



WHAT DRIVES THE OPERATING PERFORMANCE OF PRIVATISED FIRMS?

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ABSTRACT

Using a panel data analysis of Spanish privatised firms, we study how different factors influence the operating performance of divested companies. The results show that it is not privatisation per se but other factors that matter. After controlling for possible sample selection bias related to government timing of divestments, we find that the greater the relinquishment of State control and the smaller the percentage of ownership held by managers and/or employees, the better the firms' post-privatisation performance. Moreover, privatisations that are accompanied by liberalisation programmes and occur during buoyant economic cycles turn out to be more successful.

I INTRODUCTION

Privatisation of State-owned enterprises (SOEs) became an important phenomenon in the past few decades and has not stopped in the current global economic crisis. In fact, several European countries, that is, Poland, Greece, Portugal and Spain, have announced their intentions to sell SOEs. The privatisation movement has attracted a great deal of interest from scholars and institutions such as the World Bank and the Organization for Economic Co-operation and Development (OECD). Extensive theoretical and empirical literature suggests that divestments have led to significant increases in productivity and profitability.¹ This has been the case with empirical studies using sample firms privatised in both developed and developing countries (Megginson *et al.*, 1994; D'Souza *et al.*, 2005); in developing countries (Boubakri and

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¹However, other studies suggest that privatisations do not seem to lead to systematic improvements in firms' efficiency or performance (e.g. Vickers and Yarrow, 1988; Bishop and Thomson, 1992; Pestieau and Tulkens, 1993; González-Páramo, 1995; Martin and Parker, 1995; Dewenter and Malatesta, 2001; Reeves and Placic, 2004). For a survey of the privatisation literature, see Megginson and Netter (2001), Djankov and Murell (2002) or Estrin *et al.* (2009). Policy alternatives to privatisations – such as corporatisation or the outsourcing of services provided by the State to private enterprises – have also been analysed in the literature (Aivazian *et al.*, 2005).

Cosset, 1998; Boubakri *et al.*, 2005a); and in Eastern European countries (Claessens and Djankov, 2002; Brown *et al.*, 2006). For developed countries, a large number of studies also show improved performance for privatised firms (D'Souza and Megginson, 1999 – international samples; Yarrow, 1989; Martin and Parker, 1995 – United Kingdom; Boardman *et al.*, 2002 – Canada).

Nevertheless, privatisation alone may not be enough to improve efficiency (Yarrow, 1986; Allen and Gale, 1999). The empirical evidence shows that factors such as the divested firms' control rights, deregulations and increases in competition should be considered (Li and Xu, 2004; Boubakri *et al.*, 2005b; D'Souza *et al.*, 2005). Few studies, however, have been undertaken to analyse the sources of performance improvements. Our paper aims to do so for the Spanish privatisation process.

Spain provides an interesting context in which to examine these issues: it is a large economy, it is a Western Continental European country with a civil-law origin and it suffered a civil war in the 20th century. These are widely accepted indicators of low investor protection (La Porta *et al.*, 1998; Roe, 2006) and high private benefits of control (Nenova, 2003; Dyck and Zingales, 2004). The Spanish privatisation process, which is one of the largest within the EU-25, presents some specificities stemming from the formation of the SOEs (i.e. the majority of them belonged to non-regulated sectors) and to the history of the process itself. Moreover, contrary to a large body of international empirical evidence, most studies specific to Spain (both longitudinal and case studies) do not provide significant evidence that companies perform better when privatised (Sanchis, 1996; Melle, 1999; Villalonga, 2000; Romero, 2005; Cabeza and Gómez, 2007; Farinos *et al.*, 2007; Bachiller, 2009).

Using a sample of Spanish companies privatised between 1985 and 2000, we analyse the factors that might determine divested firms' performance. Specifically, we examine the effect of control rights, competition and economic environment by using a panel data methodology, which allows us to control for firm-specific heterogeneity [most of the empirical studies employ ordinary least squares (OLS) analyses²]. In addition, as firms may not be assigned randomly for privatisation (Gupta *et al.*, 2008; Estrin *et al.*, 2009; Sprenger, 2010), we control for possible self-selection bias related to government timing of privatisations. We are aware that analysing a single country's divestment process could be considered a limitation of our study as our results may not

² Some exemptions that employ panel data methodology are Villalonga (2000) for Spain, Alexandre and Charreaux (2004) for France, Bortolotti *et al.* (2002) and Li and Xu (2004) for international samples in the telecommunications sector and Brown *et al.* (2006), Ausseneg and Jelic (2007) and Brown *et al.* (2010) for Eastern European countries. In comparison with Villalonga (2000), who relies exclusively on return on assets as proxy for firm performance, we initially used other proxies for firm performance, such as efficiency, output, investment, leverage and employment, and we adjust all performance variables to their industry mean. Moreover, both the period of time studied and the sample are larger and we considered the possible biases related to the government's choice of the timing of privatisations as well as additional factors that might explain the performance of privatised firms.

be transferable to other institutional environments. However, in addition to exploring the interesting aspects of the Spanish case, focusing on a specific country allows a more in-depth study: We consider more performance and explanatory variables, build a long time series and analyse not only share issue privatisations (SIPs) but also those done by direct sales. Equally important, we can bring homogeneity to the accounting measures and avoid the possible weakness of cross-country data (due to variations in financial reporting standards, for instance).

In line with the recent survey by Estrin *et al.* (2009), our research suggests that after considering other factors that may influence post-privatisation operating performance privatisation *per se* does not explain firm performance. Profitability and efficiency seem to be driven by other factors: the State's relinquishment of control, the presence of foreign investors, liberalisation, buoyant economic conditions and firm size; on the other hand, the higher the stake held by managers and/or employees in privatised companies, the more the efficiency is hampered.

The rest of the paper is organised as follows. Section II presents a short overview of the Spanish privatisation process. Section III surveys the theoretical and empirical literature to identify potential sources of improved operating performance post-privatisation. Section IV describes the sample selection, methodology and variables we used. The results are discussed in Section V and Section VI presents our main conclusions.

II THE SPANISH PRIVATISATION PROCESS

Between 1985 – when the Spanish programme started – and 2009, 137 SOEs were divested, which accounted for about 5% of total privatisations in the EU-25. Proceeds were US\$53,749.87, placing Spain fifth in the EU-25 in terms of divestment revenues. As in other countries, privatisation was a response to the economic crisis of the late 1970s and early 1980s and was part of a restructuring process founded on liberalisation and deregulation in the financial sector and key product markets (mainly as a consequence of the application of European Community directives).³ Spanish industry, with its unwieldy, unprofitable public sector, needed to adjust to the new economic environment brought about by the country's admission to the European Commission (EC) in 1986 and the opening up of international markets. Revenue from

³ See, for example, Directives 90/387/EEC, 90/388/EEC, 92/44/EC, 95/62/EC, 96/19/EC – with regard to the implementation of full competition in the telecommunications sector – 97/13/EC, 97/33/EC, 97/51/EC and 98/84/EC (telecommunications sector); Directives 97/67/EC and 2002/39/EC (postal services) or Directives 91/440/EC, 95/18/EC, 95/19/EC, 2001/12/EC, 2001/13/EC, 2001/14/EC (transportation sector) or Directives 96/92/EC and 98/30/EC – they represented the first important step in the creation of a Europe-wide competitive electricity market; and Directives 2003/54/EC and 2005/89/EC (energy sector). In Spain, the liberalisation of the petrochemical sector started in 1992, the liberalisation of the telecommunications sector in 1997, the liberalisation of transportation at the end of the 1990s and the liberalisation of the energy market in 1998.

