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The effect of accounting comparability on the accrual-based and real earnings management

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A B S T R A C T

This study investigates whether and how managers' opportunistic earnings management activities are affected by the degree of their firms' accounting comparability with other firms. Using a large sample of U.S. firms, I find that managers' real earnings management (REM) increases whereas their accrual-based earnings management (AEM) decreases with the degree of their firms' accounting comparability with other firms. I also find that this opportunistic behavior to "escape" from AEM to REM facing higher accounting comparability is mitigated when firms' information environment and/or audit quality are better. These findings are robust to various sensitivity tests including the one to address the possible endogeneity of accounting comparability.

1. Introduction

This study investigates whether and how managers' opportunistic earnings management activities are affected by the degree of their firms' accounting comparability with other firms. Many studies examine the effect of adopting the same accounting standard (e.g., International Financial Reporting Standards) on the comparability of accounting numbers across firms in different countries (Barth et al., 2008; Lang et al., 2010; DeFond et al., 2011). Researchers also extensively investigate the effect of accounting comparability on various outcomes such as management's voluntary disclosure, analysts' coverage expansion and forecast properties, and institutional investors' portfolio structure

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(Gong et al., 2013; Kini et al., 2009; De Franco et al., 2011; Engelberg et al., 2016). However, the paper on the effect of accounting comparability, especially across firms under the same GAAP regime, on managers' earnings management is scant. This study thus aims to fill this gap by exploring whether the extent of managers' opportunistic earnings management is influenced, and how managers' choice of alternative earnings management methods is affected, by accounting comparability.

Current-period reported earnings can be managed in two different ways. First, managers can manipulate reported earnings through discretionary accrual choices that are allowed under the Generally Accepted Accounting Principles (GAAP). This within-GAAP accrual-based earnings management (hereafter AEM) typically occurs toward the end of an accounting period, after most real operating activities are completed (Zang, 2012). While it directly influences the amount of accounting accruals, AEM has no direct effect on cash flows. Second, managers can also manipulate reported earnings by adjusting real activities. Specifically, they can alter the timing and scale of real activities such as sales, production, investment, and financing throughout the accounting period in such a way that a specific earnings target can be met. For example, reported earnings can be temporarily boosted by accelerating the timing of production and sales schedules, by cutting discretionary expenditures, and/or by deferring the timing of their occurrences. Following Roychowdhury (2006), these real operation management activities that deviate from normal business practices with the primary objective of manipulating current-period earnings are referred to as real earnings management (hereafter REM). Unlike AEM, REM can have direct consequences on current and future cash flows (as well as accounting accruals), are more difficult for average investors to understand, and are normally less subject to external monitoring and scrutiny by auditors, regulators, and other outside stakeholders (Cohen et al., 2008).

In their conceptual frameworks for financial reporting, the FASB (2010) and IASB (2010) identify comparability as the qualitative characteristic of financial information that enables users to identify and understand similarities in, and differences among, items. Despite the fact that accounting comparability is one of important qualitative characteristics, the empirical research on it is relatively scarce compared with that on other accounting attributes. One reason is that it is a relative or comparative concept, not an absolute or independent criterion like other accounting characteristics. As a result, the empirical test for comparability has been intractable, especially for large sample of firms within a country, before De Franco et al. (2011) develop an operationalizable measure. I adopt their methodology to investigate the effect of accounting comparability on firms' earnings management in this paper.

I expect that managers' AEM activities are constrained when their firms' accounting is more comparable with that of other firms operating in the same industry. The primary objective of managers conducting opportunistic AEM is to obfuscate their true performance with a view to concealing their private control benefits (Zingales, 1994; Shleifer and Vishny, 1997; Leuz et al., 2003; Haw et al., 2004). If a firm's accounting amounts are more comparable with those of its industry peers, the marginal costs for outsiders (e.g., shareholders, creditors, and regulators) to collect and process accounting information of these peer firms become smaller. As a result, they can evaluate the firm's true performance more accurately because the accounting information of comparable firms is a valuable additional input to analyze the business fundamentals of the firm in question. In other words, the accounting information of the firm becomes more transparent for outside market participants if its accounting comparability increases. The consequence is diminished incentives for, and possibilities of, managers' AEM activities.

I also expect that managers' REM activities will *increase* in their firms' accounting comparability. Prior studies document the evidence that firms switch from AEM to REM under a more stringent regulatory environment (e.g., Sarbanes–Oxley Act) to meet certain earnings targets (Ewert and Wagenhofer, 2005; Cohen et al., 2008; Cohen and Zarowin, 2010). Extending this logic to this study, managers will rely on REM to a greater extent if their ability to use AEM is significantly curbed by their firms' enhanced accounting comparability. Given the level of reported earnings necessary to conceal their private control benefits, managers have strong incentives to make up for the reduced AEM due to higher accounting comparability using the increased REM.

Regressing AEM and REM measures on the accounting comparability estimate developed by De Franco et al. (2011) and other earnings management determinants using a large sample of U.S. firms during 1983–2012 period, I find that AEM decreases but REM increases with the degree of a firm's

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accounting comparability. This finding is robust to the use of signed or unsigned AEM/REM variables. I also find that this behavior of "escaping" from AEM to REM due to higher accounting comparability is mitigated when firms' information environment and/or audit quality are better.

This study contributes to extant literature on the accounting comparability and earnings management in several ways. First, to my best knowledge, this is the first study for the impact of accounting comparability on earnings management. Accounting comparability has been examined in terms of its effect on voluntary disclosure, analyst forecast properties, or investor portfolio choice. There are also abundant papers to analyze various determinants of earnings management. However, there is limited evidence on the relation between accounting comparability and earnings management, partly due to the difficulty in empirical measurement of accounting comparability. Using the empirical estimate of De Franco et al. (2011), this study sheds light on the relatively unexploited research arena. Second, this paper enriches REM literature. Compared with AEM, REM is a new topic to which researchers have increasingly paid attention. A couple of factors to affect managers' choice or trade-off between AEM and REM are explored in prior studies but a comprehensive set of determinants for their substitution or complementation has not yet been identified. This paper adds a new factor – accounting comparability – as an important trigger for the substitution of REM for AEM to the pile of previous evidence. Third, this study expands the scope of accounting comparability research. Thus far, accounting comparability has been studied mainly from the view point of accounting inputs such as accounting standards or methods. This comparability is useful to compare accounting attributes of the firms in one country under a certain GAAP regime with those in other country under a different GAAP regime. However, it is hard to compare accounting attributes or economic consequences across firms within a single country (e.g., the U.S.) under the same GAAP regime using this input-based comparability. De Franco et al. (2011) try to address this limitation by operationalizing an output-based accounting comparability measure and find that it works well to explain analysts' firm selection behavior and their forecast properties. This study tests the usefulness of their comparability measure by investigating its effect on a traditionally popular accounting topic, i.e., earnings management, and corroborates the empirical validity of the measure.

This paper has a policy implication as well. Comparability is an important qualitative characteristic which regulators are concerned with. It reduces the cost of comparing the financial statements of a company with those of others, thereby enhancing the transparency of the company's financial reporting. Whether intended or not, the increased comparability brings about the mitigation of AEM, which is, however, substituted by REM. If regulators set accounting standards or policies to increase comparability, they need to know its effect on earnings management in general, and on the substitution between AEM and REM in specific, to achieve the goal of the regulations.

The results in this study, however, need to be interpreted with caution. First, even though I focus on the accounting system comparability rather than financial statement comparability in this study, the understandability of the former by managers and directors may be affected by their understandability of the latter. External auditors and industry-expert directors can help this learning process of insiders but this paper is silent on the specific channels and/or procedures for the insiders' assessment of their firms' accounting comparability. Second, I claim that a firm's accounting system is exogenous to its managers to the extent that it is a historical product selected and implemented in the process of figuring out the best match with business characteristics. However, accounting comparability (and earnings management) is also endogenously determined by managerial discretions. For example, managers can use various events such as mergers, acquisitions, and divestitures as the source of "creative accounting techniques" to make their firms' financial statements less comparable with those of peer firms before engaging in AEM. Thus, the implications drawn from the results in this paper can be biased to the extent that the accounting comparability variable is endogenous. To alleviate this concern, I conduct robustness tests and find that the main results are unaltered.

The paper proceeds as follows: Section 2 reviews extant literature and develops main research hypotheses; Section 3 explains how the research variables are measured and specifies the empirical model used for hypothesis testing; Section 4 describes the sample and data sources and presents main empirical results; Section 5 performs sensitivity tests and additional analyses, and the final section concludes the paper.

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2. Related research and hypothesis development

A large body of accounting literature investigates the effect of International Financial Reporting Standards (IFRS) adoption on various outcomes including accounting quality and comparability. For example, DeFond et al. (2011) document that foreign mutual fund ownership increases in European firms when they mandatorily adopt IFRS because the adoption improves accounting comparability. Barth et al. (2008) report that firms applying IFRS exhibit less earnings management, more timely loss recognition, and more value relevance of accounting numbers than do matched sample firms applying non-U.S. domestic standards. Daske et al. (2008) document that market liquidity and Tobin's Q increase and cost of capital decreases for the firms adopting IFRS mandatorily. Harris and Muller (1999) provide evidence that U.S. GAAP-reconciled earnings and book value are value relevant incremental to IFRS-based accounting numbers using Form 20-F reconciliations of the IFRS-applying firms. Wu and Zhang (2009) document that European firms' sensitivity of CEO turnovers and employee layoffs to the accounting performance increases after their voluntary adoptions of IFRS or U.S. GAAP. Lang et al. (2010) report that firms' earnings comovement increases, whereas accounting comparability (measured by De Franco et al.'s (2011) methodology) does not change, and information environments are worsened in IFRS adopters compared with non-adopters. Barth et al. (2012) investigate whether IFRS-based accounting amounts are comparable to U.S. GAAP-based ones using the public firms in 27 IFRS adopting countries and the United States. They document that IFRS adopters' accounting numbers become more comparable to those of U.S. firms after their adoption, and this increase in comparability is more pronounced for mandatory adopters, firms in common law countries, and firms in strong enforcement countries. Brown and Kimbrough (2011) report that earnings noncommonality increases in U.S. firms' intangible investments and this relation is stronger in industries where R&D is better protected. Francis et al. (2014) document that firms' financial statement comparability increases when they are audited by the same auditor and this effect is more pronounced for a Big 4 auditor.

