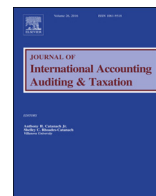




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The interplay between related party transactions and earnings management: The role of audit quality

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ABSTRACT

Related Party Transactions (RPTs) are considered a potential tool for shareholder wealth expropriation as they offer opportunities to transfer wealth between the firm and related parties. While considerable evidence has reported on the negative consequences of RPTs (declines in shareholder wealth, lowered accounting quality and an increased likelihood of financial fraud), studies examining how RPTs may be used in earnings management are relatively rare. Consequently, we investigate whether RPTs are associated with real or accrual earnings management or used as a third alternative to manage reported earnings. Our study employs a sample of firms listed on the Athens Stock Exchange during the period between 2009 and 2014. Our results indicate that, on average, real earnings management and RPTs appear to be used as substitutes. However, additional tests show that this substitution is not significant if the firm is audited by one of the Big 4 auditors. Contrarily, we do not find any significant association between accrual earnings management and RPTs. Our evidence adds to understanding about the interplay between RPTs and earnings management and how audit quality can affect the relationships investigated.

1. Introduction

Considerable analysis of the nature and objectives of related party transactions (RPTs)¹ has been published in the last decade. Numerous studies documented that RPTs are a potential means to expropriate outside shareholders through self-dealing (Ryngaert & Thomas, 2012); provide direct opportunities for related parties to extract resources from minority shareholders (Djankov, La Porta, Lopez-De-Silanes, & Shleifer, 2008), and have used as an alternative tool to manage earnings (Chen, Cheng, & Xiao, 2011). Another view is that RPTs are used for legitimate commercial purposes (Gordon, Henry, & Palia, 2004) and, in such circumstances, are not conducted to mask wealth extraction from minority shareholders (Gordon, Henry, Louwers, & Reed, 2007). However, it can still be argued that the presence of RPTs are a signal that the firm's insiders are open to self-trading and could be suggestive of the presence of other opportunistic behaviors, such as earnings management (Kohlbeck & Mayhew, 2017).

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¹ According to the Statement of Financial Accounting Standards 57 (SFAS 57) Related Party Transactions are defined as transactions between a company and its subsidiaries, affiliates, principal owners, officers or their families, directors or their families, or entities owned or controlled by its officers or their families. The International Accounting Standards (IAS) definition of related parties is similar to that of the US GAAP. "As mentioned in paragraph 29.2, IAS 24 (revised) a related party can be a person, an entity, or an unincorporated business.

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Academic research has been interested, over an extended period, in earnings management by companies (Chen et al., 2011). Prior studies have focused on earnings management through accruals-based approaches (Dechow & Dichev, 2002; Leuz, Nanda, & Wysocki, 2003) or using real activities to create manipulation opportunities (Roychowdhury, 2006). However, few prior studies have addressed the possible use of transactions with related parties as an enabler of earnings management (Aharoni, Wang, & Yuan, 2010; Jian & Wong, 2010; Thomas, Herrmann, & Inoue, 2004). We note also that this stream of research draws inferences on the relationship between RPTs and earnings management from firms in Asian economies, and therefore, may not necessarily be applicable to other markets due to differences in institutional factors.²

An important question, which we believe is not addressed is whether firms conducting RPTs for earnings management purposes, manage earnings through RPTs or through accrual-based and real activities manipulation. We aim to investigate whether or not RPTs are associated with accrual-based and real earnings management. This will contribute to our knowledge of whether RPTs are used to manage earnings and how they are used for this purpose. We attempt to investigate whether firms conducting RPTs engage in other earnings management methods in a coordinated manner.

To answer this question, we assess the association between RPTs, accrual-based earnings management and real earnings management. We argue that the amount of disclosed RPTs can indicate whether a firm uses RPTs as a separate tool for managing earnings as a substitute for other forms of earnings management or whether RPTs are used alongside accrual and real earnings management practices. A positive relationship will provide evidence that firms use RPTs jointly with other earnings management tools or at least show that RPTs are a valid signal that indicate that the managers of a company are more likely to be engaged in other opportunistic reporting phenomenon (Kohlbeck & Mayhew, 2017). On the other hand, a negative relationship may indicate that firms conducting RPTs are likely to use RPTs as an alternative tool to manage earnings that can substitute accrual-based or real earnings management. However, if no significant association exists, the argument that RPTs are legitimate business transactions could be supported (Gordon et al., 2004).

We argue that based on the significantly different institutional settings, Greece provides an interesting setting for testing our hypotheses. If RPTs can be a tool to manage earnings, this behavior should be observable in a country like Greece and perhaps provide convincing evidence. Within a weak investor protection context, a company that manage earnings is less likely to face legal consequences. Therefore, we argue that Greece is a relevant setting to investigate our hypothesis.

We form a sample of 374 firm-year observations for firms listed on the Athens Stock Exchange (ASE), and manually collect RPTs data from annual reports for fiscal years between 2009 and 2014 to investigate the association between RPTs and earnings management.

We find that the likelihood of real earnings management is less for firms conducting a significant volume of RPTs. Our findings indicate that RPTs are, on average, more likely to be used as a substitute for real earnings management. Our results do not show any significant association between RPTs and accrual-based earnings management. This suggests that RPTs are less likely to affect accruals. We also show that the substitution between RPTs and real earnings management is only robust to firms audited by a non-Big 4 auditor.

This study makes several contributions to the literature. We believe this paper is the first empirical attempt to investigate the association between RPTs and real earnings management. Second, this study represents an early empirical attempt to answer the question of how RPTs are used in earnings management. In other words, our study extends the RPTs literature by providing empirical evidence on the negative association between real earnings management and RPTs suggesting a substitution effect between RPTs and real earnings management. Third, this study highlights the influence of external auditing and corporate governance on the relationship between real earnings management and RPTs. Finally, in an extension to prior studies we investigate the association between earnings management and RPTs in a poor investor protection context.

The paper is organized as follows. Section 2 presents a background about the Greek context. Section 3 develops the hypothesis. In Section 4, we delineate the research design and describe the data. Empirical results are reported and discussed in Section 5. Finally, Section 4 summarizes and concludes.

