POST PRIVATISATION OWNERSHIP CONCENTRATION: DETERMINANTS AND INFLUENCE ON FIRM EFFICIENCY*

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Abstract:

Our paper aims to contribute to the empirical evidence that analyses the privatisation processes by studying the determinants of post privatisation ownership concentration and whether the chosen ownership structure of privatised firms constitutes an efficient governance mechanism and may help explain their efficiency. For a sample of 41 Spanish privatised firms within the period 1985-2003, we find that the method of privatisation and firms' growth help explain differences in the ownership concentration of divested firms. Furthermore, after controlling for the endogeneity of ownership concentration, the results show a positive and significant effect of ownership concentration on firms' post privatisation efficiency.

Key words:

Privatisation; ownership concentration; efficiency

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1. INTRODUCTION

Corporate governance became an important issue in governments' agenda before the present financial crisis. Some authors have suggested that the widespread of privatisation processes all over the world during the last two decades may help explain the increasing importance of corporate governance during the last years of the last century and the first years of the present century (Megginson and Netter, 2001; Becht *et al*., 2002). In fact, privatisations provide an interesting setting to understand corporate governance as they imply a significant change in the firms' ownership and corporate governance structures (Denis and McConnell, 2003). Privatisation may be defined as the transfer of ownership rights of State Owned Enterprises -SOEs- to the private sector. Through privatisations, a firm's ownership concentration may change significantly as the firm's ownership is transferred to outside investors. These new shareholders may place greater emphasis on the firm's profits and efficiency (Boycko *et al*., 1996; Sheilfer y Vishny, 1997).

From a theoretical point of view, a firm's ownership concentration may have a positive or a negative effect on firm performance. On the one hand, a high ownership concentration may alleviate the conflicts of interests between managers and shareholders, reducing agency costs and increasing firm value, but on the other hand, a high ownership concentration may also carry with costs: large shareholders may obtain private benefits of control and expropriate wealth from minority shareholders. The empirical literature regarding the possible influence of firms' ownership concentration on firm performance is mixed. For example, Shleifer and Vishny (1986) and Denis and McConnell (2003) report a positive relationship between firms' ownership concentration and value, whereas Holderness and Sheehan (1988) conclude that firms with majority shareholders do not under perform widely held firms. Considering the arguments of Coase (1937) and Demsetz (1983), a firm's ownership structure may be the outcome of the bargaining among economic agents and any association between a firm's ownership structure and its performance may be spurious. The endogeneity of the ownership structure, and consequently, of ownership concentration, may for instance explain the results reported by Holderness and Sheehan (1988). Actually, more recent studies, such as Demsetz and Villalonga (2001) for the U.S., report no causal relationship between a firm's ownership structure and its performance after correcting for the endogeneity of ownership structure.

Although since the 1980s onwards, privatisations have inspired an extensive empirical literature that analyses divested firms efficiency and performance improvements (Megginson *et al*., 1994; Wei *et al*., 2003; D'Souza *et al.*, 2005; Brown *et al*., 2006), a reduced number of studies have attempted to study the underlying reasons or factors that may explain these changes (Boubakri *et al*., 2005 a y b; D'Souza *et al*., 2005, 2007; Ausseneg and Jelic, 2007). Moreover, only a few studies have analysed the relationship between privatised firms' ownership structure and their post privatisation performance and even fewer studies consider ownership structure as endogenous when analysing this relationship. Studies that analyse the relationship between divested firms' ownership structure and their performance without considering the firms' ownership structure as endogenous include: Weiss and Nikitin (1998) that report for the Czech Republic a positive relationship between the ownership held by non-investment funds and firms' post privatisation performance or Alexandre and Charreaux (2004) that report for a sample of French privatisations that higher percentages of shares held by the largest shareholder enhance firms' performance. The results of the studies that do control for the endogeneity of privatised firms' ownership concentration also seem to suggest a positive relationship between ownership concentration and firm performance. This is the case of the results reported by Claessens and Djankov (1999) for the Czech Republic, by Pivovarsky (2001) for the Ukraine and by Boubakri *et al.* (2005a) for an international sample of privatised firms (developed and developing countries). These last results differ from the results obtained for the whole universe of quoted firms. As already pointed out, Demsetz and Villalonga (2001), for example, report a non-significant relationship between firms' ownership structure and value for U.S. firms after correcting for the endogeneity of ownership. Thus, the results related to privatised firms may raise several questions. For instance: Are privatised firms different from non-privatised firms? Are the determinants of privatised firms' ownership structures different from those of non-privatised firms? May governments choose an ownership structure for divested firms that maximise shareholders' wealth?

