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The role of state ownership on earnings quality: evidence across public and private European firms

Abstract

Purpose: This paper examines the role of state ownership on financial reporting quality regarding the characteristics of conservatism and earnings management.

Design/methodology/approach: Using a large sample of public and private European firms during the period 2003-2010, we test our hypotheses following Ball and Shivakumar's (2005) model for conservatism and the modified Jones model (1991) proposed by Dechow and Sloan (1995) for earnings management. To ensure that our results are robust, we conduct sensitivity analysis with regard to potential endogeneity and selection bias.

Findings: We find that state-owned firms are less conservative than non-state-owned firms, which is consistent with the idea that there is less need for accounting conservatism due to government protection. We also show that capital markets play an important role in shaping the relation between state ownership and earnings management. Among public firms, we find that state-owned firms have higher abnormal accruals and worse accruals quality than non-state-owned firms, which suggests that state-owned firms are not immune to capital market pressures.

Originality: Our study contributes to the debate about state intervention in the corporate sector, extending the knowledge of the effects of government ownership on earnings quality by using a large sample of European firms. Furthermore, we also introduce the effect of capital market forces on managers' behaviour in state-owned and non-state-owned companies by analysing private and publicly listed firms.

Research limitations/implications: Our study has two limitations. First, as state-owned and non-state-owned firms face quite different incentive structures, management behaviour might be determined by factors that have yet to be identified. Second, prior research results suggest an inverted U-shape relation between ownership concentration and earnings management (Brown, 2006). It would be interesting to investigate the impact of different levels of state ownership on earnings quality.

Practical implications: As our paper investigates the role of state ownership on earnings quality using a sample of European firms, it brings new insights regarding the role of state ownership in accounting quality and firm performance. In addition, it considers the role of capital markets in the relation between the quality of financial reporting and ownership by considering a sample with both public and private firms.

1. Introduction

Using a sample of large firms in 27 developed countries, La Porta *et al.* (1999) conclude that few firms are owned by a widely dispersed group of shareholders, but rather controlled by families or the state (see also Claessens *et al.*, 2000; Faccio and Lang, 2002). In this paper, we study the financial reporting practices of state-owned firms.

State-owned firms contribute significantly to the GDP, employment and market capitalization of several OECD countries and still have a dominant feature in the economy of many non-OECD countries (OECD, 2005). Indeed, governments and state-owned firms represent approximately one fifth of global stock-market capitalization (Economist, 2010) and many state-owned firms have gained major influence in the economy because of their market power in strategic industries, such as energy, transport and telecommunication.

In Europe, state-owned firms account for a large share of output and employment in many European Union (EU) member states and play an important role in the life of European citizens and businesses (EU, 2016). Indeed, although they are more dominant in the new EU member states, such as Poland, Croatia, Romania and Slovenia, they still are important players in some EU 15 member states, such as France, Italy and Sweden (EU, 2016). The global financial crisis of 2008-2009 has also contributed to this growing form of government ownership, prompting many industrialized states to increase their stake in private firms worldwide (Musacchio and Flores-Macias, 2009).

There is a general belief that state-owned firms are less efficient than non-state-owned firms (see Djankov and Murrell, 2002; Estrin *et al.*, 2009; Netter and Megginson, 2001). Also, empirical research has shown that firms experience improvements in profitability, efficiency, and resource allocation following privatization (Megginson *et al.*, 1994).

There are several reasons that may explain why state-owned firms are inefficient: social and political goals may not be consistent with profit maximization; managers are chosen based on their political connections instead of their skills and performance; greater information asymmetries and transaction costs; and greater agency costs and less monitoring.

However, state ownership can also bring benefits to the firm, such as provide ownership stability and ensure financing during crisis periods (Hope, 2013). In fact, the state is not an ordinary player and investor. The triple role of the government as a regulator, enforcer of laws, and owner of assets, creates the possibility of a favourable treatment to state-owned firms. They may benefit by granting advantages and privileges such as direct subsidies, concessionary financing and state-backed guarantees, and preferential regulatory treatment. Therefore, there is a trade-off for state ownership and prior studies discuss the cost and benefits of state ownership, and in particular, of privatization (e.g. Schmidt, 1996).

Moreover, Musacchio *et al.* (2015) suggest that a new variety of state capitalism has emerged in the 21st century with different implications in terms of both strategic and governance of state-owned firms. Governments are becoming more sophisticated owners (Hope, 2013) and as Bruton *et al.* (2015) argue, state-owned firms are no longer “pure” organizations. They are hybrid organizations as they have elements of state ownership and control on one hand and private ownership and control on the other hand (Bruton *et al.*, 2015), requiring more attention from both managers and researchers.

Prior literature suggests that ownership structure plays an important role in corporate governance, firm performance (Shleifer and Vishny, 1997) and earnings quality (Warfield *et al.* 1995). However, the role of state ownership on firm performance and

earnings quality is far from well understood. Prior studies report mixed results and international research is limited, as most studies focus on Chinese firms or are either limited to specific industries (e.g., banking industry) or to public equity firms. Although private firms are predominant in the economy and are an important source of economic growth worldwide, their accounting quality remains largely unknown as they are not required to publicly disclose financial information and so financial data is usually unavailable. Therefore, a better understanding of the relationship between state ownership and earnings quality is required for both private and public equity firms.

We examine the impact of state ownership on earnings quality in a large sample of European firms in the 2003-2010 period. We show that state ownership affects accounting quality and that capital market forces play an important role in shaping the relation between state ownership and earnings quality. Specifically, we find that state-owned firms are, on average, less conservative than their non-state-owned peers. We also find that, among private firms, state-owned firms are less likely to engage in earnings management practices. These findings are consistent with the idea that government protection reduces the need for conservative accounting and lower incentives to manage earnings.

On the other hand, our results indicate that publicly traded state-owned firms have higher levels of abnormal accruals and worse accruals quality than their non-state-owned counterparts. This finding is consistent with the belief that capital market forces create incentives on managers to engage in earnings management, and suggests that state-owned firm managers are not indifferent to market pressures to meet/beat earnings thresholds and/or to limit political costs related to greater exposure (Givoly *et al.*, 2010).

The current financial crisis has renewed the public debate about state intervention in the corporate sector (Borisova *et al.*, 2012). Our study contributes to this debate in several ways. First, it extends knowledge of the effects of government ownership on earnings quality by using a large sample of European firms. Existing empirical literature on the influence of government ownership on financial reporting refers mostly to Chinese firms, reflecting the specific nature of this market. Second, we investigate the effect of capital market forces on managers' behaviour in state-owned and non-state-owned companies by analysing both private and publicly listed firms. Finally, our analysis includes several robustness tests and different accounting quality attributes, such as conservatism, abnormal accruals and accruals quality.

