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

Cristina Gaio and Inês Pinto

ISEG – Lisbon School of Economics and Management, Lisbon, Portugal

Abstract

Purpose – The purpose of this paper is to examine 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, the authors test the hypotheses following Ball and Shivakumar's (2005) model for conservatism and the modified Jones (1991) model proposed by Dechow and Sloan (1995) for earnings management. To ensure that the results are robust, the authors conduct sensitivity analysis with regard to potential endogeneity and selection bias.

Findings – The authors 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. The authors also show that capital markets play an important role in shaping the relation between state ownership and earnings management. Among public firms, the authors 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.

Research limitations/implications – The study has two limitations. First, as state-owned and non-state-owned firms face quite different incentive structures, management behavior 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 (Ding *et al.*, 2007). It would be interesting to investigate the impact of different levels of state ownership on earnings quality.

Practical implications – As the 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.

Originality/value – The study contributes to the debate about state intervention in the corporate sector, by extending the knowledge of the effects of government ownership on earnings quality by using a large sample of European firms. Furthermore, the authors also introduce the effect of capital market forces on managers' behavior in state-owned and non-state-owned companies by analyzing private and publicly listed firms.

Keywords Financial reporting, State ownership, Earnings management, Conservatism, Private and public firms

Paper type Research paper

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 (*The 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 (European Commission, 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 (European Commission, 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 favorable 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 twenty-first 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 are 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' behavior in state-owned and non-state-owned companies by analyzing 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 (Christiansen, 2011; Kowalski 2013; European Commission, 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. Sections 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 (SOE) are less likely to recognize losses in a timely fashion than non-SOE.

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 sate 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 behavior. 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 majors 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 tunneling (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.* (2007) 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 (2011) 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 tunneling 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 US public firms have higher earnings quality than US 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 SOE are less likely to recognize losses in a timely fashion than private SOE.

H3b. Public SOE are likely to exhibit a higher level of earnings management than private SOE.

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 SOE and non-SOE:

$$\Delta NI_{it} = \alpha_0 + \beta_1 D\Delta NI_{it-1} + \beta_2 \Delta NI_{it-1} + \beta_3 D\Delta NI_{it-1} \times \Delta NI_{it-1} + \beta_4 SOE_{it}$$

$$+ \beta_5 SOE \times D\Delta NI_{it-1} + \beta_6 SOE \times \Delta NI_{it-1} + \beta_7 SOE \times D\Delta NI_{it-1} \times \Delta NI_{it-1} + \varepsilon_{it} \quad (1)$$

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 *et al.*, 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:

$$P(\text{SOE} = 1|x) = G(\text{DLAW}, \text{GDP}, \text{LEFT}, \text{IND}, \text{DCOUNT}) \tag{2}$$

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 (1991) model 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 (TA) 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:

$$\text{TA}_{it} = \alpha_0 + \beta_1(\Delta\text{REV}_{it} - \Delta\text{REC}_{it}) + \beta_2\text{PPE}_{it} + \varepsilon_{it} \tag{3}$$

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

$$\text{TA}_{it} = (\Delta\text{CA}_{it} - \Delta\text{CL}_{it} - \Delta\text{CASH}_{it} + \Delta\text{DEBT}_{it} - \text{DEP}_{it}) \tag{4}$$

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, ΔCASH is change in cash between year $t-1$ and year t, ΔDEBT 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:

$$\text{ABNTA}_{it} = \alpha_0 + \beta_1\text{SOE}_{it} + \beta_2\text{DLISTED}_{it} + \beta_3\text{SOE} \times \text{DLISTED}_{it} + \text{SIZE}_{it}$$
$$+ \text{ROA}_{it} + \text{SALESGROWTH}_{it} + \text{LEV}_{it} + \text{QRATIO}_{it} + \text{DAUDIT}_{it} +$$
$$+ \text{DLAW}_{it} + \varepsilon_{it} \tag{5}$$

where SOE is a dummy variable that takes the value of one for SOE and zero otherwise; DLISTED a dummy variable that takes the value of one for publicly listed firms and zero for

non-listed companies; SIZE the natural logarithm of total assets; ROA the return on assets calculated as earnings before interest and tax divided by total assets in previous year; SALESGROWTH the percentage sales growth in the current period; LEV the ratio of total debt to total assets; AUDIT 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):

$$\text{TCA}_{it} = \beta_0 + \beta_1 \text{CFO}_{it-1} + \beta_2 \text{CFO}_{it} + \beta_3 \text{CFO}_{it+1} + \beta_4 \Delta\text{REV}_{it} + \beta_5 \text{PPE}_{it} + \varepsilon_{it} \qquad (6)$$

where TCA is total current assets ($\Delta\text{CA}_{it} - \Delta\text{CL}_{it} - \Delta\text{CASH}_{it} + \Delta\text{DEBT}_{it}$), CFO is cash flow from operations computed as the difference between net income before extraordinary items and TA, as defined above.