2. The Greek context

According to the “Doing Business Report” produced annually by the World Bank, Greece was reported as one of the ten best economies in terms of an improved business climate in 2012 (World Bank, 2013). A main anchor of this improvement was improving investor protection and specifically the provision of better protections for minority shareholders through requiring timely and annual disclosure of RPTs. RPTs have long been considered a threat to investors within the Greek context. The increasing disclosure requirement for RPTs in Greece have been judged to offer a positive effect on the business climate, because RPTs have been noted earlier as an area lacking specific rules for disclosure (Koumanakos, Siripoulos, & Georegoulous, 2005).

Greece is a French-civil law country (La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1998). In a study of legal rules, covering protection of corporate shareholders and creditors across 49 countries, La Porta et al. (1998) conclude that French-civil law countries, such as Greece, provide relatively weak creditor and investor protection and enforcement. Poor legal protection of investors has been found to correlate with high ownership concentration (Tsalavoutas, Andre, & Evans, 2012). Controlling shareholders may wish to keep tighter control of the firm in a country with poor investor protection as they may achieve private control benefits (La Porta et al.,

² Special laws have been developed in Asian markets to increase the disclosure of RPTs and reduce their potentially negative effect on shareholder's wealth (Chen et al., 2011; Thomas et al., 2004; Jian & Wong, 2010; Aharoni et al., 2010).

1998). The interaction between weak investor protection and high ownership concentration provides incentives for controlling shareholders to expropriate wealth from minority shareholders (Gopalan & Jayaraman, 2012). It has been argued that in poor investor protection environments, such as Greece, insiders are more likely to manage earnings to conceal private benefits from outsiders to avoid the disciplinary actions that might be taken by outsiders if those benefits were detected (Leuz et al., 2003). This could create incentives for controlling shareholders to construct RPTs that would enable them to conceal any private control benefits or shareholder expropriation (Ryngaert & Thomas, 2012).

The Greek accounting framework has been determined to be stakeholder oriented, tax-driven and conservative (Tsalavoutas et al., 2012). Income taxes in Greece are unfairly high according to Tsipouirdou and Spathis (2012), which leads to tax evasion and earnings management. Empirical evidence shows that Greece exhibits the highest level of earnings management compared to other countries (Bhattacharya, Daouk, & Welker, 2003; Leuz et al., 2003).

Countries with weak shareholder protection often bind themselves to superior accounting standards to improve the disclosure policies and accounting systems and enhance the integration of domestic markets into world markets and accelerate economic growth (Hope, Jin, & Kang, 2006). From 1 January 2005, International Financial Reporting Standards (IFRS) have been compulsory for all European Union (EU) listed companies. Though Greece was one of the first countries in the EU to adopt IFRS (Ballas, Skoutela, & Tzovas, 2010), its transition has been challenging due to the major difference between Greek accounting standards and IFRS (Tsalavoutas et al., 2012).

IAS 24 *Related Party Disclosures* governs the reporting and disclosure of RPTs for IFRS adopters. Comprehensive information is required to be disclosed for each transaction with any related party. The minimum disclosure requirements under IAS 24 include the number of transactions, the amounts of outstanding balances and commitments, provisions for doubtful debts related to outstanding balances and the value of expenses realized during the period in respect of bad or doubtful debts due from related parties.

The Greek Corporate Governance code was reviewed by the Greek corporate governance council in 2013.³ Consequently, the Greek Corporate Governance code was amended. The amendment of the code restated the definition of related parties in line with IFRS and established a special practice for transactions with related parties in accordance with the amendments of law 2190/1920. Moreover, in 2008 law 3278/2008 relevant to market control and supervision was issued by the Ministry of Development. Article 26 of this law confirmed the application of the “arms’ length principle”⁴ for intercompany transactions and established formal documentation for these transactions for Greek taxpayers.

In summary, several institutional factors related to RPTs and its reporting changed over recent years in Greece. The adoption of IFRS, the review of the Greek Corporate Governance Code and enforcing the application of arm’s length principle are all significant changes in the institutional environment of Greece that might lead to changes in how RPTs are used by Greek listed firms over this period.

3. Hypothesis development

Accounting standards setters have struggled to balance the legitimate purposes of RPTs against the potential increased risks of insider trading and misappropriation of assets (Kohlbeck & Mayhew, 2017). While the Financial Accounting Standards Board (FASB) indicates that RPTs are a significant concern, they also argue that RPTs have a legitimate business function.

For those in countries using IFRS, IAS 24 *Related Party Disclosures* mandates the disclosures of RPTs to ensure that the financial statements included all information about how these transactions might affect the financial position of firms. According to the World Bank’s Doing Business website, several countries improved their investment protection by imposing specific regulations regarding the reporting and disclosure of RPTs (e.g. Albania, Armenia, Belarus, Egypt, and Greece).

Prior evidence indicates that RPTs are a potential means for insiders to expropriate outside shareholder’s funds through self-dealing (Ryngaert & Thomas, 2012) and provide direct opportunities for related parties to extract resources from minority shareholders (Djankov et al., 2008; Johnson, La Porta, Lopez-de-Silanes, & Shleifer, 2000). Prior evidence also shows that the presence RPTs could send a signal that company insiders are open to self-dealing transactions between the company and its managers, major shareholders, and directors, or at least suggest the presence of dubious management actions, such as earnings management (Kohlbeck & Mayhew, 2017). Additional studies demonstrated that firms that have engaged in fraudulent activity are more likely to have also engaged in RPTs (Beasley, Carcello, Hermanson, & Neal, 2010).

Prior literature on RPTs documents the opportunistic uses of RPTs. Chen et al. (2011) find evidence that controlling shareholders of Chinese firms structure RPTs in the pre-IPO period and that RPTs are associated with accrual earnings management. Thomas et al. (2004) documents that Japanese firms engage in earnings management using RPTs in addition to accruals earnings management to avoid losses, earning declines and negative forecast errors. Moreover, Jian and Wong (2010) find that controlling owners of Chinese listed firms engage in earnings management through RPTs. Finally, Aharony et al. (2010) provide evidence that 185 Chinese IPO firms used RPTs opportunistically during the period 1999–2001 to mask their reported earnings.