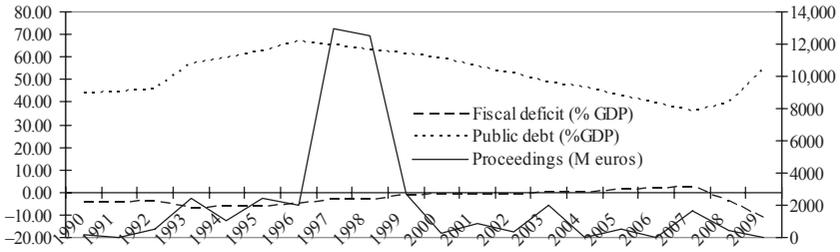


Figure 1. Evolution of privatisation proceedings, fiscal deficit and public debt.

privatisation contributed significantly to reducing the fiscal deficit and the public debt (see Figure 1).⁴

Privatisations through SIPs also helped increase the percentage of shares owned by families and reduced the importance of the State as a large shareholder in listed companies (see Figure 2). In this sense, while State participation in the Spanish stock market decreased at the end of the last century and at the beginning of this one (from 16.64% in 1992 to 0.3% in 2008), shareholdings of individuals and families remained almost stable over the entire period (24.44% in 1992 and 20.2% in 2008), and from 1997 to 1999 State ownership decreased sharply and family shareholdings peaked.

As was the case worldwide,⁵ privatisations were mainly achieved by direct sales (90% of firms), although the largest and most important ones were

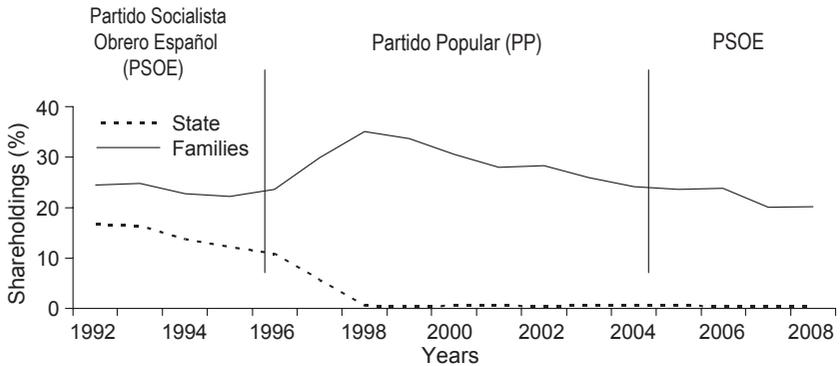


Figure 2. Evolution of State and families' participation in Spanish stock market.

⁴ The EC with ESA95 ruled that privatisation receipts could not be taken into account when calculating fiscal deficits under the Maastricht rules. From July 1996 onwards, ESA95 was applicable in Spain. Nevertheless, the revenues from privatisations may contribute to reduce the issuing of public debt leading to a reduction in outstanding public debt – other Maastricht criteria. Lower debt levels are associated with lower interest payments made by the States contributing also to the reduction of the fiscal deficit. In addition, privatisations reduce the State's transfers to SOEs and therefore may also contribute to reduce the budget deficit (see Bachiller, 2009; Bortolotti and Faccio, 2009).

⁵ For example, for a sample of 1992 privatisations in 92 countries, Megginson *et al.* (2004) show that 767 were divested through share issue privatisations and 1225 via direct sales.

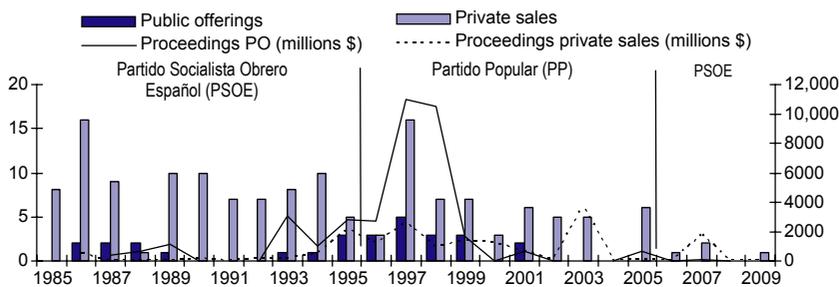


Figure 3. Spanish privatisation transactions and proceeds by method (1985–2009).

divested through SIPs (70% of total proceeds; see Figure 3). Moreover, 18% of the companies – the largest ones (27 firms) – were privatised in stages; thus, while 137 SOEs were divested between 1985 and 2009, the number of privatisation processes within that period stands at 180. There was a fairly small proportion of privatisation processes in regulated industries (as a consequence of history, the Spanish public sector contained a large fraction of firms in non-regulated industries and, therefore, just 43 of the 180 processes involve regulated industries). Privatisation of utilities did not begin until 1988 and intensified from 1992 onward.⁶

III POTENTIAL DETERMINANTS OF POST-PRIVATISATION OPERATING PERFORMANCE

The empirical evidence tends to suggest that privatisation leads to improved operating performance. The financial and economic literature has identified various reasons, including the changes in firms' control rights and institutional and macroeconomic environments. Next, we examine these factors.

III.1 Changes in control rights

The relation between control rights and performance has been the subject of an important debate in the economic literature. The political view of privatisation argues that governments tend to distort managerial objectives for political gain, as they do not internalise the costs of diverting those objectives from the

⁶ Two phases can be distinguished for the privatisations undertaken by the socialist governments in the 1980s: the first phase, from 1985 to 1992, and the second phase, from 1993 to 1996. During the first phase, the companies that were privatised were non-profitable small- and medium-sized firms that had been rescued by the public sector and lacked any strategic interest for it. Most of these companies were sold directly to a single buyer. Only after 1988 did strategic enterprises start to be privatised. After 1992, a considerable number of the largest, most important SOEs, mainly utilities, began or continued to be sold, although the State did not lose control of the firms. After the Conservative Party's General Election victory, the new government approved the Public Sector Modernisation Program and most of the large enterprises that the socialist governments had started to privatise were totally or almost fully privatised. Other SOEs were also privatised.

maximising of profits. Thus, when control rights⁷ passes from the State to private investors, the firm's objectives and managerial incentives are redefined and performance should improve (Boycko *et al.*, 1996). Accordingly, Claessens *et al.* (1997) contend that if the State maintains a majority ownership, a privatised firm is more likely to delay restructuring and maintain a large workforce. Shleifer and Vishny (1996) argue that managers of divested companies controlled by the State may not have incentives to take risks, given the firms' lesser degree of wealth diversification, and might pursue non-value-maximising objectives. The managerial view, based on agency theory, states that SOEs have difficulty overseeing their managers because there is neither an individual owner with strong incentives to do so nor a public price for providing information about good or bad managers (Laffont and Tirole, 1993).

Therefore, considering both the political and managerial views of privatisation, we put forth the following hypothesis.

H1: The more the State relinquishes control over a privatised firm, by reducing its stake or and/or not holding a golden share, the better the company's post-privatisation performance.⁸

The empirical evidence tends to support this hypothesis. In a sample of firms in developing countries, D'Souza and Megginson (1999) find greater improvements in post-privatisation efficiency when the State no longer maintains control. Similarly, Wei *et al.* (2003) report increases in profitability, efficiency and employment for Chinese privatised companies in which the State retains less than 50% of the capital, as do Boubakri *et al.* (2005a) for a sample of firms in developing countries. Similarly, for a sample of companies privatised in developed countries, D'Souza *et al.* (2007) find that real output rises as State ownership decreases, and Shen and Lin (2009), for a sample of firms privatised in China, report that State ownership lowers top manager turnover when the companies' profitability is below their industry median. In contrast, the results of Calomiris *et al.* (2010) show that State ownership has a negative effect on firm returns during privatisation announcements and a positive effect during cancellation announcements.