The accrual quality measure (AQ) is assessed by the standard deviation of the residuals of regression (6). Then $\text{AQ}_i = \sigma(\varepsilon_{it})$. 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:

$$\text{AQ}_i = \alpha_0 + \beta_1 \text{SOE}_i + \beta_2 \text{DLISTED}_i + \beta_3 \text{SOE}_i \times \text{DLISTED}_i + \text{SIZE}_i + \text{ROA}_i$$

$$+ \text{SALESGROWTH}_i + \text{LEV}_i + \text{QRATIO}_i + \text{DAUDIT}_{i+} + \text{DLAW}_i + \varepsilon_i \qquad (7)$$

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 percent 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 percent. 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 I 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

Panel A: descriptive statistics of financial variables by ownership type

		SOE	Non-SOE	Mean Diff.	
No. of firms		335	884		
No. 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 Obs.	% of sample	Non- SOE firm-year 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
UK	79	4.1	895	16.1
	1,919	100.0	5,254	100.0

Notes: 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. Percent of loss firm is the percentage of firms with negative net income during year t. Percent of firms audited by a "Big 4" auditor is the percentage of firms audited by one of the Big-4 auditing firms. Percent of firms publicly listed is the percentage of public firms. **,***Significant at 5 and 1 percent levels, respectively

Table I.
Descriptive statistics

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 percent 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.

5. Analysis and results

5.1 Accounting conservatism

Table II 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 analyze the impact of state ownership in listed vs 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 percent 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 percent 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 II 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 IMR to control for selection bias as proposed in Lennox et al. (2012). Table III 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 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.

	Coefficient	Coefficient (1)	p-value (1)	Coefficient (2)	p-value (2)	Coefficient (3)	p-value (3)	Coefficient (4)	p-value (4)
Independent variables									
Intercept	α_0	0.014	0.202	0.009	0.336	0.017	0.011	0.022	0.099
$D\Delta NI_{t-1}$	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
$D\Delta NI_{t-1} \times \Delta NI_{t-1}$	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
$SOE \times D\Delta NI_{t-1}$	β_5	0.010	0.001	0.014	0.000	0.014	0.003	0.012	0.163
$SOE \times \Delta NI_{t-1}$	β_6	−0.094	0.113	0.015	0.898	0.008	0.942	0.126	0.339
$SOE \times D\Delta NI_{t-1} \times \Delta NI_{t-1}$	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
$DLISTED \times D\Delta NI_{t-1}$	β_9			–	–	–	–	0.000	0.968
$DLISTED \times \Delta NI_{t-1}$	β_{10}			–	–	–	–	0.174	0.344
$DLISTED \times D\Delta NI_{t-1} \times \Delta NI_{t-1}$	β_{11}			–	–	–	–	−0.304	0.029
$SOE \times DLISTED$	β_{12}			–	–	–	–	0.201	0.000
$SOE \times DLISTED \times D\Delta NI_{t-1}$	β_{13}			–	–	–	–	−0.005	0.681
$SOE \times DLISTED \times \Delta NI_{t-1}$	β_{14}			–	–	–	–	−0.610	0.000
$SOE \times DLISTED \times D\Delta NI_{t-1} \times \Delta NI_{t-1}$	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		
$SOE \times IMR$				–	–	−0.002	0.302		
No. 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	

(*continued*)

Table II.
Accounting
conservatism and
ownership structure -
differential mean
reversion in
earnings changes

	Coefficient	Coefficient (1)	p-value (1)	Coefficient (2)	p-value (2)	Coefficient (3)	p-value (3)	Coefficient (4)	p-value (4)
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			