Further, additional research indicates that RPTs can be a separate method to manage reported earnings and are not entirely

³ In additional analysis (not tabulated), we investigated whether the relationship between RPTs and earnings management before and after corporate governance code amendment, which included restating the definition of related parties. The analysis reveals that the amendment of the corporate governance code did not have an effect on the relationship between RPTs and earnings management.

⁴ When associated enterprises transact with each other, the conditions of their commercial and financial relations (e.g. price of goods transferred) should be determined by market forces and should be comparable to the conditions between independent enterprises.

accrual based, but can also be cash-based (Chen et al., 2011; Jian & Wong, 2010). However, conducting RPTs signals the presence of self-dealing and opportunistic reporting behaviors by the management of companies (Kohlbeck & Mayhew, 2017). If RPTs can be a separate method to manage reported earnings, it is possible that a firm uses RPTs, accrual earnings management, real earnings management or a combination of more than one tool to manage reported earnings.

This notion is in line with the findings of prior studies. For example, Cohen and Zarowin (2010) show that firms use both real and accrual earnings management around season equity offerings (SEO). Cohen, Dey, and Lys (2008) provide empirical evidence that firms switched from accruals to real earnings management after the passage of Sarbanes Oxley Act (SOX). Irani and Oesch (2016) show that firms respond to loss of analyst coverage by increasing accrual earnings management and reducing real earnings management. Also, Zang (2012) provides evidence that managers use real and accrual earnings management as substitutes based on the relative cost of each earnings management tool. Therefore, based on prior studies that show that RPTs can be used opportunistically to manage reported earnings as well as the findings indicating that firms might use different earnings management strategies, we investigate whether or not RPTs are associated with real or accrual earnings management.

Another stream of the literature provides evidence that RPTs may be used for legitimate commercial purposes as opposed to being used solely for expropriation and exploitation of other stakeholders. The latter view perceives RPTs as legitimate tools that are designed rationally fulfil the economic demands of the firm with cost-efficient transactions (Gordon et al., 2004). Kohlbeck and Mayhew (2010) show that complex business related RPTs are not systematically linked to a decline in firm values while Ryngaert and Thomas (2012) find that RPTs that predate a counterparty becoming a related party have no negative impact on profitability or financial distress.

Given the relatively mixed evidence on the relationship between RPTs and accrual earnings management, the relationship between RPTs and accrual earnings management is still not clear. Therefore, firms involved in significant RPTs can either be more likely to manage earnings through accruals or might structure RPTs that decrease the quality of the reported earnings and have an effect of accrual-based earnings management. Alternatively, if firms use RPTs as an alternative tool for earnings management that does not influence accruals, a systematic relationship between accrual earnings management and RPTs will not be observed.

Second, since RPTs can be a tool to manipulate earnings which is not necessarily based on accruals earnings management, RPTs can be used to manipulate real activities and hence have a positive association with real earnings management proxies. Both earnings management literature and RPTs literature provide support for this intuition. For example, earnings management literature shows that firms use real earnings management or accrual earnings management or a combination of both (Braam, Nandy, Weitzel, & Lodh, 2015; Zang, 2012). This is also shown by prior RPTs studies, such as Jian and Wong (2010) and Chen et al. (2011). In this case, RPTs are typically constructed to achieve the desired reporting outcomes without adjusting accruals. However, it is unknown whether RPTs can affect real activities and hence cause a positive association between RPTs and real earnings management proxies. Alternatively, if firms use RPTs as an independent tool to manage reported earnings, they are likely to exhibit less real activities manipulation. In this case, a negative association between RPTs and real earnings management proxies will be expected. Therefore, we investigate the following two hypotheses:

H1. *Ceteris paribus* RPTs are associated with accrual earnings management

H2. *Ceteris paribus* RPTs are associated with real earnings management

4. Research design

4.1. Measurement of real earnings management

Managers may utilize one or a multiple of real earnings management strategies (Braam et al., 2015). Following prior literature (Cohen & Zarowin, 2010; Cohen et al., 2008; Roychowdhury, 2006), we use three proxies for real earnings management. We follow Roychowdhury (2006) and measure real earnings management using abnormal levels of cash flow from operations (CFO), which is generated due to accelerating the timing of sales through increased price discounts and/or more lenient credit terms. Second, abnormal levels of production costs (RMPROD), which occur through overproduction of inventory, resulting in a lower fixed cost per unit sold and a reduction of cost of goods sold. Finally, abnormal levels of discretionary expenses, which are generated due to cutting discretionary expenses such as advertising, research and development, and administrative (SG&A) expenses. Given sales levels, firms that engage in real earnings management exhibit one or more of the following characteristics: abnormally low cash flow from operations, abnormally high production costs and/or abnormally low discretionary expenses.

Normal levels of cash flow from operations are expressed as a linear function of sales and the change in sales. Following Roychowdhury (2006), we estimated the following regression:

$$CFO_{it}/Assets_{it-1} = \alpha_1 1/Assets_{it-1} + \alpha_2 Sales_{it}/Assets_{it-1} + \Delta Sales_{it}/Assets_{it-1} + \varepsilon_{it} \quad (1)$$

Where CFO_{it} is the net cash recipients and disbursements resulting from the operations of firm i in year t ; $Assets_{it-1}$ is the total assets of firm i at the year end of year $t-1$; $Sales_{it}$ is the net sales of firm i in year t ; $\Delta Sales_{it}$ is the change in net sales from year $t-1$ to t of firm i .

Abnormal CFO (*RMCF*O) was measured as the estimated residual from Eq. (1).⁵ Since price discounts and more lenient credit terms will result in lower cash inflows in the current period, lower negative residuals imply unusually low levels of cash flows from operations suggesting more sales manipulation to manage reported earnings upwards.

Also, following Roychowdhury (2006), the normal level of production costs was estimated using the following equation:

$$PROD_{it}/Assets_{it-1} = \alpha_1 1/Assets_{it-1} + \alpha_2 Sales_{it}/Assets_{it-1} + \Delta Sales_{it}/Assets_{it-1} + \epsilon_{it} \quad (2)$$

Where: *PROD* *it* is the cost of goods sold for firm *i* in year *t*. The abnormal production costs (*RMPROD*) is the difference between the actual and the normal levels of production costs was estimated as the residuals from estimating Eq. (2). Overproduction will result in positive residuals in Eq. (2). Thus, high residuals will result in higher values of (*RMPROD*) which indicates real activities manipulation through overproduction.