Another stream of more closely related research to my paper is the studies on the effect of accounting comparability. Gong et al. (2013) investigate its effect on management disclosure and report that managers are more likely to provide earnings forecasts when their firms' earnings synchronicity with other firms is lower. Kini et al. (2009) find that firms' sector diversification increases due to improved cross-firm commonalities if analysts belong to a country where accounting regulation enforces firms to include more accounting items in their annual reports. Engelberg et al. (2016) examine the effect of geographic and industry proximity on the choice of institutional investors' portfolio structure and document that mutual fund managers are more likely to hold other stocks in a geography-industry cluster in which they already have a large position of stocks. Kim et al. (2013) develop a financial statement comparability measure based on the variability of Moody's adjustments to reported earnings for the purpose of credit rating. Using this measure, they find that the bond bid-ask spread, bond yield, and CDS (credit default swap) spread are lower for the borrowers belonging to industries of higher comparability. De Franco et al. (2011) investigate the effect of accounting comparability on analyst coverage and forecast properties and report that analyst coverage increases, forecast accuracy improves, and forecast dispersion diminishes when accounting comparability of the followed firms is higher. They argue that, for a given firm, the availability of information about comparable firms lowers the cost of acquiring information, and increases the overall quantity and quality of information available about the firm. Comparability also allows analysts to better explain firm's historical performance or use information from comparable firms as additional inputs in their analyses.

2.1. Accounting comparability and AEM

The study about the effect of accounting comparability on earnings management (i.e., AEM) is scant. Jeanjean and Stolowy (2008) document that earnings management of the firms in three IFRS adopting countries (Australia, France, and the U.K.) does not decline in the post-IFRS compared to the pre-IFRS period, which is contrasted with the findings in Barth et al. (2008). However, the focus

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of both papers is comparing the quality of domestic accounting standards with that of IFRS with regard to earnings management. Since firms in a given country are governed by the same GAAP, the comparability arising from accounting standard difference remains constant to firms in the same country in the settings of both studies. However, accounting is not necessarily comparable across firms even if they comply with the same set of accounting standard in the same country. Given a variety of alternative accounting methods permitted by the GAAP and a large room of company discretions when implementing them, firm-level accounting comparability can vary significantly company by company. My research interest in this study is therefore to investigate the effect of firm-level accounting comparability on managers' earnings management (both AEM and REM) behavior within the same GAAP regime. I expect that managers' AEM activities are restricted to a greater extent when their firms' accounting is more comparable with that of other firms.

Theory and evidence indicate that incentives to misrepresent firm performance through AEM arise from the opportunistic interest of the insiders of the firm (Zingales, 1994; Shleifer and Vishny, 1997; Ball et al., 2000; Leuz et al., 2003; Haw et al., 2004). Insiders, such as managers and controlling shareholders, can enjoy private benefits using their control over the firm at the expense of outsiders such as minority shareholders and creditors. However, if these benefits are detected, outsiders will likely take disciplinary actions (e.g., changing managers) against them. Accordingly, insiders have incentives to manage reported earnings in order to mask true firm performance and to obfuscate their private control benefits from outsiders (Leuz et al., 2003). Effective legal systems protect outsiders by conferring on them rights to discipline insiders as well as by enforcing contracts to limit insiders' private control benefits (La Porta et al., 1998; Claessens et al., 2002; Nenova, 2003; Dyck and Zingales, 2004). Studies also show that high quality audits play a similar role, especially in countries with strong legal regimes, to restrict insiders' incentives to rely on AEM in order to conceal their pursuit of private control benefits (Khurana and Raman, 2004; Francis and Wang, 2008; El Ghoul et al., 2016). I posit that accounting comparability is another mechanism to mitigate managers' incentives to conduct opportunistic AEM. If a firm's accounting system and its outcomes are more comparable with those of other firms, outside market participants such as analysts, investors, and regulators can assess the firm's true economic performance more accurately by comparing the accounting information of the firm and its peers. This is because the enhanced accounting comparability reduces the marginal costs for these stakeholders to acquire and process comparable firms' accounting information as suggested in the aforementioned studies (Gong et al., 2013; Kini et al., 2009; Engelberg et al., 2016; De Franco et al., 2011), which is helpful to evaluate the fundamentals of the firm in question. Stated differently, a firm's accounting environment becomes more transparent to outsiders so that managers are left less room to engage in earnings manipulation activities to conceal their true performance if the firm's accounting comparability is higher. Furthermore, managers' reported good performance (e.g., through income-increasing AEM) is more likely to be ascribed to external factors rather than managers' abilities when a firm's earnings exhibits a higher commonality with those of other firms in the market (Kimbrough and Wang, 2014), thereby reducing their incentives for AEM. Based on the discussions above, I formalize the first testable hypothesis as follows (in alternative form):

H1. The extent of a firm's AEM is smaller when its accounting system produces more comparable accounting numbers with those of other firms, ceteris paribus.

2.2. Accounting comparability and REM

Roychowdhury (2006) has developed empirical models that allow researchers to separate the normal levels of real operational activities as reflected in cash flows from operations (CFO), production costs, and discretionary expenditures from their abnormal levels. His analysis shows that managers engage in real activities manipulation to meet certain earnings targets. Since Roychowdhury's work, subsequent studies dealing with REM issues have provided evidence supporting that, while the expected, normal levels of real activities are associated with optimal operational decisions, their

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unexpected, abnormal levels capture managerial opportunism to interfere with the transparent financial reporting process.

One notable strand of previous REM research has focused on whether managers use REM as a substitute for, or complement to, AEM when making strategic decisions on the timing and magnitude of earnings manipulation. For example, Zang (2012) investigates the substitution between AEM and REM and reports that AEM (REM) decreases (increases) when the cost of AEM is higher (e.g., high audit quality) and REM (AEM) decreases (increases) when the cost of REM is higher (e.g., high tax rate). Cohen et al. (2008) examine the impact of the Sarbanes-Oxley Act (SOX) passage on managerial choice between AEM and REM and document that the passage of SOX motivates firms to switch from AEM to REM. This substitution occurs since REM is harder for external auditors, regulators, and other stakeholders to detect, compared with AEM. Furthermore, expected legal liability costs associated with AEM increase significantly in the post-SOX environment due to heightened financial reporting regulations and additional certification requirements, while the same costs associated with REM do not. As a result, REM becomes (relatively) less costly to managers in the post-SOX period than AEM. The above evidence is consistent with the analytical results of Ewert and Wagenhofer (2005) who demonstrate that managers switch from AEM to REM in an environment of tightened accounting standards or more stringent enforcements. Survey results of Graham et al. (2005) also reveal that the large majority of managers are willing to delay the timing of new investment projects to meet a certain earnings target even when such a deferment has adverse implications on long-term value. A subsequent study by Cohen and Zarowin (2010) investigates the behaviors of REM and AEM around seasoned equity offerings (SEOs), i.e., the periods during which managers have relatively high incentives to artificially inflate current-period earnings. Consistent with Zang (2012) and Cohen et al. (2008), they also find that SEO firms have substituted from AEM to REM in the post-SOX period as SOX has made AEM more costly than REM. The above results, taken as a whole, suggest that managers take into account potential costs associated with their choice between AEM and REM.[1]

To my knowledge, however, none of the previous research investigates the possible effect of accounting comparability on the trade-off between AEM and REM. I expect that managers' REM activities will increase when their firms' accounting is more comparable with that of other firms. As hypothesized in H1, mangers have less room to manipulate reported accounting performance using AEM if their firms' accounting comparability is higher because outsiders can collect and process necessary accounting information more easily from the comparable firms and thus evaluate managers' true performance more precisely. Given the target level of reported earnings, managers have a strong incentive to make up for AEM decrease using REM increase to meet this earnings target. Unlike AEM, REM is less likely revealed by the enhanced accounting comparability and transparency because it is accomplished by manipulating real activities such as sales price, credit terms, production volume, and R&D expenditures rather than accounting accruals (which are directly influenced by the quality of accounting). That is, even though accounting amounts become more transparent to outsiders due to the increased accounting comparability, it does not necessarily improve their ability to see through managers' opportunistic REM activities. As a result, managers are tempted to resort on this more "entrenched" income manipulation tool facing better-armed outsiders. This reasoning leads to expecting a positive relation between accounting comparability and REM, which is also consistent with aforementioned REM literature documenting the substitutive relation between AEM and REM. Thus I transform these discussions to the second hypothesis as follows (in alternative form):

[1] While the primary topic of these studies is the trade-off relation between AEM and REM as a means to meet earnings management objectives, the other strand of REM research focuses on economic consequences of REM. For example, Gunny (2010) finds that firms' future profitability is higher when they use REM to meet or just beat analysts' forecasts, implying that REM plays a signaling role. Using a sample of SEO firms, Mizik and Jacobson (2007) find that to temporarily inflate stock prices at the time of SEOs, managers engage in boosting reported earnings via cutting marketing expenses, but in the long run, such managerial myopia leads to a decline in stock market performance. Kim and Sohn (2013) predict and find that the cost of equity capital increases with firms' REM as well as AEM activities.

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H2. The extent of a firm's REM is larger when its accounting system produces more comparable accounting numbers with those of other firms, ceteris paribus.[2]

3. Measurement of main variables and empirical specification

3.1. Accounting comparability

I adopt the empirical methodology of De Franco et al. (2011) to estimate firm-year level accounting comparability. Before De Franco et al. (2011), most prior studies measure accounting comparability using the inputs of accounting system such as accounting standards or methods. However, using these input-based measures can be challenging because it must be decided which accounting choices to use, how to weight them, and how to account for variation in their implementation, and because it is often difficult to use a large sample of firms (De Franco et al., 2011). To gauge the extent of accounting number comparability across firms (even within the same GAAP regime), De Franco et al. note to the output of accounting systems. If the accounting systems are similar between two firms, the output (i.e., reported accounting numbers such as earnings and book value) will be similar for the same economic event. They choose stock return and earnings as a summary measure for the economic event and accounting output, respectively. Following De Franco et al., I estimate the following regression equation, where the estimated intercept ($\hat{\alpha}$) and regression coefficient ($\hat{\beta}$) are interpreted as a firm-specific accounting system for firm i:

$$Earnings_{it} = \alpha_i + \beta_i\, Return_{it} + \varepsilon_{it}, \tag{1}$$

where *Earnings* is quarterly net income before extraordinary items deflated by the market value of equity at the end of previous quarter, and *Return* is the raw return during the quarter. I conduct these firm-specific regressions for the previous 16 quarters on the rolling basis to estimate $\hat{\alpha}_i$ and $\hat{\beta}_i$ at the point of time t. $\hat{\alpha}_j$ and $\hat{\beta}_j$ are obtained at the point of time t by repeating the same regressions for firm j. When these two accounting systems are applied to firm i's return (i.e., $Return_{it}$), the resulting numbers in the equations below are the predicted earnings (i.e., the expected accounting outcomes) of firms i and j, respectively, for the same economic event:

$$E(Earnings)_{iit} = \hat{\alpha}_i + \hat{\beta}_i\, Return_{it}, \tag{2}$$

$$E(Earnings)_{ijt} = \hat{\alpha}_j + \hat{\beta}_j\, Return_{it}. \tag{3}$$

The more the accounting systems of two firms are comparable, the smaller the difference between two expected earnings. Accordingly, the accounting comparability between firms i and j ($CompAcct_{ijt}$) is defined as follows (De Franco et al., 2011):

$$CompAcct_{ijt} = -1/16 \times \sum_{t-15}^{t} |E(Earnings)_{iit} - E(Earnings)_{ijt}|. \tag{4}$$

[2] The underlying assumption for the effect of accounting comparability on firms' earnings management activities is that corporate insiders such as managers and directors understand their firms' accounting and financial statement comparability with those of their peer firms. The usefulness of comparable financial statements is underscored in the FASB accounting concepts statement (FASB, 1980, p. 40). Managers, especially CFOs who are directly in charge of preparing their firms' financial statements, are supposed to understand this important component of conceptual framework of the U.S. GAAP, and prepare financial statements accordingly. Managers also need to read and analyze the financial statements of their firms' competitors to defend their firms' market shares and understand competitors' strengths and weaknesses. In so doing, managers are supposed to understand the differences and similarities between their firms' and competitors' accounting systems. The members of audit and compensation committees – another group of corporate insiders – are akin to the financial statement comparability as well because they need to evaluate managers' performance by comparing their firms' financial statements with those of selected peer firms.