Our paper aims to contribute both to the corporate governance and privatisations literature by analysing the main determinants of privatised firms' ownership concentration and whether divested firms' ownership concentration is an efficient governance mechanism and how it may explain firms' post privatisation efficiency for a sample of privatised firms (41) in a Western European civil law country, Spain. Previous studies that analyse similar issues are, as already mentioned, very scarce and refer to Eastern European countries such as the Czech Republic and the Ukraine (Claessens and Djankov, 1999 and Pivovarsky, 2001, respectively) or to international samples of both developed and developing countries (Boubakri *et al*., 2005a). In these studies, the sample of firms privatised by means of direct sales is either absent or small. For instance, the sample used by Claessens and Djankov (1999) includes only privatisations by vouchers; the sample used by Pivovarsky (2001) includes privatisation by a large variety of means: property of association of tenants, sales on preferential terms, free transfers of shares, privatisation certificate auctions, compensation certificate auctions, stock exchange and over the counter sales, cash sales via certificate privatisation centres or commercial and non commercial tenders; and within the sample used by Boubakri *et al.* (2005a), 72 percent of the firms were privatised through Share Issue Privatisations (SIPs) and only 28 percent were privatised through direct sales. Besides, other studies that analyse the determinants of privatised firms' ownership concentration refer also mainly to Eastern European countries: Grosfeld and Hashi (2003) use a sample of firms privatised in Poland and the Czech Republic and Boubakri *et al.* (2005a) and Grosfeld (2006) use, respectively, an international sample and a sample of firms privatised in Poland.

The privatisation program in Spain has been one of the largest among OECD countries in terms of assets sold. It raised 51,965 million US$ between 1986 and 2007, thereby ranking Spain fifth among the EU-25 countries in terms of revenues from privatisations (Privatisation Barometer, 2008). 1985 marked the beginning of this privatisation process, which has been conducted by both socialist and conservative governments (between 1985-1996, 2004-until now and 1996-2003, respectively), and has not yet finished. Our sample refers to the recent privatisation movement in Spain. It comprises firms that were divested in Spain during the period 1985-2003. Contrary to most of the international evidence, the scarce empirical evidence on the Spanish privatisation process is non-conclusive with regard to the improvements in the performance of privatised firms. The results of Sanchís (1996), Melle (1999), Villalonga (2000), and Romero (2005) do not allow concluding that there exist significant improvements in firms' post privatisation performance. Similar results are reported for the same temporal horizon after considering the possible influence of the industry effects by Cabeza and Gómez (2007), although these last authors report significant differences in the firms' performance changes depending on the firm that was privatised, the temporal horizon and the measure used as proxy of firms' performance.

We find that Spanish firms privatised through direct sales, firms that present higher pre-privatisation growth in sales and smaller firms show a higher post privatisation ownership concentration. Similar results are reported for an international sample by Boubakri *et al.* (2005a). The results of the study also show a positive relationship between the firms' ownership concentration and efficiency corroborating the results obtained by Claessens and Djankov (1999) and Pivovarsky (2001) for Eastern European countries and by Boubakri et *al*. (2005a) for an international sample. Other factors, such as the industry's competitiveness also seem to play an important role in the success of privatisations. Thus, our results, for a Western European economy and for a sample of privatised firms with a significant representation of direct sales, suggest that privatised firms' ownership concentration depends on the method of privatisation chosen by governments (a factor that is closely related to the size of the firm, to the reduction of public deficit or to the firm's industry), on the economic performance of the firm and on firm size, and that even after considering the endogeneity of ownership concentration, privatised firms' ownership concentration influences post privatisation efficiency changes.

We must note that the studies that analyse the relationship between the firms' ownership structure and performance after taking into account the endogeneity of ownership for the Spanish market support the existence of a significant relationship between firms' ownership concentration and value (De Miguel *et al*., 2004; Alonso-Bonis and De Andrés-Alonso, 2007; Mínguez-Vera and Martín-Ugedo, 2007). In this sense, at least for the Spanish case, privatised firms do not seem to be an exception in that which relates to the relationship between firms' ownership concentration and performance. Moreover, our results suggest that the method of privatisation influences privatised firms' ownership concentration and that governments when privatising may choose ownership structures that enhance firms' performance.

The paper is organized as follows. Section 2 refers to the potential determinants of firms' post privatisation ownership concentration. Section 3 analyses, from a theoretical point of view, the possible relations between privatised firms' ownership concentration and their post privatisation performance improvements. Section 4 presents the sample selection, methodology and the variables used in the study. The results of the analyses are discussed in section 5, and section 6 presents the main conclusions of the paper.