Notes: 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):

$$\Delta\mathrm{NI}_{it} = \alpha_0 + \beta_1 D\Delta\mathrm{NI}_{it-1} + \beta_2 \Delta\mathrm{NI}_{it-1} + \beta_3 D\Delta\mathrm{NI}_{it-1} \times \Delta\mathrm{NI}_{it-1} + \beta_4 \mathrm{SOE}_{it} + \beta_5 \mathrm{SOE} \times D\Delta\mathrm{NI}_{it-1} + \beta_6 \mathrm{SOE} \times \Delta\mathrm{NI}_{it-1} + \beta_7 \mathrm{SOE} \times D\Delta\mathrm{NI}_{it-1} \times \Delta\mathrm{NI}_{it-1} + \varepsilon_{it}$$

Table II.

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
No. of observations	9,670	
Adj-R^2	30.81%	
Year dummies	Included	
Industry dummies	Included	
Country dummies	Included	

Notes: 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 percent 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:

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

Table III.
The first stage sample selection model

5.2 Earnings management

Table IV 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 percent level.

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

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 (2011) and Chen *et al.* (2010) for the sample of Chinese firms.

Also, when we analyze the effect of capital market forces, model (2), our results do not confirm *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 percent 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 percent level, suggesting that private SOEs engage less in earnings management than private non-SOEs.

		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	*

Notes: 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. *Significant at 10 percent level

Table IV.
Descriptive statistics – earnings management

	Coefficient	Coefficient (1)	p-value (1)	Coefficient (2)	p-value (2)	Coefficient (3)	p-value (3)
Independent variables							
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
SALESGROWTH		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
No. 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	
VIFs – variance inflation factors							
SOE						6.74	
IMR						2.00	
SOE×IMR						4.91	

Notes: 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 the current period. LEV is the ratio of total debt to total assets; QRATIO equals cash, cash equivalents and receivables divided by current liabilities; 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. 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):

$$\text{ABNTA}_{it} = \alpha_0 + \beta_1 \text{SOE}_{it} + \beta_2 \text{DLISTED}_{it} + \beta_3 \text{SOE} \times \text{DLISTED}_{it} + \text{SIZE}_{it} + \text{ROA}_{it} + \text{SALESGROWTH}_{it} + \text{LEV}_{it} + \text{DAUDIT}_{it} + \text{QRATIO}_{it} + \text{DLAW}_{it} + \varepsilon_{it}$$

Table V.
Earnings management (abnormal accruals) and ownership structure

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 (2011) 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 analyze 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 VI[1].

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

	Coefficient	ABNTA positive		ABNTA negative	
		Coefficient (1)	p-value (1)	Coefficient (2)	p-value (2)
Independent variables					
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
SALESGROWTH		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
No. 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	

Notes: 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; 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. 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 VI.
Earnings management splitting by income-increasing and income-decreasing behavior

$$\text{ABNTA}_{it} = \alpha_0 + \beta_1 \text{SOE}_{it} + \beta_2 \text{DLISTED}_{it} + \beta_3 \text{SOE} \times \text{DLISTED}_{it} + \text{SIZE}_{it}$$

$$+ \text{ROA}_{it} + \text{SALESGROWTH}_{it} + \text{LEV}_{it} + \text{DAUDIT}_{it} + \text{QRATIO}_{it} + \text{DLAW}_{it} + \varepsilon_{it}$$

line with the general belief that income-increasing behavior is prevalent among publicly listed SOEs firms and is consistent with our conservatism findings.

Finally, we also investigate the impact of state ownership on accruals quality and report results in Table VII (see footnote 1).

The accrual quality results are consistent with those presented in Table V. 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 behavior of SOEs' managers, creating incentives for earnings management in this type of firms. For SOEs, 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 behavior 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 (Kowalski, 2013; European Commission, 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 is needed in this field.

		Coefficient	Coefficient	p-value
Independent variables				
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
SALESGROWTH			0.095	0.017
LEV			0.308	0.017
QRATIO			0.000	0.378
AUDIT			0.000	0.963
DLAW			−0.01	0.264
No. of observations			4,236	
Adj-R^2			18.76%	
Industry dummies			Included	
Country dummies			Included	

Notes: 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; 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. p-values are reported considering clustered standard error estimates (Petersen, 2009):

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

Table VII.
Accruals quality and
ownership structure

6. Robustness tests

Considering the differences existing in our two sub-samples, 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-neighbor 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 VIII.

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.

