit that managers in countries with a strong institutional environment are more likely to engage in REM efficiently, because legal constraints and stringent regulatory scrutiny in those countries serve as external monitoring mechanisms. Thus, unscrupulous REM is subject to more stringent monitoring of market participants. When the REM decision is made, managers in the countries with strong institutional settings are more likely to be concerned about the efficiency of real activities and their implications for future performance and shareholder wealth. In contrast, managers in countries with weak investor protection are likely to engage in REM for opportunistic reasons, because poor investor protection and weak enforcement of the law encourages managers to engage in activities that generate private benefit at the expense of minority shareholders' interests. Opportunistic REM garbles efficient contracting, distorts the normal operation of firms, and damages investor confidence (Ewert & Wagenhofer, 2005), resulting in impaired firm performance. Taken together, we conjecture that the effect of REM on firm performance is conditional on the strength of the country-level institutional environment. We develop the testable hypothesis as follows.

[1] Managerial incentives for earnings management include capital market transactions, contracting and regulatory incentives (Holthausen, 1990; Healy & Wahlen, 1999).

[2] Baber and Fairfield (1991) find that R&D spending is significantly reduced by firms intending to report positive or increasing earnings in the current period. Bushee (1998) and Perry and Grinaker (1994) provide similar evidence. Dechow and Sloan (1991) find that CEOs in their final years of office spent less on R&D in order to improve earnings. Roychowdhury (2006) documents firms' propensity to reduce discretionary expenditures, in order to meet earnings targets and analysts' earnings forecasts. Gunny (2010) also confirms that firms manage R&D and SG&A to boost earnings, especially when they are constrained from inflating accruals.

H1. REM affects future performance, conditional on the country-level institutional environment.

We now discuss how business cycle may affect the hypothesis postulated above. Prior literature has found that companies engage in income-decreasing accruals practices to save earnings for future periods during economic crisis (Chia, Lapsley, & Lee, 2007; Habib, Bhuiyan, & Islam, 2013; Saleh & Ahmed, 2005). On the other hand, it is argued that managers may engage in income-increasing earnings management activity during crises, because they face more pressure to meet earnings targets, to avoid violating lending covenants, to reduce pressure from stakeholders, and to preserve their reputation during economic turmoil (Ahmad-Zaluki et al., 2011; DeFond & Jiambalvo, 1994; Jaggi & Lee, 2002). The lack of evidence on firms' REM behaviour and the inconclusive findings on firms' AEM behaviour in economic crises motivate us to investigate whether the effect of REM engagement in strong institutional environments is more opportunistic or efficient during economic crisis, compared with non-crisis, periods.

Whether the REM effects of future performance will vary between crisis and non-crisis periods for firms operating in countries with strong institutional environments is not *ex-ante* clear. On the one hand, during a crisis period, managers have to cut down production activities, reduce operating expenses, and defer R&D investment because of a credit crunch and deteriorating market demand. In the presence of strong external monitoring by a country's institutions, these actions may be efficient, in that they protect firms from sliding into financial distress under worsened marked conditions, and signal superior managerial ability in taking prompt action to tackle difficult economic situations. Thus, if this efficient REM argument holds, we would expect enhanced future firm performance as a result of undertaking REM during economic turmoil by firms from countries with strong institutional environments.

However, a contrasting viewpoint suggests a less effective monitoring function of the institutional environment on firms conducting REM in crisis compared with non-crisis periods. Firms are more likely to conduct value-decreasing REM during periods of economic crisis. For instance, when the credit market is tight and the share market faces much uncertainty, firms may conduct REM to avoid breaching debt covenants, and to meet or beat market expectations as a means of averting a share price plunge. In this case, the monitoring effect of the institutional environment is less prominent. However, when the economy is strong, firms are more disciplined by institutional factors and, therefore, we would expect to observe a stronger value-enhancing function of REM. Therefore, this reasoning leads to the following hypothesis.

H2. The moderating effect of institutional strength on the REM-future performance association differs between economic crisis and non-crisis periods.

3. Research design

Following Roychowdhury (2006), our measurement of REM captures the manipulation of real activities in several ways: increasing earnings by reducing the cost of goods sold by overproducing inventory, and cutting discretionary expenditures, including R&D, advertising, and selling, general, and administrative (SG&A) expenditures. Our main analysis is based on REM measures excluding the abnormal cash flow from operations (ACFO), since the impact of REM on cash flow is ambiguous because some real manipulative activities (such as price discounting, channel stuffing, and overproduction) decrease cash flows, but others (such as cutting discretionary expenses) increase cash flows (Roychowdhury, 2006). Abnormal production costs (APROD) and abnormal discretionary expenses (ADISX) proxy for abnormal activities for the following reasons.

- Increasing production more than necessary in order to spread the fixed overhead costs over a larger number of units, boosts earnings. This method will be effective, provided the reduction in fixed costs per unit is not offset by any increase in marginal cost per unit. Cost of goods sold will be reduced with a positive impact on profit. However, the firm will still incur other production and holding costs that will lead to higher annual production costs relative to sales, and lower cash flows from operations given the same sales levels (Cohen et al., 2008).
- Decreasing discretionary expenses (advertising, R&D, and SG&A expenses) will boost current period earnings, and could lead to higher current period cash flows if the firm customarily paid for such expenses in cash.

The following Eqs. (1)–(2) are estimated for all firms in the same country and the same industry (using a two-digit industry code) with at least ten observations in an industry in a particular year, to get industry-specific parameters for calculating *APROD* and *ADISX*.

APROD is the abnormal production costs, where production costs (PROD) are measured as the sum of cost of goods sold and change in inventory (Roychowdhury, 2006). The residual from Eq. (1) estimation is used to measure APROD:

$$PROD/TA_{t-1} = \gamma_0\,(1/TA_{t-1}) + \gamma_1\,(SALES/TA_{t-1}) + \gamma_2\,(\Delta SALES/TA_{t-1}) + \gamma_3\,(\Delta SALES\_1/TA_{t-1}) + \varepsilon \quad (1)$$

A high value of APROD indicates higher REM, as production costs are abnormally high when managers use overproduction opportunistically to lower the cost of goods sold. We follow Roychowdhury (2006) and compute ADISX by using the residual from the following regressions:

$$DISX/TA_{t-1} = \gamma_0\,(1/TA_{t-1}) + \gamma_1\,(SALES_{t-1}/TA_{t-1}) + \varepsilon \quad (2)$$

where DISX is discretionary expenses (advertising, R&D, and SG&A expenses). We multiply the residuals from the estimation model of DISX by −1 so that higher values of ADISX indicate income-increasing REM. Our proxy for REM is the sum of APROD and ADISX.

In order to test H1, we first estimate the following baseline regression specification:

$$ADJROA_{t+1} = \gamma_0 + \gamma_1 ADJROA_t + \gamma_2 REM + \gamma_3 SIZE + \gamma_4 GROWTH + \gamma_5 LEV + \gamma_6 SUSPECT + \gamma_7 \Delta GDP + \varepsilon \quad (3)$$

$$ADJCFO_{t+1} = \gamma_0 + \gamma_1 ADJCFO_t + \gamma_2 REM + \gamma_3 SIZE + \gamma_4 GROWTH + \gamma_5 LEV + \gamma_6 SUSPECT + \gamma_7 \Delta GDP + \varepsilon \quad (4)$$

where $ADJROA_{t+1}$ is one-year-ahead adjusted ROA, defined as the home country's industry-mean adjusted firm-specific ROA. $ADJCFO_{t+1}$ is one-year-ahead adjusted CFO defined as the home country's industry-mean adjusted firm-specific CFO. ROA is income before extraordinary items divided by total assets. CFO is operating cash flows divided by total assets. We include current-period performance measures to control for earnings and cash flow persistence. GROWTH is the percentage increase in sales. Leverage, LEV, is the total liabilities divided by total assets. SUSPECT is a dummy variable taking a value of 1 for firms suspected of earnings management. Consistent with Gunny (2010), we define suspect firms as those with net income scaled by total assets greater than or equal to zero but < 0.01. ΔGDP is annual change in gross domestic products using GDP data from the World Bank and the International Monetary Fund (IMF). H1 is supported if the coefficient on $\gamma 2$ is more positive for observations from countries with strong institutional environments than for the subsample observations from countries with weak institutional environments.