2. DETERMINANTS OF PRIVATISED FIRMS' OWNERSHIP CONCENTRATION

Governments may choose which State Owned Enterprises -SOEs- they want to privatise, when to privatise them, the percentage of shares to be sold and the method to be used for the privatisation. Two of these factors may influence significantly the firms' post privatisation ownership structure: the timing and the method of the privatisation.

The timing of the privatisation of a firm reveals the government's preferences of which firm to be privatised and determines the percentage of shares to be sold. Actually, governments may choose to privatise a firm at a certain moment for different reasons: in order to increase the firm's revenues and to improve its economic situation, to obtain revenues that allow the reduction of the public debt or to increase the level of competitiveness of a certain industry. These issues, together with the size of the firm, may determine the fraction of shares to be sold. Besides, governments may choose to sell a firm all in one tranche, or stage, or in different stages (in Spain, for instance, between 1985 and 2007 135 firms were privatised, and of them, 28 were privatised in stages).When choosing whether to privatise a firm totally or partially, governments may want to send a signal to investors about their commitment to that particular privatisation, as when the State remains as a firm's shareholder in a partial privatisation, investors may think that the State will not incur in behaviours that may damage the value of the firm (Perotti, 1995). In this case, governments would privatise lower fractions of the firm's shares and a firm privatised in early stages of the privatisation processes would be privatised in tranches and could show after the first tranche of the privatisation process a higher ownership concentration (remaining the State a large shareholder of the firm). Furthermore, early privatisations may carry with more political uncertainty than those that happen once the privatisation program has already got a certain degree of implementation. Thus, once investors' confidence has grown up and the reversal of a privatisation is difficult, governments would privatise larger fractions of the firm's capital (Perotti, 1995)[1]. Nevertheless, a partial privatisation could also be considered by investors as the consequence of the reluctance of governments to relinquish control at early stages of the privatisation program, due for example to social and political costs or to fears of losing revenues (Boubakri *et al*., 2005a). If this is the case governments, in order to attract private investors, might choose to relinquish control in early stages of the privatisation process and consequently firms privatised in stages would show higher ownership concentration ratios (being the large shareholders the new private investors).

Although the method of privatisation used (direct sales versus share issue privatisations) may depend on the development and conditions of capital markets, political and legal factors such as the ideology of the government that initiates the privatisation, market regulation or firm's competitiveness and industry (Megginson and Netter, 2001), the method of privatisation is obviously chosen by governments and may also influence the fraction of shares sold when a firm is privatised. For instance, while, smaller companies are usually sold through private sales and totally (Bortolotti *et al*., 2004; Megginson *et al*., 2004), larger companies are sold through public offerings and are expected to present a lower ownership concentration (Megginson *et al*., 2004). The empirical evidence tends to confirm this prediction. Pivovarsky (2001) for a sample of 376 medium and large firms privatised in the Ukraine for the year 1998 and Boubakri *et al.* (2005a) for a sample of 209 firms privatised in 39 countries over the period 1980 to 2001 report that privatised firms' ownership concentration is lower for firms privatised through SIPs.

But, besides the timing and the method of privatisation used, the factors that may determine a firm's ownership structure, may also determine a privatised firm's ownership concentration. As suggested by Demsetz (1983) the ownership structure of firms may be the endogenous result of

[1] Another factor that may reflect the desire of the State to have a good reputation as seller is the underpricing of firms at privatisation. For example, Bel (2003) for the Spanish market finds that larger levels of underpricing took place during the earliest SIPs, that is, during the so-called "confidence building period".

competitive selection in which the advantages and disadvantages in costs are balanced to achieve a balanced organisation in the firm. Accordingly, Demsetz and Lehn (1985) and Demsetz and Villalonga (2001) show that a firm's ownership concentration is related to the characteristics of the firm, i.e. the degree of the industry regulation, firm's size, risk and growth.

3. DETERMINANTS OF DIVESTED FIRMS' POST PRIVATISATION PERFORMANCE CHANGES

Privatisation theory extols the advantages of the means of production being in private hands, pointing to the inefficiency of State-Owned Enterprises and to the problems faced by them when defining their goals. SOEs may well have different objectives other than profit and shareholders' wealth maximisation (Megginson and Netter, 2001). They may, for example, pursue political goals aimed at maximising social welfare that may be inconsistent with efficiency. Besides, public firms will tend to be more risk adverse and less free to adopt decisions because managers will need to justify their strategic decisions to the employees and the State (Frydman *et al*., 2000).