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

Notes: This table presents bias nearest-neighbor 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

Table VIII.
Nearest-neighbor matching estimators abnormal total accruals

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 behavior 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 (Ding *et al.*, 2007). 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.

Note

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

References

Abadie, A. and Imbens, G.W. (2011), "Bias-corrected matching estimators for average treatment effects", *Journal of Business & Economic Statistics*, Vol. 29 No. 1, pp. 1-11.

Abadie, A., Drukker, D., Herr, J.L. and Imbens, G.W. (2004), "Implementing matching estimators for average treatment effects in Stata", *Stata Journal*, Vol. 4 No. 3, pp. 290-311.

Aharony, J., Wang, J. and Yuan, H. (2010), "Tunneling as an incentive for earnings management during IPO process in China", *Journal of Accounting and Public Policy*, Vol. 29 No. 1, pp. 1-26.

Ball, R. and Shivakumar, L. (2005), "Earnings quality in UK private firms: comparative loss recognition timeliness", *Journal of Accounting and Economics*, Vol. 39 No. 1, pp. 83-128.

Basu, S. (1997), "The conservatism principle and the asymmetric timeliness of earnings", *Journal of Accounting and Economics*, Vol. 24 No. 1, pp. 3-37.

Beatty, A.L., Ke, B. and Petroni, K.R. (2002), "Earnings management to avoid earnings declines across publicly and privately held banks", *Accounting Review*, Vol. 77 No. 3, pp. 547-570.

Ben-Nasr, H., Boubakri, N. and Cosset, J.-C. (2015), "Earnings quality in privatized firms: the role of state and foreign owners", *Journal of Accounting and Public Policy*, Vol. 34 No. 4, pp. 392-416.

Borisova, G., Brockman, P., Salas, J. and Zagorchev, A. (2012), "Government ownership and corporate governance: evidence from the EU", *Journal of Banking & Finance*, Vol. 36 No. 11, pp. 2917-2934.

Bruton, G., Peng, M., Ahlstrom, D., Stan, C. and Xu, K. (2015), "State-owned enterprises around the world as hybrid organizations", *The Academy of management Perspectives*, Vol. 29 No. 1, pp. 92-114.

Burghstahler, D.C., Hail, L. and Leuz, C. (2006), "The importance of reporting incentives: earnings management in European private and public firms", *Accounting Review*, Vol. 81 No. 5, pp. 983-1016.

Bushman, R., Piotroski, J. and Smith, A. (2004), "What determines corporate transparency?", *Journal of Accounting Research*, Vol. 42 No. 2, pp. 207-252.

Bushman, R.M. and Piotroski, J.D. (2006), "Financial reporting incentives for conservative accounting: the influence of legal and political institutions", *Journal of Accounting and Economics*, Vol. 42 Nos 1-2, pp. 107-148.

Chaney, P., Faccio, M. and Parsley, D. (2011), "The quality of accounting information in politically connected firms", *Journal of Accounting and Economics*, Vol. 51 Nos 1-2, pp. 58-76.

Chen, H., Chen, J., Lobo, G.J. and Wang, Y. (2010), "Association between borrower and lender state ownership and accounting conservatism", *Journal of Accounting Research*, Vol. 48 No. 5, pp. 973-1014.

Chen, H., Chen, J., Lobo, G.J. and Wang, Y. (2011), "Effects of audit quality on earnings management and cost of equity capital: evidence from China", *Contemporary Accounting Research*, Vol. 28 No. 3, pp. 892-925.

Christiansen, H. (2011), "The sise and composition of the SOE sector in OECD countries", *OECD Corporate Governance*, Working Paper No. 5, OECD Publishing, Paris.

Chong, A., Guillen, J. and Riano, A. (2010), "Political and institutional environment and privatization prices", *Public Choice*, Vol. 142 Nos 1-2, pp. 91-110.

Claessens, S., Djankov, S. and Lang, L.H.P. (2000), "The separation of ownership and control in east Asian corporations", *Journal of Financial Economics*, Vol. 58 Nos 1-2, pp. 81-112.

Cullinan, C., Wang, F., Wang, P. and Zhang, J. (2012), "Ownership structure and accounting conservatism in China", *Journal of International Accounting, Auditing and Taxation*, Vol. 21 No. 1 pp. 1-16.