Thus, we believe that our study is of interest not only to policy makers, but also to investors, regulators, academics, practitioners and the public in general, since state-owned firms' performance may have significant impact in government budgets, being crucial for an effective fiscal consolidation. Pressure for transparency, efficiency and sustainability of these organizations has been increasing globally (OECD, 2011, 2013; EU, 2016). As financial reporting is the primary source of information about an entity, it can play an important role in providing better information in order to improve transparency and evaluate the efficiency and sustainability of state-owned firms.

The remainder of the paper is organized as follows. In the next section, we present the theoretical background and develop the hypotheses. In Section 3, we describe the methodology employed. Section 4 and 5 present the results. Section 6 provides robustness tests and section 7 concludes.

2. Theoretical Background and Hypotheses Development

Sapienza (2004), among others, argues that government ownership is supported by three main views: social, agency and political; with different implications in terms of incentives and constraints faced by managers of state-owned firms. Both social and agency views take the perspective that governments, due to market failures, create state-owned firms to maximize social welfare. In that sense, managers should pursue objectives in order to maximize social welfare (social view). However, they face low-powered incentives and less monitoring, which can generate misallocation and inefficiency (agency view). In contrast, the political view claims that political interference is what distorts the objectives of state-owned firms and the constraints faced by their managers. This view takes the perspective that politicians pursue their own personal objectives instead of social welfare maximization. In addition, according to the property rights theory, state-owned firm managers lack incentives to maximize corporate profitability and efficiency as the firm is total or partially owned by the state.

Using a sample of European firms, Borisova *et al.* (2012) shows that the difference of goals between state-owned and non-state owned firms is harmful to the quality of firms' corporate governance, arguing that while the primary goal of institutions is maximizing shareholder value, government owners may have others political or social objectives, such as public service, reduction of unemployment, and maximization of tax collection. On the other hand, on the results of La Porta *et al.* (2002) support ownership political view, suggesting that governments acquire control of firms and banks in order to provide benefits to supporters and gain votes, with the subsequent negative impact on firms' efficiency.

The focus of this study is the role of government ownership in financial reporting practices. Since state-owned firms pursue objectives that may differ from those of non-state-owned firms, and their managers face low-powered incentives and less monitoring, they may face different incentives regarding financial reporting quality. Additionally, the demand by lenders for high-quality reporting may be lower for state-owned firms due to the government protection and political connection of these firms. Therefore, state-owned firms may face lower incentives to improve financial reporting quality than non-state-owned firms.

In fact, Bushman *et al.* (2004) find that higher state ownership undermines financial transparency and Guedhami *et al.* (2009) argue that state-owned firms may have strong motives to manage financial reporting to obscure information about their real performance. Chaney *et al.* (2011) also suggest that the quality of earnings reported by politically-connected firms is significantly poorer than that of similar non-connected firms. They argue that politically-connected firms have less need to respond to market pressures and, therefore, disclose lower-quality information.

2.1. Government Ownership and Accounting Conservatism

There is a general consensus in literature that conservatism is an inherent feature of any accounting system, and it is an important attribute of financial reporting that enhances earnings quality (Basu, 1997; Ball and Shivakumar, 2005; Givoly *et al.*, 2007; Watts, 2003).

Bushman and Piotroski (2006) provide evidence that countries' legal/judicial system, securities laws, and political economy shape reported accounting information. They find

that firms report less conservatively in countries where the state has a high level of involvement in the economy.

Piotroski *et al.* (2015) provide evidence that political factors play an important role in shaping the information environment in highly political environment, showing that politically-connected managers have an incentive to suppress negative news around political events. Chaney *et al.* (2011) also find that politically-connected firms have lower incentives to improve accounting information quality than non-connected firms, since they are not penalized by a higher cost of debt. In a study about the economic performance of local governments in Australia, Pinnuck and Potter (2009) find no conservatism in the financial reports of local government due to a lower level of demand for high quality accrual-based financial reports from these entities.

Research on the impact of state ownership in financial reporting quality has been conducted mainly using Chinese samples (Chen *et al.*, 2010; Cullinan *et al.*, 2012; Xia and Zhu, 2009) because of key role of the government in the economy. These studies show that state-owned firms are associated with less conservative accounting. Weak governance, political concerns and pressures among these firms are indicated as determinants of such evidence. In particular, Chen *et al.* (2010) posit that state-owned firms are less conservative because lenders are less concerned with downside risk for state-owned firms than for non-state-owned firms.

Given the previous discussion, and in line with the perspective that a major source of demand for conservative reporting arises from creditors' concern about default risk, we state the following hypothesis:

H1: State-owned enterprises are less likely to recognize losses in a timely fashion than non-state-owned enterprises.

2.2. Government Ownership and Earnings Management

State-owned firms may have higher incentives to engage in earnings management practices in order to hide corporate resources expropriation for political purposes, since they may have other goals than profit maximization (Ben-Nasr *et al.*, 2015). In addition, state-owned firms may face lower incentives to improve earnings quality as they have access to capital in a more easily way and can obtain better contracting conditions due to state protection and politically connections. For example, Chaney *et al.* (2011) find that politically-connected firms have lower accounting information quality than non-connected firms, but they are not penalized by a higher cost of debt.

However, it is also possible that managers of state-owned firms have weaker incentives to manage earnings. For example, CEOs' compensation contracts typically place less weight on accounting performance in state-owned firms than in non-state-owned firms (Chen *et al.*, 2011; Gompers *et al.*, 2003), thereby reducing managers opportunistic financial reporting behaviour. Additionally, bank debt financing conditions for this type of firms are less dependent on the quality of accounting information, and so managers have weaker incentives to manage earnings. Therefore, based on the bonus plan and debt hypothesis, and since executive compensation and financing contracts are two major determinants of earnings management (Dechow *et al.*, 2010), state-owned firms may present lower levels of earnings management than non-state-owned firms.

Empirical evidence on the role of state ownership in earnings management is still scarce and inconclusive. Most of the existing studies are related to Chinese state-owned firms. While some of these studies suggest that state ownership is associated with earnings management in the form of tunnelling (Aharony *et al.*, 2010), others provide evidence

that state-owned firms manage earnings less than non-state-owned firms (Ding *et al.*, 2007; Wang and Yung, 2011).