⁷ The State may retain control through ownership, but also by using other mechanisms, such as politically connected firms (Boubakri *et al.*, 2008, report that the likelihood of observing these connections is positively related to the government residual stake) or golden shares. For instance, Bortolotti and Faccio (2009) show that employing golden shares leverages the State's voting power in privatised firms. In Spain, Law 5/1995 created 'golden shares', that is, shares that required State approval before a private company was allowed to acquire more than a 10% holding. Under the new Law, the State was also granted the prerogative to approve certain company decisions, such as mergers, sales of assets or changes in the firms' activities. However, in the year 2000, the EC denounced this Law and in May 2003 the UE Justice Tribunal declared illegal the golden shares of Spanish privatised companies: the Spanish State could not exercise the golden shares still in place and that were to expire in 2006 and 2007 (those of Repsol, Iberia, Telefónica and Endesa). In November 2005, the Spanish government approved a Law project that banned golden shares; this Law was approved by the parliament in April 2006 and published in May 2006 (Law 3/2006).

⁸ Nevertheless, we must also consider that the relationship between State ownership and privatised firms' performance may be non-linear or non-continuous. We took into account these possibilities as we mention in Section V.

Whether the managers and employees retain shares in privatised companies may also influence future performance. According to the political view, when control of the divested firm remains in the hands of the managerial team, changes in company strategy will be rare, given the team's connection to politicians and government (Cuervo and Villalonga, 2000). The managerial view predicts that managerial ownership has both a positive and a negative impact on post-privatisation performance. On one hand, employees and/or managers who hold sizeable stakes may identify more with the company and be less resistant to privatisation (Dong *et al.*, 2002), so greater firm efficiency and performance should be observed (Makhija and Shapiro, 2000).⁹ On the other hand, although hard constraints, career concerns and potential stakes in the divested firm may give managers more incentives to restructure, managers who are large shareholders would be also able to entrench themselves, behave opportunistically and resist change, reducing the probability of the SOE's restructuring (Aghion *et al.*, 1994). In addition, Cornelli and Li (2006) point out that managers may have *ex ante* plans to buy shares in the coming privatisation, giving them reason to delay restructuring to undervalue the firm.¹⁰

Considering the political view of privatisation and the possibility that managers will avoid restructuring, we state the second hypothesis.

H2: The higher the proportion of shares held by managers and/or employees of a privatised firm, the lower its post-privatisation performance.

This hypothesis is supported to some extent by the empirical evidence: Frydman *et al.* (1999) and Earle and Telegdy (2002) report for a sample of Eastern European countries and for Romania, respectively, that there are larger improvements in performance at divested firms controlled by external investors. As to the possible influence of employee ownership on company performance, the empirical evidence is not conclusive (Barberis *et al.*, 1996; Smith *et al.*, 1997; Earle and Telegdy, 2002; D'Souza *et al.*, 2007).

Among external investors, foreigners should be considered in their own light (Sader, 1993). When a company is acquired by foreign investors, the influence of the firm's home government is expected to decrease (political view). These investors may provide new expertise and technologies, help improve product quality and facilitate access to materials, services and financial markets. Foreign ownership should also increase market oversight of company managers (managerial view). Accordingly, Fahy *et al.* (2003) report better access to financial resources and markets for privatised firms in Poland,

⁹ The model by Roland and Sekkat (2000) shows that in transition economics, managerial career concerns constitute a motivation for SOEs to restructure at the prospect of privatisation.

¹⁰ In fact, Kotrba (1995) analyses the incentives of State firm managers before privatisation and lists seven commonly observed actions by managers (such as making privatisation take as long as possible and using the lack of ownership control to support private activities). These moves prove to be counterproductive for restructuring. Lizal *et al.* (1995) show that the break-ups of State firms in the Czech Republic were mostly value decreasing and were being propelled by the incentives of State firm managers before privatisation.

Hungary and Slovenia that were acquired by foreign investors; and Artisien-Maksimenko and Rojec (2001) find that the participation of a foreign investor leads to the acquisition of new technologies for a sample of privatisations in Poland, Hungary and the Czech Republic. Asaftei and Parmeter (2010) also report for Romania that foreign investors improve divested firms' efficiency.

Thus, we propose the next hypothesis.

H3: When foreign investors own a significant percentage of a privatised firm's shares, higher post-privatisation operating performance should be expected.

III.2 Competitive and economic environments

Competitive environments may also be crucial to the success of privatisations (Harper, 2002). In non-competitive environments private firms should not necessarily perform better than SOEs (De Fraja, 1993), while competitive environments may be more conducive to the monitoring of managers, offering them incentives to maximise shareholder wealth (Shirley and Nellis, 1991; Grosse and Yanes, 1998). Price deregulation and market liberalisation also may put pressure on managers to maximise shareholder wealth and reduce political interference, thereby leading to improvements in the performance of privatised companies. The empirical evidence shows that the more concentrated and/or regulated a market is, the smaller the increase in a firm's productivity (Sheshinski and López-Calva, 2003), and that the improvements in efficiency seem to be larger for privatised firms that operate in competitive markets (Megginson *et al.*, 1994; La Porta and López de Silanes, 1999).

Therefore, we should expect that

H4: Firms operating in liberalised and competitive markets will present a higher post-privatisation operating performance.

Another factor that may influence the success of privatisation is the economic environment. During an expansive economic cycle – especially in its early years – firms that can take advantage of strategic restructuring opportunities show performance improvements. Villalonga (2000) and Alexandre and Charreaux (2004) confirm this for Spain and France, respectively. Thus, we state our final hypothesis as follows.

H5: During an expansive economic cycle, especially in the cycle's early years, privatised firms show higher performance.

IV SAMPLE, METHODOLOGY AND VARIABLES

IV.1 Sample selection

The initial database used for our analysis comprised a sample of 116 companies privatised in Spain during the period 1985–2000 (153 processes). We obtained economic and financial information about the divested firms for a

period of up to 11 years, encompassing 5 years before the first stage or block of privatisation through 5 years after the last stage or block of privatisation. The information was obtained from different sources: the Spanish state-owned industrial holding company *Sociedad Estatal de Participaciones Industriales* (SEPI), and the reports of the *Consejo Consultivo de Privatizaciones* (CCP). The accounting information for the pre-privatisation years was obtained from the annual reports of the former SOEs stored in SEPI's library and from the Ministries of Economy and of Industry. The accounting information for the post-privatisation years was provided by the Spanish Agency (CNMV) and the Madrid Stock Exchange; the offering prospectus for listed companies; the databases SABI (*Sistema de Análisis de Balances Ibéricos*) and of Informasa; the financial reports of the Official Mercantile Registry; and the companies themselves. In addition, the aggregate data for the industries come from the information provided by the Spanish central bank's Central Balance Sheet Data Office (*Central de Balances del Banco de España*). We obtained the inflation rates and gross domestic product data from the National Institute of Statistics (*Instituto Nacional de Estadística*) databases.

The following filters were applied to the initial database:

1. Companies for which we were not able to obtain data for at least 2 years before and after privatisation: firms for which there was a lack of accounting data, and those that went bankrupt soon after privatisation (40 firms).
2. Financial and insurance companies, because of their particular characteristics (two firms).
3. Firms for which we were not able to obtain mean industry ratios of performance (four firms).

Once these filters were applied, the sample was reduced to 70 firms.¹¹ Our sample overcomes the problem of small sample sizes in previous studies about the Spanish privatisation process: Sanchís (1996) uses a sample of 17 firms, Villalonga (2000) uses 24 firms, Hernández de Cos *et al.* (2004) use 33 manufacturing firms and Romero (2005) uses 40 firms. Furthermore, our sample size is comparable with those in other empirical privatisation studies: Megginson *et al.* (1994) use a sample of 61 firms, Dewenter and Malatesta (2001) use 63 firms and Sun and Tong (2005) use 53 Chinese privatised firms.