We then rerun Eqs. (3) and (4) for firm-year observations operating in strong versus weak institutional environments. Observations are partitioned based on whether the firm operates in a common vs. a code law country (LAW) (a dummy variable coded 1 for firms operating in common law countries, and 0 otherwise), in a country with strong investor protection (value of PROTECT > median), strong legal enforcement (value of ENFORCE > median) and a high ownership concentration regime (value of OWN > median). The classification of legal tradition (LAW) is based on La Porta et al. (1998): a dummy variable that equals 1 for countries with a common-law tradition, and zero otherwise. PROTECT is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. ENFORCE represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from zero to ten. OWN is the median combined stake owned by the top three shareholders among a country's ten largest publicly traded non-financial firms (La Porta et al., 1998).

We then estimate the following interactive regression to test for the incremental effects of country-level institutional environment on the association between REM and future operating performance:

$$ADJROA_{t+1} = \gamma_0 + \gamma_1 ADJROA_t + \gamma_2 REM + \gamma_3 INSTITUTION + \gamma_4 REM^{*} INSTITUTION + \gamma_5 SIZE + \gamma_6 GROWTH + \gamma_7 LEV + \gamma_8 SUSPECT + \gamma_9 \Delta GDP + \varepsilon \quad (5)$$

$$ADJCFO_{t+1} = \gamma_0 + \gamma_1 ADJCFO_t + \gamma_2 REM + \gamma_3 INSTITUTION + \gamma_4 REM^{*} INSTITUTION + \gamma_5 SIZE + \gamma_6 GROWTH + \gamma_7 LEV + \gamma_8 SUSPECT + \gamma_9 \Delta GDP + \varepsilon \quad (6)$$

We include four standalone institutional variables (LAW, PROTECT, ENFORCE, and OWN) and their interactions with REM (REM * LAW, REM * PROTECT, REM * ENFORCE, and REM * OWN) in the above equations.

To test Hypothesis 2, we estimate Eqs. (5) and (6) above for crisis and non-crisis periods separately, and compare the coefficients on the interactive variables, REM * INSTITUTION, to discern whether the effects of REM on future performance conditional on institutional environment differs between crisis- and non-crisis periods. CRISIS is dummy variable coded 1 for observations with negative annual GDP growth. We exclude ΔGDP from our estimation model for testing H2, since CRISIS is defined based on ΔGDP. We expect the positive coefficient on REM * INSTITUTION to be more pronounced for the crisis sub-sample than it is for the non-crisis subsample, following the argument that REM conducted during the non-crisis period further improves future performance for firms in countries with strong institutional environments.

4. Sample and descriptive statistics

We retrieve financial data from the Wharton Compustat Global database for the period 2001–2015. Data on GDP growth for different countries and years is collected from the database of the World Bank and the World Economic Outlook database provided by the IMF (International Monetary Fund). The sample filtering procedure is detailed in Table 1. We began with an initial sample of 229,987 firm-year observations excluding observations from utilities (SIC coded 48 & 49) and financial institutions (SIC codes 60 to 69). To estimate REM, we require at least 8 observations in each industry, year and country combinations. This restriction reduced the sample to 185,335 firm-year observations. We further lost a total of 26,748 (26,876) observations, calculating lead PERF measures (adjusted ROA_{t+1} and adjusted CFO_{t+1}, respectively). We also require that all countries in our sample have at least 150 firm-year observations. Our final sample, therefore, comes down to 158,587 for $ADJROA_{t+1}$ and 158,489 $ADJCFO_{t+1}$ firm-year observations for 29 countries over the period: 2001–2015.

As expected, the highest percentage of observations come from the US (22.89%), followed by Japan and India with 19.58% and 14.57% of the sample observations respectively. From a legal origin perspective, common-law countries constitute 45% of the sample, while code-law countries share 55%. The average score of PROTECT is 3.34; ENFORCE: 7.27. The average level of ownership concentration, measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms, is 42%. The average GDP growth rate is 3.03%, with the highest, from China, having an average GDP growth rate of 9.48%, and the lowest average GDP growth rate of −3.61% in Greece. Descriptive statistics of the institutional

Table 1
Sample selection procedure.

Explanation	ADJROA sample	ADJCFO sample
Total firm-year observations excluding utility and financial firms for 30 countries over the period 2001–2015	229,987	229,987
Less: missing observations for REM estimation	(44,652)	(44,652)
Less: observations lost for calculating future performance measures	(26,748)	(26,846)
Final sample for 29 countries used for performance analyses over the period 2001–2015	158,587	158,489

variables are reported in Panel A.[3]

Panel B, Table 2 presents descriptive analysis on the key variables. We winsorize the variables at the 1% and 99% of their respective distributions to reduce the effects of outliers. Median REM is 0.02, with a standard deviation of 0.26. Future firm performance, proxied by $ADJROA_{t+1}$ and $ADJCFO_{t+1}$, are very close to zero with median values of 0.0114 and 0.0071 respectively. SIZE has a high standard deviation of 3.22. The large variation in firm sizes in different countries is also noted in other international studies, such as Leuz et al. (2003).

A correlations matrix of variables is shown in Panel C, Table 2. REM is correlated positively with all the performance measures. For example, the correlation between REM and one-year-ahead ADJROA is 0.21 ($p < 0.01$) and it is 0.13 ($p < 0.01$) for one-year-ahead ADJCFO, thus providing univariate support for REM's improvement of future performance. REM is also positively correlated with SUSPECT (correlation coefficient 0.027), indicating that firms that just beat their prior years' earnings have more REM compared to other firms. REM is positively (negatively) correlated with PROTECT (OWN).

5. Main test results

We estimate the association between REM and future performance at the firm level with firm-clustered standard errors (Gow, Ormazabal, & Taylor, 2010; Petersen, 2009).[4] Table 3, Panel A, reports the baseline regression analysis results using Eqs. (3) and (4) designed to test for the performance effects of REM. The results show that there is a significant positive impact of REM on firms' future performance (coefficient 0.025 and 0.017 for ADJROA and ADJCFO respectively, both significant at $p < 0.01$). The reported coefficient suggests that one standard deviation increase in REM increases $ADROA_{t+1}$ by 0.65% (coefficient estimate of 0.025×0.26 (SD of REM). Although the magnitude increase seems pretty small, note that the median adjusted ROA_{t+1} is 0.01. Therefore, the increase is 65% around the median, which is highly significant in the economic sense. The corresponding increase for ADJCFO is 44.2% around median ADJCFO. Thus, irrespective of institutional strength, we provide supportive evidence that REM is associated with future firm performance positively, in line with Gunny's (2010) finding using US data. Among the control variables, firm current-period ADJROA and ADJCFO, firm size (SIZE), firm-level growth opportunity (GROWTH) and the growth of GDP at country level (ΔGDP) are associated with future performance positively, whereas leverage (LEV) and firms suspected of earnings management (SUSPECT) are associated negatively with future performance.

Hypothesis 1 also predicts that the significant association between REM and firms' future performance is moderated by the institutional environment in which a firm operates. To test this hypothesis, we employ two testing approaches. First, we conduct subsample analyses to demonstrate the differential effect of REM on future performance, conditional on country-level institutional factors. The results are reported in Panel B of Table 3. The results reveal that the positive effect of REM on future performance is both positive and significant only for firms domiciled in countries with strong institutional environments. For example, the coefficient on REM for the $ADJROA_{t+1}$ measure is 0.019 ($p < 0.01$) for firms from common law (column 1), high PROTECT (coefficient 0.023, $p < 0.01$) (column 3), high ENFORCE (coefficient 0.016, $p < 0.01$) (column 5) and for firms in countries with low ownership concentration (coefficient 0.024, $p < 0.01$) (column 8). None of the coefficients on REM is significant for firms from code law, low PROTECT, low ENFORCE, and high OWN countries. Our inference remains unchanged when we use the ADJCFO as the performance measure. If anything, the t-statistics are stronger for the ADJCFO measure.