Ding *et al.* (2006) examine the impact of ownership concentration on earnings management for a sample of Chinese listed firms and find an inverted U-shape relation between ownership concentration and earnings management. Their results also suggest that Chinese state-owned firms exhibit lower levels of earnings management (abnormal accruals) than non-state-owned firms. Wang and Yung (2009) also find that Chinese state-owned firms have lower levels of abnormal accruals and better accruals quality than non-state-owned firms, even after controlling for the tunnelling effect. However, they also report that differences in earnings management between these two groups of firms decrease as the Chinese economy becomes more and more market driven, which suggests that state-owned firms are not immune to market pressures.

In contrast, using an international sample of privatized firms, Ben-Nasr *et al.* (2015) find that state ownership is associated with higher levels of abnormal accruals, being this relation stronger in the post-privatization period.

As previous literature on the impact of state ownership in earnings management is not clear, and the above discussion suggests that opposite effects may occur, we state our second hypothesis without making explicit the direction of such influence:

H2: State ownership influences the level of earnings management.

2.3. The Role of Public Ownership of Equity

In order to further understand the relation between state ownership and earnings quality, we investigate if the reported earnings of state-owned companies are likely to be influenced by whether the firm is publicly listed or privately held.

Previous research presents conflicting results about the role of public listing on the quality of financial information. Some authors suggest that the strong capital market demand for quality reporting, due to higher agency costs and additional regulations that limit private communication, encourages public firms to improve earnings quality. In an international study, Burghstahler *et al.* (2006) find that earnings management is more pervasive in private firms than in public firms, suggesting that the first-order effect of capital markets is to improve earnings quality. Their results also show that earnings management is more pronounced in countries with weaker legal systems and enforcement. They conclude that capital market forces and institutions reinforce each other. Hope *et al.* (2013) also find that U.S. public firms have higher earnings quality than U.S. private firms. Givoly *et al.* (2010), among others, refer to this case as the “demand” hypothesis of the role of capital markets on financial reporting quality.

In contrast, another strand of the literature supports the “opportunistic behaviour” hypothesis (Beatty *et al.*, 2002; Givoly *et al.*, 2010). This hypothesis suggests that public firms have more incentives to manage reported earnings than their private equity peers, since they often have equity-based compensation plans and are subject to capital pressures to meet/beat earnings expectations.

In the literature, the political view suggests that state-owned firms’ managers are closely tied to the government and that this type of firms may be used to obtain private benefits or to benefit politically connected firms (Musacchio *et al.*, 2015; Dinç and Gupta, 2011). Using a sample of bank-level empirical sample, Dinç (2005) show that politicians can reward their allies through their influence on government-owned banks. Considering that managers of public state-owned firms are more exposed to the evaluation of their supporters and that capital markets can put additional pressure on managers to meet earning targets (Chaney *et al.*, 2011), we expect that the quality of

earnings reported by public SOEs is significantly poorer than that of private SOEs.

Therefore, we develop the following hypotheses:

H3a: Public state-owned enterprises are less likely to recognize losses in a timely fashion than private state-owned enterprises.

H3b: Public state-owned enterprises are likely to exhibit a higher level of earnings management than private state-owned enterprises.

3. Research Design

3.1. Accounting Conservatism

We test our hypothesis following Ball and Shivakumar (2005), which use changes in net income to proxy for economic gain and losses. Hence, we estimate the following regression in order to capture differences in timely loss recognition between state-owned enterprises (SOE) and non-state-owned enterprises (non-SOE):

$$\Delta NI_{it} = \alpha_0 + \beta_1 D\Delta NI_{it-1} + \beta_2 \Delta NI_{it-1} + \beta_3 D\Delta NI_{it-1} * \Delta NI_{it-1} + \beta_4 SOE_{it} + \beta_5 SOE * D\Delta NI_{it-1} + \beta_6 SOE * \Delta NI_{it-1} + \beta_7 SOE * D\Delta NI_{it-1} * \Delta NI_{it-1} + \varepsilon_{it} \quad (1)$$

where ΔNI is the change in net income from fiscal year t-1 to t, scaled by the beginning book value of total assets; $D\Delta NI$ is a dummy variable that takes the value of one if ΔNI in the prior year is negative and zero otherwise; and SOE is a dummy variable that takes a value of one for state-owned firms and zero otherwise. Consistent with our hypothesis, SOEs are expected to be less conservative than non-SOEs, and therefore we expect that economic losses are recognized in a less timely manner for this type of firms, expecting a $\beta_7 > 0$. According to Ball and Shivakumar (2005), timely recognition of economic losses implies they are recognized as transitory income

decreases. Therefore, if the coefficient β_3 is negative, it implies that economic losses are recognized in a more timely fashion.

To ensure that our results are robust, we conduct sensitivity analysis with regard to potential endogeneity and selection bias (Lennox, Francis, and Wang, 2012). Because government ownership (proxied by the SOE variable) may be endogenous, we use the (Heckman, 1979) two-stage procedure through a probit model to determine the Inverse Mills Ratio (IMR) and include it in our second stage model of conservatism, along with an interaction term SOE×IMR.

Considering that some industries are strategically important to the government (Ng *et al.*, 2009), and that the legal framework may influence the relation between government ownership and corporate governance (Dalton *et al.*, 2003; Estrin *et al.*, 2009), we include in our first stage model industry dummies (IND), country dummies (DCOUNT) and a dummy variable to distinguish between civil and common law countries (DLAW). According to Chong *et al.* (2010) the political and institutional context may have a crucial role on which firms are state- owned or not. Therefore, we also control for political party orientation with respect to economic policy with a dummy (LEFT) for parties that are defined as communist, socialist, social democratic or left-wing. Finally, we also include the gross domestic product per capita (GDP) for each country as control variable.

Hence, we consider the following explanatory variables in our first stage probit regression:

$$P(SOE = 1|x) = G(DLAW, GDP, LEFT, IND, DCOUNT) \quad (2)$$

where IND are industries dummies; DCOUNT are countries dummies; DLAW is a dummy variable that takes a value of one if a country has a civil law system and zero if a country has a common law system; LEFT is a dummy variable that takes the value of one if the Chief Executive belongs to a left-wing party, and zero otherwise; and GDP is the natural logarithm of the gross domestic product per capita.

3.2. Earnings Management

We use the modified Jones model (1991) proposed by Dechow and Sloan (1995) to derive our earnings management measure.