SOEs may be sold in stages. These staggered sales may come about because of the size of the firm and through an asymmetric information framework between governments and private investors concerning government policies after privatisation. In particular, partial sales may be a sign of a government's commitment to bear the risk of policy reversal. Considering all the stages, our

¹¹ Although the sample amounts to 70 firms, the number of observations for each model may vary on the basis of the dependent variable considered (due to lack of information about all the variables for all sample firms or to the filters applied to avoid outliers in the dependent variables). Thus, the final sample's size in the models varies between 39 and 58 firms, while the total number of observations varies between 364 and 535.

sample amounts to 100 processes. Among them, we have considered just the first and the last stages (86 processes).¹²

A problem associated with empirical privatisation studies is the possibility of sample selection biases. We must note that our final sample resembles the whole database over the period 1985–2000 and the entire privatisation programme (1985–2009): 24% of the processes refer to utilities¹³ (22% of the total processes for the whole database over the period 1985–2000 and 23.89% for the whole privatisation programme 1985–2009); the privatisations of the sample firms also occurred mainly between 1997 and 1999 and in the last years of the 1980s, mainly 1986 and 1989, and most of the sample firms – 76.74% – were privatised through direct sales (79% for the whole database 1985–2000 and 76.66% for the entire privatisation programme 1985–2009).

IV.2 *Methodology and variables*

The Spanish privatisation process, and consequently the sample used, consists of phases that were characterised by varying objectives and by different sub-samples of privatised firms.¹⁴ As a result, sample firms may not have been randomly selected and possible self-selection biases should be controlled for (Estrin *et al.*, 2009). For instance, as suggested by Perotti (1995), early divestments carry more political uncertainty than those undertaken when the privatisation programme has reached a certain degree of implementation (once investors' confidence has built up and reversal of privatisation is difficult, governments will be able to divest larger fractions of stocks). Accordingly, Omran (2009) finds that the timing of privatisations seems to play a role in determining, for instance, private ownership concentration. Other studies such as Gupta *et al.* (2008) for the Czech Republic and Bortolotti and Faccio (2009) for the OECD suggest that, to create a good reputation as a seller or to overcome political obstacles standing in the way of successful privatisations, better firms are chosen for privatisation first.¹⁵

¹² The first and the last stages may be of particular interest. The first stage initiates the privatisation trend, signalling the State's commitment to divesting the firm, and the change from public to private ownership may be more active at this stage. In the final stage, State relinquishment of control is at its highest and therefore improved firm performance should be expected. It should be noted that for a firm divested through a single privatisation, the first and last stages coincide.

¹³ In our sample, the firms belong mainly to the transportation equipment industry (16.28%, SIC code 37); the aluminium sector (11.42%); the water, electricity and gas industry (10.46%, SIC code 49); the iron and steel industry (9.30%, SIC code 33); the food sector (7.14%); capital goods (5.71%); and to the car industry (4.28%). The industry distribution is similar for both the database from 1985 to 2000, and for the whole privatisation programme.

¹⁴ For example, under conservative governments, 35% of processes involved regulated firms and 23.52% used SIPs; under socialist governments, there was a decline to 17% and 15.18%, respectively.

¹⁵ Another factor that may indicate the government's desire for the success of privatisation is the underpricing of firms divested through SIPs, especially early SIPs (Jones *et al.*, 1999). Accordingly, for Spain, Bel (2003) shows that the underpricing of privatised firms was larger for early SIPs. Biais and Perotti (2002) relate the underpricing to the government's desire to attract middle-class votes, especially when social inequality is high. However, as noted by Keloharju *et al.* (2008), retail incentives may be a more cost-effective strategy than underpricing when it comes to increasing the number of investors.

Thus, to address the possible selection bias related to the timing, we employ a two-step estimation procedure that involves initial estimation of a probit regression with a dependent variable that equals 1 for privatisations in which the first stage (or, alternatively, the last stage) took place between 1985 and 1995, and 0 otherwise. We consider 1996 as a cut-off year because it marks both the beginning of the conservative party government in Spain and the approval of an explicit privatisation programme under the Modernisation Programme of the Public Sector (see Figure 3). Furthermore, this year divides the sample into two subsamples of similar sizes.¹⁶

We hypothesise that the government's choice of the timing of privatisations depends on the firms' industry classifications; that is, whether the companies belong to a regulated or a competitive industry, the method of sale (SIPs vs. direct sales), the presence of foreign investors as large shareholders, the percentage of shares sold, firm size and the State's fiscal deficit.¹⁷ We consider this last variable because in Spain, as in other EU countries, the need to comply with the Maastricht criterion that the fiscal deficit be less than 3% of GDP may have determined the timing of privatisations (see Figure 3).¹⁸

Thus, we analyse the probability that a firm was divested during the first period of the privatisation process (1985–1995) by estimating the following equation as the first model of the two-step procedure:

$$Early_i = a_0 + \beta_1 INDUSTRY + \beta_2 METHOD + \beta_3 INVFOR + \beta_4 PPRIVAT + \beta_5 LSIZE + \beta_6 DEFICIT + \varepsilon_i,$$

where *Early* is a dummy variable that equals 1 for privatisations whose first stage (or, alternatively, last stage) took place between 1985 and 1995 and 0 otherwise; *INDUSTRY* is a dummy variable that equals 1 for firms belonging to regulated industries (energy, electricity, transportation and telecommunications) and 0 otherwise; *METHOD* is a dummy variable that equals 1 for SIPs and 0 otherwise; *INVFOR* is a dummy variable that takes on the value of 1 if a foreign investor holds stakes in a firm's capital after privatisation and 0 otherwise; *PPRIVAT* denotes the percentage of a firm's capital sold as a consequence of the privatisation; *LSIZE* is the natural logarithm of a firm's real

¹⁶ We alternatively considered 1993 as the cut-off year (1993 marks the beginning of the second phase of the privatisations undertaken by the socialist government; see Section II). The results of the analyses did not vary significantly.

¹⁷ Following Gupta *et al.* (2008) and Bortolotti and Faccio (2009), we also considered the fact that governments may selectively divest better-performing firms first by alternatively including in the estimation proxies for privatised firms' return on assets (*ROA*) and return of equity (*ROE*) ratios – with and without industry adjustment – at the moment of privatisation. The coefficients of these performance variables, although positive, did not turn out to be statistically significant and there is also a reduction in the number of observations (due to data constraints) of the new models. Besides, the information criterion of Akaike (AIC) revealed that the initial model without considering additional explanatory variables was preferable. Thus, we decided not to include these variables in the model. In this sense, our results are similar to those reported by Sprenger (2010) for Russia; our findings also do not indicate that well-performing firms were privatised first.

¹⁸ This variable complies with the exclusion criterion as it influences the timing of privatisations, but not the operating performance of privatised firms.

sales at the moment of privatisation; and *DEFICIT* equals the fiscal deficit the year the privatisation took place.

Next, we relate the different proxies for a company's operating performance to a set of proxy variables referring to the firm's control rights, the competitive and economic environments, the firm's size, a dummy variable that accounts for the pre-privatisation vs. the post-privatisation periods, the inverse Mills ratio estimated in the first stage to correct for the possible self-selection bias, and the *Early* variable.

We estimate empirical proxies of the operating performance of privatised firms for a period of up to 11 years encompassing 5 years before the first stage through 5 years after the last stage. The proxies of profitability, efficiency, output and employment¹⁹ are estimated after adjusting for the firm's industry.²⁰ We measure profitability by using two ratios: *ROA* and return on sales (*ROS*).²¹ Operating efficiency is measured by three ratios: real sales to employees (*SALES/EMP*), net profit to employees (*NP/EMP*) and operating profit to employees (*OP/EMP*). In addition, we use real sales in millions of euros deflated to 1980 by the index of retail prices (*SALES*) as a proxy for output. Finally, as a proxy for a firm's employment levels we use the number of the firm's employees (*EMP*).

The variables that refer to the different factors that may influence the operating performance of privatised firms include: (a) proxy variables for the State's control rights (*STATEOWN*, *GSHARE*) and proxy variables that relate to characteristics of the firms' non-state ownership (*INSIDEROWN*, *INVFOR*); (b) a proxy variable for the level of the firms' industry competitiveness (*LIBERALIS*);²² and (c) a proxy variable for the economic cycle (*CYCLE*). As control variables, we include a proxy variable for the firms' size (*LSIZE*),²³ a dummy variable named *POSTPRIVAT*, which takes on the value 1 from the privatisation year onwards, the estimated probabilities (i.e. inverse Mills ratio, variable λ) regarding the timing of privatisations to correct

¹⁹ We also considered two other proxies of firm performance – investment and leverage – but no models turned out to be significant.