The normal levels of discretionary expenses are estimated using Eq. (3) (Roychowdhury, 2006):

$$DISX_{it}/Assets_{it-1} = \alpha_1 1/Assets_{it-1} + \alpha_2 Sales_{it}/Assets_{it-1} + \Delta Sales_{it}/Assets_{it-1} + \epsilon_{it} \quad (3)$$

Where *DISX* *it* is the discretionary expenses computed as the total of selling, general and administrative expenses for firm *i* in year *t*. The abnormal level of discretionary expenses (*RMDISX*) is computed as the estimated residual from Eq. (3). Low negative residuals indicate that firms cut amounts of discretionary expenses to increase reported earnings. Finally, and following Braam et al. (2015), we report the reversed scores of (*RMCF*O) and (*RMDISX*) so that for all three proxies, higher residuals correspond with elevated levels of real activities manipulation.

4.2. Measurement of accrual-based earnings management

Following prior literature, we use discretionary accruals to proxy for accrual-based earnings management. Discretionary accruals (*DA*) are the difference between the firm's actual accruals and normal level of accruals. We estimate the latter using the Jones (1991) model:

$$Accruals_{it}/Assets_{it-1} = K_1 1/Assets_{it-1} + K_2 \Delta Sales_{it}/Assets_{it-1} + K_3 PPE_{it}/Assets_{it-1} + \epsilon_{it} \quad (4)$$

Where *Accruals* *it* is earnings before extraordinary items and discontinued operations minus the operating cash flows reported in the statement of cash flows in year *t* (Collins & Hribar, 2002); *PPE* is the gross property, plant and equipment. We estimate the above regression and the estimated residuals (*DA*) capturing discretionary accruals, is our proxy for accrual-based earnings management.

4.3. Independent variables

The primary independent variable that we are interested in is RPT. Following Ryngaert and Thomas (2012), RPTs are measured by a dummy variable that receives the value of one if the total value of disclosed RPTs in the firm-year exceeds 1% of the firm-year total assets. This includes sales, purchases and outstanding balances between the firm and its related parties. Scaling RPTs by total assets controls for firm size and this proxy allows us to overcome several measurement error issues attributed to using raw dollar values of RPTs (Ryngaert & Thomas, 2012).

To assure valid results, we include a set of control variables. First, we control for corporate governance variables. Prior studies found evidence that good corporate governance activities can improve the company's reporting quality (Dechow, Sloan, & Sweeney, 1996; Klein, 2002; Peasnell, Pope, & Young, 2005). Moreover, it can impede opportunistic behavior of management, increase the value of a firm, and move the RPTs from the conflict of interest to efficient transactions (Abdul Wahab, Haron, Lok, & Yahya, 2010; Bhagat & Bolton, 2008; Chien & Hsu, 2010; Dennis & McConnell, 2003; Gordon & Henry, 2005). Therefore, overlooking governance activities might lead to endogeneity issues related to omitting relevant variables that can explain the variation in earnings management. We control for two corporate governance variables, *Board Size* as measured by the number of directors serving on the board and *Board Independence* as measured by the number of independent directors. Also, we control for the audit firm size. Becker, Defond, Jiambalvo, and Subramanyam (1998), DeFond and Subramanyam (1998) and Teoh and Wong (1993), and others show that *Big 4* audit firms are associated with less earnings management.

Second, we control for several firm attributes that can affect earnings management. Consistent with prior studies, we include *Leverage*, *Market-to-book* ratio, and natural log of total assets (*LN*T*A*) as firm control variables (Zang, 2012). *Leverage* is total debt as a percentage of total assets, and *Market-to-book* ratio as the ratio of market capitalization divided by the book value of common equity. Finally, we control for industry differences using industry dummies and add year dummies to control for year fixed effects.

⁵ Eqs. (1)–(4) are estimated for the whole sample. Due to the limited sample size occurring from missing observations for firms with no data on RPTs or firm financials, estimating the equations by industry-year results in extremely small number of industry-year observations required for regressions.

Table 1
Variable Definitions.

Variable	Measure	Description	Data Source
Dependent Variable EM			
DA	<i>Accrual Earnings Management</i>	Discretionary Accruals using the Jones Model (Jones, 1991)	Orbis
RMCFO	<i>Real Earnings Management</i>	Reversed level of abnormal cash flows from operations (Roychowdhury, 2006)	Orbis
RMPROD	<i>Real Earnings Management</i>	Level of abnormal production costs, where production costs are defined as the sum of cost of goods sold (Roychowdhury, 2006)	Orbis
RMDISX	<i>Real Earnings Management</i>	Reversed level of abnormal discretionary expenses, where discretionary expenses are the SG&A expenses (Roychowdhury, 2006)	Orbis
Independent Variables			
RPTs	<i>Related Party Transactions</i>	A dummy variable equal to 1 if RPT/Totals Assets > 1 and 0 otherwise (Ryngaert & Thomas, 2012)	Annual Reports
Big 4	<i>Audit Quality</i>	Big4 measures audit quality by audit firm size, is a dummy variable equal to 1 if the auditor is a Big 4 audit firm and 0 otherwise.	Annual Reports
Board Size	<i>Corporate Governance</i>	Number of people sitting on the board of directors of the firm.	Annual Reports
Board Independence	<i>Corporate Governance</i>	Number of independent members of the board of directors	Annual Reports
Leverage	<i>Firm Controls</i>	Leverage measures long-term debt and is calculated as the ratio of total long-term debt to the book value of total assets	Orbis
Log of Assets	<i>Market-to-book</i>	Log of assets is the natural logarithm of firm's total assets.	Orbis
Market-to-Book		Market capitalization to common equity, where common equity represents common shareholders' investment in a company	Orbis

4.4. Model and sample

Our primary tests are Ordinary Least Squares (OLS) regressions. Since we have several proxies for earnings management to (i) capture real and accrual-based earnings management and (ii) make sure our results are robust to alternative earnings management proxies, we run the following model once with each earnings management proxy to test our hypotheses:

$$EM = \beta_0 + \beta_1 * RPTs + \beta_2 * Big\ 4 + \beta_3 * Board\ Size + \beta * Board\ Independence + \beta * 5\ Leverage + \beta * 6\ Log\ of\ Assets + \beta * Market-To-Book + \beta * 8\ Year + \beta * 9\ Industry \quad (5)$$

Where the variable *EM* is one of the proxies employed to measure earnings management. The dependent and independent variables of Eq. (5) have been introduced earlier in this section and are detailed in Table 1.