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I estimate *CompAcct* for each firm $i-j$ combination for J firms within the same 2-digit Standard Industrial Classification (SIC) code in a given year.[3] After sorting all these combinations in descending order for each firm i, I make $M4\_CompAcct_{it}$ by averaging the four largest values of $CompAcct_{ijt}$, and $Ind\_CompAcct_{it}$ by taking the industry median in a given year. These are the firm-year level accounting comparability estimates used in the main analyses.

3.2. Intensity of AEM

As in other studies, I use an abnormal portion of total accruals or, equivalently, discretionary accruals (*DAC*) as the proxy for the outcome of opportunistic AEM. To decompose total accruals into the expected, normal portion and the unexpected, abnormal portion, I employ the modified Jones (1991) model as proposed by Dechow et al. (1995)[4]:

$$TAC_{it}/A_{it-1} = \beta_1[1/A_{it-1}] + \beta_2[\Delta Sales_{it}/A_{it-1}] + \beta_3[PPE_{it}/A_{it-1}] + ROA_{it} + \varepsilon_{it}, \quad (5)$$

where for firm i and in year t (or $t-1$), *TAC* denotes total accruals; A, $\Delta Sales$, and *PPE* represent total assets, the change in net sales dollars, and gross property, plant and equipment, respectively; and ε is an error term. I include return on assets (ROA) to estimate performance-adjusted *DAC* following Kothari et al. (2005). Total accruals (*TAC*) are computed as earnings before extraordinary items minus cash flow from operations, which is taken directly from the statement of cash flows.[5]

Eq. (5) is estimated cross-sectionally for each 2-digit SIC and in each year. Using the estimated parameters of Eq. (5), I compute nondiscretionary total accruals, denoted by *NTAC*, as

$$NTAC_{it} = \hat{\beta}_1[1/A_{it-1}] + \hat{\beta}_2[(\Delta Sales_{it} - \Delta REC_{it})/A_{it-1}] + \hat{\beta}_3[PPE_{it}/A_{it-1}] + \hat{\beta}_4 ROA_{it}, \quad (6)$$

where ΔREC_{it} is the change in net receivables and the other variables are as defined earlier. I then subtract *NTAC* from the lagged asset-deflated *TAC* to obtain *DAC*, which is the main proxy for the intensity of AEM used in the main analyses.

3.3. Intensity of REM

Similar to Roychowdhury (2006), Cohen et al. (2008), and Cohen and Zarowin (2010), I develop the proxies for the intensity of REM by focusing on three methods of manipulating real operational activities with an aim to temporarily boost reported earnings: (1) offering excessive sales discounts or lenient credit terms to temporarily boost sales revenues in the current period, (2) conducting overproduction to report a lower cost of goods sold in the current period, and (3) reducing discretionary expenditures in the current period.

As in other studies, I decompose the actual CFO into the normal (expected) portion and the abnormal (unexpected) portion by estimating Eq. (7) for each industry and year in which the normal CFO is assumed to be a linear function of sales and changes in sales:

$$\frac{CFO_{it}}{A_{i,t-1}} = a_1 \frac{1}{A_{i,t-1}} + a_2 \frac{Sales_{it}}{A_{i,t-1}} + a_3 \frac{\Delta Sales_{it}}{A_{i,t-1}} + \varepsilon_{it} \quad (7)$$

[3] SAS program for these estimations is provided at Verdi's website (http://www.mit.edu/~rverdi/). Following De Franco et al. (2011), I keep firms with March, June, September, and December fiscal year-ends only.

[4] Many prior studies (e.g., Dechow and Dichev, 2002) use current accruals instead of total accruals as the dependent variable. I use total accruals to measure our AEM proxies because the competing variable (i.e., REM proxies) includes research and development expenditure (R&D), which is an investment in intangible assets, as one component. I reason that including depreciation and amortization expenses, the latter of which is directly related to intangible assets and R&D, in measuring AEM variables more closely parallels the method used to measure REM in this sense. However, the essence of the main implications is unaltered when using current accruals to measure the proxies for AEM.

[5] Balance sheet approach is used instead to compute *TAC* for the firm-years where cash flow statement information is not available.

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Income-boosting strategies via overproduction and cutting discretionary expenditures, such as R&D and marketing expenditures, lead one to observe abnormally high production costs and abnormally low discretionary expenses relative to sales (Roychowdhury, 2006). To decompose actual production costs and discretionary expenses into the normal, expected portion and the abnormal, unexpected portion, I estimate Eqs. (8) and (9), respectively, for each industry and year:

$$\frac{Prod_{it}}{A_{i,t-1}} = a_1 \frac{1}{A_{i,t-1}} + a_2 \frac{Sales_{it}}{A_{i,t-1}} + a_3 \frac{\Delta Sales_{it}}{A_{i,t-1}} + a_4 \frac{\Delta Sales_{i,t-1}}{A_{i,t-1}} + \varepsilon_{it}, \tag{8}$$

$$\frac{DiscE_{it}}{A_{i,t-1}} = a_1 \frac{1}{A_{i,t-1}} + a_2 \frac{Sales_{i,t-1}}{A_{i,t-1}} + \varepsilon_{it}, \tag{9}$$

where for each firm i and year t, *Prod* refers to production costs, which is the sum of cost of goods sold and change in inventory (Compustat item COGS + change in item INVT), and *DiscE* denotes discretionary expenses computed by the sum of advertising expenses, R&D expenses, and SG&A expenses (Compustat items XAD + XRD + XSGA).

Abnormal CFO, abnormal *Prod*, and abnormal *DiscE*, denoted by *AbCFO*, *AbProd*, and *AbDiscE*, respectively, are the differences between actual values of lagged asset-deflated CFO, *Prod*, and *DiscE* and their normal levels (i.e., the fitted values of Eqs. (7), (8), and (9), respectively).[6] These three variables are the individual REM proxies used in the following analyses. Given a level of sales, firms that boost reported earnings via REM are likely to use one or all of three REM strategies (Cohen et al., 2008). To measure the firm's REM activities via all three strategies or various combinations of the three strategies, I develop a single, comprehensive measure of REM, denoted by *AbREM*, by summing the three individual REM measures, i.e., $-1 * AbCFO$, *AbProd*, and $-1 * AbDiscE$. This *AbREM* is used as the main REM variable in the following analyses.

3.4. Regression specification

To test hypotheses H1 and H2, I posit the following regression:

$$\begin{aligned} EM_{it} = {} & a_0 + a_1 M4\_CompAcct_{it} + a_2 Size_{it} + a_3 BM_{it} + a_4 ROA_{it} + a_5 |ROA|_{it} + a_6 LEV_{it} \\ & + a_7 ANAL_{it} + a_8 REGUL_{it} + a_9 Big5_{it} + a_{10} CFOA_{it} + a_{11} |CFOA|_{it} + a_{12} StdSales_{it} \\ & + a_{13} LIT_{it} + a_{14} Loss_{it} + a_{15} Offer_{it} + a_{16} RET_{it} + a_{17} INST_{it} + a_{18} OWN_{it} + \sum_i a_i IND_i \\ & + \sum_t a_t YEAR_t + \varepsilon_{it} \end{aligned} \tag{10}$$

where for firm i and year t, *EM* denotes the earnings management (AEM or REM) variables, i.e., either *DAC* or *AbREM*, and *M4_CompAcct* is the accounting comparability with other firms in the same industry. In order to isolate the incremental effect of accounting comparability on firms' earnings management from the effects of other determinants, I add various control variables commonly adopted in prior studies (Haw et al., 2004; Ashbaugh et al., 2003; Frankel et al., 2002). They are firm size, the book-to-market ratio, return on assets (ROA) and its absolute value, leverage, analyst coverage, regulated industry dummy, big auditor dummy, cash flow from operations and its absolute value, standard deviation of sales, litigious industry dummy, loss dummy, equity offer dummy, contemporaneous annual return, institutional ownership, and managerial ownership. To control for the unknown industry or year effects, I include 48 industry and 30 year dummies. The Appendix A provides the detailed definitions of all the variables used in the study.

H1 translates as $a_1 < 0$ when *EM* is *DAC*, while H2 is supported if $a_1 > 0$ when *EM* is *AbREM*. I conduct time-series cross-sectional pooled ordinary least squares regressions with standard errors corrected for firm-level clustering using Eq. (10) to test my hypotheses.

[6] I multiply −1 to *AbCFO* and *AbDiscE* so that their larger values represent more intense REM, as in *AbProd*, following prior research. The signed aggregate REM measure, *AbREM*, is constructed by summing these three individual REM variables after this conversion.

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4. Empirical results

4.1. Samples, data sources, and descriptive statistics

I extract financial statement data from *Compustat*, stock price and returns data from *CRSP*, analyst coverage and forecast data from *I/B/E/S*, institutional ownership data from *Thomson-Reuters*, managerial ownership data from *ExecuComp*, and audit fee data from *Audit Analytics*, respectively. The initial list of the sample starts from the firms listed on NYSE, AMEX or NASDAQ for the 30-year sample period, 1983–2012. To be included in the sample, a firm must have all financial statement data required for computing the research variables, including the REM and AEM proxies, and the accounting comparability variables for each sample year, *t*. I exclude firms in the financial service industry (SIC code 6000–6999) to maintain homogeneous interpretations of various accounting variables across the sample firms in different industries. I also delete the observations with negative book values of equity. To alleviate concerns over potential problems arising from the existence of extreme outliers, I winsorize the observations that fall within the top and bottom 1% of the annual empirical distributions of the major research variables included in Eq. (10). After applying the above selection criteria and data requirements, I obtain a sample of 32,211 firm-years for 4486 unique firms in the sample used for estimating the regression in Eq. (10). As in Cohen et al. (2008), the final sample consists of larger and more profitable firms than the *Compustat* population due to the data requirements.

Table 1 provides descriptive statistics for the sample used for estimating the regression in Eq. (10). The mean and median of firm-year level accounting comparability, i.e., *M4_CompAcct*, are −0.4278 and −0.2000, respectively, with a standard deviation of 0.7709, suggesting that *M4_CompAcct* is reasonably distributed. These values are similar with those reported in De Franco et al. (2011). With respect to AEM-related variables, I find that the mean and median values of signed abnormal accruals, that is, *DAC*, are close to 0, though both are negative, while the mean and median values of unsigned abnormal accruals (i.e., |*DAC*|) are about 5.4% and 3.5% of lagged total assets, respectively. The standard deviations of *DAC* and |*DAC*| are 8.35% and 6.48%, respectively, indicating that their variations are fairly large. This result is generally consistent with evidence reported in many other studies.

