

**EXPLAINING THE PERFORMANCE OF SPANISH PRIVATISED  
FIRMS: A PANEL DATA APPROACH**

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## Explaining the performance of Spanish privatised firms: a panel data approach

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## **Explaining the performance of Spanish privatised firms: a panel data approach**

### **Abstract:**

Using a panel data of 70 Spanish privatised firms, we study whether the shares held in the divested firms' capital by employees, managers and the State, the nationality of the buyer, the economic environment, as well as the firms' size, may explain the performance of privatised firms. The results suggest that firms in which the State completely relinquishes control have more probabilities of maximizing efficiency. Besides, the entrance of foreign investors in the firms' capital may provide firms with new know-how and access to new technologies and markets that may also improve the success of privatisations processes. Moreover, the results suggest that privatisations of SOEs *per se* may not be sufficient to improve their performance, since privatisations that are accompanied by liberalisation programs and competition turn out to be more successful. Finally, these results are in general terms the same both for firms privatised through direct sale and public offering.

**Key words:** Privatisation, performance, determinants, panel data

**JEL:** L33, L32, L51

## Explaining the performance of Spanish privatised firms: a panel data approach

### 1. Introduction

The privatisation of State-Owned Enterprises (SOEs) has become during the last decades an important phenomenon that has led to significant changes in the structure of corporate ownership around the world. Since this process was initiated in 1979 in the United Kingdom under the Thatcher government, this wave of privatisations has spread both to developed and developing countries, amounting the cumulative proceeds raised worldwide to almost 1.50 million \$ (Megginson, 2007). This privatisation movement has not stopped with the beginning of the new century. Between 2000 and 2005 more than 970 privatisation transactions have taken place worldwide, amounting the proceeds of privatisation processes to more than 6.700 million US\$. Although during the 1980s and 1990s privatisations took place mainly in the European and Central Asian areas (56 percent of the total transactions), they have expanded to emerging markets, being the Latin American and Caribbean areas and the South Asian countries in recent years the most significant leaders in these processes in terms of revenues.

A large body of empirical research has focused on the improvements expected in the financial and operating efficiency of divested firms as a result of privatisations. Most studies suggest that privatisations have led to significant increases in firms' productivity and profitability as reported by Megginson and Netter (2001), Djankov and Murell (2002), Lopez de Silanes (2005), Nellis (2005) and Megginson (2005). This has been the case in the UK (Parker and Hartley, 1991; Martin and Parker, 1995), in China (Wei *et al.*, 2003), in Romania (Earle and Telegdy, 2002), in Poland and Bulgaria (Estrin *et al.*, 2005), and in Malawi (Chirwat, 2004). The same conclusion has been reached by multi-country studies that employed samples of firms privatised in developed countries (Megginson *et al.*, 1994; D'Souza *et al.*, 2005), developing countries (Boubakri and Cosset, 1998; Boubakri *et al.*, 2005) and East European countries (Claessens and Djankov, 2002; Brown *et al.*, 2006)<sup>ii</sup>. However, few papers have tried to analyse the sources of the observed privatisation performance improvements (Boubakri *et al.*, 2005; D'Souza *et al.*, 2005, 2007).

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<sup>ii</sup> However, other studies suggest that privatisation does not seem to lead to systematic improvements in allocative efficiency (Pestieau and Tulkens, 1993) or in productive efficiency (Vickers and Yarrow, 1988; Gonzalez-Paramo, 1995; Martin and Parker, 1997).

Using a sample of 70 Spanish firms privatised between 1985 and 2000, we analyse possible determinants of privatised firms' performance. Specifically, we examine how ownership structures, regulation and competition affect firms' performance. The Spanish privatisation process has been one of the largest among OECD countries in terms of assets sold, thereby ranking Spain fifth among the EU-25 countries as far as revenues from privatisations are concerned (51.832,848 million US\$). Between 1985 and 2006, 135 firms were privatised in Spain, while the number of transactions in the EU amounted to 1,962, with total proceeds of 816,191.04 million US\$ (Privatization Barometer, 2007).

Although Spain is nowadays one of the largest economies in the world and its privatisation process has been quite important among the European countries and worldwide, the empirical evidence for the Spanish privatisation process is scarce and not conclusive (Melle, 1999; Villalonga, 2000; Romero, 2005; Cabeza and Gomez, 2007; Farinos *et al.*, 2007). Moreover, contrariwise to a large body of international empirical evidence, in the majority of the cases both longitudinal studies and case studies do not tend to provide significant evidence supporting enhanced performance of Spanish privatised firms, although most of these studies do not analyse other determinants, besides the privatisation *per se*, that may also help to explain divested firms' post- privatisation performance.

In comparison with most of the empirical studies that employ an OLS analysis when trying to explain possible determinants of privatised firms' performance (with the exception of Villalonga, 2000<sup>iii</sup>, for Spain, Alexandre and Charreaux, 2004, for France, Bortolotti *et al.*, 2001 and Li and Xu, 2004, for international samples in the telecommunications sector, and Brown *et al.*, 2006, for East European countries), we employ a panel data methodology which allows us to control for firm-specific heterogeneity. Furthermore, compared to other multi-country studies that also analyse possible determinants of the post-privatisation changes observed in firms' profitability and performance, for privatisations implemented through share issue privatisations (SIPs), our study uses a sample of privatised firms in one specific country. This allows us to undertake a more in depth study: we consider more performance and explanatory variables and we analyse not only privatisations by SIPs, but also by means of direct sales. The method by which SOEs are privatised may depend on the characteristics

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<sup>iii</sup> In comparison with Villalonga (2000), we initially used, along with profitability and efficiency ratios, other proxies for firms' performance, such as output, investment, leverage and employment, and we adjust all variables to their industry mean. We do not report the results for the proxy variables of investment and leverage because, as for these variables, no models turned out to be statistically significant. Besides, both the period of time considered (1985-2000) and the sample are larger, and we consider additional factors that may explain privatised firms' performance.

of the market, the political and legal environment and the protection of investor rights, as well as on firm-specific characteristics (Megginson *et al.*, 2004). As reported by these authors, larger offerings and more profitable SOEs are more likely to be privatised through SIPs. Consequently, the determinants of divested firms' performance could differ for firms privatised through SIPs or direct sales.

The results of the study, both for firms privatised through SIPs and direct sales, support a positive effect of external investors' participation, competition and firms' size on privatised firms' performance. The State's stake in the firms' capital has a negative effect on firms' performance, while the opposite holds for the presence of a foreign investor. The liberalisation of the firms' industry and an increase in competitiveness affect positively firms' profitability and efficiency, suggesting that competitiveness may put pressure on managers and/or politicians to maximize shareholders' wealth. Summing up, when the State relinquishes control and when a foreign investor acquires the firm, and in liberalised and more competitive environments, performance improvements seem to take place. Finally, larger firms are more profitable, efficient and show larger levels of output.

The rest of the paper is organized as follows. Section 2 presents a short history of the Spanish privatisation process. Section 3 surveys the theoretical and empirical literature to identify potential sources of post-privatisation performance improvements. Section 4 describes the sample selection, methodology and the variables used in the study. The results are discussed in section 5, and section 6 presents the main conclusions of the paper.

## **2. A short history of the Spanish privatisation process**

The Spanish privatisation process, as part of a process of economic restructuring founded upon liberalisation and deregulation in both the financial sector and key product markets, raised US\$ 51.382,848 million between 1986 and 2006, thereby ranking Spain fifth among the EU-25 countries in terms of revenues from privatisations. One of the spin-offs of this process is that the participation of the public sector in Spain's GDP declined sharply over the last decade of the previous century, particularly from 1996 onwards. Furthermore, the State's participation as a shareholder in the Spanish Stock Market also declined significantly from 16.64 per cent in 1992 to 0.44 per cent in 2006 (CCP, 2006).

Between 1985, the starting point of the privatisation process, and 2006, 135 State-Owned Enterprises were privatised in Spain, which represents approximately 5 per cent of total transactions in EU-25. The privatisation process in Spain was undertaken for three main reasons. Firstly, it was a response to the economic crisis of the late 1970s and early 1980s, when there were high levels of inflation, interest rates and unemployment; secondly, there was an obvious need to adjust the Spanish industry, with its unwieldy, unprofitable public sector, to the new economic environment being ushered in by Spain joining the European Community in 1986. Finally, it was a reaction to the opening-up of international markets. Thus, we may say that the reduction of the fiscal deficit and of the financial needs of public firms and the restructuring of the public sector were the main objectives for the beginning of the Spanish privatisations, similarly to what happened in other EU countries (Bel and Costas, 2001). The revenues obtained through the privatisation of State-Owned Companies from 1992 onwards, particularly during the years 1997 and 1998 (see Graph 1), contributed significantly to reduce the fiscal deficit and the amount of public debt. According to Verges (1998), up to 75 per cent of the proceeds from privatisations were devoted to this end. Actually, while the Spanish public deficit amounted to 6.6 per cent in year 1995, it was reduced to 4.8 per cent in 1996, to 3.10 in 1997 and to 3 per cent in 1998. Furthermore, in 2006 the Spanish public accounts showed a surplus of 1.8 per cent in the GDP for the first time in 30 years. A decreasing trend can be also observed for the public debt, which passed from 63.9 in year 1995 to 39.9 per cent in year 2006 (Banco de España, 2007). 1997 and 1998 were the most active years in privatisation transactions: 12 per cent of total privatisation processes took place in 1997, while this figure amounted to 6 per cent in 1998.