Dalton, D.R., Daily, C.M., Certo, S.T. and Roengpitya, R. (2003), "Meta-analyses of financial performance and equity: fusion or confusion?", *Academy of Management Journal*, Vol. 46 No. 1, pp. 13-26.

Dechow, P. and Dichev, I. (2002), "The quality of accruals and earnings: the role of accrual estimation errors", *Accounting Review*, Vol. 77 No. 4, pp. 35-59.

Dechow, P. and Sloan, R.G. (1995), "Detecting earnings management", *Accounting Review*, Vol. 70 No. 2, pp. 193-225.

Dechow, P., Ge, W. and Schrand, C. (2010), "Understanding earnings quality: a review of the proxies, their determinants and their consequences", *Journal of Accounting and Economics*, Vol. 50 Nos 2-3, pp. 344-401.

Dinç, I.S. (2005), "Politicians and banks: political influences on government-owned banks in emerging markets", *Journal of Financial Economics*, Vol. 77 No. 2, pp. 453-479.

Dinç, I.S. and Gupta, N. (2011), "The decision to privatize: finance and politics", *Journal of Finance*, Vol. 66 No. 1, pp. 241-269.

Ding, Y., Zhang, H. and Zhang, J. (2007), "Private vs. state ownership and earnings management: evidence from Chinese listed companies", *Corporate Governance: An International Review*, Vol. 15 No. 2, pp. 223-238.

Djankov, S. and Murrell, P. (2002), "Enterprise restructuring in transition: a quantitative survey", *Journal of Economic Literature*, Vol. 40 No. 3, pp. 739-792.

Estrin, S., Hanousek, J., Kočenda, E. and Svejnar, J. (2009), "The effects of privatization and ownership in transition economies", *Journal of Economic Literature*, Vol. 47 No. 3, pp. 1-30.

European Commission (2016), "State-owned enterprises in the EU: lessons learnt and ways towards in a post-crisis context", Institutional Paper No. 031, Brussels.

Faccio, M. and Lang, L.H.P. (2002), "The ultimate ownership in western European corporations", *Journal of Financial Economics*, Vol. 65 No. 3, pp. 365-395.

Francis, J., LaFond, R., Olsson, P. and Schipper, K. (2005), "The market pricing of accruals quality", *Journal of Accounting and Economics*, Vol. 39 No. 2, pp. 295-327.

Givoly, D., Hayn, C. and Katz, S. (2010), "Does public ownership of equity improve earnings quality?", *Accounting Review*, Vol. 85 No. 1, pp. 195-225.

Givoly, D., Hayn, C.K. and Natarajan, A. (2007), "Measuring reporting conservatism", *Accounting Review*, Vol. 82 No. 1, pp. 65-106.

Gompers, P., Ishii, J. and Metrick, A. (2003), "Corporate governance and equity prices", *Quarterly Journal of Economics*, Vol. 118 No. 1, pp. 107-155.

Grossi, G., Papenfub, U. and Tremblay, M.-S. (2015), "Corporate governance and accountability of state-owned enterprises. Relevance for science and society and interdisciplinary research perspectives", *International Journal of Public Sector Management*, Vol. 28 Nos 4/5, pp. 274-285.

Guedhami, O., Pittman, J. and Saffar, W. (2009), "Auditor choice in privatized firms: empirical evidence on the role of state and foreign owners", *Journal of Accounting and Economics*, Vol. 48 Nos 2/3, pp. 151-171.

Heckman, J. (1979), "The sample selection bias a specification error", *Econometrica*, Vol. 47 No. 1, pp. 153-161.

Hodge, F.D., Kennedy, J.J. and Maines, L.A. (2004), "Does search-facilitating technology improve the transparency of financial reporting?", *Accounting Review*, Vol. 79 No. 3, pp. 687-703.

Hope, O.-K. (2013), "Large shareholders and accounting research", *China Journal of Accounting Research*, Vol. 6 No. 1, pp. 3-20.

Hope, O.-K., Wayne, T. and Dushyantkumar, V. (2013), "Financial reporting quality of U.S. private and public firms", *Accounting Review*, Vol. 88 No. 5, pp. 1715-1742.

Jones, J. (1991), "Earnings management during import relief investigations", *Journal of Accounting Research*, Vol. 29 No. 2, pp. 193-228.

Kowalski, P. (2013), *State-Owned Enterprises: Trade Effects and Policy Implications*, OECD Publishing, Paris.