Consistent with prior literature, we use the balance sheet approach to compute total accruals because many firms are not required to prepare, or do not consistently report cash flow statements during our sample period. Then, we run the following cross-sectional regression within each industry for the sample period:

$$TA_{it} = \alpha_0 + \beta_1(\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \varepsilon_{it} \quad (3)$$

where TA is firm i's total accruals in year t defined as:

$$TA_{it} = (\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta DEBT_{it} - DEP_{it}) \quad (4)$$

where ΔCA is change in current assets between year t-1 and year t, ΔCL is change in current liabilities between year t-1 and year t, $\Delta CASH$ is change in cash between year t-1 and year t, $\Delta DEBT$ is change in short-term debt between year t-1 and year t and DEP variable is the depreciation and amortization expenses in year t. ΔREV is change in revenues between year t-1 and year t and PPE is total gross value of property, plant and equipment in year t. ΔREC is change in accounting receivables between year t-1 and

year t . All variables are scaled by total assets at the beginning of the year to control for size effect.

Our earnings management measure, Abnormal Total Accruals (ABNTA), is computed as the absolute value of the regression (3) residuals, with larger values indicating higher levels of earnings management. To allow for differences in earnings management between SOEs and non-SOEs, we estimate the following regression including different control variables:

$$\begin{aligned}
 ABNTA_{it} = & \alpha_0 + \beta_1 SOE_{it} + \beta_2 DLISTED_{it} + \beta_3 SOE * DLISTED_{it} + SIZE_{it} + \\
 & ROA_{it} + SALES GROWTH_{it} + LEV_{it} + QRATIO_{it} + DAUDIT_{it} + DLAW_{it} + \\
 & \varepsilon_{it}
 \end{aligned}
 \tag{5}$$

where SOE is a dummy variable that takes the value of one for state-owned enterprises and zero otherwise; DLISTED is a dummy variable that takes the value of one for publicly listed firms and zero for non-listed companies; SIZE is the natural logarithm of total assets; ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year; SALES GROWTH is the percentage sales growth in the current period; LEV is the ratio of total debt to total assets; AUDIT is a dummy variable that takes the value of 1 for Big 4 auditors; QRATIO equals cash, cash equivalents and receivables divided by current liabilities and DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system.

Although we are aware that several authors question the reliability of such estimates and present different problems with regard to this research design (McNichols, 2000), we use this measure in order to compare our results with previous literature and conduct

different robustness tests.

To strengthen our analysis of the effect of state ownership on earnings quality, we also study the relation cash flows and accruals (i.e., accruals quality), as proposed by Dechow and Dichev (2002) and modified by McNichols (2000) and Francis *et al.* (2005):

$$TCA_{it} = \beta_0 + \beta_1 CFO_{it-1} + \beta_2 CFO_{it} + \beta_3 CFO_{it+1} + \beta_4 \Delta REV_{it} + \beta_5 PPE_{it} + \varepsilon_{it} \quad (6)$$

where TCA is total current assets ($\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta DEBT_{it}$), CFO is cash flow from operations computed as the difference between net income before extraordinary items and total accruals (TA), as defined above.

The accrual quality measure (AQ) is assessed by the standard deviation of the residuals of regression (6). Then $AQ_i = \sigma(\varepsilon_{it})$. This model is based on the idea that the quality of accruals and earnings is decreasing in the magnitude of estimation error in accruals. Therefore, larger values of our measure AQ indicate lower quality of accruals and therefore lower quality of earnings. In order to confirm the influence of ownership structure on accruals quality, we estimate the following regression:

$$AQ_i = \alpha_0 + \beta_1 SOE_i + \beta_2 DLISTED_i + \beta_3 SOE_i * DLISTED_i + SIZE_i + ROA_i + SALES GROWTH_i + LEV_i + QRATIO_i + DAUDIT_{i+} + DLAW_i + \varepsilon_i \quad (7)$$

All variables are defined as before.

4. Sample and Variables

Data are taken from the Amadeus database for the 2003-2010 period. We start by identifying state-owned firms by selecting firms owned by at least one shareholder of

the following type: public authorities, states or governments, with a minimum of 20% ownership. We chose this threshold as this implies that the state has significant influence on the decisions of the firm and we aim to analyze the role of state in firms' corporate governance. Musacchio *et al.* (2015) refer that the new varieties of state capitalism include not only the firms that are owned and managed wholly by the state, but also firms for which governments own either majority or minority equity positions.

We exclude financial firms (NAICS codes 52-53) and firms with total revenues less than 1 million euros. After eliminating firms with missing data, our sample of SOEs comprises 335 firms and 1,919 firm-year observations. The average state ownership in 2010 is 67%. Based on this sample of SOEs, we then identify a sample of non-SOEs by selecting firms in the same industries with sales closest to those of SOEs (+/- one standard deviation of sales). After eliminating firms with missing data, our non-SOEs sample consists of 884 firms and 5,254 firm-year observations. We believe that our sample represents better the population of firms by including a greater proportion of non-SOEs (instead of using a similar number of both types of firms) as non-SOEs are predominant in Europe.

Table 1 presents the descriptive statistics (panel A) and the distribution of observations by industries (panel B) and countries (panel C). As the proportion of firms with state ownership is lower in Europe when compared to other areas, such as China, our sample of SOEs is considerably smaller than non-SOEs. As shown in panel A, there are significant differences in the financial ratios of the two sub-samples. SOEs are less profitable, less leveraged and have lower sales growth, but have higher assets. On the other hand, the SOEs sub-sample contains a higher percentage of firms with negative income and includes firms that are less likely to choose a big 4 auditor firm. These results seem to be consistent with a large body of literature that explores the potential

inefficiencies of government control (Pargendler, 2012). In terms of industry affiliation (panel B), the services sector is the most important for both sub-samples, and there is a greater concentration of SOEs in transportation and warehousing industries (NAICS codes 48-49) than non-SOEs. This concentration is consistent with the idea that governments often operate in sectors where there is natural monopoly (public utilities) or where it has strategic interests. Finally, and as expected, with regard to the country distribution, panel C shows that Eastern Europe countries represent 25% of SOEs sub-sample.

Therefore, considering the significant differences between these two types of firms, we conduct different tests in order to control for these differences on accounting information.

[Insert Table 1]

5. Analysis and Results

5.1. Accounting Conservatism

Table 2 presents the results for accounting conservatism by ownership type under different specifications. Model (1) does not include control variables and model (2) includes several control variables. In model (3), we control for selection bias and finally in model (4), we consider a dummy variable and interaction terms to analyse the impact of state ownership in listed versus non-listed firms.

Regarding non-SOEs, there is evidence of timely recognition of both gains and losses, as coefficients β_2 and $\beta_2+\beta_3$ are both negative and significant. The results also suggest

that non-SOEs are conservative as β_3 is negative and significant at the 5% level in all specifications.