²⁰ A firm's industry mean per year, as reported by the Spanish central bank, was subtracted from the value shown by each firm each year. The number of companies included in the calculation of an industry mean per year varies from 40 to more than 1000, depending on the sector. Thus, although SOEs are also included in the industry mean ratios, their weight is minimum.

²¹ We also considered the ratio *ROE*, but no model turned out to be significant when using this ratio as the dependent variable, neither for the first stage of privatisation nor for the final one.

²² As a proxy of a firm's industry competitiveness, we also considered its industry concentration each year, which was defined by the market share of the four main companies of the sector in terms of the number of employees. The results were similar.

²³ Larger firms may be more difficult to turn out after privatisation and may benefit from greater ongoing State support; for instance, they may receive soft financing. As a result, larger SOEs may be operating under better economic and financial conditions at the moment of privatisation and, consequently, may exhibit less substantial post-privatisation performance improvements. It can also be argued, however, that their better historical performance, linked to the positive effect of privatisation, could result in better post-privatisation performance in comparison with smaller firms.

for the self-selection bias and the variable *Early*.²⁴ Thus, we estimate the following regression model as the second-stage model:

$$\begin{aligned} PERFORMANCE_{it} = & a_0 + \beta_1 STATEOWN_{it} + \beta_2 GSHARE_{it} \\ & + \beta_3 INSIDEROWN_{it} + \beta_4 INVFOR_{it} \\ & + \beta_5 LIBERALIS_{it} + \beta_6 CYCLE_{it} + \beta_7 LSIZE_{it} \\ & + \beta_8 POSTPRIVAT_{it} + \beta_9 \lambda_i + \beta_{10} Early_i + \mu_{it}, \end{aligned}$$

where *PERFORMANCE* denotes the different proxies for firms' performance (profitability, efficiency, output, employment, investment and leverage), *STATEOWN* is defined as the size of the State's stake in the firms' capital each year,²⁵ *GSHARE* is a dummy variable that indicates whether the State holds a golden share in the privatised firm,²⁶ *INSIDEROWN* and *INVFOR* are dummy variables that take on the value of 1 when the firms' managers and/or employees or a foreign investor, respectively, hold any stake in the firm's capital, *LIBERALIS* is a dummy variable that adopts the value of 1 when an industry has been liberalised and 0 otherwise, *CYCLE* indicates the country's economic situation each year (variation of the GDP each year),²⁷ firm size is defined as the logarithm of the firm's total assets each year (*LSIZE*),²⁸ *POSTPRIVAT* is a dummy variable that takes on the value 1 in the post-privatisation period and 0 otherwise, λ is the inverse Mills ratio of the models of the first-stage estimated model and *Early* is the dummy variable used as a dependent variable in the probit models.

²⁴ Considering the possible influence of restructuring on company efficiency, we considered firm reorganisation prior to privatisation by defining two dummy variables that relate to the improvement, or deterioration, of operating performance measures in the pre-privatisation period and to the reduction in employment in the pre-privatisation period [-5, +1]. The results of the analyses do not vary and the defined variables do not turn out to be significant. Although we are aware that these variables may be imperfect proxy variables for the restructurings of SOEs prior to privatisation, we were not able to obtain other information that allowed us to define more accurate variables. Consequently, and taking into account a reduction in the number of observations, we decided not to include the results of the analyses considering these variables.

²⁵ Alternatively, we considered a dummy variable that takes on a value of 1 if the State does not hold any stake in the privatised firm and 0 otherwise. The results were similar. Besides, we must note that variable *POSTPRIVAT* is correlated with this dummy variable. For instance, when variable *POSTPRIVAT* takes the value of 1, for the first stage of privatisation, the State also owns less than 50% of firm capital in 88.57% of the cases.

²⁶ This variable is included only in the models for the last stage of privatisation, as golden shares were barely in place during the first stage.

²⁷ In addition, considering that privatised firm performance and efficiency gains may be higher at the start of expansive economic cycles, we defined a dummy variable that takes the value of 1 if it corresponds to the first year of the cycle (*CYCLE1*) and 0 otherwise, and another dummy variable that takes the value of 1 if it corresponds to the two first years and 0 otherwise (*CYCLE2*). For the first stage of privatisation, the results show that *CYCLE1* and *CYCLE2* in the majority of the cases present a positive and significant coefficient for most of the estimations, especially the variable *CYCLE2*. For the last stage, the results are similar although the significance of the variables is lower.

²⁸ Alternatively, we considered the logarithm of the firm's real sales as a proxy variable for the firm's size. The results were similar.

These second-stage models are estimated via a pooled cross-sectional time-series regression using a generalised least squares (GLS) procedure. Panel data estimations seem to be the most suitable method of capturing performance indicator variations over time, as we can control for individual, firm-specific unobservable heterogeneity as well as temporal changes in a firm's operating environment; we avoid problems caused by the possible correlation between non-observable firm characteristics and individual variables (Hausman and Taylor, 1981). As the Hausman (1978) test is not significant for all the models, we focus on the random effects models. In addition, we correct the estimations for heteroskedasticity problems.

IV.3 Summary statistics and variable correlations

Summary statistics of key dependent and explanatory variables for the year of privatisation for the first stage of the privatisation processes are shown in Table 1.²⁹ Regarding bivariate correlations between variables, variable *LSIZE* is significantly and positively correlated with variables *INSIDEROWN* and *INVFOR*, so both internal and foreign investors seem to invest more frequently in larger firms. The State's stake in privatised firms (*STATEOWN*) is negatively correlated with variables *INSIDEROWN* and *INVFOR*, suggesting that the larger the State's stake in privatised firms, the smaller the presence of other significant shareholders. As expected, variable *POSTPRIVAT* is negatively correlated to variables *STATEOWN* and positively correlated with variables *INSIDEROWN*, *INVFOR* and *LIBERALIS*. It is worth mentioning, however, that although some variables show a statistically significant correlation, when applying variance inflation factors (VIFs) we find no evidence of multicollinearity problems.

V RESULTS

V.1 Timing of privatisations

The results of the probit models for both the first and last stages of the privatisation processes are reported in Table 2. For the first stage, the model correctly predicts the timing of privatisations in 90% of the cases, while this figure rises to 94% for the last stage. For the first stage, the timing of sales is positively associated with the method of privatisation (*METHOD*), but just with a 10% significance.³⁰ Another variable that influences the timing of privatisations is *INDUSTRY*: firms that belong to a regulated industry seem to

²⁹ For the last stage of privatisation, the summary statistics and bivariate correlations were similar.

³⁰ Spanish firms privatised by means of SIPs, in most cases the Crown Jewels of the SOEs, show a higher probability of being divested during the first defined period (1985–1995). The socialist government, especially after 1988, sold some SOEs completely by means of share issues (e.g. Gesa and Acesa) and initiated the selling of others (Ence, Endesa, Repsol, Argenteria and Telefónica), whereas the conservative government that took office in 1996 only initiated the privatisation by means of SIPs of four firms (Aceralia, Aldeasa, Tabacalera and REE).