With respect to the REM-related variables, the mean (median) value of signed abnormal REM (i.e., *AbREM*) is −0.0618 (−0.0456), with a standard deviation of 0.4166, whereas the mean (median) value of unsigned abnormal REM (i.e., |*AbREM*|) is 0.3530 (0.2603), with a standard deviation of 0.3260. The standard deviations are fairly large, indicating that REM practices via the various combinations of three channels vary widely across firms. The sign and magnitude of the signed REM variables are similar to those reported in Cohen et al. (2008).

As for control variables, the mean values of book-to-market ratio (*BM*), ROA, leverage (*LEV*), institutional ownership (*INST*), and CEO ownership (*OWN*) are 0.6180, 3.52%, 48.0%, 40.9%, and 1.0%, respectively. On average, six analysts are following each sample firm (note that *ANAL* is a logarithm value) and 92.5% of firms are audited by big auditors (*Big5*). About 21.1% of firms report loss and 8.2% of firms record net issuance of equity amounting more than 5% of total assets (*Offer*). The descriptive statistics on the other variables are, overall, comparable to those reported in prior literature.

Table 2 presents the correlation matrix of major variables used in Eq. (10). All the correlation coefficients significant at less than the 1% level are boldfaced, 5% in bold-italics, 10% in italics, and the others are insignificant at the 10% level. Consistent with H1, *M4_CompAcct* has a significantly negative correlation with *DAC* (Pearson = −0.0113, Spearman = −0.0552). Contrary to my expectation, however, it has a negative correlation with *AbREM* as well. *DAC* has also an unexpected positive correlation with *AbREM*. This is because the effects of other REM determinants are not yet isolated. To examine the effect of accounting comparability on AEM and REM after controlling for other factors affecting earnings management, I conduct multivariate regressions in the following subsections. Unreported result for brevity also shows that three individual signed REM proxies, that is, $-1 * AbCFO$, *AbProd*, and $-1 * AbDiscE$, are positively correlated with one another at the 1% level, and, as expected, are significantly and positively correlated with the comprehensive REM proxy, that is, *AbREM*, with Pearson correlations of 0.4412, 0.9248, and 0.8275, respectively. These high correlations suggest that the REM proxies capture unique aspects of the same underlying construct, namely, the intensity of REM.

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Table 1
Descriptive statistics.

	n	Mean	Std.	25%	Median	75%
DAC	32,211	−0.0091	0.0835	−0.0434	−0.0060	0.0266
|DAC|	32,211	0.0535	0.0648	0.0152	0.0350	0.0692
AbREM	32,211	−0.0618	0.4166	−0.2446	−0.0456	0.1392
|AbREM|	32,211	0.3530	0.3260	0.1386	0.2603	0.4585
M4_CompAcct	32,211	−0.4278	0.7709	−0.4200	−0.2000	−0.1100
Ind_CompAcct	32,211	−1.9007	1.7209	−2.1500	−1.4100	−1.0000
Size	32,211	5.8981	1.7953	4.6412	5.8715	7.0804
BM	32,211	0.6180	0.5360	0.3235	0.5167	0.7703
ROA	32,211	0.0352	0.1400	0.0105	0.0503	0.0934
LEV	32,211	0.4797	0.1977	0.3290	0.4980	0.6288
ANAL	32,211	1.9567	0.7855	1.3863	1.9459	2.5649
REGUL	32,211	0.1451	0.3522	0.0000	0.0000	0.0000
Big5	32,211	0.9251	0.2632	1.0000	1.0000	1.0000
CFOA	32,211	0.0927	0.1300	0.0490	0.0969	0.1519
StdSales	32,211	0.0760	0.1021	0.0211	0.0495	0.0979
LIT	32,211	0.2353	0.4242	0.0000	0.0000	0.0000
Loss	32,211	0.2108	0.4079	0.0000	0.0000	0.0000
Offer	32,211	0.0815	0.2735	0.0000	0.0000	0.0000
RET	32,211	0.2035	0.7414	−0.1492	0.0982	0.3764
INST	32,211	0.4087	0.3108	0.1065	0.4067	0.6627
OWN	32,211	0.0101	0.0415	0.0000	0.0000	0.0016

This table presents descriptive statistics for the major variables used in the main analyses. All the variables are as defined in Appendix A.

4.2. Does accounting comparability decrease AEM and increase REM?

Table 3 reports the results of regressing the AEM and REM proxies (i.e., *DAC* and *AbREM*) on the accounting comparability variable (i.e., *M4_CompAcct*) and control variables using Eq. (10) in columns (1) and (2), respectively. The coefficient on *M4_CompAcct* is −0.0020 and significant at the 1% level (*t*-value = −3.08) in column (1). This means that managers reduce their earnings management activities through accruals manipulations when their firms' accounting is more comparable with that of other firms operating in the same industry, consistent with H1. In contrast, the coefficient on *M4_CompAcct* is 0.0081 and significant at the 10% level (*t*-value = 1.77) in column (2). This indicates that managers increase their earnings management activities through real operation manipulations under a more comparable accounting system, consistent with H2.

The effect of accounting comparability on firms' earnings management is also economically meaningful. A one-standard-deviation increase in *M4_CompAcct* (0.7709) decreases *DAC* by 0.0015 (=0.7709 * −0.0020) and increases *AbREM* by 0.0062 (=0.7709 * 0.0081). These are corresponding to −2.2% and 1.6% of the interquartile ranges of *DAC* and *AbREM*, respectively.[7] In sum, the results in Table 3 support our argument that managers switch from AEM to REM to achieve their earnings targets in a more transparent environment, where their AEM activities are restricted by outsiders' easier evaluations for the true firm performance due to the accounting outputs that are more comparable with those of competing firms.[8]

[7] These economic significances are comparable to those reported in the preliminary analysis of De Franco et al. (2011). They document that a one-standard-deviation increase in *M4_CompAcct* results in a 1–3% increase in the probability of being selected as a peer in analysts' reports (see p. 897).

[8] The effect of accounting comparability on earnings management can arise through other linkages rather than managers' self-restraint on AEM due to the increased monitoring from outsiders. For example, enhanced accounting comparability increases analyst coverage and improves forecast accuracy (De Franco et al., 2011), and these improved analyst coverage and forecast quality in turn can reduce AEM (Yu, 2008). To address this "indirect effect" concern, I add *AbsFE* (absolute value of forecast error to proxy for forecast accuracy) in the regression model (note that *ANAL* (analyst coverage) is already included in the model). The untabulated results are very similar with those in Table 3.

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Table 2
Correlation Matrix.

	DAC	AbREM	M4_CompAcct	Size	BM	ROA	LEV	ANAL	REGUL	Big5	CFOA	StdSales	LIT	Loss	Offer	RET	INST	OWN
DAC	**1**	**.3039**	***−.0113***	**−.0653**	**.0569**	.0055	**.0564**	**−.0652**	**.0312**	**−.0169**	**−.5482**	***−.0110***	**−.0918**	**−.0249**	**.0758**	.0027	**−.0686**	**−.0305**
AbREM	**.3127**	**1**	**−.0694**	**−.1576**	**.1552**	**−.1681**	**.1505**	**−.2016**	**.0269**	**−.0397**	**−.3168**	**.0992**	**−.1752**	**.0826**	−.0015	**−.0462**	**−.1095**	**−.0464**
M4_CompAcct	**−.0552**	**−.1477**	**1**	**.1000**	**−.2170**	**.1833**	**−.1499**	**.1642**	.0043	**.0195**	**.1089**	**−.0438**	**.0754**	**−.2380**	**−.0336**	−.0018	**.0747**	**.0343**
Size	**−.0765**	**−.1813**	**.2234**	**1**	**−.2917**	**.1279**	**.1378**	**.6231**	**.1115**	**.1199**	**.1745**	**−.1521**	**−.0324**	**−.1500**	**−.0334**	**.0292**	**.3104**	**.0685**
BM	**.1170**	**.2334**	**−.2261**	**−.3488**	**1**	**−.1173**	**.0722**	**−.2203**	**.0688**	**−.0375**	**−.1107**	**−.0420**	**−.1309**	**.1405**	**−.0765**	**−.1334**	**−.1617**	**−.0639**
ROA	**−.0773**	**−.2229**	**.3307**	**.1571**	**−.3591**	**1**	**−.0840**	**.1851**	*.0107*	−.0062	**.6836**	**.0646**	**−.1560**	**−.6490**	**−.1215**	**.1065**	**.1102**	**.0788**
LEV	**.0890**	**.1673**	**−.1440**	**.1490**	**.0955**	**−.2466**	**1**	**.1095**	**.3131**	**.0868**	**−.0330**	**−.0329**	**−.2936**	.0004	**−.1117**	**−.0768**	**−.0790**	**−.0778**
ANAL	**−.0672**	**−.2258**	**.2397**	**.6368**	**−.2336**	**.2108**	**.1145**	**1**	**.1269**	**.1325**	**.2232**	**−1158**	**−.0215**	**−.2020**	**−.0163**	**.0369**	**.1910**	.0028
REGUL	**.0514**	**.0208**	**.0613**	**.1186**	**.1535**	**−.0852**	**.3380**	**.1303**	**1**	−.0071	***.0128***	**−.1490**	**−.2285**	**−.1081**	**−.0286**	**−.0177**	**−.1809**	**−.0267**
Big5	**−.0175**	**−.0431**	**.0211**	**.1270**	**−.0364**	−.0047	**.0839**	**.1333**	**−.0071**	**1**	**.0206**	**−.0210**	**−.0161**	**−.0162**	**−.0365**	−.0071	**.0534**	−.0089
CFOA	**−.5286**	**−.3364**	**.2301**	**.2081**	**−.2807**	**.6222**	**−.1349**	**.2449**	**−.0366**	**.0348**	**1**	**.0186**	**−.1274**	**−.4360**	**−.1471**	**.0632**	**.1341**	**.0883**
StdSales	**−.0455**	**.0356**	**−.0749**	**−.1796**	**−.1564**	**.2150**	**−.1318**	**−.1200**	**−.2579**	**−.0248**	**.0881**	**1**	**.0198**	.0065	**.0576**	**.0829**	**−.0458**	**.0349**
LIT	**−.1058**	**−.1569**	**.1134**	**−.0368**	**−.1956**	**−.0565**	**−.2930**	**−.0275**	**−.2285**	**−.0161**	**−.0651**	**.0571**	**1**	**.1873**	**.0815**	**.0554**	**.0529**	***−.0128***
Loss	***−.0124***	**.1069**	**−.3266**	**−.1549**	**.0872**	**−.7064**	**.0011**	**−.2011**	**−.1081**	**−.0162**	**−.4407**	**−.0353**	**.1873**	**1**	**.0954**	**−.0933**	**−.0816**	**−.0528**
Offer	**.0628**	*.0107*	**−.0796**	**−.0364**	**−.1084**	**−.0476**	**−.1065**	**−.0178**	**−.0286**	**−.0365**	**−.0852**	**.0739**	**.0815**	**.0954**	**1**	**.1320**	**−.0366**	**−.0200**
RET	**.0155**	**−.0525**	**.0685**	**.0800**	**−.1773**	**.2726**	**−.0144**	**.1103**	**.0451**	.0003	**.1680**	**.0898**	**−.0371**	**−.2123**	**.0893**	**1**	**.0176**	.0081
INST	**−.0820**	**−.1116**	**.1479**	**.3077**	**−.1995**	**.1286**	**−.0867**	**.1812**	**−.1843**	**.0510**	**.1422**	.0016	**.0529**	**−.0795**	**−.0359**	**.0240**	**1**	**.0609**
OWN	**−.0952**	**−.1098**	**.1817**	**.4319**	**−.2330**	**.1223**	**.0414**	**.2235**	**−.0304**	**.0799**	**.1668**	*−.0097*	−.0010	**−.1030**	**−.0565**	**.0268**	**.3647**	**1**