The Spanish privatisation process has been conducted by both the socialist and the conservative governments (between 1985-1996, 2004-until now, and 1996-2003, respectively), has not yet finished, and has been accompanied by greater competition in key product markets, particularly over the latter half of the 1990s. Among the main achievements related to the liberalisation processes it should be mentioned the petrochemical sector's liberalisation which started in 1992, the telecommunications sector's liberalisation in 1997, the liberalisation of transports at the end of the 1990's and the liberalisation of the electrical market in 1998.

Two stages can be distinguished under the socialist government: the first stage from 1985 to



1992 and the second stage from 1993 to 1996. During the first stage non-profitable firms were totally sold and profitable firms were only partially sold. The aim was to obtain revenues. During this phase a “silent privatisation”, justified by technological, organizational and strategic necessities for the firms’ development and for the reduction of the public sector’s size, took place (Cuervo, 2004). The main characteristic of the second stage (1993-1996) was the increase in partial sales by public offerings of the SOEs Crown Jewels (i.e. Argentaria, Endesa, or Repsol). However, in order to maintain the control over Spanish firms, the government created hard cores of shareholders, and golden shares were established from 1995 onwards.

Under the conservative government, privatisations took place through an explicit policy thanks to the “Modernisation Program of the Public Sector” initiated in 1996. Although the main motivations underlying these privatisations were associated with the higher efficiency of private firms (Bel and Costas, 2001), their sequence and the use of the revenues obtained make necessary to consider that the economic motivations coexisted with the financial ones (Verges, 1998, 2000).

Under both governments, the main method of privatisation was the direct sale (90 per cent of the firms), although the largest and most important firms were privatised through share issues privatisations (70 per cent of the total proceedings) (Privatization Barometer, 2007) (Graph 2). A considerable number of firms, particularly the larger ones, were privatised in stages. 48 per cent were sold off in different phases during the socialist period (1985-1996), 32 per cent were first sold during the socialist period and continued to be privatised under the conservatives, and 20 per cent were privatised in different phases between 1996 and 2003, when the Spanish Conservative Party held power. In 2005, the socialist government continued the privatisation of three firms whose privatisation had been started by the conservative government, and privatised another three firms.

As is the case of most of the privatisation processes, one objective of the Spanish privatisation program has also been to create a popular capitalism that would boost stock market development. Boubakri and Hamza (2007) show that in legal environments that guarantee investor protection, privatisations through share issues benefit stock markets development. In the case of Spain, the privatisation process has indeed helped developing the Spanish capital

markets. Actually, a significant part of the current largest listed companies in Spain were originally SOEs (i.e. Telefonica, Endesa and Repsol) or are the result of mergers of private companies with privatised companies (BBVA). In January 2008 the market capitalisation of privatised firms belonging to IBEX35 Index amounted to 187,470,314 thousand Euros, which represents 38 per cent of the total Index capitalisation.

During the most active privatisation years, privatisations through SIPs also helped to enlarge the percentage of shares owned by families, and reduced the importance of the State as a large shareholder of quoted companies. In this sense, whilst the State participation in the Spanish Stock Market decreased at the end of the last century and the beginning of this one (from 16.64 per cent in 1992 to 0.44 per cent in 2006), the shareholdings held by individuals and families remained almost stable over the entire period (24.44% in 1992 to 23.8% in 2006). But, from 1997 to 1999 (the years when privatisation processes peaked both in size of firms and number of firms privatised) the State ownership decreased sharply and families' shareholdings peaked.

### **3. Potential sources of post-privatisation performance changes**

The finance and economic literature has identified different reasons why privatisations might derive in improvements in the firms' performance; among them, changes in the firms' ownership structures and the macroeconomic and institutional environments. We next refer to these factors.

#### **3.1. Changes in the firms' ownership structures**

One of the factors that may explain post-privatisation firms' performance is the change in the firms' corporate governance due to changes in their ownership structures. The political view of privatisations argues that politicians have a tendency to distort managerial objectives in order to satisfy political objectives, especially excess employment, as they do not internalize the costs of distorting firms' objectives away from profit maximization. When control rights pass from the State to private investors, the firms' objectives and managers' incentives are redefined and, consequently, firms' performance should increase (Boycko *et al.*, 1996).

Accordingly, Claessens *et al.* (1997) contends that if the State maintains a majority ownership the firm is more likely to delay restructuring and maintain high levels of employment, and Shleifer and Vishny (1996) argue that divested firms controlled by the State, or by the managerial team, may not have incentives to assume risks given their less wealth diversification and could pursue non value maximizing objectives. Therefore, the higher the relinquishment of control by the State, the larger the post-privatisation performance improvements, as politicians may not be able to continue influencing firms' decisions and consequently privatised companies will experience increases in entrepreneurship activities and growth and profitability.

The managerial view, based on the agency theory, also helps explain privatised firms' performance due to changes in the firms' ownership structures. It states that SOEs have difficulties to monitor managers because there is neither an individual owner with strong incentives to monitor managers nor a public price to provide information about good or bad managers (Laffont and Tirole, 1993).

The empirical evidence tends to support both the political and managerial view of privatisations, as it shows that the change of control rights from the State to private investors enhances firms' performance. D'Souza and Megginson (1999) for a sample of firms belonging to developing countries find larger efficiency improvements for privatisations in which the State no longer maintains control. Similarly, Wei *et al.* (2003) for a sample of Chinese privatisations report post-privatisation increases in profitability, efficiency and employment for privatised firms in which the State retains less than 50 per cent of the capital, as do Boubakri *et al.* (2005) for a sample of developing countries. Likewise, D'Souza *et al.* (2007) find that real output increases as State ownership decreases. Nevertheless, other studies, as Gupta (2005) for India, find that partial privatisations and the maintenance of management control by the State may have a positive impact on profitability, productivity and investment. These last results contradict the political view of privatisations and suggest that the monitoring by the market may be sufficient to enhance firms' performance.

Whether the managers and employees retain shares in privatised firms may also influence their future performance. According to the political view, when the divested firm's control remains in the hands of the managerial team, given their proximity to politicians and to the

government, changes in the firm's strategy, especially those relating to investment and employment, will be rare (Cuervo and Villalonga, 2000). The managerial view predicts both a positive and a negative impact of managerial ownership in privatised firms' performance. On the one hand, higher stakes of employees or managers may increase their identification with the company. Both managers and employees will be more motivated and will not present resistance to the privatisation process (Dong *et al.*, 2002), and consequently increases in privatised firms' efficiency and performance should be observed (Brouthers and Arens, 1999; Markhija and Shapiro, 2000). Nevertheless, large stakes of firms' shares held by managers would allow them to entrench themselves, presenting opportunistic behaviours and higher resistance to change, reducing the probability of SOEs' restructurings (Blanchard and Aghion, 1996).

The empirical evidence tends to suggest larger increases in performance for divested firms controlled by external investors (Frydman *et al.*, 1999; Earle and Teledge, 2002)<sup>iv</sup>, supporting thus both the political view and the monitoring role exercised by outside investors over managers (managerial view). Regarding the possible influence of employees' ownership on firms' performance, the empirical evidence is not conclusive. On the one hand, some studies show a negative relationship between employees' ownership and efficiency or productivity (Barberis *et al.*, 1996; Boycko *et al.*, 1996; Earle and Teledge, 2002) or between employees' ownership and profitability (D'Souza *et al.*, 2007), while on the other hand, others studies find that this relationship turns out to be positive (Smith *et al.*, 1997).

Among the external investors, foreign investors' ownership should be considered as a special case. They may influence significantly firm's post-privatisation performance and market valuation (Sader, 1993; Lopez de Silanes, 1997). Foreign investors may provide new know-how and technologies to the divested firms, may help to improve the quality of firms' products and facilitate their access to products and services markets and to financial markets. Consequently, foreign investors' ownership will increase the monitoring exercised by markets over managers (managerial view). This argument is supported by the results of Fahy *et al.* (2003) that report a better and easier access to financial resources and markets of privatised firms that were acquired by foreign investors, and by the paper by Artisien-Maksimenko (2001) who found that the participation of a foreign investor in privatised firms' capital leads

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<sup>iv</sup> However, the empirical evidence is not always conclusive regarding a better performance for firms dominated by externals (Frydman *et al.*, 1997).

to the acquisition of new technologies. Furthermore, when firms are acquired by foreign investors the influence of national politicians will be expected to be lower (political view).