Greece follows the French civil law which is considered a weak system in investor protection. The population of listed firms is 237 firms. RPTs data are collected manually from annual reports of firms listed on the ASE in Greece. Financial statement data for earnings management and control variables are collected from the Orbis database supplied by Bureau van Dijk. We exclude financial firms and firms suspended from ASE. We also find that several firm-year observations have missing data, either for RPTs or financials. We end up at a final sample of 374 firm-year observations for the period 2009–2014 for firms listed in the ASE that satisfy all our data requirements. The sampling procedures are presented in Table 2.

4.5. Descriptive statistics

Table 3 reports summary statistics for the variables of interest. The mean values of earnings management proxies are, consistent with prior studies (Cohen et al., 2008), equal to zero. The variable *RPTs* shows a mean value of 0.616 indicating that around 60% of the companies conduct significant amounts of RPTs. The *Big 4* variable shows a mean of 0.355 indicating that around 35% of the companies are audited by a Big 4 auditor. This is in line with results reported in prior studies employing samples of Greek listed firms, such as Caramanis and Lennox (2008) and Tsipouridou and Spathis (2012).

Table 4 presents correlations for the main variables of interest. To determine the robustness of our findings, we report both the Spearman's non-parametric and the Pearson's parametric coefficients. Spearman (Pearson) correlations are shown above (below) the diagonal. The direction and magnitude of both coefficients are generally similar and hence, any remaining non-normalities may not

Table 2
Sampling Procedures.

	Firms	Observations
Population	237	1,422
Financial Firms	(29)	(174)
Suspended Firms	(25)	(150)
Non-excluded Observations	183	1098
Missing Observations		(724)
Final Sample		374

Table 3
Descriptive Statistics for Main Variables.

Variable	Mean	Median	Std. Deviation	Minimum	Maximum
DA	0.000	0.0185	0.125	−0.667	0.470
RMCF0	0.000	−0.029	0.169	−0.620	0.900
RMPROD	0.000	−0.200	0.731	−1.193	4.639
RMDISX	0.000	−0.175	0.590	−1.260	3.800
RPTs	0.616	1.000	0.487	0.000	1.000
Big4	0.355	0.000	0.479	0.000	1.000
Board Size	8.779	8.000	2.423	4.000	15.000
Board Independence	5.035	4.000	2.116	2.000	11.000
Leverage	1.801	0.208	28.340	0.000	549.057
Log of Assets	12.259	12.093	1.389	6.002	16.598
Market-to-Book	0.825	0.522	2.353	−1.685	43.367
Loss	0.520	1.000	0.500	0.000	1.000

All variables defined in Table 1.

pose serious problems. Moreover, the correlations among the variables are also averagely low so not to pose multicollinearity concerns, with a variance inflation factor below 2.0 for all variables in an OLS regression (not tabulated).

Table 4 shows that RPTs are not correlated with DA, however, is negatively and significantly associated with all real earnings management proxies (RMCF0, RMPROD and RMDISX) with p-values 0.033, 0.000, and 0.000, respectively. This suggests that RPTs activity is not related to accrual-based earnings management when measured using discretionary accruals. However, it indicates that RPTs and real earnings management might be used as substitutes to manage the reported earnings. One explanation supporting this is the negative correlations between real earnings management proxies and audit quality as measured by the variable Big 4. The negative correlation might imply that since RPTs are under significant scrutiny from auditors, firms might prefer managing their earnings by real activities manipulation (real earnings management).

5. Empirical results and discussion

This section presents the findings of our empirical tests. Subsection 5.1 presents the main results of H1 and H2 and whether the results are sensitive to measuring RPTs using an indicator variable. Subsection 5.2 presents the results of the test investigating whether RPTs and real (and accrual) earnings management are used as substitutes. Subsection 5.3 discusses test findings on whether the relationship between RPTs and earnings management is dependent on the firm being audited by one of the Big-4 accounting firms. Finally, Subsection 5.4 investigates whether our results might change if we use an alternative proxy for RPTs, namely abnormal RPTs.

5.1. Related party transactions and earnings management

Table 5 presents the results of the OLS regressions in Eq. (1). Each column shows the results of running the regression using one of the four earnings management proxies. Models (1)–(3) report the results for real earnings management proxies RMCF0, RMPROD, and RMDISX, respectively. Model (4) reports the results for the regression model employing discretionary accruals (DA) as the dependent variable. The three coefficients on RPTs in real earnings management regressions are negative and significant. This indicates that firms conducting significant RPTs are less likely to engage in real earnings management. This supports the view that RPTs are considered a unique tool to manage reported earnings independently and that constructing RPTs are a tool to manage earnings that is used as an alternative to real activities manipulation. This follows prior studies such as Chen et al. (2011) and Jian and Wong (2010).

Regarding discretionary accruals (DA) as the proxy employed to measure accrual-based earnings management, Table 5 shows no significant association between RPTs and DA (p-value = 0.845). This suggests that RPTs activity is not related to companies' discretion over accruals and hence suggests that there is no relationship between the two variables. El-Helaly (2016) similarly notes that firms conducting material RPTs do not exhibit more accrual-based earnings management than their counterparts.⁶ We interpret this finding as an indicator that firms use either RPTs or real earnings management to manipulate reported earnings. However, we do not claim that the possibility that firms exercised accruals earnings management should be excluded.