Moreover, in public firms there is a dual level of agency relations (citizens-government and government-management), the citizens cannot sell the firms' shares, the State may have political objectives, and firms may rely on the State for funding and are thus unlikely to face bankruptcy. Given these characteristics and the lack of market discipline, the change from public to private ownership ought to spark enhanced profitability and efficiency in privatised firms (Yarrow, 1986; Boycko *et al*., 1993). This expected increase in the operating performance of divested firms is supported by different empirical studies that report an increase in the ratios of return on assets, return over sales or operating efficiency for privatised firms (Megginson *et al*., 1994; Boubakri and Cosset, 1998; Antoncic and Hisrich, 2003; D' Souza *et al*., 2007).

However, the empirical evidence about the Spanish case is not conclusive. Sanchís (1996), Melle (1999), Villalonga (2000) and Romero (2005) do not find significant improvements in firms' performance after privatisation. Villalonga (2000) and Cabeza and Gómez (2007) consider possible determinants that may influence firms' post privatisation performance. Villalonga (2000) finds that firms' size, the economic cycle and the presence of a foreign investor influence significantly firms' post privatisation performance while Cabeza and Gómez (2007) report significant differences in the firms' performance changes depending on the firm that was privatised, the stage of the privatisation process -first versus last stage-, the temporal horizon and the measure used as a proxy of firms' performance. These results, in line with other international studies (Megginson and Netter, 2001), suggest that the change from public to private ownership can not be considered the only determinant of divested firms' performance improvements. Other factors may also influence the post privatisation changes in performance. Among them, it should be mentioned the firms' ownership and corporate governance structures.

Agency literature often distinguishes between internal and external corporate governance mechanisms[2]. Internal mechanisms include, among others, the firms' ownership structure. In this paper, we focus on the role played by divested firms' ownership concentration. Berle and Means (1932) already suggested the importance of ownership concentration to alleviate the agency problems between shareholders and managers. Dispersed ownership increases the principal-agent problem due to asymmetric information and uncertainty and managers may not act in the interest of the owner and this agency problem may have a negative impact on firms' performance. On the contrary, large shareholders, whose wealth depends on firms' performance, may have more incentives to support the cost of monitoring managers and ensure that their resources are not diverted (Grossman and Hart, 1980).

However, it can be also argued that high ownership levels may impose a tight control on managerial initiatives and incentives (Aghion and Tirole, 1997; Burkat *et al*., 1997), limit large shareholders' wealth diversification, reduce their tolerance towards risk (Demsetz and Lehn, 1985; Admati *et al*., 1994; Bolton and Von Thadden, 1998; Heinrich, 2000) and increase their private benefits of control (Shleifer y Vishny, 1997). Moreover, specifically, for privatised firms, privatisations that lead to diffused ownership structures will reduce political control over privatised firms and the agency costs derived from political control (Boycko *et al*., 1996). The results for Bulgaria reported by Atanasov (2005) tend to support this prediction. He finds that privatised firms with a large shareholder under perform both SOEs and private firms.

The empirical evidence regarding the relationship between ownership concentration and firm performance is mixed. For instance, Shleifer and Vishny (1986), Agrawall and Maandelker (1990), Leech and Leahy (1991) and Denis and McConnell (2003) report a positive relationship between ownership concentration and firm value; Morck *et al.* (1988) and Barclay *et al*. (1993) find a positive relationship between ownership concentration and firm profitability, whereas Holderness and Sheehan (1988) conclude that firms with large shareholders do not under-perform widely held corporations[3]. Nevertheless, these studies do not consider the firm's ownership structure as the result of the bargaining among economic agents (Coase, 1937; Demsetz, 1983). For Demsetz (1983), being this the case, a firm's ownership structure, whether concentrated or disperse, should maximise its value and no systematic and systematic relation

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[2] For a revision of these monitoring mechanisms see Shleifer and Vishny (1997), Maher and Anderson (2000) or Denis and McConnell (2003).
[3] For Spain, considering ownership as an exogenous variable, Galve and Salas (1993) and Azofra *et al.* (1995) report a positive relationship between ownership concentration and firm value.

ought to exist between firms' ownership and value. Accordingly, Loderer and Martin (1997), Cho (1998), Himmelberg *et al.* (1999), Pedersen and Thomsen (1999), Demsetz and Villalonga (2001) or Palia (2001) do not find that firms' ownership influence firms' performance. The empirical evidence concerning this issue for the Spanish market is nevertheless the opposite. The studies by De Miguel *et al.* (2004), Alonso-Bonis and De Andrés-Alonso (2007) and Mínguez-Vera and Martín-Ugedo (2007) suggest a significant relationship between firms' ownership and value even after taking into account the endogeneity of firms' ownership.