Considering that our prediction is that SOEs are less likely to recognize economic losses in a timely fashion than non-SOEs, our focus is on the incremental coefficients β_6 and β_7 . Consistent with our hypothesis, we find evidence that SOEs are less conservative as β_7 is positive and statistically significant (at the 10% level) in all specifications. In relation to the recognition of gains, the coefficient β_6 is statistically insignificant, which indicates that SOEs recognize gains as “persistent” and tend not to reverse (Ball and Shivakumar, 2005). One possible justification for these results is related to the debt contracting explanation for accounting conservatism (Watts, 2003). Prior literature provides evidence that for SOEs, the demand for conservatism is lower as lenders are less concerned with downside risk due to government guarantees (Hodge *et al.*, 2004).

Table 2 shows that these results are robust for different specifications. We estimate model (1) and (2), excluding and including control variables to ensure that our results are robust according to the choice of control variables.

In model (3), we include the Inverse Mills Ratio (IMR) to control for selection bias as proposed in Lennox *et al.* (2012). Table 3 reports results of our first stage state-choice model. We find that SOEs are more likely to belong to countries with a civil law system and countries with Chief Executives of left-wing party. On the other hand, in countries with higher GDP per capita, it is less likely to find a SOE. To control for multicollinearity, we compute the variance inflation factors (VIFs) and find VIFs less than 6.4, suggesting that there is no problem at this level.

Since previous literature suggests that there are differences in reporting quality between private and publicly listed firms (Ball and Shivakumar, 2005; Burghstahler *et al.*, 2006;

Givoly *et al.*, 2010), we also conduct tests including the DLISTED variable to control for these differences. Findings do not support our hypothesis H3a that public SOEs are less conservative than private ones, as the coefficients (not reported) are not statistically significant. Considering only the subsample of public companies, we show that SOEs are less likely to recognize losses in a timely fashion than non-SOEs. These results confirm that SOEs are less conservative than non-SOEs.

[Insert Table 2]

[Insert Table 3]

5.2. Earnings Management

Table 4 reports the means of our earnings management measures by type of ownership. Results suggest that discretionary accruals are higher in SOEs. Nevertheless, the differences are not statistically significant at the 5% level.

[Insert Table 4]

Table 5 presents the results of regression (5) under three specifications: (1) including only the SOE dummy and control variables; (2) including the DLISTED dummy and control variables; and (3) controlling for potential selection bias.

[Insert Table 5]

Our results suggest that state ownership has no significant impact on earnings management. Indeed, the coefficient β_1 is not statistically significant in model (1), suggesting that there is no difference in earnings management between SOEs and non-

SOEs. These results are contrary to the findings of Ding *et al.* (2007), Wang and Yung (2009) and Chen *et al.* (2003) for the sample of Chinese firms.

Also, when we analyse the effect of capital market forces, model (2), our results do not confirm hypothesis (H3b) that public SOEs are likely to exhibit a higher level of earnings management than private SOEs, as the coefficients (not reported) are not statistically significant. Nevertheless, among publicly held companies, our results show a different picture. $\beta_1 + \beta_3$ (= 0.015) is positive and statistically significant at the 10% level, suggesting that public SOEs present higher earnings management than public non-SOEs. On the other hand, the coefficient β_1 is negative and significant at 5% level, suggesting that private SOEs engage less in earnings management than private non-SOEs.

This finding is consistent with the idea that state-owned firms' managers may have incentives to benefit politically firms and to give a better image of firm's performance (Musacchio *et al.*, 2015; Dinç and Gupta, 2011). The results are also in line with those of Wang and Yung (2009) for the Chinese firms.

Finally, our results show that the level of earnings management increases with leverage and sales growth and decreases with the size of the firm, which are consistent with the results of prior literature.

To further explore the association between state ownership and earnings management, we analyse earnings management based on the sign of abnormal accruals, as managers may have different incentives to inflate or deflate earnings. Therefore, we estimate

regression (5) separately, considering positive and negative abnormal accruals (ABNTA Positive vs. ABNTA Negative), and reports results in Table 6.¹

Consistent with our previous results, Table 6 shows that SOEs are less likely to engage in income-increasing behaviour than non-SOEs among private firms ($\beta_1 = -0.028$ and statistically significant at the 1% level). In addition, public SOEs are more likely to engage in income-increasing behaviour than public non-SOEs ($\beta_1 + \beta_3 = 0.013$ and statistically significant at 10% level). However, we find no significant difference with respect to income-decreasing behaviour. Therefore, we conclude that the effect of capital market pressure leads to more income-increasing behaviour and have no impact in income-decreasing behaviour, which is in line with the general belief that income-increasing behaviour is prevalent among publicly listed SOEs firms and is consistent with our conservatism findings.

[Insert Table 6]

Finally, we also investigate the impact of state ownership on accruals quality and report results in Table 7.²

[Insert Table 7]

The accrual quality results are consistent with those presented in Table 5. In particular, we conclude that public SOEs present accounting information of lower quality than public non-SOEs ($\beta_1 + \beta_3 = 0.031$).

In short, we find that capital market forces seem to influence the behaviour of SOEs' managers, creating incentives for earnings management in this type of firms. For SOEs,

¹ For brevity, we report results only for specification (2) of the model.

² For brevity, we report results only for specification (2) of the model.

the pressure to meet or beat thresholds and to give a better image of firm's performance seem to prevail on the effect of increasing demand for higher-quality information by investors. This finding is reinforced by the evidence that public SOEs have higher level of abnormal accruals, worse accruals quality and engage more in income-increasing behaviour than public non-SOEs. Higher incentives for managing accounting information and/or more pressure on managers due to government protection in public market may explain this finding. These results suggest that SOEs, when facing high competitive pressure, are acting more as non-SOEs. Since SOEs may have significant impact in government budgets (OCED, 2013; EU, 2016), our findings reinforce the idea that the government plays a new role as shareholder in the public sector and that management incentives for these type of firms are changing. Therefore, more research are needed in this field.

6. Robustness Tests

Considering the differences existing in our two subsamples, we perform matching estimators as a robustness test for our earnings management results (Abadie *et al.*, 2004; Abadie and Imbens, 2011; Rosenbaum and Rubin, 1983). We aim to compare differences in earnings management level between SOE and non-SOE with similar characteristics (matched non-SOE). We conduct these tests using bias-corrected nearest-neighbour matching estimators (Abadie *et al.*, 2004). We are interested in estimating the average difference existing in earnings management between two comparable groups. Results are presented in table 8.