To determine the sensitivity of the findings we report in Table 5, we undertake additional empirical tests. Following prior studies (Ryngaert & Thomas, 2012), we confirm that our results are not affected by using a dummy variable to measure RPTs. Therefore, we re-estimate all regressions using a continuous variable for RPTs (RPTs-Value). In Table 6, we report additional results for all regression models; these results are estimated using the total value of RPTs divided by the total assets of the firm. These findings confirm our

⁶ El-Helaly (2016) compares several accounting quality proxies that are solely based on accrual-based earnings management across two sub-samples, firms reporting material RPTs versus firms that do not report material RPTs in Greece from 2009 to 2011. However, our study investigates the association between RPTs and discretionary accruals as well as the association between RPTs and real earnings management in Greece from 2009 to 2014.

Table 4
Spearman and Pearson Correlations.

Variables	DA	RMCFO	RMPROD	RMDISX	RPT	Big 4	Board Size	Board Independence	Leverage	Log of Assets	Market-to-Book	Loss
DA												
RMCFO	.269**											
RMPROD	-0.057	.807**										
RMDISX	0.026	.743**	.978**									
RPT	-0.012	-.194**	-.265**									
Big 4	0.045	-.182**	-.244**	-.261**								
Board Size	-0.007	-.331**	-.349**	-.329**	0.071							
Board Independence	-0.033	-.233**	-.261**	-.253**	0.034	.320**						
Leverage	0.025	-0.026	-0.037	-0.032	0.041	-0.039	0.007					
Log of Assets	0.087	-.529**	-.599**	-.562**	.160**	.382**	.545**					
Market-to-Book	0.003	-0.072	-0.039	-0.022	-0.011	-0.005	0.083	0.058				
Loss	-.359**	0.071	0.015	-0.066	0.086	0.043	-0.019	0.018	-0.051	-0.044	-0.045	

The upper diagonal shows Spearman correlation coefficients. The lower diagonal presents Pearson correlation coefficients. All variables defined in Table 1. * and ** correlations are significant at the 0.05 and 0.01 levels, respectively.

Table 5
Related Party Transactions and Earnings Management (main tests of H1 and H2).

Independent Variables	Dependent Variable			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
RPTs	−0.034**	−0.262***	−0.215***	0.003
Big4	0.029	0.086	0.059	0.027*
Board Size	−0.010*	−0.030	−0.022	0.000
Board Independence	0.009	0.022	0.011	−0.006
Leverage	−0.001***	−0.006***	−0.005***	0.000
Log of Assets	−0.089***	−0.437***	−0.335***	0.007
Market-to-Book	−0.003	−0.006	−0.002	−0.001
Loss	0.011	−0.007	−0.096*	−0.087***
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Adjusted R Square	0.375	0.525	0.486	0.158

Results of the main OLS regressions testing the association between RPTs and earnings management. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

Table 6
Robustness Tests using a continuous variable for RPTs.

Independent Variables	Dependent Variable			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
RPTs-Value	−0.003	−0.018**	−0.012*	0.001
Big4	0.028	0.081	0.053	0.029*
Board Size	−0.009*	−0.029	−0.019	0.003
Board Independence	0.010*	0.034	0.021	−0.006
Leverage	−0.026*	−0.161***	−0.178***	−0.076***
Log of Assets	−0.092***	−0.458***	−0.354***	0.003
Market-to-Book	−0.004	−0.008	−0.004	−0.002
Loss	0.013	0.002	−0.088*	−0.081***
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Adjusted R Square	0.374	0.517	0.485	0.246

In these OLS regressions, RPTs is measured as the total value of RPTs (RPTs-Value) scaled by total assets instead of a dummy variable to test the association between RPTs and earnings management. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

prior results regarding the association between earnings management proxies and RPTs. Only one exception is that the coefficient on (*RPTs-Value*) when RMCFO is the dependent variable is insignificant in Table 6 (p-value = 0.824). However, the other two coefficients are robust to the extent that keeps our main inferences unchanged. Prior evidence shows that real activities manipulation affects abnormal cash flows from operations in different directions and the net effect is ambiguous (Roychowdhury, 2006; Zang, 2012).

5.2. Are RPTs and real earnings management substitutes

The results reported in the section above indicate that firms conducting significant RPTs use them as an alternative tool to manage reported earnings and are less likely to manage their earnings through real activities manipulation. An alternative explanation is that conducting RPTs negatively affects real earnings management proxies or vice versa. To conclude either way, a significant relationship should not be observable in the opposite direction. In other words, to confirm that RPTs and real earnings management are not substitutes, a reverse causation should not exist. To check this concern, we re-estimate our regressions while employing earnings management proxies as the independent variable and RPTs as the dependent variable while we maintain all other independent variables. If the coefficients for real earnings management proxies are negative and significant then it can be interpreted that RPTs do not cause real earnings management indicators to decrease. This will represent an evidence that RPTs and real earnings management are used as substitutes. On the other hand, if the coefficients of real earnings management are not significant, it can be interpreted that the assumption that RPTs and real earnings management are used as substitutes is invalid.

Hence, we re-estimate four binary logistic regressions using the following equation:

$$\text{Log}(p/1-p) \text{ it} = \beta_0 + \beta_1 * EM + \beta_2 * \text{Big 4} + \beta_3 * \text{Board Size} + \beta^* \text{Board Independence} + \beta^* 5 \text{ Leverage} + \beta^* 6 \text{ Log of Assets} + \beta^* \text{Market-To-Book} + \beta^* 8 \text{ Year} + \beta^* 9 \text{ Industry} \quad (6)$$

Table 7
The use of RPTs and Real Earnings Management as Substitutes for Earnings Management Purposes.

Independent Variables	Dependent Variable = RPTs			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
RMCFO	-1.890*			
RMPROD		-1.311***		
RMDISX			-1.516***	
DA				0.313
Big4	-0.691**	-0.723**	-0.695**	-.647
Board Size	0.067	0.053	0.060	0.087
Board Independence	-0.252**	-0.234**	-0.244**	-0.273***
Leverage	0.018	-0.142	-0.201	0.087
Log of Assets	0.061	-0.310*	-0.247	0.235*
Market-to-Book	0.000	-0.001	0.003	0.008
Loss	-0.209	-0.201	-0.068	-0.206
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Cox & Snell R Square	0.239	0.271	0.269	0.230
Nagelkerke R Square	0.324	0.367	0.365	0.313

Results of the binary logistic regressions where RPTs is the dependent variable testing the association between RPTs and earnings management. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

Where p is the latent probability that $RPTs = 1$, which is the case if total RPTs exceeds 1% of the firm-year total assets. The results of the four binary logistic regressions are presented in Table 7. Each column corresponds to one of our four earnings management proxies, *RMPROD*, *RMCFO*, *RMDISX*, and *DA*. The coefficients of all variables capturing real earnings management behavior remain negative and significant; a finding that supports our prior results.