To provide further corroborative evidence on the conditional effect of REM on future performance, we estimate Eqs. (5) and (6) and report the results in Panel C of Table 4. Columns (1)–(8) report the results of regressing $ADJROA_{t+1}$ on current-period REM, institutional variables (LAW, PROTECT, ENFORCE, and OWN), the interactions between REM and these institutional variables (REM * INSTITUTION), and the control variables. The results show that the coefficients on the standalone variables LAW (coefficient 0.03, $p < 0.01$), PROTECT (coefficient 0.002, $p < 0.01$), ENFORCE (coefficient 0.004, $p < 0.01$), and OWN (coefficient 0.074, $p < 0.01$) are all positive and significant. Importantly, the coefficients on the interactive variables REM * LAW (coefficient 0.033,

[3] La Porta et al. (1998) do not provide institutional variables for China. Using the same methodology as La Porta et al. (1998), Allen et al. (2005) developed their measurements of institutional environment for China. Thus, we retrieve Chinese institutional variables from Allen et al. (2005). Therefore, Allen et al.'s (2005) measurements of institutional variables for China are largely consistent with the rest of the sample countries, and allow us to include China, one of the largest economies, into our sample.

[4] We also implement two-way clustering analyses on our panel data to generate two-way cluster-robust covariance matrix for the fixed effect model as originally proposed by Arellano (1987) and Wooldridge (2002). Specifically, the xtivreg2 stata command developed by Schaffer (2010) is employed to control for year and firm fixed effect and cluster standard errors at the same level. The analyses also control for the possibility that real earnings management decisions are endogenously determined. Using a reduced sample of observations due to deletion of singleton groups, the results of two-way cluster analyses show highly consistent findings with our main results. We are grateful for one reviewer's comment prompting this robustness test.

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Table 2
Descriptive statistics.

Panel A: Summary of country specific and economic statistics

Country	N	% of sample	ΔGDP (%)	Crisis period	LAW	PROTECT	ENFORCE	OWN
Australia	8489	5.35	2.84	–	1	4	9.50	0.28
Brazil	741	0.47	3.70	2009, 2015	0	3	6.13	0.63
Canada	3116	1.96	2.01	2009	1	5	9.80	0.24
Chile	224	0.14	4.27	2009	0	5	6.52	0.38
China	17,324	10.92	9.48	–	0	3	3.50	0.29
Germany	4165	2.63	1.20	2003, 2009	0	1	9.10	0.5
Denmark	275	0.17	0.92	2008, 2009	0	2	10.00	0.4
Finland	399	0.25	1.03	2009, 2012–2014	0	3	10.00	0.34
France	3575	2.25	1.05	2009	0	3	8.70	0.24
United Kingdom	9241	5.83	1.63	2008, 2009	1	5	9.20	0.15
Greece	439	0.28	−3.61	2008–2013, 2015	0	2	6.80	0.68
Hong Kong	122	0.08	3.04	2009	1	5	8.90	0.54
Indonesia	1616	1.02	5.66	–	0	2	2.90	0.62
India	23,110	14.57	7.41	–	1	5	5.60	0.43
Israel	770	0.49	3.63	2002	1	3	7.72	0.55
Italy	509	0.32	−0.53	2008, 2009, 2012, 2013	0	1	7.10	0.6
Japan	31,045	19.58	0.74	2008, 2009, 2011	0	4	9.20	0.13
Korea	3105	1.96	3.70	–	0	2	5.60	0.2
Mexico	161	0.10	2.72	2001, 2009	0	1	5.37	0.67
Malaysia	5168	3.26	4.86	2009	1	4	7.70	0.52
Norway	406	0.26	1.32	2009	0	4	10.00	0.31
Pakistan	1030	0.65	3.75	–	1	5	3.70	0.41
Peru	298	0.19	5.92	–	1	3	4.65	0.57
Philippines	419	0.26	5.60	–	0	3	3.50	0.51
Singapore	2650	1.67	5.60	2009	1	4	8.90	0.53
Sweden	621	0.39	1.69	2008, 2009, 2012	0	3	10.00	0.28
Thailand	2636	1.66	3.63	2009	1	2	4.90	0.48
United States	36,300	22.89	1.82	2008, 2009	1	5	9.50	0.12
South Africa	633	0.40	2.85	2009	1	5	6.40	0.52
Total	158,587	100.00	3.03	–	0.45	3.34	7.27	0.42

Note: The institutional variables for all countries except China shown in this table are developed based on La Porta et al. (1998). *LAW* is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). *PROTECT* is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. *ENFORCE* represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. *OWN* is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005).

(*continued on next page*)

Table 2 (*continued*)

Panel B: Summary of key variables for the whole sample over the period of 2001–2015

Variables	N	Mean	S.D.	1st quartile	Median	3rd quartile
REM	158,587	0.00	0.26	−0.05	0.02	0.08
$ADJROA_{t+1}$	158,587	0.00	0.27	−0.03	0.01	0.08
ADJROA	158,587	0.01	0.26	−0.03	0.01	0.08
$ADJCFO_{t+1}$	158,489	−0.00	0.10	−0.04	0.01	0.06
ADJCFO	158,489	0.00	0.10	−0.04	0.01	0.06
LAW	158,587	0.59	0.49	0.00	1.00	1.00
PROTECT	158,587	4.12	1.04	4.00	4.00	5.00
ENFORCE	158,587	7.77	2.22	5.60	9.20	9.50
OWN	158,587	0.26	0.15	0.13	0.20	0.43
SIZE	158,587	7.07	3.22	4.80	7.03	9.39
GROWTH	158,587	0.07	0.31	−0.03	0.04	0.15
LEV	158,587	0.26	0.32	0.03	0.19	0.37
SUSPECT	158,587	0.09	0.28	0.00	0.00	0.00
ΔGDP	158,587	3.57	3.62	1.60	2.70	6.00

Note: *REM* is the sum of *ABNPROD* and *ABNDISX*. *ABNPROD* is the abnormal production costs, where production costs (*PROD*) are measured as the sum of cost of goods sold and change in inventory (Roychowdhury, 2006). See Eq. (1) in the text for the estimation procedure for *ABNPROD*. *DISX* is discretionary expenses (advertising expense, R&D, and SG&A expenses). See Eq. (2) in the text for the estimation procedure for *ADISX*. We multiply the residuals from the estimation model of *DISX* by −1 so that higher values of *ADISX* indicate income-increasing *REM*. ROA proxies for firm performance, and is calculated as income before extraordinary items divided by total assets. CFO is calculated as cash flow from operating activities divided by total assets. $ADJROA_{t+1}$ ($ADJCFO_{t+1}$) is one-year-ahead industry-mean adjusted firm-specific ROA (CFO). LAW is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). *PROTECT* is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. *ENFORCE* represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. *OWN* is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005). Size (*SIZE*) is measured as the natural logarithm of total assets. *GROWTH* is the percentage increase in sales. Leverage (*LEV*) is total liabilities divided by total assets. *SUSPECT* is a dummy variable taking a value of 1 for firms with net income scaled by total assets greater than or equal to zero but < 0.01, and 0 otherwise. *ΔGDP* is the annual growth rate of GDP for all countries collected from the World Bank and International Monetary Fund (IMF).

Panel C: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
REM (1)	–													
LAW(2)	0.002													
PROTECT (3)	**0.010**	**0.691**												
ENFORCE (4)	0.001	**0.208**	**0.352**											
OWN (5)	**−0.014**	**0.106**	**−0.366**	**−0.580**										
SIZE (6)	**0.090**	**−0.542**	**−0.229**	**−0.209**	**−0.090**									
GROWTH (7)	**−0.033**	**0.036**	**0.025**	**−0.091**	**0.056**	**0.038**								
LEV (8)	**−0.047**	**0.050**	**0.045**	**−0.092**	**0.057**	**0.033**	**0.155**							
SUSPECT (9)	**0.027**	**−0.122**	**−0.058**	**−0.081**	**0.014**	**0.111**	**−0.073**	**0.023**						

(*continued on next page*)

Table 2 (*continued*)

Panel C: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ΔGDP (10)	**−0.005**	**0.031**	**−0.091**	**−0.748**	**0.468**	−0.001	**0.157**	**0.080**	**0.037**					
$ADJROA_{t+1}$ (11)	**0.208**	0.000	0.000	0.000	0.000	**0.205**	**0.093**	**−0.234**	**−0.010**	0.000				
ADJROA (12)	**0.273**	**0.013**	**0.012**	**0.012**	**−0.012**	**0.193**	**0.107**	**−0.283**	−0.003	**−0.009**	**0.681**			
$ADJCFO_{t+1}$ (13)	**0.134**	0.000	0.000	0.000	0.000	**0.203**	**0.103**	**−0.099**	**−0.018**	0.000	**0.554**	**0.486**		
ADJCFO (14)	**0.150**	**0.010**	**0.009**	**0.009**	**−0.007**	**0.200**	**0.104**	**−0.162**	**−0.026**	**−0.007**	**0.507**	**0.551**	**0.593**	–