La Porta, R., Lopez-De-Silanes, F. and Shleifer, A. (1999), "Corporate ownership around the world", *Journal of Finance*, Vol. 54 No. 2, pp. 471-517.

La Porta, R., Lopez-De-Silanes, F. and Shleifer, A. (2002), "Government ownership of banks", *Journal of Finance*, Vol. 57 No. 1, pp. 265-301.

Lennox, C.S., Francis, J.R. and Wang, Z. (2012), "Selection models in accounting research", *Accounting Review*, Vol. 87 No. 2, pp. 589-616.

McNichols, M.F. (2000), "Research design issues in earnings management studies", *Journal of Accounting and Public Policy*, Vol. 19 Nos 4-5, pp. 313-345.

Megginson, W., Nash, R. and Randenborgh, M.V. (1994), "The financial and operating performance of newly privatized firms: an international empirical analysis", *Journal of Finance*, Vol. 49 No. 2, pp. 403-452.

Musacchio, A. and Flores-Macias, F. (2009), "The return of state-owned enterprises. Should we be afraid?", *Harvard International Review*, April, available at: www.hbs.edu/faculty/Pages/item.aspx?num=36235

Musacchio, A., Lazzarini, S. and Aguilera, R. (2015), "New varieties of state capitalism: strategic and governance implications", *Academy of Management Perspectives*, Vol. 29 No. 1, pp. 115-131.

Netter, J.M. and Megginson, W. (2001), "From state to market: a survey of empirical studies on privatization", *Journal of Economic Literature*, Vol. 39 No. 2, pp. 321-389.

Ng, A., Yuce, A. and Chen, E. (2009), "Determinants of state equity ownership, and its effect on value/performance: China's privatized firms", *Pacific-Basin Finance Journal*, Vol. 17 No. 4, pp. 413-443.

OECD (2011), *The Size and Composition of the SOE Sector in OECD Countries*, Paris.

Pargendler, M. (2012), "State ownership and corporate governance", *Fordham Law Review*, Vol. 80 No. 6, pp. 2917-2973.

Petersen, M.A. (2009), "Estimating standard errors in finance panel data sets: comparing approaches", *Review of Financial Studies*, Vol. 22 No. 1, pp. 435-480.

Pinnuck, M. and Potter, B. (2009), "The quality and conservatism of the accounting earnings of local governments", *Journal of Accounting & Public Policy*, Vol. 28 No. 6, pp. 525-540.

Piotroski, J., Wong, T. and Zhang, T. (2015), "Political incentives to suppress negative information: evidence from Chinese listed firms", *Journal of Accounting Research*, Vol. 53 No. 2, pp. 405-459.

Rosenbaum, P. and Rubin, D. (1983), "The central role of the propensity score in observational studies for causal effects", *Biometrica*, Vol. 70 No. 1, pp. 41-55.

Sapienza, P. (2004), "The effect of government ownership on bank lending", *Journal of Financial Economics*, Vol. 72 No. 2, pp. 357-384.

Schmidt, K. (1996), "The costs and benefits of privatization: an incomplete contracts approach", *Journal of Law, Economics, and Organization*, Vol. 12 No. 1, pp. 1-24.

Shleifer, A. and Vishny, R.W. (1997), "A survey of corporate governance", *The Journal of Finance*, Vol. 52 No. 2, pp. 737-783.

The Economist (2010), "Chinese acquisitions: China buys up the world", *The Economist*, November 11, p. 11.

Wang, L. and Yung, K. (2011), "Do state enterprises manage earnings more than privately owned firms? The case of China", *Journal of Business Finance & Accounting*, Vol. 38 Nos 7-8, pp. 794-812.

Warfield, T., Wild, J.J. and Wild, K. (1995), "Managerial ownership, accounting choices, and informativeness of earnings", *Journal of Accounting and Economics*, Vol. 20 No. 1, pp. 61-91.

Watts, R. (2003), "Conservatism in accounting part I: explanations and implications", *Accounting Horizons*, Vol. 17 No. 3, pp. 207-221.

Xia, D. and Zhu, S. (2009), "Corporate governance and accounting conservatism in China", *China Journal of Accounting Research*, Vol. 2 No. 2, pp. 81-108.

Corresponding author
Inês Pinto can be contacted at: inespinto@iseg.utl.pt