Table 1
 Summary statistics (at the moment of privatisation)

Variables	Mean	Median	Maximum	Minimum	SD
Dependent variables					
<i>ROA</i> (N: 50)	-1.414	-0.094	38.145	-40.881	14.480
<i>ROS</i> (N: 49)	-5.150	0.371	68.828	-79.866	15.696
<i>SALES/EMP</i> (N: 53)	0.021	-0.003	0.719	-0.081	0.109
<i>OP/EMP</i> (N: 42)	-0.004	1.66-04	0.051	-0.138	0.030
<i>SALES</i> (N: 64)	123.035	2.934	2127.2	-204.977	344.969
<i>LEV</i> (N: 51)	-4.257	-2.971	64.933	-62.845	26.163
<i>LLEV</i> (N: 48)	-9.180	-7.374	-35.639	-52.179	16.768
Explanatory and control variables					
<i>STATEOWN</i> (N: 70)	85.942	100	100	3.81	23.453
<i>CYCLE</i> (N: 70)	3.689	3.830	7.624	-0.045	1.920
<i>SIZE</i> (N: 63)	1056.162	71.599	28,958.31	1.514	3790.252
Other explanatory and control variables			Percentage/(number) of observations		
<i>INSIDEROWN</i>			0 (69)		
<i>INVFOR</i>			0 (67)		
<i>LIBERALIS</i>			10.29 (7)		

Notes: The sample consists of 70 privatised firms in Spain during the period 1985–2000. *ROA* denotes return on assets (industry adjusted, %); *ROS* denotes return on sales (industry adjusted, %); *SALES/EMP* denotes the ratio of real sales to employees (industry adjusted); *OP/EMP* denotes the ratio of operating profit to employees (industry adjusted); *SALES* denotes the level of real sales (industry adjusted, millions euros); *LEV* denotes the total leverage (industry adjusted, %); *LLEV* denotes the long-run leverage (industry adjusted, %); *STATEOWN* is the percentage that the State holds in the firm's capital; *CYCLE* denotes the variation in the gross domestic product at the moment of privatisation; *SIZE* is the total asset at the moment of privatisation (millions euros); *INSIDEROWN* denotes the participation of management and/or employees in the firm's capital; *INVFOR* denotes if there is a foreign investor in the firm's capital; *LIBERALIS* denotes whether the industry is liberalised or not; *N* denotes the number of firms.

have been chosen to be privatised at a later stage. This may be explained by the characteristics of the Spanish SOEs and privatisation process and is in accordance with the arguments suggested by Bornstein (1999): firms belonging to manufacturing and competitive sectors may be easier to privatise than utilities, which are usually larger and more complex. This result is also in line with those of Boubakri *et al.* (2005a) and Omran (2009) that suggest that utilities and telecommunication sectors show lower levels of private ownership concentration and the government seems to be reluctant to relinquish control in industries that believes economically or politically strategic.

The variable *DEFICIT* also influences the timing of privatisations. Results suggest that the higher the level of budget deficit, the lower the probability of privatisations taking place during the defined early period (1985–1995). The years of higher levels of budget deficit in Spain for the period considered in the study (1985–2000) correspond to the second half of the 1990s. Actually, the high levels of fiscal deficit and the need to comply with the Maastricht Treaty forced the Spanish State to privatise a large fraction of SOEs during those years. This may explain the observed negative relation between the variables *DEFICIT* and *Early*. Finally, contrary to the evidence reported by other authors such as Ausseneg and Jelic (2007), we do not find that the presence of

Table 2
Government's choice of privatisation timing

Variable	Coefficient (<i>p</i> -value)
Panel A: First stage of privatisations	
Constant	-2.055* (0.059)
<i>INDUSTRY</i>	-1.468* (0.065)
<i>METHOD</i>	2.105* (0.052)
<i>INVFOR</i>	0.675 (0.254)
<i>PPRIVAT</i>	0.019 (0.131)
<i>LSIZE</i>	0.008 (0.951)
<i>DEFICIT</i>	-1.294*** (0.008)
Goodness of fit (%)	90
Log-likelihood	-20.310
LR chi-squared	44.79***
Pseudo- R^2	0.524
No. of firms	63
Panel B: Last stage of privatisations	
Constant	-4.294** (0.017)
<i>INDUSTRY</i>	-1.610** (0.048)
<i>METHOD</i>	-0.259 (0.753)
<i>INVFOR</i>	0.154 (0.798)
<i>PPRIVAT</i>	-1.6-04 (0.986)
<i>LSIZE</i>	-8.03-03 (0.952)
<i>DEFICIT</i>	-1.265*** (0.001)
Goodness of fit (%)	94
Log-likelihood	-18.011
LR chi-squared	51.30***
Pseudo- R^2	0.5875
No. of firms	63

Notes: The sample consists of 70 privatised firms in Spain during the period 1985–2000. Probit maximum likelihood estimation for the dependent variable *Early* is applied. *Early* is a dummy variable that takes on the value of 1 for privatisations during 1985–1995 and 0 otherwise; *INDUSTRY* is a dummy variable that takes on the value of 1 for regulated industries; *METHOD* is a dummy variable that takes on the value of 1 for firms privatised by share issue privatisations; *INVFOR* is a dummy variable that takes on the value of 1 if there is a foreign investor in the firm's capital; *PPRIVAT* denotes the percentage of shares sold; *LSIZE* denotes the logarithm of firm sales at the moment of privatisation; and *DEFICIT* is the public deficit at the moment of privatisation. Corrected standard errors were taken into account in the estimations.

*Statistically significant at the 10% level; **Statistically significant at the 5% level; ***Statistically significant at the 1% level.

a foreign investor, the percentage of ownership privatised or size of firm significantly influence the government's choice of privatisation timing.

When we repeat the probit model using the last stage of privatisations as a benchmark, the results confirm the significant influence of the variables *INDUSTRY* and *DEFICIT* for the timing of privatisations, but we do not find that the variable *METHOD* significantly influences the timing of privatisations (see Table 2, Panel B). The fact that most of the firms that were privatised in stages were privatised as SIPs may be biasing the years of the privatisations of these firms towards the second period considered and neutralising the positive and significant relation found between *METHOD* and

the timing of privatisations when considering the first stage of privatisations as a benchmark.

V.2 Firms' operating performance and privatisations (SIPs and direct sales)

We next refer to the results of the second-stage regression models (see Table 3).³¹ The variable λ that controls for the self-selection bias regarding the timing of privatisation matters for the profitability ratio *ROS* and for the efficiency ratio of net profit to employees (*NP/EMP*) when considering the first stage of privatisations and for the level of output (*SALES*) when considering the last stage of privatisations. The coefficient of the variable *Early* is positive and statistically significant for *ROA* and *ROS* for the first-stage models and negative for the level of sales in the last stage of privatisations. These findings suggest that without correcting for self-selection bias, the results may overestimate the improvements in operating profitability and efficiency of early privatisations.

Profitability

The panel analyses reveal a negative and significant coefficient for the variable (*STATEOWN*) and a significant positive impact of foreign investors (*INVFOR*) on profitability for the first stage of privatisations. In addition, variable *LIBERALIS* presents a negative and significant coefficient for *ROS* for the last stage of privatisations. The coefficient of firm size (*LSIZE*) is positive and significant for the profitability ratio *ROS* for the last stage of privatisation. Furthermore, and with regard to the profitability ratios (*ROA* and *ROS*), the privatisation *per se* (*POSTPRIVAT*) presents a positive coefficient being statistically significant for *ROA* in the first stage of privatisations.³²

Efficiency

For the last stage of privatisations, the results show that the greater the State's stake in the capital (*STATEOWN*), or when a golden share exists (*GSHARE*), the lower the level of firm efficiency (ratios *NP/EMP* and *OP/EMP*). For both stages of privatisations, but especially for the last one, internal ownership (*INSIDEROWN*) is associated with decreased efficiency (ratios *SALES/EMP*, *NP/EMP* and *OP/EMP*). In contrast, the foreign investor variable (*INVFOR*), when significant, presents a positive coefficient, but only

³¹ Outliers of the dependent variables were filtered to avoid biases. For the first stage of privatisation no models turned out to be significant for the dependent variable employment. Models were not significant when using *ROA* as the dependent variable for the last stage of privatisation. Non-significant models are not reported in the tables. We also ran all the models including just the proxy variables related to each of the proposed hypotheses and the control variables. The results were similar, but differed in some cases especially regarding variable *POSTPRIVAT*.