This table presents the correlation matrix between the major variables used in the analyses. The values to the upper right are Pearson correlation coefficients, and those in the bottom left are Spearman correlation coefficients. All the correlations that are significant at less than the 1%, 5%, and 10% levels are boldfaced, bold-italicized, and italicized, respectively. Correlations that are neither boldfaced nor italicized are insignificant at any conventional level. All the variables are as defined in Appendix A.

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Table 3
Effect of accounting comparability on AEM and REM (signed).

Variable	(1) *Dep = DAC*	(2) *Dep = AbREM*
Intercept	0.0285***	0.2080***
	(9.16)	(7.29)
M4_CompAcct	−0.0020***	0.0081*
	(−3.08)	(1.77)
Size	−0.0003	−0.0058*
	(−0.88)	(−1.76)
BM	0.0020***	0.0038***
	(1.97)	(4.43)
ROA	0.4242***	−0.7604***
	(29.47)	(−14.15)
|ROA|		−0.5618***
		(−9.95)
LEV	0.0221***	0.1668***
	(7.01)	(5.89)
ANAL	0.0036***	−0.0767***
	(4.61)	(−9.75)
REGUL	−0.0026*	−0.0368***
	(−1.65)	(−3.16)
Big5	−0.0000	−0.0457**
	(−0.02)	(−2.50)
CFOA	−0.6727***	
	(−59.27)	
StdSales	−0.0288***	0.4551***
	(−2.97)	(5.99)
LIT	−0.0197***	−0.1542***
	(−13.30)	(−8.48)
Loss	−0.0005	−0.0612***
	(−0.25)	(−5.82)
Offer	0.0073***	0.0116
	(4.41)	(1.02)
RET	0.0001	0.0033
	(0.12)	(0.76)
INST	−0.0010	−0.0477***
	(−0.58)	(−2.65)
OWN	0.0224*	−0.2343
	(1.91)	(−1.61)
Industry and year dummies	Included	Included
Adj. R^2	0.5902	0.1398
No. of obs.	32,211	32,211

This table presents the impact of accounting comparability on signed AEM and REM after controlling for various determinants for earnings management. Accounting comparability reduces AEM but increases REM. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.
*** Indicates statistical significance at the 0.01 level (two tailed).
** Indicates statistical significance at the 0.05 level (two tailed).
* Indicates statistical significance at the 0.10 level (two tailed).

Turning to control variables in column (1), AEM increases in the book-to-market ratio (*BM*), leverage (*LEV*) and managerial ownership (*OWN*), and decreases in regulated and litigious industries (*REGUL*, *LIT*), and sales volatility (*StdSales*). The result is generally consistent with prior literature (Frankel et al., 2002; Ashbaugh et al., 2003; Haw et al., 2004). Discretionary accruals have a strong positive correlation with profitability (*ROA*) and a negative correlation with cash flow (*CFOA*), as shown in prior studies (Kasznik, 1999; Kothari et al., 2005; Dechow et al., 1998). The coefficient on *Offer* is positive and significant (0.0073, *t*-value = 4.41), implying that firms boost stock prices through AEM before equity issuances, which is consistent with the related findings in prior studies (Teoh et al.,

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1998a, 1998b; Rangan, 1998; Shivakumar, 2000). Other variables are insignificant (*Size*, *Big5*, *Loss*, *RET*, *INST*) or significant in an unexpected direction (*ANAL*). In column (2), the results for control variables are largely similar with those in column (1). Some notable differences are: REM increases in *StdSales* and decreases in *Size*, *ROA*, and *Loss*. Also managers' REM activities are mitigated by enhanced monitoring roles by analysts (*ANAL*), auditors (*Big5*),[9] and institutional investors (*INST*).

Though most prior studies on REM pay attention to the signed REM, many AEM-related papers use unsigned AEM (i.e., |*DAC*|) because managers sometimes have opportunistic incentives to manage earnings downward using accruals (Jones, 1991; Ramanna and Roychowdhury, 2010). Thus I repeat the analyses in Table 3 using AEM and REM proxies that are both unsigned. The results are summarized in Table 4. The coefficients on *M4_CompAcct* are negative for |*DAC*| in column (1) (−0.0021) and positive for |*AbREM*| in column (2) (0.0082), respectively, both significant at the 1% level (*t*-value = −3.51 and 2.62, respectively). A one-standard-deviation increase in *M4_CompAcct* (0.7709) decreases |*DAC*| by 0.0016 (=0.7709 ∗ −0.0021) and increases |*AbREM*| by 0.0063 (=0.7709 ∗ 0.0082). These are corresponding to −3.0% and 1.8% of the mean values of |*DAC*| and |*AbREM*|, respectively. These results reinforce H1 and H2 that managers increase abnormal real activities to make up for the reduced abnormal accrual manipulation to achieve some financial targets when their firms' accounting comparability is high, and show that the main findings in Table 3 are not sensitive to the choice of signed or unsigned earnings management variables.

As for control variables, |*DAC*| increases in |*ROA*|, *LIT*, *Loss*, and *Offer*, and decreases in *Size*, *BM*, and *OWN* in column (1). In contrast with Table 3 using signed *DAC*, analyst coverage mitigates managers' AEM activities proxied for by |*DAC*|, which is consistent with Yu (2008). Earnings management flexibility using |*DAC*| is also restrained by high quality audits (*Big5*), in line with the findings of Becker et al. (1998). The coefficient on *StdSales* is significantly positive, which confirms the necessity of controlling for operating volatility when earnings management is measured by absolute value of *DAC* (Hribar and Nichols, 2007). The results for control variables for |*AbREM*| in column (2) are qualitatively similar with those in column (1).

4.3. Endogeneity issue

Thus far, I have assumed that accounting comparability of a firm is exogenous to its managers. A critical concern on this study is, however, the possibility that accounting comparability and earnings management are both endogenous. That is, managers can exercise discretions in choosing their firms' accounting methods or systems as well as in determining the intensity of earnings management. For example, managers can choose accounting systems or methods which are highly not comparable with those of other firms in order to conduct an opportunistic AEM more easily. And then, as a result of extensive AEM, they do not need to conduct much REM. On the contrary, when AEM is not necessary, they choose highly comparable accounting systems or methods with those of other firms. This reverse causality, however, cannot explain why then managers increase REM if they choose highly comparable accounting systems mainly because AEM is unnecessary. Rather, it is a more plausible explanation that mangers reduce AEM and switch to REM when their firms (i.e., boards) exogenously impose highly comparable accounting systems on them. In spite of the apparent possibility of managers' choice of, and change in, current accounting methods, I posit that, in a firm's accounting system, there is also a portion that is largely given to them as a result of optimal choices and implementations by their predecessors and monitors in their firm's history to select the best accounting system that can translate the firm's business fundamentals into reported accounting numbers.

To check the potential impact of endogeneity, I conduct three tests. First, I repeat the main analysis in Table 3 using lagged values of *M4_CompAcct*. Even though the effectiveness of this prescription diminishes to the extent of the temporal persistence of accounting comparability, the results can give us a preliminary insight on the robustness of the previous findings.[10] The results are presented in Table 5 Panel A. Consistent with the previous results, the coefficient on *M4_CompAcct* is significantly

[9] The mitigation of firms' REM by high quality auditors is investigated in an international setting by Choi et al. (2016).
[10] The autocorrelation coefficient from regressing *M4_CompAcct* on its lagged value is 0.8484, significant at the 1% level.

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Table 4
Effect of accounting comparability on AEM and REM (unsigned).

Variable	(1) *Dep* = |*DAC*|	(2) *Dep* = |*AbREM*|
Intercept	0.0282***	0.1671***
	(3.55)	(4.00)
M4_CompAcct	−0.0021***	0.0082***
	(−3.51)	(2.62)
Size	−0.0022***	−0.0140***
	(−5.72)	(−5.76)
BM	−0.0023**	−0.0271***
	(−2.11)	(−4.88)
ROA		0.1528***
		(3.49)
|*ROA*|	0.0749***	0.9114***
	(3.64)	(20.17)
LEV	0.0198***	0.0291
	(5.71)	(1.48)
ANAL	−0.0040***	0.0160***
	(−5.32)	(2.96)
REGUL	−0.0094	−0.0916**
	(−1.30)	(−2.46)
Big5	−0.0029*	0.0086
	(−1.68)	(0.83)
|*CFOA*|	0.2294***	
	(11.95)	
StdSales	0.0383***	0.4073***
	(6.08)	(6.19)
LIT	0.0089***	0.0715***
	(5.08)	(4.48)
Loss	0.0156***	−0.0049
	(10.01)	(−0.59)
Offer	0.0083***	0.0291***
	(4.83)	(3.77)
RET	0.0014*	0.0144***
	(1.70)	(3.94)
INST	−0.0016	−0.0019
	(−0.99)	(−0.14)
OWN	−0.0179**	0.1025
	(−2.13)	(1.09)
Industry and year dummies	Included	Included
Adj. R^2	0.2942	0.3425
No. of obs.	32,211	32,211

This table presents the impact of accounting comparability on unsigned AEM and REM after controlling for various determinants for earnings management. Accounting comparability reduces AEM but increases REM. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.

*** Indicates statistical significance at the 0.01 level (two tailed).
** Indicates statistical significance at the 0.05 level (two tailed).
* Indicates statistical significance at the 0.10 level (two tailed).

negative in column (1) and positive in column (2) when the dependent variable is *DAC* and *AbREM*, respectively.

Second, I take a 2SLS approach to formally address the endogeneity issue. In the first stage, *M4_CompAcct* is regressed on various instrumental variables (IV) and other variables explaining accounting comparability, and then the expected value of *M4_CompAcct* is used for the main regressions in the second stage. I choose ROA volatility (*StdROA*), regulated industry dummy (*REGUL*), firm size (*Size*), the book-to-market ratio (*BM*), leverage (*LEV*), and intangible intensity (*Intangible*) following Brown and Kimbrough (2011). I also include the length of operating cycle (*OperCycle*), labor

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Table 5
Controlling for the endogeneity of accounting comparability.