Note: This correlation is based on the sample used for ADJROA analysis of 158,587 observations. Bold-faced correlations are significant at $p < 0.05$. Variables are defined in Table 2. REM is the sum of ABNPROD and ABNDISX. ABNPROD is the abnormal production costs, where production costs (PROD) are measured as the sum of cost of goods sold and change in inventory (Roychowdhury, 2006). See Eq. (1) in the text for the estimation procedure for ABNPROD. DISX is discretionary expenses (advertising expense, R&D, and SG&A expenses). See Eq. (2) in the text for the estimation procedure for ADISX. We multiply the residuals from the estimation model of DISX by −1 so that higher values of ADISX indicate income-increasing REM. ROA proxies for firm performance, and is calculated as income before extraordinary items divided by total assets. CFO is calculated as cash flow from operating activities divided by total assets. $ADJROA_{t+1}$ ($ADJCFO_{t+1}$) is one-year-ahead industry-mean adjusted firm-specific ROA (CFO). LAW is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). PROTECT is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. ENFORCE represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. OWN is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005). Size (SIZE) is measured as the natural logarithm of total assets. GROWTH is the percentage increase in sales. Leverage (LEV) is total liabilities divided by total assets. SUSPECT is a dummy variable taking a value of 1 for firms with net income scaled by total assets greater than or equal to zero but < 0.01, and 0 otherwise. ΔGDP is the annual growth rate of GDP for all countries collected from the World Bank and International Monetary Fund (IMF).

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Table 3
Real earnings management and future operating performance.

Panel A: Baseline model

	$ADJROA_{t+1}$	$ADJCFO_{t+1}$
Variables	(1)	(2)
Intercept	−0.058***	−0.029***
	(−13.24)	(−7.96)
$ADJROA_t$	0.638***	–
	(81.26)	
ADJCFOt	–	0.555***
		(122.59)
REM	0.025***	0.017***
	(5.39)	(12.69)
SIZE	0.009***	0.004***
	(28.03)	(35.61)
GROWTH	0.026***	0.015***
	(8.68)	(14.58)
LEV	−0.052***	−0.005***
	(−12.83)	(−4.97)
SUSPECT	−0.012***	−0.003***
	(−12.43)	(−4.75)
ΔGDP	0.001***	0.000***
	(10.96)	(6.36)
Industry FE	YES	YES
Year FE	YES	YES
Observations	158,587	158,489
Adj. R-squared	0.476	0.365

Panel B: Subsample analysis on the effect of REM on firm performance in strong vs. weak institutional environment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
VARIABLES	Common Law	Code Law	High Protect	Low Protect	High Enforce	Low Enforce	High OWN	Low OWN
Intercept	−0.098***	−0.003	−0.088***	−0.002	−0.083***	−0.015***	−0.037	−0.067***
	(−10.99)	(−0.58)	(−13.43)	(−0.38)	(−8.61)	(−3.51)	(−1.19)	(−13.04)
PERF(ROA)	0.618***	0.479***	0.642***	0.493***	0.596***	0.541***	0.556***	0.639***
	(73.08)	(20.06)	(77.98)	(20.22)	(61.46)	(35.64)	(15.37)	(79.23)
REM	0.019***	0.004	0.023***	0.002	0.016***	−0.000	0.008	0.024***
	(3.65)	(0.57)	(4.77)	(0.22)	(2.85)	(−0.07)	(0.24)	(5.20)

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Table 3 (*continued*)

Panel B: Subsample analysis on the effect of REM on firm performance in strong vs. weak institutional environment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
VARIABLES	Common Law	Code Law	High Protect	Low Protect	High Enforce	Low Enforce	High OWN	Low OWN
SIZE	0.022***	0.002***	0.011***	0.003***	0.035***	0.003***	0.005***	0.010***
	(31.94)	(6.48)	(27.12)	(6.96)	(30.53)	(11.31)	(5.87)	(27.30)
GROWTH	0.036***	0.013***	0.033***	0.014***	0.053***	0.017***	0.020***	0.028***
	(9.42)	(3.16)	(9.05)	(3.12)	(8.14)	(6.19)	(2.60)	(8.65)
LEV	−0.065***	−0.041***	−0.055***	−0.045***	−0.071***	−0.034***	−0.037***	−0.054***
	(−12.70)	(−7.49)	(−11.76)	(−6.14)	(−9.98)	(−9.56)	(−3.02)	(−12.61)
SUSPECT	−0.003	−0.016***	−0.009***	−0.022***	−0.003	−0.015***	−0.009***	−0.013***
	(−1.44)	(−17.05)	(−7.51)	(−13.41)	(−0.69)	(−18.13)	(−2.85)	(−12.06)
ΔGDP	−0.005***	0.000***	0.004***	−0.000	0.005**	0.001***	−0.001**	0.002***
	(−14.59)	(3.47)	(15.85)	(−0.71)	(2.19)	(4.62)	(−2.33)	(12.25)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	93,563	65,024	121,534	37,053	49,606	108,981	13,526	145,061
Adj. R-squared	0.504	0.288	0.493	0.295	0.532	0.344	0.368	0.481

Panel B (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
VARIABLES	Common Law	Code Law	High Protect	Low Protect	High Enforce	Low Enforce	High OWN	Low OWN
Intercept	−0.040***	−0.012*	−0.038***	−0.009	−0.026***	−0.017***	−0.020	−0.033***
	(−8.54)	(−1.77)	(−8.44)	(−1.34)	(−8.54)	(−3.90)	(−1.39)	(−7.09)
PERF(ROA)	0.557***	0.429***	0.570***	0.452***	0.632***	0.424***	0.404***	0.564***
	(104.61)	(48.07)	(112.84)	(45.45)	(97.46)	(66.63)	(27.42)	(119.61)
REM	0.013***	−0.002	0.016***	0.001	0.010***	−0.001	0.013	0.016***
	(9.60)	(−0.70)	(11.89)	(0.12)	(7.00)	(−0.26)	(1.24)	(12.12)
SIZE	0.008***	0.002***	0.005***	0.002***	0.010***	0.002***	0.002***	0.004***
	(42.68)	(10.46)	(33.84)	(10.25)	(34.65)	(17.78)	(6.89)	(34.81)
GROWTH	0.016***	0.013***	0.016***	0.013***	0.016***	0.013***	0.020***	0.015***
	(11.99)	(8.64)	(12.97)	(6.86)	(8.48)	(10.92)	(6.12)	(13.61)
LEV	−0.006***	−0.006***	−0.005***	−0.008***	−0.004***	−0.002	−0.011***	−0.005***
	(−5.12)	(−3.62)	(−4.13)	(−3.72)	(−2.79)	(−1.26)	(−3.28)	(−4.47)

(*continued on next page*)

Table 3 (*continued*)

Panel B (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
VARIABLES	Common Law	Code Law	High Protect	Low Protect	High Enforce	Low Enforce	High OWN	Low OWN
SUSPECT	−0.001	−0.004***	−0.003***	−0.004***	0.002	−0.006***	−0.004	−0.003***
	(−0.45)	(−5.72)	(−3.77)	(−3.51)	(1.20)	(−7.99)	(−1.44)	(−4.50)
ΔGDP	−0.002***	0.000***	0.001***	−0.000	0.001**	0.000***	−0.001*	0.001***
	(−13.99)	(2.58)	(11.88)	(−1.58)	(2.07)	(3.29)	(−1.90)	(7.54)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	93,493	64,996	121,442	37,047	49,552	108,937	13,518	144,971
Adj. R-squared	0.423	0.204	0.397	0.227	0.554	0.200	0.191	0.381