³² In addition, although not shown, to test for the possible influence of changes in leverage on the profitability of privatised firms, we included in the analyses proxy variables related to the firms' total and long-term leverage. The proxy variables of firm leverage always present a negative although non-statistically significant coefficient for profitability ratios and the results remain the same.

Table 3
Performance determinants of privatised firm

Variable	Reg. 1 (ROA)	Reg. 2 (ROS)	Reg. 3 (SALES/EMP)	Reg. 4 (NPI/EMP)	Reg. 5 (OPI/EMP)	Reg. 6 (SALES)
Constant	-0.579 (0.869)	-18.392* (0.088)	-0.077 (0.282)	-0.010 (0.255)	-0.019* (0.055)	-304.217*** (0.000)
STATEOWN	-0.082*** (0.004)	-0.089 (0.204)	-2.28-04 (0.432)	-1.10-04 (0.179)	-7.13-06 (0.943)	1.016*** (0.041)
INSIDEROWN	0.882 (0.614)	-2.163 (0.615)	-0.072** (0.012)	-0.006 (0.169)	-2.32-04 (0.971)	126.104*** (0.006)
INVFOR	2.993* (0.080)	-1.235 (0.779)	-0.011 (0.282)	0.010* (0.084)	0.003 (0.437)	76.607*** (0.000)
LIBERALIS	-1.104 (0.508)	-4.932 (0.103)	0.070** (0.048)	-0.012 (0.177)	4.08-04 (0.958)	-60.065 (0.152)
CYCLE	0.093 (0.695)	0.578 (0.414)	0.001 (0.306)	0.001* (0.064)	0.001** (0.045)	1.562 (0.601)
LSIZE	0.492 (0.300)	1.791 (0.185)	0.002 (0.615)	0.002** (0.031)	0.002* (0.099)	84.748*** (0.000)
POSTPRIVAT	5.912* (0.064)	1.620 (0.843)	-0.009 (0.764)	-0.011 (0.146)	0.003 (0.685)	83.970 (0.101)
λ	5.02-05 (0.615)	5.35-04** (0.036)	8.64-07 (0.540)	7.85-07* (0.080)	1.82-07 (0.624)	-0.002 (0.106)
Early	0.803*** (0.002)	1.757*** (0.004)	0.001 (0.678)	8.96-04 (0.131)	0.001 (0.165)	-6.735 (0.132)
Wald's χ^2	35.78***	48.29***	18.93**	29.11***	39.61***	81.64***
No. of observations	430	418	434	393	366	535
No. of groups	47	45	45	40	39	58
Hausman	0.19	5.26	0.85	8.01	1.96	4.63
R ²	0.100	0.086	0.141	0.179	0.180	0.384

Table 3 (Continued)

Variable	Reg. 1 (ROS)	Reg. 2 (SALES/EMP)	Reg. 3 (NP/EMP)	Reg. 4 (OP/EMP)	Reg. 5 (SALES)	Reg. 6 (EMP)
Constant	-26.899** (0.015)	-0.025 (0.788)	-0.003 (0.965)	0.006 (0.580)	-237.100*** (0.002)	-1968.106** (0.026)
STATEOWN	-0.026 (0.702)	-2.19-04 (0.604)	-1.19-04 (0.141)	-1.85-04* (0.090)	0.339 (0.529)	27.256*** (0.004)
GSHARE	4.306 (0.262)	-0.024 (0.493)	-0.023*** (0.009)	-0.006 (0.242)	29.524 (0.592)	5704.1*** (0.000)
INSIDEROWN	-4.579 (0.270)	-0.059** (0.034)	-0.016** (0.016)	-0.017*** (0.000)	109.625*** (0.002)	2396.503*** (0.000)
INVFOR	-3.699 (0.435)	0.042* (0.074)	0.003 (0.503)	0.002 (0.556)	72.661** (0.013)	904.638** (0.014)
LIBERALIS	-8.445* (0.052)	0.025 (0.448)	0.013** (0.010)	0.008 (0.266)	-207.648*** (0.000)	2148.512*** (0.004)
CYCLE	0.862 (0.159)	0.004 (0.149)	0.001*** (0.004)	0.001*** (0.009)	2.169 (0.542)	-72.597* (0.073)
L SIZE	2.322* (0.078)	-0.013 (0.230)	6.30-04 (0.498)	0.001 (0.420)	85.464*** (0.000)	1430.44*** (0.000)
POSTPRIVAT	7.448 (0.337)	0.007 (0.854)	-0.005 (0.523)	0.004 (0.684)	29.761 (0.586)	-2623.702*** (0.002)
λ	1.37-08 (0.494)	1.09-12 (0.991)	2.41-11 (0.150)	-8.87-12 (0.755)	-5.15-07*** (0.002)	-4.25-06 (0.183)
Early	1.110 (0.143)	0.001 (0.647)	-4.60-04 (0.490)	-0.001 (0.217)	-8.977** (0.036)	-13.083 (0.770)
Wald's χ^2	26.88***	26.25***	43.96***	23.08***	197.46***	113.04***
No. of observations	412	411	390	364	518	437
No. of groups	45	44	41	40	57	47
Hausman	0.20	2.92	10.58	3.44	2.41	2.54
R ²	0.168	0.085	0.115	0.180	0.394	0.582

Notes: ROA and ROS denote firms' profitability; SALES/EMP, NP/EMP and OP/EMP denote firms' efficiency; SALES denotes firms' real sales; EMP denotes firms' level of employment; STATEOWN is the percentage that the State holds in the firm's capital; INSIDEROWN denotes the participation of the management and/or employees in the firm's capital; INVFOR denotes if there is a foreign buyer; LIBERALIS denotes if it is a liberalised industry or not; CYCLE denotes the variation in the gross domestic product; L SIZE is the logarithm of total assets; POSTPRIVAT denotes if the year corresponds or not to the post-privatisation period; λ is a variable that controls for the sample selection bias; and Early denotes if the firm was privatised during the early years (1985-1995). Corrected standard errors were taken into account in the estimations.

*Statistically significant at the 10% level; **Statistically significant at the 5% level; ***Statistically significant at the 1% level.

significant at the 10% level (for the ratios NP/EMP and $SALES/EMP$ for the first and last stages of privatisations, respectively).

Another factor worth mentioning is liberalisation (*LIBERALIS*). When significant, the coefficient of this variable suggests that firm efficiency increases when the company belongs to a liberalised industry (ratios $SALES/EMP$ for the first stage of privatisation and NP/EMP for the last stage of privatisation). In addition, the variable *CYCLE* is linked to higher levels of efficiency (ratios NP/EMP and OP/EMP for both the first and last stages of privatisation). The proxy variable for firm size (*LSIZE*) presents positive and significant coefficients, especially for the first stage of privatisations. Finally, privatisation *per se* does not seem to have a clear effect on efficiency: the variable *POSTPRIVAT* does not turn out to be significant.

Output

For the first stage of privatisations, variable *STATEOWN* presents a positive coefficient. Although this result seems to contradict the expected, one explanation could be that during the first stage of privatisations some firms are only partially divested, so the State remains in control and may put pressure on managers to attain inefficient levels of output or employment to protect economically or socially distressed areas. Variables *INSIDEROWN* and *INVFOR* also present positive and significant coefficients for variable *SALES* for both stages of privatisations. These results suggest that managers and/or employees may pursue empire-building objectives when they have significant stakes in privatised firms, and that the presence of foreign investors may provide divested firms with new expertise and technologies leading to increases in sales.

Variable *LIBERALIS* presents a negative and significant coefficient for the last stage of privatisations, suggesting that firms privatised in liberalised industries may have less market power and therefore present lower levels of output. Finally, firm size (*LSIZE*) presents a positive and significant coefficient for both the first and last stages of privatisation and variable *POSTPRIVAT* does not turn out to be significant in neither the first nor the last stage of privatisations.