Variable	(1) *Dep = DAC*	(2) *Dep = AbREM*
Panel A: Using lagged value of comparability		
Lagged M4_CompAcct	−0.0029***	0.0074**
	(−3.61)	(2.49)
Size	−0.0006	−0.0048
	(−1.64)	(−1.35)
BM	0.0018	0.0369***
	(1.60)	(3.73)
ROA	0.4392***	−0.7271***
	(28.76)	(−12.57)
Intercept	Included	Included
Other control variables	Included	Included
Industry and year dummies	Included	Included
Adj. R^2	0.5890	0.1417
No. of obs.	32,211	32,211

Dep = M4_CompAcct	(1) *1st stage*	(2) *EM = DAC*	(3) *EM = AbREM*
Panel B: 1st stage regression and reverse regressions			
Intercept	−0.5104***	−0.5147***	−0.5099***
	(−7.16)	(−7.19)	(−7.17)
EM		−0.0631	−0.0020
		(−1.01)	(−0.12)
StdROA	−1.7033***	−1.7075***	−1.7037***
	(−7.45)	(−7.44)	(−7.45)
REGUL	0.1173***	0.1169***	0.1172***
	(4.21)	(4.19)	(4.20)
Size	0.0271***	0.0269***	0.0270***
	(5.16)	(5.13)	(5.24)
BM	−0.2917***	−0.2916***	−0.2915***
	(−6.77)	(−6.76)	(−6.69)
OperCycle	0.0941***	0.0948***	0.0940***
	(8.47)	(8.50)	(8.32)
LEV	−0.6757***	−0.6747***	−0.6750***
	(−15.36)	(−15.36)	(−15.24)
Labor	0.2001***	0.2009***	0.2015***
	(5.08)	(5.09)	(4.97)
CapInt	0.0958**	0.0990**	0.0958**
	(2.31)	(2.38)	(2.31)
Intangible	0.0006***	0.0006***	0.0006***
	(2.96)	(3.01)	(2.96)
Post2005	−0.0449***	−0.0448***	−0.0449***
	(−2.81)	(−2.81)	(−2.81)
Industry dummies	Included	Included	Included
Adj. R^2	0.2067	0.2068	0.2067
No. of obs.	32,211	32,211	32,211

Variable	(1) *Dep = DAC*	(2) *Dep = AbREM*
Panel C: 2nd stage regression of earnings management on comparability		
E(M4_CompAcct)	−0.0022***	0.0260***
	(−2.77)	(3.93)
Size	−0.0001	−0.0037
	(−0.18)	(−1.09)
BM	0.0019*	0.0413***
	(1.82)	(4.75)
ROA	0.4251***	−0.7527***
	(28.85)	(−13.68)
Intercept	Included	Included

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Table 5 (*continued*)

Variable	(1) *Dep = DAC*	(2) *Dep = AbREM*
Other control variables	Included	Included
Industry and year dummies	Included	Included
Adj. R^2	0.5926	0.1433
No. of obs.	32,211	32,211

This table presents the results of controlling for the endogeneity of accounting comparability. Panel A reports the results of using lagged value of comparability. Panels B column (1) and C report the results of 2SLS regressions, with the former tabulating the 1st stage regressions using the instrumental variables for accounting comparability and the latter tabulating the 2nd stage regressions using the expected value of accounting comparability. Panel B columns (2) and (3) report the results to address reverse causality by regressing accounting comparability variable on earnings management variables. The main results in Table 3 are robust to this endogeneity controlling. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.

*** Indicates statistical significance at the 0.01 level (two tailed).

** Indicates statistical significance at the 0.05 level (two tailed).

* Indicates statistical significance at the 0.10 level (two tailed).

intensity (*Labor*), and capital intensity (*CapInt*) because accounting comparability can vary across these business characteristics. Finally, I include post-2005 indicator (*Post2005*) because U.S. firms' within-country accounting comparability may be affected by the European firms' mandatory adoption of IFRS in 2005. See Appendix A for the detailed definitions of these variables. To be a good IV, it must be highly correlated with the endogenous variable but not correlated with the error terms of the main regression. Among the explanatory variables included in the first stage regression, I choose *Labor*, *CapInt*, and *Post2005* as the IV of *M4_CompAcct*. *Labor* and *CapInt* are expected to be highly correlated with accounting comparability because labor and capital intensities substantially influence the fundamental characteristics of a firm. After the mandatory adoption of IFRS by European competitors, U.S. firms may increase their within-country accounting comparability because both Firms *i* and *j* are likely to adopt an accounting system which is more comparable with IFRS. On the contrary, U.S. firms' within-country accounting comparability may decrease after 2005 if only Firm *i*'s accounting system moves toward IFRS while Firm *j*'s remains unchanged. In contrast, there is no strong theoretical or empirical evidence that these variables affect managers' incentives to engage in earnings management activities. Column (1) of Table 5 Panel B summarizes the results of this first stage regression. Accounting comparability increases in regulated industries, firm size, the length of operating cycle, and labor/capital/intangible intensities, and decreases in ROA volatility, the book-to-market ratio, leverage, and in post-2005 period. The coefficients on *Labor* and *CapInt* are 0.2001 and 0.0958, and significant at the 1% and 5% levels, respectively. The coefficient on *Post2005* is −0.0449 and significant at the 1% level, indicating that U.S. firms' within-country accounting comparability has decreased after 2005. The results are generally consistent with Brown and Kimbrough (2011). The adjusted R^2 is 20.67%, indicating that the chosen instruments are not poor.[11] Using the expected value of *M4_CompAcct*, I repeat the main analysis in Table 3 and report the results in Table 5 Panel C. The coefficient on *E(M4_CompAcct)* is significantly negative in column (1) and positive in column (2) when the dependent variable is *DAC* and *AbREM* (coeff. = −0.0022 and 0.0260, *t*-value = −2.77 and 3.93), respectively.

Finally, I regress *M4_CompAcct* on *DAC* and *AbREM* (i.e., changing the dependent and independent variables each other) to check the possibility of reverse causality directly. The results are reported in columns (2) and (3) of Table 5 Panel B. The control variables for accounting comparability are the same as those in column (1), which are used for the first stage regression of the 2SLS above. Neither the coefficient on *DAC* in column (2) nor *AbREM* in column (3) is statistically significant (coeff. = −0.0631 and −0.0020, *t*-value = −1.01 and −0.12, respectively). In sum, the results in this subsection show that the main findings in Table 3 are robust to controlling for the endogeneity of accounting comparability variable.

[11] Hausman's (1978) specification tests indicate the appropriateness of the 2SLS approach and the chosen instrumental variables (Hausman statistics = 69.54; *p*-value < 0.001).

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5. Sensitivity tests and additional analyses

5.1. Using individual REM measures

Thus far, I have used the aggregate REM measure to proxy for the firms' earnings management through real operation manipulations. This is because three individual REM measures serve the common construct of real earnings management and the aggregate measure can reduce measurement errors in individual proxies. However, each individual REM measure also has a unique aspect of real operation manipulations, and managers can rely on each method differentially in replacing AEM. I explore this possibility by using $-1 * AbCFO$, $AbProd$ and $-1 * AbDiscE$ in lieu of $AbREM$ in regessing Eq. (10) and present the results in Table 6, with signed REM measures in Panel A and unsigned ones in Panel B. The results for control variables are not reported (except *Size*, *BM*, and *ROA*) for brevity in this and subsequent tables.

The results in Panel A are qualitatively similar with those in Table 3. The coefficients on *AbProd* and $-1 * AbDiscE$ are both positive, which are significant at the 1% and 5% levels, respectively, while $-1 * AbCFO$ is insignificant. The results in Panel B are similar with those in Table 4. The coefficients on $|AbProd|$ and $|AbDiscE|$ are positive and significant at the 1% level. The coefficient on $|AbCFO|$ is also positive and significant at the 10% level. In sum, the results in Table 6 show that managers' use of REM activities to fill in the constrained AEM is done through all the three channels of sales price discount, overproduction, and discretionary expenditure adjustment, with a slight preference of the latter two.

5.2. Role of information environment in the effect of accounting comparability

If managers switch accrual manipulations to real operation adjustments for their opportunistic earnings management due to their firms' enhanced accounting comparability, this trade-off effect will be more pronounced for the firms with bad information environment. Stated differently, good information environment represented by large firm size, analyst coverage, and institutional holdings will deter this trade-off effect because outsiders can monitor managers' actions more effectively under this already more transparent information flows. To test this expectation, I interact *Size*, *ANAL*, and *INST* with the main variable of interest *M4_CompAcct*. If the substitution of AEM to REM is mitigated by better information environment, the coefficient on these interaction variables will be negative when the dependent variable is *AbREM* and positive (or negative) when it is *DAC*.[12]

Table 7 presents the results. When information environment is proxied for by firm size, the coefficient on $M4\_CompAcct * Size$ is positive for the dependent variable of *DAC* in column (1) (0.0003) and negative for that of *REM* in column (2) (−0.0056), and the latter is significant at the 1% level (*t*-value = −2.95). This means that the increase of REM to make up for the decrease of AEM due to higher accounting comparability is ameliorated in larger firms arguably because information environment is more transparent already in such firms. The result is similar when information environment is captured by analyst followings. The coefficient on $M4\_CompAcct * ANAL$ is −0.0011 for *DAC* in column (3) and −0.0202 for *AbREM* in column (4), respectively, and the latter is significant at the 1% level (*t*-value = −3.76). When institutional ownership is used to proxy for the information environment, the coefficient on $M4\_CompAcct * INST$ is positive in column (5) and negative in column (6) but insignificant in both columns. Finally, I include all three interactions together in columns (7) and (8) to see the incremental effect of each information environment proxy. Only the coefficient on $M4\_CompAcct * ANAL$ is significant in expected directions. It is −0.0024 and −0.0187 for AEM and REM in columns (7) and (8), respectively, both significant at the 1% level. This indicates that, in the existence of a better accounting comparability, managers increasing REM (decreasing AEM) is mitigated (encouraged) when more analysts watch over their firms. Overall, the results support that

[12] If a better information environment plays a mechanical role to mitigate the trade-off between AEM and REM, the coefficients on these interaction variables will be negative for *REM* and positive for *DAC*. However, if it plays a monitoring role (e.g., through the activism of analysts or investors), they can be negative for *DAC* as well because monitors may *encourage*, not deter, income-decreasing (or less income-increasing) earnings management through AEM, while they will apparently deter income-increasing earnings management through REM.

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Table 6
Effect of accounting comparability on individual REM.