### 3.2. Macroeconomic and institutional environments

But not only may privatised firms' performance be influenced by their ownership structures; a competitive environment may also be crucial for the success of privatisations (Harper, 2002). Competitive environments may monitor managers, offering them incentives to maximize shareholders' wealth (Shirley and Nellis, 1991; Grosse and Yanes, 1998). Likewise, price deregulation and market liberalisation may also impose pressure on managers to maximize shareholders' wealth and reduce political interference, thus leading to performance improvements in privatised firms' performance. Accordingly, the empirical evidence shows that the more concentrated and/or regulated is the market the lower the increase in firms' productivity, although firms may be able to exploit their market power (Sheshinski and Lopez-Calva, 2003). Furthermore, as different authors report, even if privatisations' efficiency improvements seem to take place both in competitive and regulated industries, the improvements in firms' efficiency are significantly larger for privatised firms that operate in competitive markets (Megginson *et al.*, 1994; La Porta and Lopez de Silanes, 1999).

Another factor that may influence the success of privatisation processes is the economic environment at the time of the privatisation. A country with a fairly sophisticated economy and higher income rates is more likely to have a market friendly policy. Moreover, as restructurings are more plausible during expansive economic cycles, the post-privatisation firms' performance improvements should be larger for firms privatised during expansive economic cycles. Villalonga (2000) for Spain and Alexandre and Charreaux (2004) for France confirm this prediction. They report a positive relationship between post-privatisation firms' efficiency and the economic cycle.

Besides the above reported factors, some firms' characteristics, such as firms' size, may also influence privatised firms' performance. Larger firms may be more difficult to turn out after privatisation (Villalonga, 2000; Aussenegg and Jelic, 2002), and may have benefited from greater ongoing State's support, for instance they may have received soft financing (Megginson and Netter, 2001). As a result, larger SOEs may be in better economic and

financial conditions at the moment of privatisation and, consequently, they may exhibit less substantial post-privatisation performance improvements after privatisation. But it could also be argued that their better historical performance, linked to the positive effect of privatisation, could result in a better post-privatisation performance in comparison with smaller firms.

#### **4. Sample, variables and methodology**

##### **4.1. Sample selection**

The initial database used for the analysis comprises a sample of companies privatised in Spain during the period 1985-2000, namely 117 firms. We got economic and financial information about the privatised firms for a period of up to eleven years encompassing five years before the first stage or block of privatisation through five years after the last stage or block of privatisation.

To the initial database the following filters were applied:

- a) Firms for which we were not able to obtain data for at least two years after and before privatisation: firms for which there was a lack of accounting data or firms that went bankrupt soon after the privatisation.
- b) Financial firms due to their particular characteristics.
- c) Firms for which we were not able to obtain their mean industry ratios of performance.

Once these filters were applied, the final sample was reduced to 70 firms (86 privatisation processes) (Table 1). In comparison with previous studies about the Spanish privatisation process, our sample is more representative and larger: Sanchis (1996) uses a sample of 17 firms, Villalonga (2000) uses a sample of 24 firms, Hernandez de Cos *et al.* (2004) use a sample of 33 manufacturing firms and Romero (2005) uses a sample of 40 firms. Furthermore, our sample size is comparable to studies that use international samples of firms privatised through public share offerings; for instance Megginson *et al.* (1994) use a sample of 61 firms, Dewenter and Malatesta (2001) use a sample of 63 firms and Sun and Tong (2005) use a sample of 53 firms.

Table 2 shows the year and industry distribution of sample firms. They mostly belong to the transport equipment industry (16.28% - SIC code 37), to the water, electricity and gas industry (10.46% - SIC Code 49) and to the iron and steel industry (9.30% - SIC Code 33). As is the case for the whole Spanish privatisation process, sample firms' privatisations occurred mainly between 1997 and 1999 (13 privatisation processes in 1997, 15.12%, and 10 privatisation processes in 1999, 11.63%). The majority of sample firms were privatised through a direct sale (76.74% of the cases).

We consider two stages of the privatisation process (the first stage and the last stage) taking into account that the implications of privatisations may differ as a consequence of the real relinquishment of the State in the firms' capital. In this sense, we should expect a higher firms' performance the lower the percentage of shares retained by the State; and thus, better firms' performance would be expected for the last stage of privatisations. Nevertheless, one may also argue that the first stage of the privatisation process initiates the privatisation trend, signalling the commitment of the State with the firms' privatisation and that the change from public to private ownership is more actively occurring at this moment.

The information about the Spanish privatised firms was obtained from different data sources: the Spanish State-Owned Holding Company (*Sociedad Estatal de Participaciones Industriales -SEPI-*), some samples used by previous studies (Verges, 1999; Villalonga, 2000a) and the reports of the Consultative Board of Privatisations (*Consejo Consultivo de Privatizaciones -CCP-*). The accounting information was obtained: for the pre-privatisation years, from the annual reports of the formerly SOEs stored in the library of the SEPI and different ministries (Economy and Industry); for the post-privatisation years, from information provided by the Spanish Supervisory Agency (CNMV), by the Madrid Stock Exchange and the firms' offerings prospectus for listed companies, by the databases SABI (Sistema de Analisis de Balances Ibericos) and Informasa, and by the financial reports of the Official Mercantile Registry and by the companies. This information has been completed with that provided by the Dicodi and the Dun's & Bradstreet directories. In addition, the aggregate data for the industries comes from the information provided by the Spanish Central Bank's Central Balance Sheet Data Office (Central de Balances del Banco de España). In order to estimate the industry's concentration we employed the directory "*Fomento de la Produccion*", and inflation rates and GDP data were obtained from the National Institute of Statistics

(*Instituto Nacional de Estadística*) databases.

#### 4.2. Variables

In order to analyse possible factors that may influence privatised firms' performance, we first estimate empirical proxies of their performance for a period of up to eleven years encompassing five years before the first stage or block of privatisation through five years after the last stage or block of privatisation<sup>v</sup>. Thus, for each company, we estimate different proxies of its profitability, efficiency, output and employment<sup>vi</sup>, relating to both the five years of public ownership and the five years as a privatised entity after the last privatisation stage. These measures are estimated after adjusting for its industry, i.e., a firm's industry mean for the same year, as reported by the Spanish Central Bank, was subtracted from the value shown by each firm each year. For all firms, the year of privatisation is named year 0.

We measure profitability using two ratios: return on assets (ROA) and return on sales (ROS)<sup>vii</sup>. Operating efficiency is measured by four ratios: real sales-to-employees (SALES/EMP), net profit-to-employees (NP/EMP), operating profit-to-employees (OP/EMP) and added value-to-employees (AV/EMP). Besides, we use real sales -in million euros- (sales deflated to 1980 by the index of retail prices, SALES) as a proxy for output. Finally, as a proxy for the firms' employment level we use the number of the firms' employees (EMP) (Table 3, Panel A).

The variables that refer to the different factors that may influence privatised firms' performance are shown in Table 3, Panel B. These variables include: a) proxy variables for the presence of the State as shareholder or its maintenance of control through golden shares (STATEOWN, GSHARE) and proxy variables that relate to other characteristics of the firms' ownership (INSIDEROWN, INVFOR); b) proxy variables for the level of the firms industry's competitiveness (LIBERALIS, CONCENT); c) a proxy variable for the economic cycle (CYCLE); and d) a proxy variable for the firms' size (LSALES).

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<sup>v</sup> The first stage of the privatisation process -1S- refers to the first sale, while the last stage of the privatisation process -LS- refers to the last sale or privatisation. For those firms that were privatised through a single privatisation, 1S and LS coincide.

<sup>vi</sup> We also considered two other proxies for firms' performance (investment and leverage), but no models turned out to be significant. Employment models only turn out significant for the last stage of privatisation.

<sup>vii</sup> We also considered the ratio return of equity (ROE), but no model turned out to be significant when using as dependent variable this ratio, neither for the first stage of the privatisation process nor for the last one.



STATEOWN is defined as the size of the State's stake in the firms' capital each year<sup>viii</sup> and GSHARE is defined as a dummy variable that indicates whether the State holds a golden share on the privatised firm. This variable is only included in the models for the last stage of privatisations, since golden shares were hardly in place during the first stage of privatisations. INSIDEROWN and INVFOR are defined as dummy variables that take value one when the firms' managers and/or employees or a foreign investor, respectively, hold any stake in the firms' capital.