Panel C: Eq. (6) analysis on the effect of REM on future performance conditional on institutional factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
Intercept	−0.084***	−0.066***	−0.093***	−0.083***	−0.040***	−0.032***	−0.047***	−0.039***
	(−15.51)	(−13.98)	(−15.92)	(−15.70)	(−10.48)	(−8.41)	(−11.73)	(−10.23)
ROAt	0.631***	0.637***	0.636***	0.634***	–	–	–	–
	(79.89)	(81.13)	(80.66)	(80.60)				
CFOt	–	–	–	–	0.548***	0.554***	0.552***	0.551***
					(121.27)	(122.50)	(121.51)	(120.88)
REM	−0.005	−0.065***	−0.100***	0.064***	−0.003	−0.021***	−0.088***	0.034***
	(−0.87)	(−3.31)	(−4.50)	(7.08)	(−0.94)	(−2.94)	(−10.42)	(12.57)
LAW	0.030***	–	–	–	0.013***	–	–	–
	(23.12)				(19.76)			
PROTECT	–	0.002***	–	–	–	0.001***	–	–
		(4.62)				(2.65)		
ENFORCE	–	–	0.004***	–	–	–	0.002***	–
			(9.47)				(9.84)	
OWN	–	–	–	0.074***	–	–	–	0.029***
				(16.31)				(13.16)
REM ∗ LAW	0.033***	–	–	–	0.021***	–	–	–
	(4.18)				(6.40)			
REM ∗ PROTECT	–	0.020***	–	–	–	0.008***	–	–
		(4.46)				(5.18)		
REM ∗ ENFORCE	–	–	0.014***	–	–	–	0.011***	–

(*continued on next page*)

Table 3 (*continued*)

Panel C: Eq. (6) analysis on the effect of REM on future performance conditional on institutional factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
			(5.29)				(12.18)	
REM ∗ OWN	–	–	–	−0.207***	–	–	–	−0.094***
				(−5.45)				(−8.03)
SIZE	0.011***	0.009***	0.009***	0.010***	0.005***	0.004***	0.004***	0.004***
	(30.30)	(28.08)	(28.70)	(27.62)	(39.21)	(35.72)	(37.22)	(34.46)
GROWTH	0.026***	0.026***	0.026***	0.027***	0.015***	0.015***	0.015***	0.015***
	(8.43)	(8.66)	(8.69)	(8.74)	(14.09)	(14.53)	(14.57)	(14.59)
LEV	−0.055***	−0.052***	−0.051***	−0.054***	−0.006***	−0.005***	−0.005***	−0.006***
	(−13.42)	(−12.80)	(−12.65)	(−13.16)	(−5.69)	(−4.87)	(−4.42)	(−5.36)
SUSPECT	−0.010***	−0.012***	−0.012***	−0.011***	−0.002***	−0.003***	−0.003***	−0.003***
	(−10.17)	(−12.24)	(−11.64)	(−11.30)	(−3.27)	(−4.60)	(−3.86)	(−4.08)
ΔGDP	0.001***	0.001***	0.003***	0.000***	0.000***	0.000***	0.001***	0.000
	(6.52)	(10.69)	(13.21)	(2.83)	(2.73)	(6.19)	(11.38)	(0.13)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	158,587	158,587	158,587	158,587	158,489	158,489	158,489	158,489
Adj. R-squared	0.477	0.476	0.476	0.477	0.368	0.366	0.367	0.367

***, **, and * represent statistical significance at the 1% (5% and 10%) level (two-tailed test). Note: REM is the sum of ABNPROD and ABNDISX. ABNPROD is the abnormal production costs, where production costs (PROD) are measured as the sum of cost of goods sold plus change in inventory (Roychowdhury, 2006). See Eq. (1) in the text for the estimation procedure for ABNPROD. DISX is discretionary expenses (advertising expense, R&D, and SG&A expenses). See Eq. (2) in the text for the estimation procedure for ADISX. We multiply the residuals from the estimation model of DISX by −1 so that higher values of ADISX indicate income-increasing REM. ROA proxies for firm performance, and is calculated as income before extraordinary items divided by total assets. CFO is calculated as cash flow from operating activities divided by total assets. $ADJROA_{t+1}$ ($ADJCFO_{t+1}$) is one-year-ahead industry-mean adjusted firm-specific ROA (CFO). LAW is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). PROTECT is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. ENFORCE represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. OWN is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005). Size (SIZE) is measured as the natural logarithm of total assets. GROWTH is the percentage increase in sales. Leverage (LEV) is total liabilities divided by total assets. SUSPECT is a dummy variable taking a value of 1 for firms with net income scaled by total assets greater than or equal to zero but < 0.01, and 0 otherwise. ΔGDP is the annual growth rate of GDP for all countries collected from the World Bank and International Monetary Fund (IMF).

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Table 4
REM and future performance conditional on institutional environment during crisis versus non-crisis periods.

Panel A

	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
Intercept	−0.127***	−0.077***	−0.067***	−0.062***	−0.019	−0.049***	−0.190***	−0.078***
	(−8.61)	(−14.07)	(−4.97)	(−12.84)	(−1.10)	(−11.15)	(−7.95)	(−14.55)
ADJROA	0.701***	0.624***	0.712***	0.629***	0.709***	0.629***	0.704***	0.626***
	(32.91)	(77.33)	(33.83)	(78.56)	(33.60)	(78.21)	(33.36)	(78.05)
REM	−0.015	−0.004	0.034	−0.074***	−0.164*	−0.088***	−0.005	0.070***
	(−0.83)	(−0.68)	(0.49)	(−3.62)	(−1.71)	(−10.30)	(−0.18)	(7.56)
LAW	0.053***	0.030***	–	–	–	–	–	–
	(9.64)	(22.66)						
REM * LAW	0.019	0.034***	–	–	–	–	–	–
	(0.72)	(4.17)						
PROTECT	–	–	−0.004*	0.003***	–	–	–	–
			(−1.95)	(7.20)				
REM * PROTECT	–	–	−0.006	0.022***	–	–	–	–
			(−0.42)	(4.86)				
ENFORCE	–	–	–	–	−0.008***	0.000	–	–
					(−3.89)	(0.19)		
REM * ENFORCE	–	–	–	–	0.032	0.014***	–	–
					(1.25)	(5.33)		
OWN	–	–	–	–	–	–	0.115***	0.070***
							(7.80)	(14.89)
REM * OWN	–	–	–	–	–	–	0.048	−0.226***
							(0.33)	(−5.84)
SIZE	0.014***	0.010***	0.010***	0.008***	0.011***	0.008***	0.013***	0.009***
	(13.10)	(28.97)	(11.91)	(26.85)	(11.86)	(26.77)	(11.92)	(26.18)
GROWTH	0.017	0.027***	0.022**	0.028***	0.021**	0.029***	0.021**	0.028***
	(1.61)	(8.77)	(2.03)	(9.01)	(1.98)	(9.02)	(2.01)	(8.88)
LEV	−0.048***	−0.055***	−0.047***	−0.052***	−0.048***	−0.051***	−0.050***	−0.053***
	(−3.55)	(−13.35)	(−3.45)	(−12.68)	(−3.52)	(−12.53)	(−3.66)	(−13.04)
SUSPECT	−0.012***	−0.009***	−0.015***	−0.011***	−0.015***	−0.011***	−0.014***	−0.011***
	(−4.64)	(−8.93)	(−5.78)	(−10.63)	(−5.51)	(−10.34)	(−5.39)	(−10.18)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	16,663	141,924	16,663	141,924	16,663	141,924	16,663	141,924
Adj. R-squared	0.543	0.470	0.541	0.469	0.541	0.469	0.543	0.470

Panel B

	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
Intercept	−0.042***	−0.038***	−0.011	−0.031***	0.009	−0.029***	−0.064***	−0.037***

(continued on next page)

Table 4 (*continued*)