Variable	(1) *Dep* = −1 ∗ *AbCFO*	(2) *Dep* = *AbProd*	(3) *Dep* = −1 ∗ *AbDiscE*
Panel A: Singed REM			
M4_CompAcct	−0.0005	0.0058***	0.0073**
	(−0.56)	(3.17)	(2.45)
Size	−0.0011*	−0.0019	−0.0004
	(−1.81)	(−1.26)	(−0.23)
BM	0.0024	0.0162***	0.0201***
	(1.49)	(4.40)	(4.46)
ROA	−0.4060***	−0.4229***	0.0872**
	(−19.35)	(−16.99)	(2.51)
Intercept	Included	Included	Included
Other control variables	Included	Included	Included
Industry and year dummies	Included	Included	Included
Adj. R^2	0.2580	0.1260	0.1203
No. of obs.	32,211	32,211	32,211
Variable	(1) *Dep* = |*AbCFO*|	(2) *Dep* = |*AbProd*|	(3) *Dep* = |*AbDiscE*|
Panel B: Unsigned REM			
M4_CompAcct	0.0012*	0.0037***	0.0072***
	(1.69)	(3.05)	(2.89)
Size	−0.0027***	−0.0035***	−0.0077***
	(−5.65)	(−3.15)	(−5.83)
BM	−0.0051***	−0.0071***	−0.0270***
	(−3.65)	(−3.26)	(−6.10)
ROA	0.0598***	0.0789***	0.0035
	(3.74)	(4.15)	(0.13)
Intercept	Included	Included	Included
Other control variables	Included	Included	Included
Industry and year dummies	Included	Included	Included
Adj. R^2	0.2977	0.2012	0.1949
No. of obs.	32,211	32,211	32,211

This table presents the impact of accounting comparability on the individual REM activities after controlling for various determinants for earnings management. Accounting comparability increases individual REM. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.
*** Indicates statistical significance at the 0.01 level (two tailed).
** Indicates statistical significance at the 0.05 level (two tailed).
* Indicates statistical significance at the 0.10 level (two tailed).

managers' escape from AEM to REM induced by the improved accounting comparability is constrained by the existing high quality information environment. Across all columns, the coefficients on the main effect *Size*, *ANAL*, and *INST* variables are significantly negative when the dependent variable is *AbREM*, indicating that firms' REM activities are constrained in good information environment on average, independent of accounting comparability.

5.3. Role of audit quality in the effect of accounting comparability

In a similar vein with the spirit of Table 7 analysis, high quality auditors are expected to play a monitoring role to restrain managers' switch from AEM to REM to meet a certain earnings target when their firms' accounting is more comparable with that of other firms. I measure audit quality by big auditor dummy (*Big5*), audit firm's nation-wide industry expertise (*Ind-expert*), and the size of audit practice office (*Off-size*) and interact these variables with *M4_CompAcct*. If high quality audits play an affirmative monitoring role on behalf of shareholders, the coefficient on these interaction variables will be negative when the dependent variable is *REM* and positive (or negative) when it is *DAC*.

The results are reported in Table 8. When audit quality is proxied for by big auditor dummy, the coefficient on *M4_CompAcct* ∗ *Big5* is 0.0029 for *DAC* in column (1) and −0.0274 for *REM* in column

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Table 7
Role of information environment in the effect of accounting comparability on AEM and REM.

	Size interaction		Analyst coverage interaction		Institutional ownership interaction		Three interactions	
	(1) *Dep = DAC*	(2) *Dep = AbREM*	(3) *Dep = DAC*	(4) *Dep = AbREM*	(5) *Dep = DAC*	(6) *Dep = AbREM*	(7) *Dep = DAC*	(8) *Dep = AbREM*
M4_CompAcct	−0.0045***	0.0401***	−0.0007	0.0395***	−0.0030***	0.0089*	−0.0039**	0.0452***
	(−2.68)	(3.52)	(−0.59)	(4.82)	(−3.57)	(1.69)	(−2.20)	(3.85)
Size	−0.0003	−0.0081**	−0.0005	−0.0053	−0.0005	−0.0055*	−0.0001	−0.0064*
	(−0.98)	(−2.26)	(−1.43)	(−1.64)	(−1.51)	(−1.68)	(−0.41)	(−1.73)
ANAL	0.0040***	−0.0766***	0.0036***	−0.0849***	0.0041***	−0.0770***	0.0031***	−0.0840***
	(5.03)	(−9.74)	(4.28)	(−9.94)	(5.07)	(−9.77)	(3.64)	(−9.60)
INST	−0.0003	−0.0489***	−0.0004	−0.0505***	0.0004	−0.0501**	0.0004	−0.0450**
	(−0.20)	(−2.73)	(−0.22)	(−2.82)	(0.19)	(−2.51)	(0.24)	(−2.24)
*M4_CompAcct * Size*	0.0003	−0.0056***					0.0007***	−0.0022
	(1.34)	(−2.95)					(2.88)	(−1.02)
*M4_CompAcct * ANAL*			−0.0011	−0.0202***			−0.0024***	−0.0187***
			(−1.54)	(−3.76)			(−3.19)	(−3.20)
*M4_CompAcct * INST*					0.0015	−0.0019	0.0021	0.0117
					(0.90)	(-0.16)	(1.35)	(0.95)
Intercept	Included	Included	Included	Included	Included	Included	Included	Included
Other control variables	Included	Included	Included	Included	Included	Included	Included	Included
Industry and year dummies	Included	Included	Included	Included	Included	Included	Included	Included
Adj. R^2	0.5792	0.1351	0.5793	0.1355	0.5792	0.1348	0.5794	0.1355
No. of obs.	32,211	32,211	32,211	32,211	32,211	32,211	32,211	32,211

This table presents the role of information environment in the effect of accounting comparability on AEM and REM after controlling for various determinants for earnings management. Accounting comparability decreases AEM but a better information environment does not affect this tendency. In contrast, accounting comparability increases REM and a better information environment mitigates this REM increase. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.

*** Indicates statistical significance at the 0.01 level (two tailed).

** Indicates statistical significance at the 0.05 level (two tailed).

* Indicates statistical significance at the 0.10 level (two tailed).

Table 8
Role of audit quality in the effect of accounting comparability on AEM and REM.

Variable	Big5 interaction		Industry expertise interaction		Office size interaction	
	(1) *Dep = DAC*	(2) *Dep = AbREM*	(3) *Dep = DAC*	(4) *Dep = AbREM*	(5) *Dep = DAC*	(6) *Dep = AbREM*
M4_CompAcct	−0.0047*	0.0333***	−0.0022**	0.0249***	−0.0008	0.1479***
	(−1.90)	(2.91)	(−2.02)	(3.34)	(−0.09)	(3.10)
Big5	0.0013	−0.0588***				
	(0.59)	(−2.76)				
Ind-expert			0.0018	−0.0040		
			(1.03)	(−0.26)		
Off-size					−0.0023***	−0.0060
					(−3.62)	(−1.09)
M4_CompAcct ∗ Big5	0.0029	−0.0274**				
	(1.19)	(−2.31)				
M4_CompAcct ∗ Ind-expert			0.0020	−0.0255**		
			(1.34)	(−2.42)		
M4_CompAcct ∗ Off-size					−0.0001	−0.0077***
					(−0.11)	(−2.77)
Intercept	Included	Included	Included	Included	Included	Included
Other control variables	Included	Included	Included	Included	Included	Included
Industry and year dummies	Included	Included	Included	Included	Included	Included
Adj. R^2	0.5903	0.1400	0.5509	0.1612	0.5519	0.1612
No. of obs.	32,211	32,211	11,542	11,542	11,542	11,542

This table presents the role of audit quality in the effect of accounting comparability on AEM and REM after controlling for various determinants for earnings management. Accounting comparability decreases AEM but high quality audits do not affect this tendency. In contrast, accounting comparability increases REM and high quality audits mitigate this REM increase. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.
*** Indicates statistical significance at the 0.01 level (two tailed).
** Indicates statistical significance at the 0.05 level (two tailed).
* Indicates statistical significance at the 0.10 level (two tailed).

(2), with the latter significant at the 5% level. This implies that Big5 auditors effectively constrain managers' switch from AEM to REM due to their firms' high accounting comparability. The results are qualitatively the same when audit quality is measured by auditor's industry leadership or office size. The coefficients on *M4_CompAcct ∗ Ind-expert* and *M4_CompAcct ∗ Off-size* are significantly negative when the dependent variable is *AbREM* in columns (4) and (6), respectively.[13] In sum, the results in Table 8 show that audit quality mitigates managerial opportunism to rely on REM when AEM is restricted by the enhanced accounting comparability of the firm.

5.4. Other sensitivity tests

I conduct a battery of sensitivity tests to check the robustness of the main results. The regression residuals used in main tests as proxies for managers' opportunistic earnings management can capture the abnormal levels of business activities that are actually not related to managerial opportunism, such as management inefficiency, unique business models, and different business cycles (Roychowdhury, 2006; Zang, 2012). To reduce measurement errors in my earnings management variables, I repeat the main tests in Table 3 using subsamples where the estimated variables are more likely to represent managers' opportunistic income manipulations: subsamples for small profits, small

[13] The coefficient on *Off-size* is negative and significant (−0.0023, *t*-value = −3.62) when the dependent variable is *DAC* in column (5). This is consistent with Francis and Yu (2009), who report that AEM is mitigated by larger audit practice office size. In contrast, the coefficient on *Ind-expert* in column (3) is not significant, which is inconsistent with Reichelt and Wang (2010), who document that AEM is constrained by audit firm's nation-wide and city-level industry expertise.

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Table 9
Results using subsamples of small profit, earnings increase, and meet/beat firms.

Variable	Small profit		Small earnings increase		Meet or beat forecast	
	(1) *Dep = DAC*	(2) *Dep = AbREM*	(3) *Dep = DAC*	(4) *Dep = AbREM*	(5) *Dep = DAC*	(6) *Dep = AbREM*
M4_CompAcct	−0.0016	0.0081	−0.0018*	0.0148***	−0.0035***	0.0125***
	(−1.07)	(1.01)	(−1.79)	(2.70)	(−3.80)	(2.99)
Size	−0.0018*	−0.0055	−0.0012**	−0.0105***	−0.0013**	−0.0170***
	(−1.69)	(−0.96)	(−2.57)	(−4.11)	(−2.40)	(−6.79)
BM	−0.0000	−0.0004	−0.0001	0.0006	−0.0003	−0.0079***
	(−0.27)	(−0.71)	(−0.61)	(0.51)	(−0.86)	(−5.09)
ROA	0.9145***	3.9283**	0.4530***	0.2144***	0.3989***	−0.75
	(3.15)	(2.55)	(9.21)	(2.81)	(5.19)	(−0.09)
Intercept	Included	Included	Included	Included	Included	Included
Other control variables	Included	Included	Included	Included	Included	Included
Industry and year dummies	Included	Included	Included	Included	Included	Included
Adj. R^2	0.5851	0.1877	0.5224	0.2727	0.5664	0.3404
No. of obs.	1310	1310	5297	5297	2939	2939

This table presents the main results of Table 3 using three subsamples: firms with small profit, small earnings increase, and meeting or just beating analyst earnings forecasts. The main results are maintained except for the small profit subsample where *M4_CompAcct* maintains its original signs but becomes insignificant. All the variables are as defined in Appendix A. The results are based on the pooled ordinary least squares regressions with standard errors corrected for firm-level clustering. The numbers in parentheses are *t*-values.