LIBERALIS is a dummy variable that adopts value one when an industry has been liberalised and zero otherwise. CONCENT indicates the firm's industry concentration each year (expressed in a percentage). It is defined as the four main firms of the sector's market share (in terms of number of employees)<sup>ix</sup>. We also considered the possibility of including a dummy variable that denoted whether the firm belonged or not to a regulated industry (SECTOR)<sup>x</sup>. However, this variable (constant over time) was not adequate for the analysis. Nevertheless, we repeated all the estimations including CONCENT and SECTOR as proxies for competitive environments, detecting no differences for the significance and coefficients of the other independent variables included in the analysis. Likewise, as variable LIBERALIS is correlated with several other explanatory variables, we estimated all the models including only variable CONCENT as proxy for the firms' competitiveness and found that the results were similar.

Variable CYCLE indicates each year's country's economic situation, and firm's size (LSALES) is defined as the logarithm of the firm's real total sales in millions of euros each year (LSALES)<sup>xi</sup>. Finally, in order to test for the influence of privatisations on firms' performance we included a dummy variable named POSTPRIVAT which takes value one from the privatisation year onward<sup>xii</sup>.

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<sup>viii</sup> Alternatively, we considered a dummy variable that takes value one if the State does not hold any stake in the privatised firm and zero otherwise. The results were similar.

<sup>ix</sup> We are aware of the existence of other most adequate proxies for this variable, for instance, the industry's market share in terms of sales. However, due to data constraints we were not able to consider another proxy.

<sup>x</sup> Firms that belong to the energy, electricity, transport and communication industries.

<sup>xi</sup> Alternatively, we considered the logarithm of the firm's total assets as a proxy variable for firm's size. The results did not vary.

<sup>xii</sup> Alternatively, we considered five dummy variables that relate to the years passed since the privatisation year. The results were similar and there were not significant differences between these dummies except for the regression models where the dependent variables are the added value-to-employees ratio and the output proxy (for the first stage of privatisations), and the ratio net profit-to-employees (for the last stage of privatisation). Consequently, we only considered one dummy related to the privatisation *per se*.

### 4.3. Methodology

In order to analyse whether different factors may have influenced the profitability, efficiency, output and employment of divested firms, we relate the different proxies for firms' performance to the set of proxy variables referring to the firms' ownership structures, their regulatory and economic environment, their size and the dummy variable that accounts for the pre and post-privatisation period. Panel data estimations seem to be the most suitable method of capturing the variations over time in the performance indicators, since we may control for individual, firm-specific heterogeneity, as well as for temporal changes in the firms' operating environment. By employing this methodology we avoid problems caused by the possible correlation between non-observable firms' characteristics and the individual variables, that is, we may eliminate the unobservable heterogeneity that sample firms could present (Hausman and Taylor, 1981). Unobservable heterogeneity might result in spurious correlations with the dependent variables, which would bias the coefficients obtained.

As is customary in panel data analyses, we estimate both fixed effects and random effects models. The fixed effects specification assumes that company-specific effects are fixed parameters to be estimated, whereas the random effects model assumes that companies constitute a random sample. To identify which model is preferable we run the Hausman test to determine whether the unobservable heterogeneity is correlated with the explanatory variables (Hausman, 1978), which in turn implies that coefficients estimated by fixed-effects estimator and those estimated by random effect estimator do not statistically differ. If the Hausman test is significant we focus on the fixed effects model, whereas we stress the random effect model if the test turns out to be no significant. Additionally, we have corrected the estimations for heteroskedasticity and autocorrelation problems.

### 4.4. Summary statistics and variables' correlations

When we compare the explanatory variables' values over the pre-privatisation period versus the post-privatisation period, we find that, as expected, although the median value for variable STATEOWN in the pre-privatisation period amounts to 100 per cent, it amounts to 0 over the post-privatisation period. Over the pre-privatisation period, as expected, no firm presents golden shares, insider ownership or foreign investors as shareholders. During the post-privatisation period, while in the year following the last stage of privatisation the State holds a

golden share in 7.14 per cent of divested firms, this percentage amounts only to 4.55 per cent of privatised firms in the fifth year after privatisation; insiders are significant shareholders of privatised firms for about 25 per cent of sample firms, and foreign investors' have invested in more of 40 per cent of sample firms. Liberalisation seems to take place along with privatisation processes: while only 9 per cent of sample firms belong to liberalised industries in the year before privatisation, this percentage almost doubles (16.18%) in the first year after privatisation.

The bivariate correlations between variables (for the first stage of privatisation) are presented in Table 4<sup>xiii</sup>. Variable LSALES is significantly and positively correlated with the variables INSIDEROWN and INVFOR, so both internal and foreign investors seem to invest more frequently in larger firms. Besides, larger firms belong to more concentrated industries. 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 lower the presence of other significant shareholders. As expected, variable LIBERALIS is negatively correlated to variable CONCENT, suggesting that liberalised industries are less concentrated (Table 4).

## **5. Firms' performance and privatisation**

The results, after choosing the correct model (fixed or random), and considering the first and the last stage of the privatisation processes are reported in Table 5<sup>xiv</sup>. We first refer to the results regarding profitability, efficiency, output and employment measures for the whole sample, and afterwards we refer to some additional results obtained when dividing the sample into two sub-samples: one composed by the firms that were privatised by means of direct sales and the other composed by SIPs firms. Lastly, we summarize the main results of the analyses.

### **5.1. Profitability**

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<sup>xiii</sup> For the last stage of privatisation the results were similar.

<sup>xiv</sup> Extreme values 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 variables net profit-to-employees and employment. Models were not significant when using variable ROA as dependent variable for the last stage of privatisation. Non-significant models are not reported in the Tables.

For the first stage of privatisation, and with regard to the profitability ratios (ROA and ROS) the privatisation *per se* (POSTPRIVAT) seems to have a positive and significant effect on firms' performance (at the 5 and 10 per cent level, respectively). For the last stage of the privatisation process, this variable also presents a positive coefficient for the ROS ratio, although the coefficient is not statistically significant. Additionally, the panel analyses reveal a positive, although non significant, coefficient for the variable representing the ownership held by the State (STATEOWN) and a significant positive impact of foreign investors (INVFOR) on profitability, both for the first and the last stage of the privatisation process (ROA and ROS, respectively). Besides, variable CONCENT presents a positive and significant coefficient on ROA for the first stage of the privatisation process. Finally, the coefficient of firms' size (LSALES) is positive and significant for all the profitability ratios and for both stages of the privatisation process, suggesting that larger firms are the more profitable.

## 5.2. Efficiency

Similar to what happens for the ratios related to profitability, for both stages of privatisation, the privatisation *per se* (POSTPRIVAT), when significant, seems to influence positively firms' efficiency (AV/EMP, first privatisation stage at a 1 per cent)<sup>xv</sup>.

Ownership also influences privatised firms' efficiency. The State's stake in the firms' capital is associated with lower levels of efficiency for the first stage of privatisation (added value to employee, AV/EMP). Likewise, for the last stage of privatisation, the higher the State's stake in the capital (STATEOWN), or when a golden share exists (GSHARE), the lower the level of firms' efficiency (SALES/EMP, NP/EMP, OP/EMP, AV/EMP). These results suggest a negative influence of the control exercised by the State on firms' efficiency. Also, in both stages of the privatisation processes, but especially in the last one, internal ownership (INSIDEROWN) is associated with less efficiency (SALES/EMP, NP/EMP, AV/EMP). On the contrary, foreign investors' variable (INVFOR), when significant, presents positive coefficients for both the first and the last stage of the privatisation processes.

Other factors that are worth mentioning are liberalisation (LIBERALIS) and the level of the firms' industry concentration (CONCENT). When significant, the coefficients of these variables for both stages of privatisation suggest that firms' efficiency increases when the

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<sup>xv</sup> For the last stage of privatisation, variable POSTPRIVAT presents a negative coefficient for the model that uses as dependent variable NP/EMP, but the statistical significance of the coefficient is only 10%.

firms belong to liberalised industries and when the industry's concentration is low. Firms' size (LSALES) presents positive and significant coefficients.

### 5.3. Output

Variable POSTPRIVAT does not turn out to be significant when using output as dependent variable. The proxy of the State's participation in the firms' capital (STATEOWN) presents for the first stage of privatisation a positive coefficient, although the coefficient is only significant at a 10 per cent level. Although this result seems to contradict the one expected, one possible explanation could be that during the first stage of privatisation some firms are privatised only partially, so the State may continue controlling privatised firms, i.e., governments may incentive managers via subsidies with the purpose of attaining inefficient levels of output or employment in order to protect economically or socially distressed regions or areas. The positive and significant coefficient of variable GSHARE for the last stage of privatisation also seems to point to this argument. Firms in which the State retains control present larger levels of output. Variables INSIDEROWN and INVFOR also present positive coefficients, although variable INSIDEROWN does not influence significantly firms' performance during the last stage of privatisation. These results suggest that the presence of foreign investors may provide privatised firms with new know-how and technologies, thus increasing their sales.