Panel B								
	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$	$ADJCFO_{t+1}$
	(−2.66)	(−9.94)	(−0.71)	(−8.08)	(0.53)	(−7.84)	(−3.71)	(−9.65)
ADJCFO	0.556***	0.547***	0.566***	0.553***	0.565***	0.551***	0.560***	0.550***
	(50.31)	(117.96)	(51.63)	(119.24)	(51.37)	(118.23)	(50.70)	(117.68)
REM	0.002	−0.004	−0.013	−0.022***	−0.164*	−0.088***	0.018**	0.036***
	(0.31)	(−1.22)	(−0.52)	(−3.00)	(−1.71)	(−10.30)	(2.18)	(12.91)
LAW	0.024***	0.013***	–	–	–	–	–	–
	(9.47)	(19.36)						
REM * LAW	0.012	0.022***	–	–	–	–	–	–
	(1.49)	(6.44)						
PROTECT	–	–	−0.001	0.001***	–	–	–	–
			(−1.21)	(4.12)				
REM * PROTECT	–	–	0.006	0.008***	–	–	–	–
			(1.06)	(5.27)				
ENFORCE	–	–	–	–	−0.003***	0.000***	–	–
					(−3.58)	(3.07)		
REM * ENFORCE	–	–	–	–	0.019*	0.011***	–	–
					(1.84)	(12.10)		
OWN	–	–	–	–	–	–	0.049***	0.027***
							(7.84)	(11.76)
REM * OWN	–	–	–	–	–	–	−0.037	−0.100***
							(−0.74)	(−8.40)
SIZE	0.006***	0.005***	0.004***	0.004***	0.005***	0.004***	0.005***	0.004***
	(18.42)	(38.38)	(16.17)	(35.34)	(16.27)	(35.36)	(16.75)	(33.40)
GROWTH	0.011***	0.015***	0.013***	0.016***	0.012***	0.016***	0.012***	0.016***
	(3.10)	(14.06)	(3.68)	(14.51)	(3.63)	(14.67)	(3.66)	(14.33)
LEV	−0.006**	−0.006***	−0.006**	−0.005***	−0.007**	−0.005***	−0.007**	−0.006***
	(−2.02)	(−5.57)	(−2.03)	(−4.65)	(−2.21)	(−4.19)	(−2.32)	(−5.15)
SUSPECT	−0.002	−0.002***	−0.003*	−0.003***	−0.003*	−0.002***	−0.003*	−0.003***
	(−1.15)	(−2.94)	(−1.85)	(−4.03)	(−1.70)	(−3.33)	(−1.65)	(−3.78)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	16,650	141,839	16,650	141,839	16,650	141,839	16,650	141,839
Adj. R-squared	0.406	0.364	0.402	0.362	0.403	0.363	0.404	0.363

***, **, and * represent statistical significance at the 1% (5% and 10%) level (two-tailed test). Note: REM is the sum of ABNPROD and ABNDISX. ABNPROD is the abnormal production costs, where production costs (PROD) are measured as the sum of cost of goods sold and change in inventory (Roychowdhury, 2006). See Eq. (1) in the text for the estimation procedure for ABNPROD. DISX is discretionary expenses (advertising expense, R&D, and SG&A expenses). See Eq. (2) in the text for the estimation procedure for ADISX. We multiply the residuals from the estimation model of DISX by −1 so that higher values of ADISX indicate income-increasing REM. ROA proxies for firm performance, and is calculated as income before extraordinary items divided by total assets. CFO is calculated as cash flow from operating activities divided by total assets. $ADJROA_{t+1}$ ($ADJCFO_{t+1}$) is one-year-ahead industry-mean adjusted firm-specific ROA (CFO). LAW is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). PROTECT is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. ENFORCE represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10.OWN is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005). Size (SIZE) is measured as the natural logarithm of total assets. GROWTH is the percentage increase in sales. Leverage (LEV) is total liabilities divided by total assets. SUSPECT is a dummy variable taking a value of 1 for firms with net income scaled by total assets greater than or equal to zero but < 0.01, and 0 otherwise. ΔGDP is the annual growth rate of GDP for all countries collected from the World Bank and International Monetary Fund (IMF).

$p < 0.01$), REM * PROTECT (coefficient 0.02, $p < 0.01$), REM * ENFORCE (coefficient 0.014, $p < 0.01$), and REM * OWN (-0.21, $p < 0.01$), suggest that the firms from countries with strong institutional environments document a more impressive future operating performance compared to firms from countries with weaker institutional environments. Our inference remains the same when ADJCFO is used as the performance measure (the interactive coefficients are significant in columns 5 to 8). Interestingly, the coefficient on REM becomes negative (when LAW, PROTECT, ENFORCE are the institutional factors: columns (1) to (3) and columns (5) to (7)) and positive (when OWN is the institutional factor: columns (4) and (8)), suggesting that the effect of REM on future performance for countries with weak institutional environments is value-decreasing.

Taken together, the reported results in Table 3 provide strong evidence that the positive performance effects of REM are confined to countries with strong institutional environments.

We now discuss our findings related to H2, which proposes that the positive performance effect of REM varies between crisis and non-crisis periods. If managers strategically utilize managerial discretion in redirecting operations and spending patterns in an economic downturn, in order to protect firms from sliding into financial difficulties, any REM conducted would be efficient and value-enhancing and, as a result, we would find a stronger positive coefficient on REM * INSTITUTION in a crisis period than in a non-crisis period. Nevertheless, when firms face a credit crunch during a crisis period, REM might be conducted opportunistically by firms, to obfuscate their financial distress and to avoid breaching debt covenants. Driven by such objectives during an economic downturn, firms conduct REM more aggressively by, e.g., cutting R&D and laying off staff, which are counter-productive in the long run. If this argument holds, we would observe a stronger monitoring effect of institutions on firms' REM during an ordered economic environment rather than during economic turbulence. Table 4 presents the regression analysis designed to test this hypothesis. We exclude ΔGDP from the regression, because it was used to partition sample observations into crisis vs. non-crisis periods.

Using LAW as the institutional variable and $ADROA_{t+1}$ as the performance measure, Panel A of Table 4 reveals that the coefficient on REM * LAW is significantly positive during a non-crisis period (coefficient 0.034, significant at $p < 0.01$), but insignificant during a crisis period (coefficient 0.019, t statistics 0.72), suggesting that the value-enhancing effect of REM for firms in strong institutional environments is only observable during non-economic crisis periods. This is also the case when PROTECT, ENFORCE, and OWN are used as the institutional variable. For example, the coefficient on REM * PROTECT is 0.022 (significant at $p < 0.01$), REM * ENFORCE (coefficient 0.014, significant at $p < 0.01$), and that on REM * OWN (coefficient -0.23, significant at $p < 0.01$) during non-crisis periods. The negative coefficient suggests a stronger moderating effect of ownership concentration on REM's future value implication. Thus, the findings consistently show that the value-enhancing function of institutional factors for firms conducting REM is confined during the non-crisis periods. Panel B reports results using $ADJCFO_{t+1}$ as the dependent variable. Again our inference remains unchanged, as the sign and significance of the interactive coefficients are consistent with the results reported for the $ADJROA_{t+1}$ measure.

Collectively, the results show that the business cycle has a profound effect on the association between REM and future performance when the institutional environment is taken into consideration.

6. Additional tests

6.1. Regression results using countries with a large number of observations

It is apparent from Table 2 that there is a skewed distribution of the sample size, with four countries out of 29 comprising about 68% of the sample size (the US, China, Japan and India). It is, therefore, important to test whether the reported results are driven by firms from these countries. Among them, the US and Japan have the highest institutional strength, while China and India are at the other end of the spectrum. Therefore, these four countries are the ideal representatives for hypothesis testing. We conduct additional tests on H1 and H2 using data from these four major countries in comparison to the rest of the 25 countries.

For H1, using observations from the US, Japan, China and India, we find positive and significant coefficients on REM * LAW, REM * PROTECT, and REM * ENFORCE and a negative coefficient on REM * OWN (coefficient 0.042, 0.041, 0.015, -0.186, all significant at $p < 0.001$) for the ADJROA performance measure. The same conclusion is drawn when future cash flow is the dependent variable (un-tabulated). However, the coefficients on REM * INSTITUTION are insignificant for most of model specifications when the analyses are conducted using observations from the remaining 25 countries.

Panel B of Table 5 reports H2 testing results using the four major countries vs. the rest of counties. The results show that the strength of the institutional environment has an incremental effect on the future performance of firms conducting REM during a non-crisis period, but not in a crisis period, using observations from the US, Japan, China and India. In comparison, H2 testing using the remaining 25 countries demonstrates insignificant coefficients on the interactive terms, REM * INSTITUTION, during non-crisis periods. Taken together, this additional analysis suggests that our main results are largely driven by observations from large countries, possibly because they contribute the most to the sample observations.

6.2. Testing hypotheses by country

We re-run analysis to test H1 and H2 country-by-country. Specifically, we regress future firm performance on REM and other control variables specified in Eq. (5), while excluding INSTITUTION and REM * INSTITUTION. Country-wise regression test on H1 show that in countries with strong institutions such as the US, Japan, Australia and Germany, REM is positively related to future performance, whereas the effect of REM on future performance is either negative or insignificant in countries with weak institutional factors such as China, India and Indonesia. The results of H2 testing by country show that in countries with strong institutions, the effect of REM on future performance is significantly positive during non-economic crisis period.