*** Indicates statistical significance at the 0.01 level (two tailed).
** Indicates statistical significance at the 0.05 level (two tailed).
* Indicates statistical significance at the 0.10 level (two tailed).

earnings increases, and meeting or just beating analyst earnings forecasts. Following Gunny (2010), I define small profit (*S_Profit*) as 0 < net income/total assets ⩽ 0.01, small earnings increase (*S_Increase*) as 0 < annual change in net income/total assets ⩽ 0.01, and meet-or-beat (*S_Meet*) as 0 ⩽ (realized earnings per share - analyst forecast)/stock price ⩽ 0.01. The results are reported in Table 9. For small profit sample, the signs of *M4_CompAcct* coefficient are consistent with those in Table 3, that is, negative and positive in columns (1) and (2), respectively, though insignificant. For small earnings increase sample, the coefficients on *M4_CompAcct* are −0.0018 and 0.0148 in columns (3) and (4) and significant at the 10% and 1% levels, respectively. Finally, they are −0.0035 and 0.0125 in columns (5) and (6), both significant at the 1% level when meet-or-beat sample is used.[14] These results indicate that the main results reported in Table 3 are robust to a more stringent definition of earnings management and thus alleviate concerns about measurement errors.

I repeat the main analyses using an alternative accounting comparability measure, *Ind_CompAcct*, which is the industry median of firm-pair *CompAcct* in Eq. (4). Unreported results show that the essence of the main implications in the aforementioned analyses remains unaltered. Though I believe that total accruals are a better choice to measure discretionary accruals as mentioned in Section 3, I measure the AEM variable using current accruals and repeat the main analyses. Untabulated results are robust to the use of this alternative accrual measure. I also estimate the main regressions using Fama and MacBeth (1973) annual cross-sectional regressions. The average of 30 yearly coefficients is computed and *t*-values are computed using standard errors obtained from the empirical distribution of each coefficient over the 30-year period after correcting for serial correlation. Unreported results show that statistical inferences on the test variables are qualitatively similar to those reported in the paper. In short, the main findings in previous sections are robust to various sensitivity checks and alternative variable measurements.

[14] The magnitudes of coefficients (especially in REM regressions) have increased in general compared with those of Table 3. This supports my theory for the role of comparability in inducing the substitution from the "opportunistic" AEM to REM because comparability has nothing to do with mitigating or exacerbating non-opportunistic portions of earnings management.

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6. Concluding remarks

With pooled ordinary least squares regressions of AEM and REM on the proxies for accounting comparability and other control variables for earnings management, I find that REM increases whereas AEM decreases with the degree of a firm's accounting comparability with other firms. I also find that managers' opportunistic behavior to "escape" from AEM to REM facing higher accounting comparability is mitigated when their firms' information environment and/or audit quality are better.

Improving accounting comparability may be a double-edged sword. On one hand, it is beneficial to a firm. When a firm's reported earnings, especially accruals, is of higher quality due to the restriction of opportunistic AEM, auditors and audit committees can conduct financial statement audits more efficiently, and analysts can issue earnings forecasts and stock trading recommendations more accurately. Investors and creditors can evaluate a firm's future prospects more objectively by comparing its accounting numbers with those of comparable firms thereby providing capitals at a lower cost. On the other hand, improving accounting comparability can bring various costs to the firm and its managers. A firm needs to put a lot of monetary and nonmonetary resources to change its existing accounting system toward a more comparable one with those of its peer firms. It also needs to grant its managers an increased level of compensations because managers would want to make up for their losses caused by the curtailed private benefits and perks due to the AEM restrictions (to the extent that it is not fully filled up by the REM increases). Moreover, given that REM is more detrimental than AEM to long-term firm fundamentals (Kim and Sohn, 2013), the switch from AEM to REM due to the enhanced level of accounting comparability may be costly to the firm. Therefore, firms need to evaluate the costs and benefits of improving their accounting comparability before they implement a new accounting system.

The findings in this paper provide important implications for investors, analysts, regulators, and researchers. First, recent survey evidence shows that managers are willing to use REM to manipulate reported earnings even though REM activities have adverse consequences on long-term firm value. The evidence indicates that investors and analysts need to exercise caution in their portfolio selections because including more firms with better accounting comparability can be costly due to the exacerbated REM in those firms, even though information acquisition and processing costs are lower for those firms. Second, this study provides standard setters and stock market regulators with a useful insight into unintended adverse consequences of strengthening an important aspect of qualitative characteristics of accounting, i.e., comparability. The evidence suggests that a policy enhancing the accounting comparability across firms with an aim to mitigate managers' opportunistic AEM by making information environment more transparent for outsiders can potentially seed another problem of firms shifting their earnings management strategies from AEM to REM. Finally, the results suggest that academic researchers interested in the role of accounting comparability across firms under the same GAAP regime can expand their research scope tapping on a variety of unexplored topics. Using the empirical estimate of De Franco et al. (2011) or its variants, various impacts of accounting comparability on accounting, finance, and other business outcomes can be tested. Given that little is known about the relations between accounting comparability and these factors, I recommend further research on the issue.

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Appendix A. Variable definitions and measurements

M4_CompAcct	=	firm-year level accounting comparability, which is the average of the largest four comparability combinations for firm i and other firms in the same 2-digit SIC in a given year
Ind_CompAcct	=	firm-year level accounting comparability, which is the industry median of comparability combinations for firm i and other firms in the same 2-digit SIC in a given year
Earnings	=	quarterly net income deflated by the market value of equity at the end of previous quarter
Return	=	raw stock return during the quarter
A	=	total assets (annual Compustat data item AT)
Sales	=	annual Compustat data item SALE
REC	=	accounts receivable (annual Compustat data item RECT)
PPE	=	gross property, plant, and equipment (annual Compustat data item PPEGT)
TAC/A	=	total accruals divided by lagged total assets, where total accruals (TAC) are computed by income before extraordinary items (annual Compustat data item IBC) minus CFO
DAC	=	discretionary accruals, estimated by the modified Jones model
|DAC|	=	absolute value of DAC
NTAC	=	non-discretionary accruals, estimated by the modified Jones model
CFO	=	cash flow from operations, computed by annual Compustat data item OANCF minus item XIDOC
|CFO|	=	absolute value of CFO
CFOA	=	CFO divided by lagged total assets
|CFOA|	=	absolute value of CFOA
AbCFO	=	level of abnormal CFO, estimated by lagged asset-deflated CFO minus the fitted value using Eq. (7) to measure normal level of CFO
|AbCFO|	=	absolute value of AbCFO
AbProd	=	level of abnormal production costs, estimated by lagged asset-deflated production costs minus the fitted value using Eq. (8) to measure normal level of production costs, where production costs are defined as the sum of the cost of goods sold (annual Compustat data item COGS) and the change in inventories (item INVT)
|AbProd|	=	absolute value of AbProd
AbDiscE	=	level of abnormal discretionary expenses, estimated by lagged asset-deflated discretionary expenses minus the fitted value using Eq. (9) to measure normal level of discretionary expenses, where discretionary expenses are defined as the sum of advertising expenses (annual Compustat data item XAD), R&D expenses (item XRD), and SG&A expenses (item XSGA)
|AbDiscE|	=	absolute value of AbDiscE
AbREM	=	aggregate measure of REM, which is the sum of AbCFO, AbProd, and AbDiscE with AbCFO and AbDiscE multiplied by −1
|AbREM|	=	absolute value of AbREM
Size	=	firm size, measured by the natural logarithm of market value of equity (CRSP per share stock price x annual Compustat item CSHO)
BM	=	book-to-market ratio of common equity, computed by the book value of equity (annual Compustat data item CEQ) divided by the market value of equity

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ROA	=	income before extraordinary items (annual Compustat data item IBC) divided by lagged total assets
|ROA|	=	absolute value of ROA
LEV	=	leverage, computed by total liabilities (annual Compustat data item LT) divided by total assets
ANAL	=	analyst coverage, computed by the natural logarithm of one plus number of analysts following the firm
REGUL	=	regulated industry dummy, set to 1 if a firm's 2-digit SIC falls in 40–49 or 60–63
BIG5	=	big auditor dummy, set to 1 if a firm's auditor is one of the big 4, 5, or 6 audit firms
StdSales	=	standard deviation of sales for the previous five years at maximum
LIT	=	litigious industry dummy, set to 1 if a firm's 4-digit SIC falls in 2833–2836 (biotech), 3570–3577, 7370–7374 (computer), 3600–3674 (electronics), or 5200–5961 (retailing) following Francis et al. (1994)
Loss	=	loss dummy, set to 1 if a firm reports a negative net incone during the fiscal year
Offer	=	equity issuance dummy, set to 1 if sales of common and preferred stock (annual Compustat data item SSTK) exceed purchases of common and preferred stock (PRSTKC) by more than 5% of total assets
RET	=	contemporaneous annual raw stock return
INST	=	institutional ownership, computed by the ratio of the number of common shares owned by institutional investors to the number of total common shares outstanding
OWN	=	managerial ownership, measured by the ratio of the number of common shares owned by CEO to the number of total common shares outstanding
StdROA	=	standard deviation of ROA for the previous five years at maximum
OperCycle	=	operating cycle, measured by natural logarithm of the sum of days receivables (365/(Compustat data item SALE/RECT)) and days inventory (365/(SALE/INVT))
Labor	=	labor intensity, measured by the number of total employees divided by total assets
CapInt	=	capital intensity, measured by net PPE (Compustat data item PPENT) divided by total assets
Intangible	=	intangible intensity, measured by the sum of advertising and R&D expenses divided by sales
Ind-expert		audit firm's nation-wide industry expertise dummy, set to 1 if the firm's auditor has national reputation (the highest market share in the client's 2-digit SIC); and
Off-size	=	audit office size, measured by the sum of audit fees of the practice audit office auditing the firm
S_Profit	=	small profit dummy, set to 1 if $0 <$ Net Income/Total Assets $\leqslant 0.01$
S_Increase	=	small earnings increase dummy, set to 1 if $0 <$ ΔNet Income/Total Assets $\leqslant 0.01$
S_Meet	=	dummy for meeting or just beating analyst consensus EPS forecast, set to 1 if $0 \leqslant (E - F)/P \leqslant 0.01$, where E is net income divided by number of common shares outstanding, F is the consensus analyst EPS forecast at the end of fiscal year, and P is per-share stock price at the end of fiscal year
Post2005	=	post 2005 dummy, set to 1 if a firm's fiscal year ends in 2005 or later
AbsFE	=	analyst forecast accuracy, measured by $\|E - F\|/P$ where E is net income divided by number of common shares outstanding, F is the consensus analyst EPS forecast at the end of fiscal year, and P is per-share stock price at the end of fiscal year

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