Variable LIBERALIS presents a negative and significant coefficient for the last stage of privatisation, suggesting that firms privatised in liberalised industries may have less market power and therefore present lower levels of output. Firms' size presents a positive and significant coefficient for both the first and the last stage of the privatisation process.

### 5.4. Employment

Although variable POSTPRIVAT does not influence significantly divested firms' employment, the variables related to the firms' ownership structures seem to be relevant (Table 5, Panel B). Firms in which the State holds a golden share (GSHARE) are the ones with larger levels of employment. Once again, these results suggest that the maintenance of control by the State via golden shares may incentive managers to attain inefficient levels of employment. Likewise, insiders' ownership (INSIDEROWN) is associated with more

employment, perhaps due to managers' attitude towards building empires and to the pressure exercised by employees as shareholders. Foreign investors' ownership (INVFOR) has also a positive impact on employment. Firms' macroeconomic and institutional environments (variables CYCLE, LIBERALIS and CONCENT) do not influence significantly firms' employment.

### 5.5. Summary of results

Summing up, these results, similarly to the ones reported by Boubakri and Cosset (1998) for a sample of firms privatised in developing countries, by D'Souza and Megginson (1999) for a sample of firms privatised in industrialized countries, by La Porta and Lopez de Silanes (1999) for Mexico suggest that privatisations lead to higher profitability and efficiency. Thus, once other possible determinants of divested firms' performance are considered, privatisation *per se* still seems to influence firms' performance.

Nevertheless, although privatisation may be important, other factors, in addition to the change from public to private ownership, seem to influence more significantly privatised firms' performance. The results point to the necessity of considering the firms' ownership structures, the industries' level of competitiveness and the firms' size when analysing privatisations' success. In fact, the retention of significant share stakes by the State and the existence of golden shares, especially once the privatisation has been completed (after the last stage of privatisation), seem to damage firms' operating efficiency and to increase firms' sales and employment levels. These results, similar to the ones reported by D'Souza and Megginson (1999), Wei *et al.* (2003), Boubakri *et al.* (2005) and D'Souza *et al.* (2007), support both the political and the managerial view of privatisation with regard to the Spanish privatisation process, and suggest that the relinquishment of control by the State may have a significant influence on the success of privatisation processes.

Other large shareholders may also play an important role in the success of privatisation processes. In line with the results reported by Frydman *et al.* (1999) or Earle and Teledge (2002) related to managerial ownership, or by Barberis *et al.* (1996), Boycko *et al.* (1996), Earle and Teledge (2002) on employees' ownership, insiders' ownership seems to decrease

divested firms' efficiency and increase their employment levels, while foreign investors, as previously reported by Djankov (1999), Wei *et al.* (2003), Alexandre and Charreux (2004) and D'Souza *et al.* (2007) seem to have a positive effect on both firms' profitability and efficiency, and firms' output and employment. These results support once again the political view of privatisation and the possible entrenchment of insiders in privatisation processes (managerial view).

Privatised firms' institutional environment also seems to be an important factor for the success of privatisations. Firms operating in liberalised and less concentrated industries obtain higher efficiency levels. Besides, firms that have been fully privatised and firms operating in liberalised sectors present lower levels of output, which suggests that they may extract less market power. However, neither the economic environment nor the economic cycle seem to influence divested firms' performance. This result appears to contradict the one reported by Villalonga (2000), although her measure of variable CYCLE differs from ours. The fact that most of the firms were privatised during expansive economic cycles, especially the firms that were privatised by means of SIPs, and that those firms are the ones operating in more concentrated sectors may explain the results. The fact that Villalonga (2000) does not consider the industry's concentration may also help to explain our differential results.

Finally, and as already reported by Villalonga (2000), firms' size (LSALES) has a positive influence on divested firms' performance.

## 5.6. Additional analyses

We next refer to all the analyses relating exclusively to the sample of firms privatised by means of direct sales (Table 6). Most multi-country studies use samples of SIPs and only a few studies that analyse possible determinants of firms' performance include samples of direct sale privatisations. As reported by Megginson *et al.* (2004) the choice of whether to use the public capital market or the private capital market is based on whether the government can receive the best price. While SIPs are more likely in less developed capital markets, for more profitable State-Owned Enterprises and in countries with more protection of minority shareholders, direct sales are more likely when there is less State control and the firm is smaller.

In the Spanish privatisation program, 90 per cent of the firms were privatised through direct sales, although 70 per cent of the total proceeds were obtained through SIPs. As shown in Table 6, variable STATEOWN seems to decrease firms' profitability (ratio ROS for both stages of privatisation) and firms' efficiency (ratio OP/EMP, last stage of privatisation). INSIDEROWN presents a negative and significant coefficient at a 1 per cent level on efficiency ratio OP/EMP (first stage of privatisation) and a positive and significant coefficient at a 5 per cent level on employment (last stage of privatisation). Foreign investor ownership presents a positive and significant coefficient on firms' profitability (ratio ROS, last stage of privatisation) and output (last stage of privatisation). Variable LIBERALIS influences positively firms' efficiency (SALES/EMP, both stages of privatisation), while for the first stage of privatisation variable CONCENT influences in a positive way firms' profitability (ratios ROA and ROS ) and for both stages of privatisation variable CONCENT influences negatively firms' efficiency (ratio OP/EMP).

Firms' size (when significant) enhances firms' profitability, efficiency, output and employment.

These results are therefore similar to those reported for the whole sample, although the negative influence of insiders' ownership on firms' performance and the positive effect of foreign investors' ownership seem to be more significant than was the case for the whole sample.

Although it is not shown here, we conduct panel data analyses and mean and median difference analyses for the sub-sample of firms privatised by means of share issues privatisations. However, the results of the panel data analyses must be taken cautiously given the small size of the sub-sample. The results do not allow us to affirm that SIPs do always show post-privatisation performance improvements. While firms privatised by means of direct sales seem to experience increases in firms' profitability, efficiency, output and sales, this is not always the case for SIPs. This differential behaviour may be explained because firms privatised by share issues show already prior to privatisation good performance and/or have been restructured prior to privatisation and were also listed on the Stock Exchange and were therefore subject to the monitoring exercised by capital markets.

By analysing which factors may influence the performance of SIPs, as well as the evidence



reported by D'Souza and Megginson (1999) and D'Souza and Hamza (2007) for international samples, we once again find that not only privatisation *per se*, but also firms' ownership structures and institutional environment, may influence divested firms' performance.

Summing up, our results indicate that regardless of whether firms are privatised through share issues or through direct sale, the relinquishment of control by the State, either as a shareholder or as a holder of golden shares, enhances firms' profitability, efficiency and output, especially once the firms have been fully or almost fully privatised. Insiders' ownership seems to decrease firms' performance, thus supporting a possible entrenchment of insiders (this result is particularly significant for firms privatised by SIPs), while the presence of foreign investors as significant shareholders seem to influence positively firms' performance. Besides, our results, similarly to those reported by La Porta and Lopez de Silanes (1999), point to the importance of firms' industries competitiveness in order to explain the success of privatisations. Firms that belong to more concentrated industries show lower levels of performance improvements, while the liberalisation of regulated industries seems to provide incentives for the success of privatised firms.

## **6. Conclusions**

The debate about the effects of privatisation on firms' performance is important. However, there are not too many papers that use panel data when studying the possible determinants of the firms' post-privatisation performance changes, and most of the papers that employ international samples, use samples of SIPs. By analysing which factors may influence the performance of Spanish firms privatised between 1985 and 2000, we find evidence that not only privatisation *per se*, but also the relinquishment of control by the State or the presence of foreign investors in the firms' capital are important determinants of the privatised firms' performance. Furthermore, liberalisation and competition policies contributed substantially to improve firms' performance. Liberalisation has a positive impact on firms' efficiency, which suggests that macro-economics reforms create the necessary incentives for privatised firms to improve their performance. Furthermore, when dividing the sample between firms privatised through direct sales and share issues, the results reinforce the importance of ownership related variables and of the institutional setting for the success of privatisation. Besides, these results

point to the necessity of encompassing liberalisation to privatisation processes, and to the importance of corporate governance for privatisation success. Privatisations work better when they are accompanied by other institutional and firms' corporate governance reforms.

Consequently, our study represents a step towards examining how ownership, competition and other characteristics of the privatisation processes impact the performance of divested firms.