Table 5
Additional tests.

Panel A: H1 testing using four Countries (the US, Japan, China and India) vs. the remaining countries

	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries
Variables	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
Intercept	−0.132***	−0.170***	−0.075***	−0.159***	−0.096***	−0.101***	−0.246***	−0.054***
	(−17.87)	(−19.65)	(−10.74)	(−19.33)	(−10.10)	(−10.39)	(−16.69)	(−6.25)
ROAt	0.660***	0.662***	0.663***	0.658***	0.568***	0.571***	0.562***	0.574***
	(61.06)	(61.31)	(61.36)	(60.63)	(49.91)	(50.30)	(49.23)	(50.99)
REM	−0.011*	−0.173***	−0.110***	0.054***	0.006	0.025	−0.028	0.002
	(−1.74)	(−5.63)	(−5.77)	(5.67)	(0.57)	(1.16)	(−0.44)	(0.11)
LAW	0.024***	–	–	–	0.038***	–	–	–
	(17.26)				(13.97)			
REM * LAW	0.042***	–	–	–	0.001	–	–	–
	(4.84)				(0.10)			
PROTECT	–	0.011***	–	–	–	0.010***	–	–
		(15.31)				(11.39)		
REM * PROTECT	–	0.041***	–	–	–	−0.004	–	–
		(5.92)				(−0.80)		
ENFORCE	–	–	−0.006***	–	–	–	0.017***	–
			(−11.34)				(19.11)	
REM * ENFORCE	–	–	0.015***	–	–	–	0.004	–
			(6.39)				(0.55)	
OWN	–	–		0.149***	–	–	–	0.008
			–	(18.60)				(1.21)
REM * OWN	–	–		−0.186***	–	–	–	0.022
				(−4.97)				(0.34)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	107,779	107,779	107,779	107,779	50,808	50,808	50,808	50,808
Adj. R-squared	0.550	0.550	0.550	0.551	0.384	0.383	0.387	0.382

Panel B: Test of REM on future performance during crisis versus non-crisis periods with samples from the US, Japan, China and India

	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India
	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
Intercept	−0.214***	−0.134***	−0.917***	−0.177***	−5.603***	−0.091***	2.070**	−0.156***
	(−10.64)	(−17.44)	(−3.39)	(−19.10)	(−2.75)	(−10.86)	(2.42)	(−18.54)
ROAt	0.696***	0.654***	0.696***	0.654***	0.696***	0.657***	0.696***	0.652***
	(28.06)	(58.05)	(28.06)	(58.23)	(28.06)	(58.47)	(28.06)	(57.66)

(*continued on next page*)

Table 5 (*continued*)

Panel B: Test of REM on future performance during crisis versus non-crisis periods with samples from the US, Japan, China and India

	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India	US, Japan, China & India
	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
REM	−0.027*	−0.007	−0.182	−0.164***	−1.216	−0.113***	0.477	0.059***
	(−1.67)	(−1.04)	(−1.52)	(−5.33)	(−1.44)	(−5.88)	(1.39)	(5.89)
LAW	0.176***	0.024***	–	–	–	–	–	–
	(2.65)	(16.60)						
REM * LAW	0.039	0.040***	–	–	–	–	–	–
	(1.42)	(4.47)						
PROTECT	–	–	0.176***	0.012***	–	–	–	–
			(2.65)	(15.59)				
REM * PROTECT	–	–	0.039	0.040***	–	–	–	–
			(1.42)	(5.72)				
ENFORCE	–	–	–	–	0.586***	−0.004***	–	–
					(2.65)	(−5.41)		
REM * ENFORCE	–	–	–	–	0.129	0.016***	–	–
					(1.42)	(6.56)		
OWN	–	–	–	–	–	–	−17.570***	0.138***
							(−2.65)	(17.09)
REM * OWN	–	–	–	–	–	–	−3.876	−0.197***
							(−1.42)	(−5.15)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	11,927	95,852	11,927	95,852	11,927	95,852	11,927	95,852
Adj. R-squared	0.603	0.543	0.603	0.543	0.603	0.542	0.603	0.543

Panel B (continued): Test of REM on future performance during crisis versus non-crisis periods with samples from the remaining 25 countries

	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries
	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
Intercept	−0.193***	−0.096***	−0.216***	−0.103***	−0.254***	−0.259***	−0.174***	−0.052***
	(−6.28)	(−9.58)	(−6.60)	(−9.98)	(−6.68)	(−16.44)	(−4.92)	(−5.72)
ROAt	0.617***	0.564***	0.617***	0.567***	0.615***	0.558***	0.618***	0.571***
	(14.41)	(48.79)	(14.41)	(49.21)	(14.29)	(48.01)	(14.50)	(49.87)
REM	0.016	0.004	0.136*	0.009	0.085	−0.027	−0.152***	0.019
	(0.38)	(0.37)	(1.74)	(0.41)	(0.32)	(−0.42)	(−3.03)	(1.00)
LAW	0.017**	0.040***	–	–	–	–	–	–
	(2.17)	(14.10)						

(*continued on next page*)

Table 5 (*continued*)

Panel B (continued): Test of REM on future performance during crisis versus non-crisis periods with samples from the remaining 25 countries

	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries	Rest 25 countries
	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0	CRISIS = 1	CRISIS = 0
VARIABLES	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$	$ADJROA_{t+1}$
REM * LAW	−0.085	0.008	–	–	–	–	–	–
	(−1.56)	(0.54)						
PROTECT	–	–	0.008***	0.011***	–	–	–	–
			(3.30)	(11.79)				
REM * PROTECT	–	–	−0.043**	0.000	–	–	–	–
			(−2.24)	(0.06)				
ENFORCE	–	–	–	–	0.011***	0.018***	–	–
					(4.40)	(19.02)		
REM * ENFORCE	–	–	–	–	−0.014	0.004	–	–
					(−0.47)	(0.58)		
OWN	–	–	–	–	–	–	−0.041**	0.009
							(−2.20)	(1.22)
REM * OWN	–	–	–	–	–	–	0.452***	−0.031
							(2.76)	(−0.47)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4736	46,072	4736	46,072	4736	46,072	4736	46,072
Adj. R-squared	0.394	0.385	0.396	0.384	0.394	0.388	0.395	0.382

***, **, and * represent statistical significance at the 1% (5% and 10%) level (two-tailed test). Note: REM is the sum of ABNPROD and ABNDISX. ABNPROD is the abnormal production costs, where production costs (PROD) are measured as the sum of cost of goods sold and change in inventory (Roychowdhury, 2006). See Eq. (1) in the text for the estimation procedure for ABNPROD. DISX is discretionary expenses (advertising expense, R&D, and SG&A expenses). See Eq. (2) in the text for the estimation procedure for ADISX. We multiply the residuals from the estimation model of DISX by −1 so that higher values of ADISX indicate income-increasing REM. ROA proxies for firm performance, and is calculated as income before extraordinary items divided by total assets. CFO is calculated as cash flow from operating activities divided by total assets. $ADJROA_{t+1}$ ($ADJCFO_{t+1}$) is one-year-ahead industry-mean adjusted firm-specific ROA (CFO). LAW is a dummy variable that equals 1 for countries belonging to the common-law tradition, and 0 otherwise (code-law tradition). PROTECT is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from zero to five. ENFORCE represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. OWN is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen et al. (2005). Size (SIZE) is measured as the natural logarithm of total assets. GROWTH is the percentage increase in sales. Leverage (LEV) is total liabilities divided by total assets. SUSPECT is a dummy variable taking a value of 1 for firms with net income scaled by total assets greater than or equal to zero but < 0.01, and 0 otherwise. ΔGDP is the annual growth rate of GDP for all countries collected from the World Bank and International Monetary Fund (IMF).

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6.3. Testing a sample without observations from China

The La Porta et al. (1998), (2002) studies do not provide measures for the institutional environment in China. This study uses the Chinese institutional variables developed by Allen, Qian, and Qian (2005). In order to alleviate the concern that differences in institutional environment measurements used in the research process might affect the results, additional tests are conducted using a sample without the data from China. The sample for this additional test contains 141,533 firm-year observations.