Employment

The variables related to a company's control rights seem to be relevant for employment in privatised firms, but just for the model related to the last stage of privatisations (see Table 3, Panel B). The greater the State's holding in a firm's capital, the more employees the company has, which is also the case when the State has a golden share (*GSHARE*). These results suggest that the State's maintenance of control may cause managers to attain inefficient levels of employment. Likewise, insider ownership (*INSIDEROWN*) is associated with a larger number of employees, perhaps because of managerial inclination to build empires and to the pressure exercised by employees who are shareholders. Foreign investor ownership (*INVFOR*) also has a positive impact on employment levels. In addition, results suggest that at privatised firms in

liberalised industries, employment is higher. The variable *POSTPRIVAT* seems to influence negatively and significantly the level of employment, suggesting a reduction in the number of employees in divested firms.

V.3 Firms' operating performance and privatisations: results by privatisation method

As reported by Megginson *et al.* (2004), the choice of whether to use the public capital market or the private capital market may depend, among other factors, on the institutional setting, whether the government can get the best price, and firm size: SIPs may be more likely in less-developed capital markets, for more profitable larger SOEs and in countries with greater protection of minority shareholders. Within the Spanish privatisation programme, 90% of the firms were divested through direct sales, although 70% of the total proceeds came from SIPs.³³

Although not shown, the results obtained³⁴ when we used the sub-sample of firms privatised by direct sales are not all similar to our findings when we looked at the whole sample of divested firms. Similar to what we observed for the entire sample, the size of the State's shareholding seems to significantly decrease firm profitability and efficiency. However, the negative influence that the size of manager and/or employee shareholdings has on operating performance is less pronounced for the sub-sample of firms privatised by direct sales, especially for the last stage of divestment; and the positive effect of foreign investor ownership on profitability and efficiency that we observed for the whole sample is not corroborated for the sub-sample. The influence of the proxy variables representing the firm's competitive and economic environment that we found for the entire sample remains, although it is less significant for the direct sales sub-sample. Finally, as we found for the whole sample, firm size, when statistically significant, enhances profitability, efficiency, output and employment; and the variable representing the post-privatisation period shows a positive and significant effect on output for the first stage of privatisation but a negative effect on employment for the last stage.

As for the sub-sample of SIPs, using panel data analyses would not produce reliable results because of the sub-sample's size. For this reason, we estimated differences between sub-samples. The results must be considered with caution, but similar to the evidence reported by D'Souza and Megginson (1999) and Boubakri and Hamza (2007) for international samples, they reinforce the idea that firm control rights and institutional environment may influence the performance of divested companies.

³³ In Spain, transparency and minority shareholders' rights have increased during the past decades, but the country still shows lower anti-director rights and disclosure requirement indexes than Anglo-Saxon countries. This could explain the high percentage of firms divested through private sales. In addition, because of its history, the public sector had many non-large, non-regulated firms, which also explains the high percentage of private sales.

³⁴ These results refer to the second step of the regression models after controlling for the government's timing of privatisations. Owing to the number of observations, the results should be considered with caution.

V.4 Summary of results

Summing up, the findings show that considering the timing of privatisations may be necessary in analysing the factors that may affect the performance of privatised firms. Among these variables, privatisation *per se* does not seem to have a significant influence on profitability and efficiency once other factors that may help explain the success of privatisation processes have been controlled for:³⁵ certain elements such as company control rights, firm industry level of competitiveness, the economic environment and firm size are relevant.

In particular, the results support Hypothesis 1: the relinquishment of control by the State, either as a shareholder or as a holder of golden shares, seems to enhance firm profitability and efficiency. These findings are similar to those reported by D'Souza and Megginson (1999), Wei *et al.* (2003), Boubakri *et al.* (2005a) and D'Souza *et al.* (2007) and support both the political and managerial views of privatisation with regard to the Spanish divestment process.³⁶ Moreover, they suggest that non-State shareholders should also be taken into account in attempts to explain the success of privatisations. In line with the results reported by Frydman *et al.* (1999) and Earle and Telegdy (2002) related to managerial ownership and with those reported by Barberis *et al.* (1996) and Earle and Telegdy (2002) on employee ownership, insider ownership seems to decrease the efficiency of divested firms and increase their staffing levels. These results support Hypothesis 2.

As proposed in Hypothesis 3 and previously reported by Wei *et al.* (2003), Alexandre and Charreaux (2004), D'Souza *et al.* (2007) and Brown *et al.* (2010), foreign investors seem to have a positive effect on firm profitability, output and employment for the whole sample. These results seem to support the view that companies acquired by foreign investors suffer less from the influence of national politicians (political view), and foreign investor capital may usher in new technologies, thereby enhancing firm performance.

The economic environment in which divested firms operate also seems to be an important potential factor in the success of privatisations. Similar to La Porta and López de Silanes (1999) and as put forth in Hypothesis 4, we find that firms in liberalised industries achieve higher operating performance. Moreover, as proposed in Hypothesis 5, we find that during an

³⁵ However, variable *POSTPRIVAT* does turn out to be significant for dependant variables *OP/EMP* and *SALES* for the first stage of privatisation when we included only control variables in the models. Considering that variable *POSTPRIVAT* is significantly correlated with variables *STATEOWN*, *INVFOR* and *LIBERALIS*, these results suggest that it is not privatisation *per se*, but other factors that may drive post-privatisation operating performance improvements.

³⁶ When we took into account non-linear relations between State ownership and divested firms' performance, neither for a quadratic specification, nor for a cubic one, were the results significant (neither for the first-stage nor the last-stage models). Besides, we also considered the possibility of a non-continuous relation between State ownership and privatised firm performance by including a dummy variable that took the value of 1 when the State after privatisation held more than 50% of the company's shares. This variable (for the first stage of privatisation models), similar to the variable *STATEOWN*, affected profitability negatively and significantly; it also influenced firm output, significantly but positively.

expansive economic cycle – especially in the early years of the cycle – privatised firms show greater efficiency. This result confirms research by Villalonga (2000) and suggests that privatised company efficiency may be partly explained by the country's economic situation. Finally, as Villalonga (2000) has also reported, performance seems to be influenced positively by firm size.

VI CONCLUSIONS

This paper contributes to the debate about the effects of privatisation on firm performance by analysing the determinants of divested companies' performance in one of the biggest privatisation programmes undertaken by a Western Continental European country: Spain, a civil-law economy, which after decades of protective and authoritarian right-wing rule emerged with a large public sector that needed to be restructured as democracy arrived and the country joined the EC. The programme, undertaken by the left- and right-wing governments, involved a large percentage of non-regulated firms, and in 90% of the cases the divestments were performed through private sales. Contrary to most of the existent empirical evidence from studies for other countries, the Spanish programme does not seem to have resulted in significant performance improvements for privatised firms.

Our findings for a Western European country confirm previous results reported for Eastern European countries, showing the need to control for the government's choice of privatisation timing. Moreover, they suggest that Spanish governments did not choose to privatise regulated companies first, but rather those firms from competitive industries that were more easily divested; and that the State's need for cash, spurred by the Maastricht criteria, influenced the timing of privatisations. Nowadays, as a result of the economic crisis, various countries, including Spain, have announced further divestments. These announcements, again driven by a need for cash, reinforce the importance of controlling for timing when studying privatisation.

Our results also suggest that the State's relinquishment of control and/or the presence of outside investors in the firms' capital enhance post-privatisation operating performance, and that regulatory reforms and competition, mainly in our case as a consequence of EC directives, also are beneficial. Performance also improves during expansive economic cycles, especially when the cycles are in their early stages, because efficiency improvements and strategic restructuring opportunities are more likely. Nevertheless, in line with previous results reported for Eastern European countries, our findings suggest that *ex ante* managerial incentives and the proximity of managers to politicians may delay firms' strategic changes and consequently limit the expected benefits from divesting. This evidence indicates that if governments want to ensure that privatisations turn out well, they should relinquish control of the firms and try to attract foreign investors who may facilitate new technology and will be less influenced by national politicians.

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