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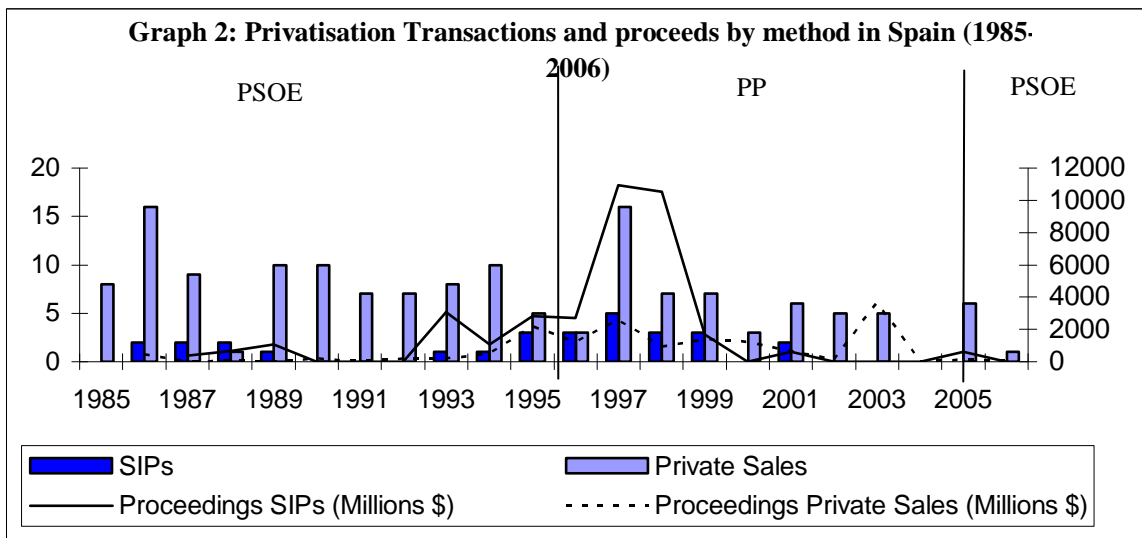
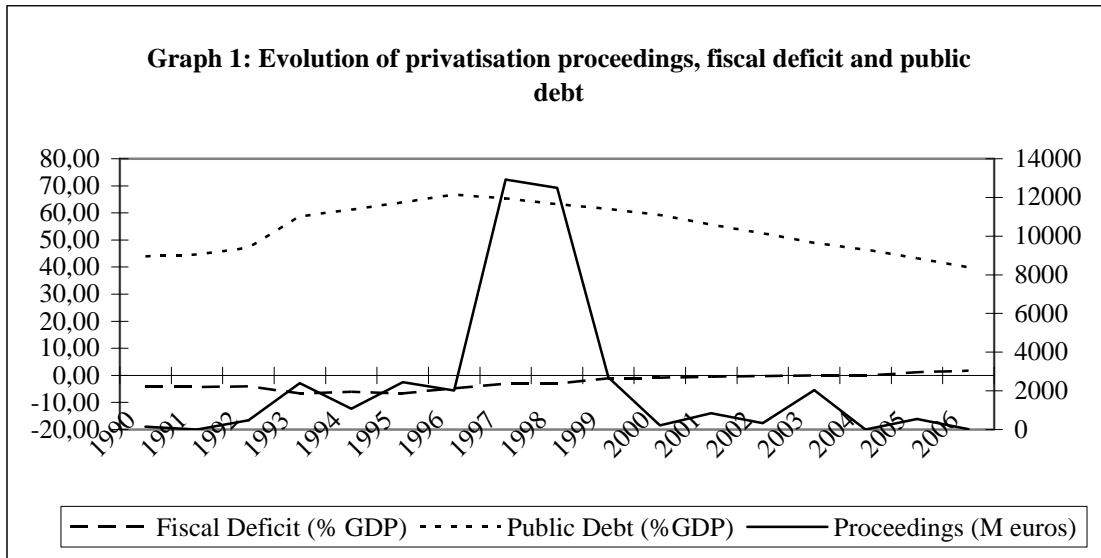
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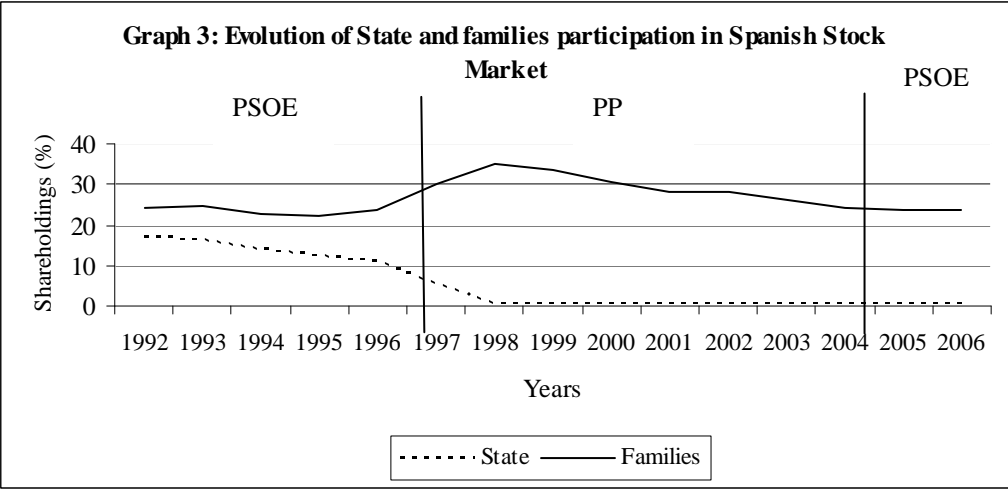
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**Table 1: Sample**

<b>Privatisation year <sup>(1)</sup></b>	<b>Privatised firm</b>	<b>Activity</b>	<b>Method of privatisation</b>
1985/89	Ingenasa	Biotechnological	Direct Sale
1985	Gossypium	Textiles	Direct Sale
1985	Textil Tarazona	Textiles	Direct Sale
1985	Viajes Marsans	Tourism	Direct Sale
1986	Amper	Electronics	PO
1986	Entursa	Tourism	Direct Sale
1986	Frigsa	Food	Direct Sale
1986	Gesa	Energy	PO
1986	Remetal <sup>(2)</sup>	Aluminium	Direct Sale
1986/90	Seat	Car industry	Direct Sale
1986/94	Telesincro	Electronics	Direct Sale
1987	Acesa	Highways	PO
1987	Alumalsa	Aluminium	Direct Sale
1987	Gas Madrid	Energy	PO
1987	Litofan	Aluminium	Direct Sale
1987	Purolator	Car industry	Direct Sale
1988/95	Ence	Paper	PO
1988/98	Endesa	Energy	PO
1989	Astican	Shipbuilding	Direct Sale
1989/92	Ateinsa	Capital goods	Direct Sale
1989	Enfersa <sup>(3)</sup>	Fertilizers	Direct Sale
1989/92	MTM	Capital goods	Direct Sale
1989	Oesa	Food	Direct Sale
1989	Pesa	Electronics	Direct Sale
1989/97	Repsol	Energy	PO
1990	Hytasa	Textiles	Direct Sale
1990	Salinas de Torrelavieja	Salt	Direct Sale
1991/92	Geasa	Porcelain	Direct Sale
1991	Jobac <sup>(4)</sup>	Wholesale	Direct Sale
1991	Tsd	Electronics	Direct Sale
1992	Campsa	Petrochemical	Direct Sale
1992	Icuatro	Health	Direct Sale
1993	Automoción 2000	Car industry	Direct Sale
1993	FSC	Capital goods	Direct Sale
1993/94	Palco	Aluminium	Direct Sale
1993	Royal Brands	Food	Direct Sale
1994	Artespaña	Craftsmanship	Direct Sale
1994	CTE	Shipping	Direct Sale
1994/97	Enagas	Gas	Direct Sale
1995/99	Indra	High technology	Direct Sale / PO
1995	Lesas	Food	Direct Sale
1995	Refinalsa	Aluminium	Direct Sale
1995	Sidenor	Iron and steel	Direct Sale
1995/99	Telefonica	Telecommunications	PO
1996	Gas Natural	Gas	PO
1996	Sagane	Energy	Direct Sale
1996	Sefanitro	Fertilizers	Direct Sale
1997 (SEP/OCT)	Aldeasa	Wholesale	Direct Sale / PO
1997	Almagrera	Mining	Direct Sale
1997 (JUL/DEC)	CSI-Aceralia	Iron and steel	Direct Sales/ PO
1997	Elcano	Sea transport	Direct Sale
1997	Ferroprefil	Aluminium	Direct Sale
1997	H.J. Barreras	Shipbuilding	Direct Sale
1997	Iongraf	Aluminium	Direct Sale
1997/99	Retevisión <sup>(5)</sup>	Telecommunications	Direct Sale/Auction
1997	Surgiclinic Plus	Pharmaceuticals	Direct Sale

**Table 1: Sample (continuation)**

<b>Privatisation year <sup>(1)</sup></b>	<b>Privatised firm</b>	<b>Activity</b>	<b>Method of privatisation</b>
1998	COMEE	Energy	Auction
1998	Inespal	Aluminium	Direct Sale
1998	Inima	Environment	Direct Sale
1998	Productos Tubulares	Iron and steel	Direct Sale
1998	Tabacalera	Food (tobacco)	PO
1999	Astander	Shipbuilding	Direct Sale
1999	Aya	Aerospace	Direct Sale
1999	Enatcar	Road transport	Direct Sale
1999	Iberia	Air transport	Direct Sale
1999	Icsa	Aerospace	Direct Sale
1999	LM Composites	Capital goods	Direct Sale
1999	REE	Energy	PO
2000	CASA	Aerospace	Direct Sale
2000	Initec	Engineering services	Direct Sale

(1) First and last year of the privatisation process (privatisation in stages or blocks).