For privatised firms, the empirical evidence tends to support the positive influence of ownership concentration on firm performance. Without considering ownership concentration as endogenous, Weiss and Nikitin (1998) find, for privatisations that took place through vouchers in the Czech Republic, that ownership concentration is associated with improvements in the firms' performance, but only if the ownership is concentrated in hands of other than those of investment funds and Alexandre and Charreaux (2004), for a sample of 19 French SIPs, report that the shares held by the largest shareholder after privatisation influence positively firms' performance. Claessens and Djankov (1999), for a cross-section of Czech firms privatised through vouchers, find that the higher the ownership concentration, the higher the profitability and labour productivity of divested firms, although, once corrections for endogeneity have been considered, a positive and significant effect of ownership concentration is only found for the measure of labour productivity; Pivovarsky (2001) finds that ownership concentration (specially when in hands of foreign investors and banks) is positively associated with firm total factor productivity and labour productivity in the Ukraine and the study by Boubakri *et al.* (2005a), for a international sample of firms privatised mainly by means of SIPs shows, after controlling for the endogeneity of ownership, that firms' ownership concentration is positively related to firms' performance.

Other factors that may also influence the firms' post privatisation performance are the competitive and economic environment and firms' size. The competitiveness of both the product and factor markets of divested firms may be crucial for the success of privatisations. In the lack of competitive environments, firms' efficiency will depend mostly on regulation, being the nature of the firm -private or public- not decisive (Yarrow, 1986; Vickers and Yarrow, 1988). Thus, the impact of the change from public to private ownership on firms' performance should be larger when an increase in market competitiveness also takes place (Shirley and Nellis, 1991; Grosse and Yanes, 1998). Accordingly, the empirical evidence shows that post privatisation profitability increases more and productivity less in regulated or less competitive industries, suggesting that firms operating in regulated markets may be exploiting, at least partially, their market power (Sheshinski and López-Calva, 2003). Furthermore, as different authors report, even if the efficiency improvements of privatisations seem to take place in both 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 López de Silanes, 1999).

The economic environment at the time a firm is privatised may also influence the success of its privatisation. For instance, a country with a fairly sophisticated economy and higher income rates is more likely to have a market-friendly policy and as restructurings are more plausible during expansive economic cycles, post privatisation firms' performance improvements should be larger for firms privatised during expansive economic cycles. The results of Villalonga (2000) and Alexandre and Charreaux (2004) confirm this prediction for Spain and France, respectively. Both authors report a positive relationship between the economic cycle and firms' post privatisation efficiency.

Finally, besides the above reported factors, other 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), 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, may exhibit lower post privatisation performance improvements immediately after privatisation. Nevertheless, it could also be argued that their better historical performance, plus the positive influence of privatisation, could result in better post privatisation performances.

4. SAMPLE SELECTION, METHODOLOGY AND VARIABLES USED IN THE STUDY

4.1. Sample selection

The initial database used for the analysis comprises the sample of companies privatised in Spain during the period 1985-2003, 131 firms. We got economical and financial information about the firms for a period of up to seven years covering the three years before and the three years after the year of privatisation (year 0 is considered the year the first privatisation of a firm, whether partial or total, takes place).

The following filters were applied to the initial database:

a) Firms for which we were unable to obtain data for a period of up to seven years covering the three years before and the three years after the privatisation process: firms for which there was a lack of accounting data, firms that began their activity in the two years before the privatisation and firms that closed their business around the privatisation.

b) Financial firms due to their differential characteristics.

c) Firms for which we were unable to obtain the mean industry ratio.

Once these filters were applied, the final sample comes to 56 firms. For this sample, we estimated all the dependant and independent variables of the analyses. In order to run the analyses we needed no missing values for any of the dependant and independent variables. As for some observations/years we were not able to find the required information to estimate the variables, we finally ended up with a sample of 41 firms[4] (Table 1).

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-*), 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 storied in the library of the SEPI and different ministries (Economy and Industry); and for the post-privatisation years, from information provided by the companies, the Spanish Supervisory Agency (CNMV) and by the Madrid Stock Exchange. Additionally, we checked the databases SABI (*Sistema de Análisis de Balances Ibéricos*) and Informasa, and the financial reports of the Official Mercantile Registry. This information was completed with the information provided by the Dicodi and the Dun's & Bradstreet directories. The aggregate data for the industries corresponds to information provided by the Spanish Central Bank (*Central de Balances del Banco de España*). GDP data was obtained from the National Institute of Statistics (*Instituto Nacional de Estadística*) databases. We use Annual Reports and Annual Corporate Governance Reports and in some cases information provided directly from firms to obtain information about ownership concentration.