5.3. The effect of audit quality and corporate governance on the relationship between RPTs and earnings management

Dennis and McConnell (2003) and Gordon and Henry (2005) specified corporate governance as a crucial factor that can mitigate the relationship between earnings management and RPTs. Those studies suggest that good corporate governance can turn RPTs from a potential conflict of interest to an efficient transaction by providing efficient and effective monitoring. Independent auditors provide one of the monitoring tools that aim to assure that financial statements reflect economic reality. Our results indicate that Big 4 audit firms are associated with less earnings management, which indicates that these firms provide higher audit quality that can impede earnings management. These results are significant and consistent with prior literature (Francis, Maydew, & Sparks, 1999).

Additionally, more recent evidence suggests that when the firms' ability to manage accruals is constrained by higher quality auditors; they resort to real earnings management as an alternative technique to manage earnings (Zang, 2012). Given the nature of RPTs it is still not clear how the relationship between RPTs and earnings management might be affected by audit quality. Although our results show a negative association between RPTs and real earnings management, more needs to be understood about the moderating effect of audit quality on this relationship. We are basically interested in investigating the effect of audit quality on the relationship because Tables 5 and 6 show that the variable *Big 4* fails to record significant association with real earnings management, whereas Table 7 shows *Big 4* is a significant and negative determinant of the materiality of RPTs conducted.

Thus, we would like to investigate the joint effect of RPTs and audit quality on our earnings management proxies. On one hand, the monitoring conducted by higher quality auditors might provide an incentive to managers to manage reported earnings through real activities manipulation to avoid the higher levels on inspection on RPTs due to the high risk associated with these transactions and the signals it provides that the managers are open to self-dealing and might engage in opportunistic reporting behavior (Kohlbeck & Mayhew, 2017). An alternative explanation is that firms with high quality auditors combine both real earnings management and RPTs to diversify their tools to manage reported earnings.

To provide empirical evidence that can support either argument, we re-estimate our regressions after introducing an interaction term capturing the joint effect of RPTs and audit quality on our earnings management proxies. We compute the variable $RPTs * Big4$ to capture the variation in earnings management proxies explained by the group of firms who conducted material RPTs, yet are audited by a Big 4 auditor. The coefficient of this interaction term is the main coefficient of interest. If there is a significant positive association between this interaction term and our earnings management proxies it can be suggested firms conducting significant RPTs, yet audited by one of the Big 4 auditors are more likely to manage reported earnings by real activities manipulation accompanied with RPTs. On the other hand, if the relationship is negative then it can be concluded that RPTs and real earnings management are used as substitutes even if RPTs are audited by one of the Big 4 auditor.

Results of this test are presented in Table 8 and support the argument that the relationship between RPTs and earnings management is affected by audit quality. The coefficients of RPTs are all negative and significant when the dependent variable is a proxy for real earnings management. The coefficient for $RPTs * Big4$ is positive and significant in all models employing a real earnings management proxy (p -values = 0.009, 0.00 and 0.00). The association between $RPTs * Big4$ and discretionary accruals is negative, yet

Table 8

The effect of Audit Quality on the relationship between RPTs and Earnings Management.

Independent Variables	Dependent Variable			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
RPTs	−0.050***	−0.357***	−0.301***	0.002
Big4	−0.004	−0.099	−0.105	0.030
Board Size	−0.007	−0.012	−0.005	0.003
Board Independence	0.006	0.007	−0.004	−0.007
Leverage	−0.021	−0.144***	−0.167***	−0.085
Log of Assets	−0.091***	−0.448***	−0.341***	0.007
Market-to-Book	−0.004	−0.006	−0.002	−0.003
Loss	0.017	0.250	−0.070	−0.090***
RPTs*Big4	0.061*	0.326**	0.274*	−0.018
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Adjusted R Square	0.379	0.547	0.518	0.114

In these OLS regressions, RPTs interacts with Big4 to test whether the association RPTs and earnings management is affected by audit quality. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

insignificant (p-value = 0.557). This also shows that firms conducting material RPTs are less likely to show accrual-based earnings management behavior.

However, the findings reported in Table 8 are not sufficient to conclude that firms conducting material RPTs while being audited by one of the Big 4 auditors use a combination of the two earnings management strategies. The reason for this is that the results might be mainly driven by firms audited by non-Big 4 audit firms. In Table 2, the descriptive statistics show that the mean of the variable Big 4 is 35% - which means that around 65% of the firms are audited by a non-Big 4 auditor. As an additional analysis (not tabulated), we run the analysis across two subsamples. Namely, firm-years audited by Big 4 auditor *versus* firm years audited by a non-Big 4 auditor. This analysis shows that RPTs are not significantly associated with real earnings management for firms audited by Big 4 auditors. However, our prior findings are only consistent and robust to firm-years audited by non-Big 4 auditors. In summary, this shows that the central tenor of our results that RPTs are negatively associated with real earnings management does not change. The results are only statistically significant if the firm is audited by a non-Big 4 auditor.

Similar to audit quality, we investigate whether the relationship between earnings management and RPTs varies according to the strength of corporate governance in our sampled firms. First, we compute an indicator variable *HIGHCG*. *HIGHCG* receives the value of one form firm-years with above mean board size and board independence and zero otherwise. We then re-run our regressions after introducing the interaction term *RPTs*HIGHCG*.

The results reported in Table 9 are in line with the results reported in Table 8. All coefficients of RPTs are negative and significant when the dependent variable is a proxy for real earnings management. Also, the interaction term *RPTs*HIGHCG* is positive and significant explanatory variable for real earnings management proxies. The results suggest that RPTs are used as substitutes for firms with weak corporate governance, but for firms with strong corporate governance, RPTs are positively associated with real earnings management.

Table 9

The effect of Corporate Governance on the relationship between RPTs and Earnings Management.