(2) Although in 1990 0.5% of the firm was privatised, due to lack of information, we only consider the first stage of the privatisation process.

(3) Although in 1991 20% of the firm was privatised, due to lack of information, we only consider the first stage of the privatisation process.

(4) Although in 1995 30% of the firm was privatised, due to lack of information, we only consider the first stage of the privatisation process.

(5) Although in 1999 30% of the firm was privatised, due to lack of information, we only consider the first stage of the privatisation process.

(6) The industry classification corresponds to the one denoted by the SEPI reports (not SIC codes).

PO denotes Public Offerings

Source: Own elaboration

**Table 2: Industry and annual distribution and classification by the method of privatisation**

The sample consists of 70 companies privatised in Spain during the period 1985-2000. The number of privatisation processes amounts to 86.

<b>Panel A: Sample industry classification</b>		
<i>Industry (SIC Codes)</i>	<i>Number of observations</i>	<i>Percentage of observations</i>
10	1	1.16%
14	1	1.16%
20	4	4.65%
21	1	1.16%
22	3	3.49%
26	3	3.49%
28	3	3.49%
29	3	3.49%
30	1	1.16%
32	2	2.32%
33	8	9.30%
34	4	4.65%
35	4	4.65%
36	2	2.86%
37	14	16.28%
38	1	1.16%
41	1	1.16%
44	2	2.32%
45	1	1.16%
47	2	1.43%
48	4	4.65%
49	9	10.46%
50	2	2.32%
54	1	1.16%
55	2	2.32%
70	1	1.16%
73	5	5.81%
87	1	1.16%
Total	86	100%
<b>Panel B: Sample annual distribution</b>		
<i>Year</i>	<i>Number of observations</i>	<i>Percentage of observations</i>
1985	4	4.65%
1986	7	8.14%
1987	5	5.81%
1988	2	2.32%
1989	8	9.30%
1990	3	3.49%
1991	3	3.49%
1992	5	5.81%
1993	4	4.65%
1994	5	5.81%
1995	6	6.98%
1996	3	3.49%
1997	13	15.12%
1998	6	6.98%
1999	10	11.63%
2000	2	2.32%
Total	86	100.00%
<b>Panel C: Classification by the method of privatisation</b>		
Number of public offerings	18	20.93%
Number of direct sales	66	76.74%
Auction	2	2.32%
Privatisation processes	86	100%

**Table 3: Variables of the study**

<b>Variables</b>	<b>Description</b>	<b>Predicted relationship</b>
<b>Panel A: Dependent variables</b>		
Profitability		
Return on assets (ROA)	Operating profit divided by total assets	
Return on sales (ROS)	Operating profit divided by sales	
Operating efficiency		
SALES/EMP	Real sales divided by the number of employees	
NP/EMP	Net profit divided by the number of employees	
OP/EMP	Operating profit divided by the number of employees	
AV/EMP	Added value divided by the number of employees	
Output		
Real sales (SALES)	Nominal sales/ index of retail prices	
Employment		
Employees (EMP)	Number of employees	
<b>Panel B: Explanatory and control variables</b>		
Explanatory variables		
STATEOWN	Percentage that the State holds in the firm's capital each year	-
GSHARE	Dummy variable that takes value 1 if the State has a golden share in the firm each year and 0 otherwise	-
INSIDEROWN	Dummy variable that takes value 1 if an internal investor (managers and/or employees) holds participation in the firm's capital and 0 otherwise (each year)	-
INVFOR	Dummy variable that takes value 1 if there is a foreign buyer and 0 in otherwise (each year)	+
LIBERALIS	Dummy variable that takes value 1 if industry is liberalised (each year) and 0 otherwise	+
CONCENT	Level of concentration of firm industry each year	-
POSTPRIVAT	Dummy variable that takes value 1 if within the post-privatisation period and 0 otherwise	+
Control variables		
LSALES	Logarithm of the firm total sales in each year	
CYCLE	Variation of the gross domestic product each year	

**Table 4: Correlation matrix for the dependent and explanatory variables (first stage)**

The sample consists of 70 firms privatised in Spain in the period 1985-2000. ROA and ROS denote firms' profitability. SALES/EMP, OP/EMP and AV/EMP denote firms' efficiency. SALES denotes firms' real sales. 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. CONCENT denotes the industry's concentration. LSALES is the logarithm of total sales. CYCLE denotes the variation in the gross domestic product. POSTPRIVAT denotes if the year corresponds or not to the post-privatisation period.

Variables	ROA	ROS	SALES/EMP	OP/EMP	AV/EMP	SALES	STATEOWN	INSIDEROWN	INVFOR	LIBERALIS	CONCENT	POSTPRIVAT	LSALES
ROS	0.365*** (0.000)												
SALES/EMP	-0.049 (0.302)	-0.014 (0.760)											
OP/EMP	0.537*** (0.000)	0.199*** (0.000)	0.030 (0.523)										
AV/EMP	0.070 (0.267)	0.024 (0.705)	0.139** (0.026)	0.701*** (0.000)									
SALES	0.111** (0.012)	0.010 (0.809)	0.010 (0.814)	0.077 (0.101)	-0.065 (0.298)								
STATEOWN	-0.129*** (0.003)	-0.049 (0.271)	-0.000 (0.998)	-0.059 (0.211)	0.023 (0.706)	-0.018 (0.631)							
INSIDEROWN	0.119*** (0.007)	0.062 (0.173)	0.018 (0.674)	0.104** (0.030)	-0.087 (0.173)	0.452*** (0.000)	-0.213*** (0.000)						
INVFOR	0.107** (0.019)	0.049 (0.285)	-0.110** (0.011)	0.088* (0.072)	-0.075 (0.246)	0.239*** (0.000)	-0.307*** (0.000)	0.228*** (0.000)					
LIBERALIS	-0.063 (0.163)	-0.017 (0.711)	0.082* (0.058)	0.020 (0.663)	0.371*** (0.000)	0.233*** (0.000)	-0.093** (0.014)	0.207*** (0.000)	0.080** (0.039)				
CONCENT	0.230*** (0.000)	0.035 (0.484)	-0.057 (0.277)	0.102** (0.048)	-0.011 (0.862)	0.126*** (0.004)	-0.033 (0.440)	0.141*** (0.001)	-0.013** (0.770)	-0.242*** (0.000)			
POSTPRIVAT	0.129*** (0.003)	0.074 (0.101)	-0.005 (0.905)	0.070 (0.137)	0.007 (0.909)	0.086** (0.027)	-0.845*** (0.000)	0.323*** (0.000)	0.461 (0.000)	0.163*** (0.000)	0.002 (0.949)		
LSALES	0.220*** (0.000)	0.061 (0.171)	0.012 (0.767)	-0.333*** (0.001)	0.035 (0.573)	0.557*** (0.000)	0.022 (0.552)	0.234*** (0.000)	0.175*** (0.000)	0.268*** (0.000)	0.311*** (0.000)	0.045 (0.234)	
CYCLE	-0.000 (0.978)	0.074 (0.101)	-0.011 (0.795)	0.034 (0.470)	0.005 (0.927)	-0.013 (0.732)	-0.039 (0.296)	0.014 (0.698)	0.015 (0.682)	0.015 (0.690)	-0.035 (0.414)	0.045 (0.234)	0.007 (0.843)

(P-value)

\* Statistically significant at a 10%

\*\* Statistically significant at a 5%

\*\*\* Statistically significant at a 1%

**Table 5: Determinants of privatised firm's performance**

ROA and ROS denote firms' profitability. SALES/EMP, NP/EMP, OP/EMP and AV/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. CONCENT denotes the industry's concentration. CYCLE denotes the variation in the gross domestic product. LSALES is the logarithm of total sales. POSTPRIVAT denotes if the year corresponds or not to the post-privatisation period.