[Insert Table 8]

Results give evidence that for the all sample, SOE register on average less earnings management than non-SOE in line with the idea that managers of SOE have weaker incentives to manage earnings (Chen *et al.*, 2011). Nevertheless, considering the subsample of publicly held companies, the inverse relation is observed, public SOE are likely to exhibit a higher level of earnings management than public non-SOE enterprises in line with the “opportunistic” hypothesis (Givoly *et al.*, 2010). These findings show that capital markets exposure may create management incentives to manage earnings and that SOEs are not immune to this type of incentives.

7. Conclusion

We examine the effect of state ownership on accounting quality using different dimensions of earnings quality and a sample of European firms in the 2003-2010 period. Our results suggest that SOEs are less conservative than non-SOEs, which is consistent with the debt contracting explanation for accounting conservatism and previous evidence that lenders of SOEs are less concerned with downside risk.

Results also suggest that capital markets play an important role in explaining the relation between state ownership and earnings management. Indeed, we find that private SOEs have lower levels of abnormal accruals and better accruals quality than private non-SOEs. We interpret this positive impact of state ownership on earnings quality in private firms as the result of lower earnings management incentives, mainly due to government implicit guarantees.

In contrast, among public firms, SOEs are more likely to have higher levels of abnormal accruals and worse accruals quality than non-SOEs. This finding is consistent with the

idea that capital market forces put pressure on state-owned managers to meet performance benchmarks, thus creating incentives to manage earnings.

Taken together, our results suggest that SOEs have less need to be conservative and to engage in earnings management practices than non-SOEs due to government protection. However, SOEs are not immune to capital market pressures and present lower earnings quality when they are publicly traded.

We believe our study makes two important contributions to the literature. First, considering the growing importance of corporate governance, performance and accountability of SOEs in many research fields such as public management (Grossi *et al.*, 2015), our paper contributes to this topic supporting the argument that SOEs are no longer “pure” organization (Bruton *et al.*, (2015) and are not immune to capital market pressures. Second, by using a sample with both public and private firms, we contribute to the yet scarce literature on accounting quality of private firms and to a better understanding of the role of capital markets in the relation between the quality of financial reporting and ownership.

Our study has two limitations. First, as state-owned and non-state-owned firms face quite different incentive structures, management behaviour might be determined by factors that have yet to be identified. Second, prior research results suggest an inverted U-shape relation between ownership concentration and earnings management (Brown, 2006). As future research it would be interesting to investigate the impact of different levels of state ownership on earnings quality. It would also be interesting to study the impact of state ownership on real earnings management, and how the 2007-2009 global financial crisis and, in particular, the 2011-2013 European sovereign debt crisis, has affected SOE’s performance.

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Table 1: Descriptive Statistics

Panel A: Descriptive Statistics of Financial Variables by Ownership Type

		SOE	Non-SOE	Mean Diff.	
N° of Firms		335	884		
N° of Firm-Year		1,919	5,254		
Total Assets (in € millions)	Mean	6,491	4,512	(1,979)	***
Growth Assets	Mean	0.06	0.09	0.03	***
Total Sales (in € millions)	Mean	3,259	3,894	635	***
Sales Growth	Mean	0.06	0.10	0.04	***
Leverage	Mean	0.04	0.07	0.03	***
Return on Assets	Mean	0.05	0.08	0.03	***
Q-Ratio	Mean	4.14	3.69	(0.45)	**
% of Loss Firm	Mean	0.15	0.12	(0.03)	***
% of Firms Audited by a "Big 4"	Mean	0.55	0.85	0.30	***
% of Firms Publicly Listed	Mean	0.41	0.30	(0.11)	***

Panel B: Industry of Sample Firms by Ownership Type

	SOE Firm-Year		Non- SOE Firm-Year	
	Obs.	% of Sample	Obs.	% of Sample
Agriculture and Forestry	99	5.2%	-	0.0%
Mining, Oil and Gas Extraction	45	2.3%	193	3.7%
Utilities and Construction	217	11.3%	574	10.9%
Manufacturing	207	10.8%	851	16.2%
Wholesale Trade	72	3.8%	724	13.8%
Retail Trade	26	1.4%	97	1.8%
Transportation and Warehousing	409	21.3%	284	5.4%
Information	197	10.3%	296	5.6%
Real Estate	91	4.7%	61	1.2%
Services and Others	556	29.0%	2,174	41.4%
Total Firm-Year Observations	1,919	100.0%	5,254	100.0%

Panel C: Countries of Sample Firms by Ownership Type

Austria	17	0.9%	-	0.0%
Benelux Countries	196	10.2%	555	10.0%
Eastern Europe Countries	485	25.3%	424	7.6%
France	192	10.0%	689	12.4%
Germany	182	9.5%	987	17.7%
Greece	61	3.2%	63	1.1%

Ireland	78	4.1%	83	1.5%
Italy	112	5.8%	470	8.4%
Nordic Countries	344	17.9%	627	11.3%
Portugal	91	4.7%	126	2.3%
Spain	82	4.3%	335	6.0%
United Kingdom	79	4.1%	895	16.1%
	1,919	100.0%	5,254	100.0%

Mean values of the variables over the eight-year are reported. The distribution of each variable is winsorized at the extreme +/- 1 percent values. Differences in means are tested for significance using a two-tailed t-test; Growth Assets is the growth in total assets from year t-1 to t. Total Sales are sales in millions of euros. Sales Growth is growth in sales from year t-1 to t. Leverage is the ratio of total debt to total assets. Return on Assets is the return on assets calculated as earnings before interest and tax divided by total assets in t-1. Q-Ratio equals the sum of cash, cash equivalents and receivables divided by current liabilities. % of Loss Firm is the percentage of firms with negative net income during year t. % of Firms Audited by a "Big 4" Auditor is the percentage of firms audited by one of the Big-4 auditing firms. % of Firms Publicly Listed is the percentage of public firms. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively.