The results using the sample without China are consistent with the main test results that use data points from all 29 countries. We find the coefficients to be consistent with the main results. For instance, with respect to the impact of REM on future performance (test of H1), the coefficients on REM * INSTITUTION are positive and highly significant for the institutional variables, LAW, PTOTECT and ENFORCE, while negative and highly significant for the OWN construct (the coefficients are 0.024 for LAW, 0.017 for PROTECT, 0.011 for ENFORCE and −0.20 for OWN, all significant at $p < 0.001$) (Un-tabulated). Thus, the test results are similar to the main analysis as reported in Table 3.

6.4. Testing a sample using only non-manufacturing firms

To alleviate the concern that the differences in industry composition, and the large proportion of manufacturing firms, might drive the regression results, we conduct an additional test with a sample of non-manufacturing firms only: a total of 21,393 firm-year observations from SIC 2000–3999 are excluded. The un-tabulated results using a sample without manufacturing firm-years shows findings consistent with our primary results, in that the moderating effect of a strong institutional environment on the REM and future performance association remains unchanged.

6.5. Alternative measure for legal enforcement

We rerun our regressions substituting the original measurement of legal enforcement with a private enforcement index developed by Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008), in order to see whether monitoring enforced at private level has similar constraining effects on REM. Djankov et al. (2008) state that private enforcement is to facilitate good corporate behaviour. This approach emphasizes extensive disclosure, approval procedures for transactions, and facilitation of private litigation. “With this approach, the government moves beyond laissez-faire, and regulates the contracting framework, but leaves enforcement to private parties” (p. 431). The un-tabulated results reveal a strong positive coefficient on the interactive term, REM * ENFORCE for H1 (coefficient 0.06, t-statistic 9.06, significant at $p < 0.01$).

7. Conclusion

This paper examine whether the effect of REM on future performance varies with the strength of the country-level institutional environment. We find that although REM is generally associated with firms' future performance positively, this positive effect is mainly attributable to countries with a strong institutional environment. In addition, the positive effect of strong institutions on future firm performance in the presence of REM is more pronounced during non-economic crisis periods than in economic crises.

Our study adds to the REM literature by focusing on the future performance effects of REM internationally. Although prior research has investigated the determinants of REM internationally, this paper is the first to test the performance implications of REM in an international setting. We also contribute to the accounting information and crisis literature by documenting a varying effect of REM on future performance during economic boom versus economic crisis periods.

References

Ahmad-Zaluki, N. A., Campbell, K., & Goodacre, A. (2011). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control and post-IPO performance. *The International Journal of Accounting, 46*(2), 111–137.

Ali, A., & Hwang, L. S. (2000). Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research, 38*(1), 1–21.

Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics, 77*(1), 57–116.

Arellano, M. (1987). Computing robust standard errors for within-groups estimators. *Oxford Bulletin of Economics and Statistics, 49*, 431–434.

Baber, W. R., & Fairfield, P. M. (1991). The effect of concern about reported income on discretionary spending decisions: The case of research and development. *The Accounting Review, 66*(6), 818–829.

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics, 29*(1), 1–51.

Braam, G., Nandy, M., Weitzel, U., & Lodh, S. (2015). Accrual-based and real earnings management and political connections. *The International Journal of Accounting, 50*(2), 111–141.

Bruns, W. J., & Merchant, K. A. (1990). The dangerous morality of managing earnings. *Management Accounting, 72*(2), 22–25.

Bushee, B. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review, 73*(3), 305–333.

Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics, 32*(1-3), 237–333.

Bushman, R., Chen, Q., Engel, E., & Smith, A. (2004). Financial accounting information, organizational complexity and corporate governance systems. *Journal of Accounting and Economics, 37*, 167–201.

Chi, W., Lisic, L. L., & Pevzner, M. (2011). Is enhanced audit quality associated with greater real earnings management? *Accounting Horizons, 25*(2), 315–335.

Chia, Y. M., Lapsley, I., & Lee, H. (2007). Choice of auditors and earnings management during the Asian financial crisis. *Managerial Auditing Journal, 22*(2), 177–196.

Choi, A., Choi, J.-H., Kim, J.-B., & Sohn, B. C. (2012). *The joint effect of audit quality and legal regime on the use of real versus accrual-based earnings management: International evidence.* Working PaperSeoul National University.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes Oxley periods. *The Accounting Review, 83*(3),

757–787.
Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2–19.
Corrado, C., Hulten, C., & Sichel, D. (2009). Intangible capital and US economic growth. *Review of Income and Wealth, 55*(3), 661–685.
Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem. *Journal of Accounting and Economics, 14*(1), 51–89.
Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*, 344–401.
DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant effects and the manipulation of accruals. *Journal of Accounting and Economics, 17*(1), 145–176.
Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics, 88*(3), 430.
Enomoto, M., Kimura, F., & Yamaguchi, T. (2015). Accrual-based and real earnings management: An international comparison for investor protection. *Journal of Contemporary Accounting and Economics, 11*(3), 183–198.
Ewert, R., & Wagenhofer, A. (2005). Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review, 80*(4), 1101–1124.
Goel, R., & Ram, R. (1994). Research and development expenditures and economic growth: A cross-country study. *Economic Development and Cultural Change, 42*(2), 403–411.
Gow, I. D., Ormazabal, G., & Taylor, D. J. (2010). Correcting for cross-sectional and time-series dependence in accounting research. *Accounting Review, 85*(2), 483–512.
Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1–3), 3–73.
Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(3), 855–888.
Gunny, K. A., & Zhang, T. C. (2014). Do managers use meeting analyst forecasts to signal private information? Evidence from patent citations. *Journal of Business Finance & Accounting, 41*(7–8), 950–973.
Habib, A. (2008). Corporate transparency, financial development and the allocation of capital: Empirical evidence. *Abacus, 44*(1), 1–21.
Habib, A., Bhuiyan, M. B. U., & Islam, A. (2013). Financial distress, earnings management and market pricing of accruals during the global financial crisis. *Managerial Finance, 39*(2), 155–180.
Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365–384.
Holthausen, R. W. (1990). Accounting method choice: opportunistic behavior, efficient contracting and information perspectives. *Journal of Accounting and Economics, 12*, 207–218.
Ipino, E., & Parbonetti, A. (2017). Mandatory IFRS adoption: The trade-off between accrual-based and real earnings management. *Accounting and Business Research, 47*(1), 91–121.
Jaggi, B., & Lee, P. (2002). Earnings management response to debt covenant violations and debt restructuring. *Journal of Accounting, Auditing & Finance, 17*(4), 295–324.
Jenkins, D. S., Kane, G. D., & Velury, U. (2009). Earnings conservatism and value relevance across the business cycles. *Journal of Business Finance and Accounting, Vol. 36*(9&10), 1041–1058.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy, 106*(6), 1113–1155.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. *Journal of Finance, 57*(3), 1147–1170.
Leuz, C., Nanda, D., & Wysocki, P. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics, 69*(3), 505–527.
Perry, S., & Grinaker, R. (1994). Earnings expectations and discretionary research and development spending. *Accounting Horizons, 8*(4), 43–51.
Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370.
Saleh, N. M., & Ahmed, K. (2005). Earnings management of distressed firms during debt renegotiation. *Accounting and Business Research, 35*(1), 69–86.
Sanchez-Ballesta, J. P., & Garca-Meca, E. (2007). Ownership structure, discretionary accruals and the informativeness of earnings. *Corporate Governance: An International Review, 15*(4), 677–691.
Schaffer, M. E. (2010). xtivreg2: Stata module to perform extended IV/2SLS, GMM and AC/HAC, LIML and k-class regression for panel data models. http://ideas.repec.org/c/boc/bocode/s456501.html.
Seifert, B., & Gonenc, H. (2011). Creditor rights and R&D expenditures. *Corporate Governance: An International Review, 20*(1), 3–20.
Taylor, G. K., & Xu, R. Z. (2010). Consequences of real earnings management on subsequent operating performance. *Research in Accounting Regulation, 22*(2), 128–132.
Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data.* Cambridge, MA: MIT Press.
Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review, 87*(2), 675–703.
Zhao, Y., Chen, K. H., Zhang, Y., & Davis, M. (2012). Takeover protection and managerial myopia: Evidence from real earnings management. *Journal of Accounting and Public Policy, 31*(1), 109–135.