Independent Variables	Dependent Variable			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
RPTs	−0.068***	−0.404***	−0.337***	−0.001
Big4	−0.026	−0.066	−0.035	0.020
HIGHCG	−0.074**	−0.340***	−0.289***	−0.006
Leverage	−0.040***	−0.216***	−0.223***	−0.079***
Log of Assets	−0.092***	−0.446***	−0.346***	0.001
Market-to-Book	−0.003	−0.003	0.000	−0.002
Loss	0.021	0.032	−0.062	−0.081***
RPTs*HIGHCG	0.125***	0.523***	0.456***	0.023
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Adjusted R Square	0.396	0.554	0.530	0.244

In these OLS regressions, RPTs interacts with HIGHCG to test whether the association RPTs and earnings management is affected by corporate governance. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

Table 10
Abnormal RPTs and Earnings Management.

Independent Variables	Dependent Variable			
	Model 1 RMCFO	Model 2 RMPROD	Model 3 RMDISX	Model 4 DA
Abnormal RPTs	−0.008**	−0.037***	−0.027***	−0.002
Big4	0.021	0.058	0.033	0.026*
Board Size	−0.008	−0.025	−0.016	0.003
Board Independence	0.009	0.031	0.018	−0.007
Leverage	−0.025*	−0.166***	−0.179***	−0.075***
Log of Assets	−0.091***	−0.456***	−0.352***	0.004
Market-to-Book	−0.004	−0.007	−0.004	−0.002
Loss	0.008	−0.015	−0.102*	−0.084***
Abnormal RPTs*Big4	0.015**	0.053	0.044**	0.007
Fixed Industry and year effects	Yes	Yes	Yes	Yes
Adjusted R Square	0.382	0.523	0.491	0.247

Results of assuring our results are not sensitive to the distinction between normal and abnormal RPTs. In these OLS regressions, RPTs is measured by abnormal RPTs. All variables defined in Table 1.

*, **, *** indicate significance at the 0.1, 0.05 and 0.01 levels.

5.4. Abnormal RPTs and earnings management

Similar to accruals, the level of RPTs can either be normal or abnormal for a firm (Jian & Wong, 2010). Normal RPTs are defined to be appropriate to the normal operating characteristics of the firms conducting them and, thus, are more likely to be conducted for legitimate business purposes. In order to assure our results are not affected by failing to distinguish between normal and abnormal RPTs, we re-estimate the OLS regressions conducted in Section 5.3 using abnormal RPTs as a proxy for RPTs instead of the total value of RPTs. Following Jian and Wong (2010), we use an OLS regression model to remove any normal components of RPTs that are associated with industry classifications or firm characteristics, such as size (measured by the natural logarithm of total assets), leverage, and market-to-book ratio.

The regression model has an adjusted R-Square of 22% (not tabulated) which is higher than Jian and Wong (2010)'s reported adjusted R-Square of 11%. Also, the chemicals and the oil and gas industries were found to significantly associate with the amount of conducted RPTs. The residual term is our measure of *Abnormal RPTs*.

The residual of the regression described above is then used as our proxy for RPTs to assure that the results reported earlier are not affected by treating normal and abnormal RPTs as if they are the same. The results of this robustness test are reported in Table 10 and confirm all our prior findings. First, they show that *Abnormal RPTs* (similar to total RPTs) are negatively and significantly associated with real earnings management proxies. Second, they confirm that RPTs and discretionary accruals do not record any significant association. This finding shows that our results are not affected whether we use total RPTs or abnormal (discretionary) RPTs to measure RPTs.

6. Conclusion

We investigate how firms use RPTs to manage their reported earnings. Some prior evidence indicates that RPTs may be considered a tool to manipulate reported earnings. However, it is unclear whether RPTs are used independently to manage earnings or maybe used in conjunction with other techniques to manipulate accruals or real activities of a firm. In the latter instance, we would conclude that RPTs are likely being used to indirectly manage earnings. A third possibility is that they reflect normal transactions conducted for legitimate commercial purposes.

To address the issue, we investigate the association between RPTs and both real and accrual-based earnings management indicators for firms listed on the ASE. Following Zang (2012) we measure accrual earnings management using discretionary accruals (Jones, 1991) and real earnings management by discretionary cash flow from operations, discretionary production costs and discretionary expenses (Roychowdhury, 2006).

The results indicate that RPTs are more likely to be used as a standalone tool to manage earnings and act as a substitute for real earnings management. The results show no systematic relationship between RPTs and accrual-based earnings management. Second, our results show that the substitution effect is only present in firms audited by a non-Big 4 auditor. The results are robust to alternative specifications of our models. In our robustness tests, we try to rule out the possibility that our results are biased due to our research design choices.

Our results support and complement findings from prior studies. Our results show that RPTs can be a separate tool to manage earnings (Chen et al., 2011) and can be directly used to manipulate reported earnings (Jian & Wong, 2010). They are also more likely to be associated with at least one other opportunistic behavior phenomenon (Kohlbeck & Mayhew, 2017). Our results also show that firms under high quality monitoring measured by audit quality (Big 4 auditors) may resort to alternative earnings management tools (Zang, 2012).

Although our evidence is significant and robust, there are a few limitations that need to be acknowledged. First, due to the nature of RPTs and in common with other studies investigating RPTs, this study suffers from a restricted sample size. This is due to the possibility that some related parties may not be disclosed and so cannot be identified. It is also a function of the nature of the data which must be manually collected. This limits the existence of multi-country studies that might allow the investigation of variations in RPTs and their effects across countries. Second, we argue that the existence and the consequences of RPTs are a function of several institutional variables. Since these institutional variables vary from one country to another, our results cannot be generalised to other countries. However, we believe that other studies in weak investor protection contexts like Greece are more likely to yield comparable results. Third, we caution that our results and discussions are interpreted that all RPTs are used for opportunistic or earnings management purposes. Although we tried to address this issue empirically by examining the relationship between abnormal RPTs and earnings management, this was mainly to collaborate our findings rather than assuring that all RPTs are used for earnings management purposes. Yet, this is the only feasible way to address this concern empirically. Future research should try to investigate the presence and consequences of RPTs in a multi-country setting that can enable researchers to investigate the relationship between RPTs and earnings management studies in different institutional settings.

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