Variable	Reg. 1 (ROA)	Reg. 2 (ROS)	Reg. 3 (SALES/EMP)	Reg. 4 (OP/EMP)	Reg. 5 (AV/EMP)	Reg. 6 (SALES)	
<b>PANEL A: FIRST STAGE OF PRIVATISATION</b>							
Constant	-7.601*** (0.000)	-13.297*** (0.000)	0.028 (0.196)	-0.009** (0.034)	0.001 (0.913)	-152.471*** (0.001)	
STATEOWN	0.011 (0.554)	0.026 (0.356)	-1.35-04 (0.569)	-4.69-06 (0.911)	-3.11-04** (0.018)	0.932* (0.068)	
INSIDEROWN	2.376 (0.107)	1.041 (0.639)	-0.057*** (0.006)	1.96-04 (0.946)	-0.017* (0.067)	79.910* (0.072)	
INVFOR	2.922** (0.021)	0.751 (0.732)	0.047** (0.016)	-0.045 (0.152)	0.014* (0.097)	55.170** (0.033)	
LIBERALIS	-0.247 (0.812)	-0.630 (0.744)	0.160*** (0.000)	0.006* (0.077)	0.005 (0.613)	-1.114 (0.981)	
CONCENT	0.048** (0.026)	0.076 (0.106)	-8.39-04** (0.020)	-1.13-04** (0.011)	-3.13-04*** (0.005)	0.805 (0.148)	
CYCLE	-0.012 (0.933)	0.629 (0.103)	0.001 (0.718)	-3.28-04 (0.265)	-0.008 (0.646)	-2.592 (0.386)	
LSALES	0.627*** (0.003)	0.575* (0.075)	0.005* (0.083)	7.55-04* (0.071)	0.006*** (0.000)	49.126*** (0.000)	
POSTPRIVAT	3.696** (0.035)	5.089* (0.063)	0.011 (0.576)	0.004 (0.266)	0.030*** (0.001)	47.849 (0.282)	
Wald $\chi^2$	41.59***	30.40***	27.04***	24.50***	35.08***	59.40***	
Hausman	7.57	11.83	17.69**	9.98	4.71	32.38***	
N	346	341	402	313	178	451	
<b>PANEL B: LAST STAGE OF PRIVATISATION</b>							
Variable	Reg. 1 (ROS)	Reg. 2 (SALES/EMP)	Reg. 3 (NP/EMP)	Reg. 4 (OP/EMP)	Reg. 5 (AV/EMP)	Reg. 6 (SALES)	Reg. 7 (EMP)
Constant	-9.630*** (0.008)	0.032*** (0.006)	0.014 (0.204)	0.001 (0.657)	5.11-04 (0.972)	-47.471 (0.538)	-320.988 (0.813)
STATEOWN	0.024 (0.500)	-3.25-04*** (0.005)	-2.52-04** (0.028)	-1.11-05** (0.013)	-1.54-04 (0.336)	-0.103 (0.898)	3.644 (0.801)
GSHARE	1.467 (0.549)	-0.134*** (0.000)	-0.015** (0.048)	-0.002 (0.419)	-0.077*** (0.000)	390.603** (0.011)	8248.715*** (0.001)
INSIDEROWN	3.024 (0.123)	-0.021*** (0.000)	-0.009** (0.047)	-0.003* (0.065)	-0.007 (0.446)	60.493 (0.122)	2085.493** (0.018)
INVFOR	4.034* (0.063)	0.022*** (0.000)	0.004 (0.443)	-0.001 (0.502)	-0.015 (0.124)	52.728* (0.071)	1857.642*** (0.008)
LIBERALIS	0.354 (0.862)	0.047*** (0.007)	-0.008 (0.242)	0.003 (0.268)	0.004 (0.832)	-172.215*** (0.010)	1608.219 (0.109)
CONCENT	0.003 (0.929)	-3.34-04*** (0.002)	-6.79-05 (0.518)	-2.09-04*** (0.000)	-4.26-04** (0.020)	0.597 (0.281)	-2.609 (0.818)
CYCLE	0.064 (0.823)	-1.23-04 (0.887)	0.001** (0.027)	0.001 (0.714)	-1.64-04 (0.877)	-2.728 (0.373)	-64.427 (0.196)
LSALES	1.065*** (0.002)	0.001*** (0.008)	5.87-04 (0.482)	3.21-04 (0.227)	0.009*** (0.000)	47.462*** (0.000)	767.067*** (0.000)
POSTPRIVAT	4.861 (0.150)	-0.017 (0.118)	-0.018* (0.096)	0.043 (0.315)	0.019 (0.246)	-51.740 (0.485)	-1277.359 (0.348)
Wald $\chi^2$	30.71***	76.42***	30.27***	52.57***	36.36***	60.80***	93.35***
Hausman	6.84	13.06	25.73***	11.26	13.02	33.37***	47.45***
N	323	389	314	302	171	441	417

\* Statistically significant at a 10%

\*\* Statistically significant at a 5%

\*\*\* Statistically significant at a 1%

**Table 6: Determinants of privatised firm's performance (direct sales)**

ROA and ROS denote firms' profitability. SALES/EMP, OP/EMP and AV/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. CONCENT denotes the industry's concentration. CYCLE denotes the variation in the gross domestic product. LSALES is the logarithm of total sales. POSTPRIVAT denotes if the year corresponds or not to the post-privatisation period.

Variable	Reg. 1 (ROA)	Reg. 2 (ROS)	Reg. 3 (SALES/EMP)	Reg. 4 (OP/EMP)	Reg. 5 (AV/EMP)	Reg. 6 (SALES)
<b>PANEL A: FIRST STAGE OF PRIVATISATION</b>						
Constant	-6.526*** (0.004)	-7.090 (0.412)	0.018 (0.389)	-0.013** (0.026)	0.012 (0.322)	-61.670*** (0.000)
STATEOWN	-0.003 (0.893)	-0.183** (0.025)	-3.14-04 (0.226)	-1.34-05 (0.841)	6.85-05 (0.644)	0.235* (0.092)
INSIDEROWN	5.998* (0.058)	3.292 (0.518)	0.021 (0.312)	-0.010*** (0.001)	-0.002* (0.078)	6.193 (0.552)
INVFOR	2.936* (0.072)	0.278 (0.964)	-0.029 (0.214)	-0.007 (0.105)	0.014 (0.151)	0.730 (0.933)
LIBERALIS	-0.976 (0.492)	-1.235 (0.690)	0.230*** (0.000)	0.009 (0.179)	0.026 (0.227)	2.488 (0.900)
CONCENT	0.064* (0.072)	0.297*** (0.005)	-6.11-04 (0.131)	-1.33-04** (0.044)	-1.93-04 (0.168)	-0.011 (0.967)
CYCLE	-0.219 (0.246)	-0.405 (0.709)	0.002 (0.653)	7.04-04 (0.371)	-1.45-04 (0.931)	-0.078 (0.932)
LSALES	0.733*** (0.001)	1.419 (0.111)	0.010*** (0.003)	0.002** (0.033)	0.005*** (0.002)	25.187*** (0.000)
POSTPRIVAT	2.623* (0.051)	4.689 (0.526)	-0.013 (0.511)	0.012* (0.050)	0.014 (0.330)	20.104 (0.124)
Wald $\chi^2$	29.90***	21.33***	27.04***	39.97***	25.37***	20.45***
Hausman	4.63	15.34*	38.52***	14.39*	9.65	18.54**
N	270	273	343	253	145	362
<b>PANEL B: LAST STAGE OF PRIVATISATION</b>						
Variable	Reg. 1 (ROS)	Reg. 2 (SALES/EMP)	Reg. 3 (OP/EMP)	Reg. 4 (SALES)	Reg. 5 (EMP)	
Constant	0.028 (0.990)	0.025 (0.382)	-0.001 (0.745)	-47.439*** (0.006)	-226.139* (0.068)	
STATEOWN	-0.091*** (0.002)	-3.86-04 (0.225)	-9.03-05* (0.047)	-0.136 (0.495)	2.839** (0.027)	
INSIDEROWN	-0.403 (0.891)	0.035* (0.091)	-0.003 (0.352)	10.510 (0.301)	15.386** (0.788)	
INVFOR	5.720** (0.037)	0.006 (0.778)	6.94-04 (0.814)	22.316* (0.079)	-80.198 (0.229)	
LIBERALIS	-4.446* (0.065)	0.213*** (0.000)	0.002 (0.509)	7.949 (0.682)	-112.729 (0.235)	
CONCENT	0.051 (0.255)	-8.10-04* (0.065)	-1.88-04*** (0.000)	0.168 (0.565)	-1.968* (0.076)	
CYCLE	-0.082 (0.777)	0.004 (0.308)	-6.29-04 (0.175)	0.451 (0.672)	1.526 (0.752)	
LSALES	1.230*** (0.005)	0.011*** (0.000)	9.96-04*** (0.009)	22.612*** (0.000)	68.749*** (0.000)	
POSTPRIVAT	4.035* (0.069)	-0.038* (0.097)	-0.003 (0.438)	8.513 (0.630)	226.802* (0.052)	
Wald $\chi^2$	27.56***	47.62***	44.52***	68.72***	35.67***	
Hausman	6.52	22.02***	13.22	19.27**	11.43	
N	228	305	211	332	306	



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