Table 2: Accounting Conservatism and Ownership Structure - Differential Mean Reversion in Earnings Changes

$$\Delta NI_{it} = \alpha_0 + \beta_1 D\Delta NI_{it-1} + \beta_2 \Delta NI_{it-1} + \beta_3 D\Delta NI_{it-1} * \Delta NI_{it-1} + \beta_4 SOE_{it} + \beta_5 SOE * D\Delta NI_{it-1} + \beta_6 SOE * \Delta NI_{it-1} + \beta_7 SOE * D\Delta NI_{it-1} * \Delta NI_{it-1} + \varepsilon_{it}$$

Independent Variables:	Coefficient	Coefficient (1)	P-Value (1)	Coefficient (2)	P-Value (2)	Coefficient (3)	P-Value (3)	Coefficient (4)	P-Value (4)
Intercept	α_0	0.014	0.202	0.009	0.336	0.017	0.011	0.022	0.099
DANI _{t-1}	β_1	-0.005	0.058	-0.006	0.062	-0.006	0.091	-0.006	0.131
ΔNI_{t-1}	β_2	-0.149	0.024	-0.191	0.023	-0.185	0.027	-0.237	0.048
DANI _{t-1} * ΔNI_{t-1}	β_3	-0.286	0.000	-0.251	0.026	-0.261	0.010	-0.176	0.155
SOE	β_4	-0.001	0.676	-0.001	0.707	0.003	0.509	-0.005	0.145
SOE*DANI _{t-1}	β_5	0.010	0.001	0.014	0.000	0.014	0.003	0.012	0.163
SOE* ΔNI_{t-1}	β_6	-0.094	0.113	0.015	0.898	0.008	0.942	0.126	0.339
SOE*DANI _{t-1} * ΔNI_{t-1}	β_7	0.482	0.016	0.403	0.038	0.481	0.055	0.042	0.086
DLISTED	β_8			0.000	0.888	0.001	0.890	-0.002	0.590
DLISTED*DANI _{t-1}	β_9			-	-	-	-	0.000	0.968
DLISTED* ΔNI_{t-1}	β_{10}			-	-	-	-	0.174	0.344
DLISTED*DANI _{t-1} * ΔNI_{t-1}	β_{11}			-	-	-	-	-0.304	0.029
SOE*DLISTED	β_{12}			-	-	-	-	0.201	0.000
SOE*DLISTED*DANI _{t-1}	β_{13}			-	-	-	-	-0.005	0.681
SOE*DLISTED* ΔNI_{t-1}	β_{14}			-	-	-	-	-0.610	0.000
SOE*DLISTED*DANI _{t-1} * ΔNI_{t-1}	β_{15}			-	-	-	-	1.230	0.000
SIZE				0.000	0.000	-0.001	0.000	-0.001	0.000
ROA				0.000	0.277	0.000	0.354	0.000	0.265
SALESGROWTH				0.043	0.000	0.041	0.000	0.043	0.000
LEV				0.000	0.994	0.003	0.757	-0.001	0.900
AUDIT				-0.001	0.483	-0.001	0.652	-0.001	0.402
QRATIO				0.000	0.985	0.000	0.98	0.000	0.994
DLAW				-0.001	0.587	-	-	-0.001	0.563
IMR				-	-	0.001	0.421	-	-
SOE*IMR				-	-	-0.002	0.302	-	-
N° of Observations		4,337		3,631		3,310		3,631	
Adj-R ²		9.29%		11.73%		10.89%		12.99%	
Year Dummies		included		included		included		included	
Industry Dummies		included		included		not included		included	
Country Dummies		included		included		not included		included	
VIFs - Variance-Inflation-Factors									
SOE						6.44			
IMR						2.13			
SOE*IMR						3.71			

ΔNI is the change in net income from fiscal year $t-1$ to t , scaled by the beginning book value of total assets, $D\Delta NI$ is a dummy variable that takes the value of 1 if ΔNI_{t-1} is negative, and SOE is a dummy variable with 1 indicating state-owned firms. $DLISTED$ is a dummy variable that takes the value of 1 for listed firms. $SIZE$ is the natural logarithm of total assets and ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year. $SALESGROWTH$ is the percentage sales growth in the current period. LEV is the ratio of total debt to total assets. $AUDIT$ is a dummy variable that takes the value of 1 for Big 4 auditors. $QRATIO$ equals cash, cash equivalents and receivables divided by current liabilities. $DLAW$ is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system. We use the two-stage procedure through a probit model to determine the inverse Mills ratio (IMR) and include it in our second stage model of conservatism. P -values are reported considering clustered standard error estimates (Petersen, 2009).

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Table 3: The first stage sample selection model

$$\ln[P(SOE = 1)] = \alpha_0 + \beta_1 DLA W + \beta_2 GDP + \beta_3 LEFT + \varepsilon_{it}$$

Independent Variables:	Odds Ratio	P-Value
Intercept	0.997	0.000
DLAW	0.846	0.000
GDP	-0.172	0.000
LEFT	0.147	0.000
N° of Observations	9670	
Adj-R ²	30.81%	
Year Dummies	included	
Industry Dummies	included	
Country Dummies	included	

This table provides odd ratios from logistic regression. The dependent variable is SOE(Y). This variable equal to 1 for firms owned by at least one shareholder of the following type: public authorities, states or governments, with a minimum of 20% percentage ownership and 0 otherwise. DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law. GDP is natural logarithm of the gross domestic product per capita and LEFT is a dummy variable that takes the value of 1 if the Chief Executive belongs to a left-wing party, 0 otherwise.

Table 4: Descriptive Statistics – Earnings Management

		SOE	Non-SOE	Mean Diff.
ABNTA	ABNTA	0.089	0.085	-0.004
ABNTA Positive	ABNTA Positive	0.088	0.087	-0.001
ABNTA Negative	ABNTA Negative	-0.091	-0.083	0.008 *
AQ	AQ	0.093	0.100	0.007 *

ABNTA are the abnormal accruals computed as the absolute value of the residuals of the regression (5). ABNTA Positive is positive abnormal accruals and ABNTA Negative is negative abnormal accruals. AQ is accruals quality assessed by the standard deviation of the residuals of regression (6). Differences in means are tested for significance using a two-tailed t-test. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively.