[4] Two firms were eliminated of our initial sample (56), not due to the existence of missing values, but because the value of the efficiency proxy variable could bias the estimations.

Table 1: Sample

Privatisation Year	Privatised Firm	Activity [1]	Method of privatisation [2]
1986	Amper	Electronics	SIP
1986	Gesa	Energy	SIP
1986	Seat	Car industry	Direct Sale
1987	Alumalsa	Aluminium	Direct Sale
1987	Gas Madrid	Energy	SIP
1988	Ence	Paper	SIP
1988	Endesa	Energy	SIP
1989	Ateinsa	Capital goods	Direct Sale
1989	MTM	Capital goods	Direct Sale
1989	Repsol	Energy	SIP
1991	Geasa	Porcelain	Direct Sale
1993	Palco	Aluminium	Direct Sale
1994	Artespaña	Craftsmanship	Direct Sale
1994	CTE	Shipping	Direct Sale
1995	Lesa	Food	Direct Sale
1995	Refinalsa	Aluminium	Direct Sale
1995	Telefónica	Telecommunications	SIP
1995	Indra	High technology	Direct Sale
1996	Gas Natural	Gas	SIP
1996	Sefanitro	Fertilizers	Direct Sale
1997	Aldeasa	Wholesale	Direct Sale
1997	Almagrera	Mining	Direct Sale
1997	CSI-Aceralia	Iron and steel	Direct Sale
1997	Elcano	Sea transport	Direct Sale
1997	Ferroperfil	Aluminium	Direct Sale
1997	H.J. Barreras	Shipbuilding	Direct Sale
1997	Iongraf	Aluminium	Direct Sale
1998	Inespal	Aluminium	Direct Sale
1998	Productos tubulares	Iron and steel	Direct Sale
1998	Tabacalera	Food (tobacco)	SIP
1999	Astander	Shipbuilding	Direct Sale
1999	Aya	Aerospace	Direct Sale
1999	Enatcar	Road transport	Direct Sale
1999	Icsa	Aerospace	Direct Sale
1999	LM Composites	Capital goods	Direct Sale
1999	REE	Energy	SIP
2000	Casa	Aerospace	Direct Sale
2001	Babcok & Wilcox	Capital goods	Direct Sale
2001	Conversión Aluminio	Aluminium	Direct Sale
2002	Coosur	Food	Direct Sale
2002	Olcesa	Food	Direct Sale

[1] The industry classification corresponds to the one denoted by the SEPI reports (not SIC codes).
[2] SIP denotes Share Issue Privatisation.

Source: Own elaboration

Table 2 shows the industry and annual distribution of the firms included in our sample, as well as the privatisation method employed in each case. The firms belong mainly to the transport equipment industry and to the steel and iron industry (14.63 percent - SIC codes 37 and 33), and to the water, electricity and gas industry (12.20 percent -SIC code 49) -Table 2, Panel A-. The privatisation processes took place mainly in years 1997 (17.07 percent) and 1999 (14.63 percent) (Table 2, Panel B). Compared to previous studies that do not include privatisations by means of direct sales (Claessens and Djankov, 1999 or Alexandre and Charreaux, 2004) or just include a small percentage of firms privatised by this mean (Pivorasky, 2001 or Boubakri *et al.*, 2005a), our sample, as it is the case for the whole Spanish privatisation process, comprises a significant percentage of firms privatised by means of direct sales (75.60 percent, Table 2, Panel C).

Table 2: Sample's distribution: industry, yearly and privatisation method

The sample consists of 41 companies privatised in Spain during the period 1985-2003.

Panel A: Sample industry classification		
Industry (SIC Codes)	Number of observations	Percentage of observations
10	1	2.44%
20	3	7.32%
21	1	2.44%
26	1	2.44%
28	1	2.44%
29	1	2.44%
30	1	2.44%
32	1	2.44%
33	6	14.63%
34	3	7.32%
35	2	4.88%
36	1	2.44%
37	6	14.63%
41	1	2.44%
44	3	7.32%
48	1	2.44%
49	5	12.20%
50	1	2.44%
55	1	2.44%
73	1	2.44%
Total	41	100%
Panel B: Sample annual distribution		
Year	Number of observations	Percentage of observations
1986	3	7.32%
1987	2	4.88%
1988	2	4.88%
1989	3	7.32%
1991	1	2.44%
1993	1	2.44%
1994	2	4.88%
1995	4	9.76%
1996	2	4.88%
1997	7	17.07%
1998	3	7.32%
1999	6	14.63%
2000	1	2.44%
2001	2	4.88%
2002	2	4.88%
Panel C: Classification by the method of privatisation		
Number of share issue privatisations	10	24.40%
Number of direct sales	31	75.60%
Privatisation processes	41	100%

4.2. Methodology and variables

When analysing the relationship between a firm's ownership structure and performance a common approach is to conduct a regression analysis of firm performance on selected variables representing the firm's ownership structure. However, as already mentioned, if a firm's ownership is endogenous, this method can be misspecified if some of the unobserved determinants of firm performance also explain the firm's ownership variables, leading to a spurious relation between a firm's ownership and its performance. In order to correct for the endogeneity of ownership structure, and specifically of ownership concentration, we employ a two-step estimation procedure that involves the use of instrumentals variables. In the first step, we regress the endogenous variable ownership concentration over the instrumental variables predicting a value for each sample's observation. In the second step, when regressing firm's efficiency over ownership concentration, we substitute the endogenous variable by the estimated predicted values obtained in the first step.

Instruments should comply with two conditions: to be important determinants of the endogenous variables and to be exogenous, that is, they cannot be correlated with the error term of the second regression. We use as instrumental variables of ownership concentration the timing and method of privatisation, firm's regulation, size, risk and growth[5].

Thus, we estimate the following equation as the first model of the two-step procedure[6]:

$$CONC_i = a_0 + \beta_1 LATE + \beta_2 METHOD + \beta_3 SECTOR + \beta_4 SIZE + \beta_5 RISK + \beta_6 SALESGR + \varepsilon_i$$

where CONC denotes the ownership concentration of divested firms at the end of the first year after privatisation, LATE is a dummy variable that takes value 1 for sample-firms privatised after 1996 and 0 otherwise[7], METHOD is a dummy variable that equals 1 for firms privatised through direct sales and 0 for firms privatised through SIPs, SECTOR is a dummy variable that equals 1 for firms that belong to regulated sectors (energy, electricity, transportation, telecommunications) and 0 otherwise, SIZE is defined the natural logarithm of the firm's assets in the first year following privatisation, RISK is the standard deviation of the annual industry adjusted return on assets during the three years preceding the privatisation year (pre-privatisation period), and SALESGR denotes the growth rate in real sales during the pre-privatisation period.

[5] The necessary conditions for identification are met as we include two exogenous variables that plausibly affect only ownership concentration but not divested firms' post privatisation performance: risk and growth.
[6] Robust models have been estimated considering possible heterokedasticity problems.
[7] We consider 1996 as the cut off year, since this year marks the beginning of the government of the conservative party in Spain and the approval of an explicit privatisation program under the "Modernisation Program of the Public Sector".

We consider two different measures of ownership concentration: the percentage of shares held by the largest private shareholder, C1, (Grosfeld and Hashi, 2003 and Alexandre and Charreaux, 2004 employ also this measure) and an approximation of the Herfindahl index (the sum of the squared ownership shares held by the first largest private investor), H1. Following, Demsetz and Lehn (1985), Himmelberg *et al.* (1999) and Boubakri *et al.* (2005a), we also apply a logistic transformation to C1, using the formula log [C1/ (100-C1)] to convert a bounded variable into an unbounded one (LC1), and a logarithmic transformation to H1 (LH1)[8] (Table 3, Panel A).

Next, we analyse the determinants of the firms' efficiency. Similarly to D'Souza and Megginson (1999); Wei *et al*. (2003) and Boubakri *et al*. (2005b), we estimate the change in firm efficiency, that is, the real sales to employee ratio (SALES/EMP), during period [+1, +3] in comparison to period [-3,-1]. We consider firms' efficiency after its adjustment to the corresponding industry, i.e., we subtract from the value shown by each firm each year the firm's industry mean value for the same year as reported by the Spanish Central Bank. For all firms, the year of privatisation is named year 0.