Table 5: Earnings Management (Abnormal Accruals) and Ownership Structure

$$ABNTA_{it} = \alpha_0 + \beta_1 SOE_{it} + \beta_2 DLISTED_{it} + \beta_3 SOE * DLISTED_{it} + SIZE_{it} + ROA_{it} + SALES GROWTH_{it} + LEV_{it} + DAUDIT_{it} + QRATIO_{it} + DLAW_{it} + \varepsilon_{it}$$

Independent Variables:	Coefficient	Coefficient (1)	P-Value (1)	Coefficient (2)	P-Value (2)	Coefficient (3)	P-Value (3)
Intercept	α_0	0.308	0.010	0.305	0.000	0.281	0.000
SOE	β_1	-0.008	0.266	-0.020	0.010	-0.043	0.003
DLISTED	β_2			-0.023	0.000	-0.029	0.000
SOE*DLISTED	β_3			0.035	0.000	0.044	0.000
SIZE		-0.013	0.000	-0.012	0.000	-0.012	0.000
ROA		0.000	0.938	0.000	0.954	0.000	0.950
SALES GROWTH		0.035	0.010	0.035	0.001	0.034	0.002
LEV		0.158	0.000	0.147	0.000	0.153	0.000
QRATIO		0.000	0.000	0.000	0.000	0.000	0.000
AUDIT		-0.001	0.731	0.000	0.931	0.004	0.531
DLAW		-0.027	0.001	-0.027	0.001	-	-
IMR						-0.007	0.247
SOE*IMR						0.013	0.078
N° of Observations		4,051			4,051		4,150
Adj-R ²		9.43%			10.04%		8.40%
Year Dummies		included			included		included
Industry Dummies		included			included		not included
Country Dummies		included			included		not included
<u>VIFs - Variance-Inflation-Factors</u>							
SOE							6.74
IMR							2.00
SOE*IMR							4.91

ABNTA is the absolute value of abnormal accruals computed as the residuals of the cross-sectional modified Jones model. SOE is a dummy variable with 1 indicating state-owned firms and 0 indicating Non-State firms. DLISTED is a dummy variable that takes the value of 1 for listed firms. SIZE is the natural logarithm of total assets and ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year. SALES GROWTH is the percentage sales growth in the current period. LEV is the ratio of total debt to total assets. QRATIO equals cash, cash equivalents and receivables divided by current liabilities. AUDIT is a dummy variable that takes the value of 1 for Big 4 auditors. DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system. We use the two-stage procedure through a probit model to determine the inverse Mills ratio (IMR) and include it in our second stage model of earnings management in model (3). P-values are reported considering clustered standard error estimates by both time and firm (Petersen, 2009).

Table 6: Earnings Management Splitting by Income-Increasing and Income-Decreasing Behaviour

$$ABNTA_{it} = \alpha_0 + \beta_1 SOE_{it} + \beta_2 DLISTED_{it} + \beta_3 SOE * DLISTED_{it} + SIZE_{it} + ROA_{it} + SALES GROWTH_{it} + LEV_{it} + DAUDIT_{it} + QRATIO_{it} + DLAW_{it} + \varepsilon_{it}$$

Independent Variables:	Coefficient	ABNTA Positive		ABNTA Negative	
		Coefficient (1)	P-Value (1)	Coefficient (2)	P-Value (2)
Intercept	α_0	0.236	0.000	-0.274	0.000
SOE	β_1	-0.028	0.001	0.012	0.360
DLISTED	β_2	-0.027	0.000	0.021	0.003
SOE*DLISTED	β_3	0.041	0.000	-0.024	0.073
SIZE		-0.011	0.000	0.011	0.000
ROA		0.000	0.913	0.000	0.747
SALES GROWTH		0.041	0.001	-0.028	0.189
LEV		0.191	0.000	-0.111	0.000
QRATIO		0.000	0.000	0.001	0.424
AUDIT		0.005	0.120	0.005	0.464
DLAW		-0.011	0.141	0.040	0.001
N° of Observations		2,008		2,043	
Adj-R ²		15.14%		8.86%	
Year Dummies		included		included	
Industry Dummies		included		included	
Country Dummies		included		included	

ABNTA Positive is positive abnormal accruals and ABNTA is negative abnormal accruals. SOE is a dummy variable with 1 indicating state-owned companies. DLISTED is a dummy variable that takes the value of 1 for listed firms. SIZE is the natural logarithm of total assets and ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year. SALES GROWTH is the percentage sales growth in the current period. LEV is the ratio of total debt to total assets. QRATIO equals cash, cash equivalents and receivables divided by current liabilities. AUDIT is a dummy variable that takes the value of 1 for Big 4 auditors. DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system. We use the two-stage procedure through a probit model to determine the inverse Mills ratio (IMR) and include it in our second stage model of earnings management in model (3). P-values are reported considering clustered standard error estimates by both time and firm (Petersen, 2009).

Table7: Accruals Quality and Ownership Structure

$$AQ_i = \alpha_0 + \beta_1 SOE_i + \beta_2 DLISTED_i + \beta_3 SOE_i * DLISTED_i + SIZE_i + ROA_i + SALES GROWTH_i + LEV_i + QRATIO_i + DAUDIT_{i+} + DLAW_i + \varepsilon_i$$

Independent Variables:	Coefficient	Coefficient	P-Value
Intercept	α_0	0.273	0.000
SOE	β_1	-0.021	0.087
DLISTED	β_2	-0.034	0.000
SOE*DLISTED	β_3	0.052	0.005
SIZE		-0.014	0.000
ROA		0.000	0.765
SALES GROWTH		0.095	0.017
LEV		0.308	0.017
QRATIO		0.000	0.378
AUDIT		0.000	0.963
DLAW		-0.01	0.264
N° of Observations		4,236	
Adj-R ²		18.76%	
Industry Dummies		included	
Country Dummies		included	

AQ is accruals quality assessed by the standard deviation of the residuals of regression (6). SOE is a dummy variable with 1 indicating state-owned firms. DLISTED is a dummy variable that takes the value of 1 for listed firms. SIZE is the natural logarithm of total assets and ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year. SALES GROWTH is the percentage sales growth in the current period. LEV is the ratio of total debt to total assets. QRATIO equals cash, cash equivalents and receivables divided by current liabilities. AUDIT is a dummy variable that takes the value of 1 for Big 4 auditors. DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system. P-values are reported considering clustered standard error estimates (Petersen, 2009).

Table 8: Nearest-neighbour matching estimators Abnormal Total Accruals

Parameters Estimated	Coefficient All Firms	P-Value	Coefficient Listed Firms	P-Value	Coefficient Non-Listed Firms	P-Value
Mean ABNTA difference	-0.024	0.007	0.029	0.041	-0.038	0.002

This table presents bias nearest-neighbour matching estimators for ABNTA (Abadie *et al.*, 2004). ABNTA is the absolute value of abnormal accruals computed as the residuals of the cross-sectional modified Jones model. Matching variables: SIZE is the natural logarithm of total assets; ROA is the return on assets calculated as earnings before interest and tax divided by total assets in previous year; SALESGROWTH is the percentage sales growth in the current period; LEV is the ratio of total debt to total assets; QRATIO equals cash, cash equivalents and receivables divided by current liabilities; AUDIT is a dummy variable that takes the value of 1 for Big 4 auditors; DLAW is a dummy variable that takes a value of 1 if a country has a civil law system and 0 if a country has a common law system.