The main explanatory variables of the change in privatised firms' operating efficiency include the predicted values for the different proxies of ownership concentration that were estimated in the first stage regression (P_CONC). In addition, considering that several authors, also for Spanish firms, provide evidence of nonlinearities in the ownership-performance relationship (Mork *et al*., 1988; McConnnell and Servaes, 1990; Himmelberg *et al*., 1999; Thomsen and Pedersen, 2000; De Miguel *et al*., 2004) we extend our specification to include the instrumental P_CONC and its squared variable $(P\_CONC)^2$. As control variables we include: a dummy variable that adopts value one for the firms that belong to a regulated industry and zero otherwise[9], CYCLE, the variation between the mean GDP in the post privatisation period related to the mean GDP in the pre privatisation period, and SIZE, defined as the logarithm of firm's total assets in the first year following privatisation[10] (Table 3, Panel B). Thus, as second step-regression model we estimate the following:

$$Vefficiency = a_0 + \beta_1 P\_CONC + \beta_2 (P\_CONC)^2 + \beta_3 SECTOR + \beta_4 CYCLE + \beta_5 SIZE + \theta\lambda_i$$

[8] Most of the firms privatised by means of direct sales were sold to a single shareholder. Therefore, the level of stakes held by the largest shareholder after privatisation is quite high. We therefore considered as single indicator of the degree of ownership concentration the ownership held by the largest shareholder and not by the three or five largest shareholders. Note also that when the largest shareholder owns 100 percent of the firm's shares, the transformation LC1 is not possible and therefore when using this proxy for ownership concentration the number of observations drops significantly.

[9] Alternatively, we defined a dummy that takes value one when the industry concentration of the divested firm increases after privatisation and zero otherwise. The results did not change.

[10] Alternatively, we considered the firm's total real sales as proxy of firms' size. The results did not change.

Where *Vefficiency* denotes the variation or change, post versus pre privatisation [-3+3], in divested firms' operating efficiency.

Table 3: Variables of the study

Panel A: Determinants of post privatisation ownership concentration		
Variables	Description	Predicted relationship
Dependent variable (Ownership concentration)		
C1	The percentage of shares held by the largest private shareholder	
H1	The sum of squared ownership shares held by the first largest private investor	
LC1	Logistic transformation to C1	
LH1	Logarithmic transformation to H1	
Explanatory variables		
LATE	Dummy variable that takes value 1 for privatisations that took place during the period 1996-2003 and 0 otherwise	-
METHOD	Dummy variable that takes value 1 if the firm was privatised through a direct sale and 0 otherwise	+
SECTOR	Dummy variable that takes value 1 if a company belongs to a utilities sector and 0 otherwise	- / +
SIZE	Logarithm of the firm total assets at the end of the year following privatisation	-
RISK	Standard deviation of the annual return on assets during the pre- privatisation period	+
SALESGR	Real sales growth during the pre-privatisation period	+
Panel B: Ownership concentration and post privatisation efficiency		
Dependent variable		
VSALES/EMP	Variation of real sales to the number of employees [-3,+3]	
Explanatory variables		
P_ CONC	Estimated ownership concentration	+
$(P\_CONC)^2$	Squared estimated ownership concentration	-
SECTOR	Dummy variable that takes value 1 if a company belongs to a utilities sector and 0 otherwise	-
CYCLE	Variation of the Spanish GDP during the post privatisation period in comparison to the pre privatisation period	+
SIZE	Logarithm of the firm's total assets at the end of the year following privatisation	-/+

Table 4 presents the summary statistics (mean, median, maximum, minimum and standard deviation) of the variables included in the study[11]. The mean ownership stake held by the largest shareholder at the year after privatisation is 80.708 percent. 21 percent of the privatised firms

[11] For three of the firms included in the study we do not have information about variable C1. For this reason, the summary statistics and the correlation matrix are calculated for a sample of 38 firms. Nevertheless, for the first step model it is possible to estimate the predicted values of the different proxies of ownership concentration for all sample-firms, and consequently the sample for the second step models amounts to 41 observations.

belong to a regulated industry and the mean firm's size at the end of the first year after privatisation in terms of total assets amounts to 1,922.267 million Euros, although the sample is very asymmetric (with a maximum value of 5,545.598 million Euros and a minimum value of 2,108 million Euros). The mean level of risk, that is, the standard deviation of return on assets in the pre-privatisation period, amounts to 4.780, and that figure for firms' growth amounts to -0.516. 60 per cent the firms were privatised after 1996 (Table 4, Panel A). The mean change of the ratio real sales to employees is -3.21-04. The variable CYCLE reveals that firms were mainly privatised during periods of economic growth (the mean value of the variation in GDP is 0.320) (Table 4, Panel B).

The variables' bivariate correlations are presented in Table 5. The ownership concentration (the first shareholder stakes in firms' capital) is related in a positive way with METHOD, indicating that in firms privatised through direct sales, ownership concentration tends to be higher and variable SIZE is negatively correlated to the firms' ownership concentration. The largest firms are usually privatised through share issue privatisations and in different stages, and consequently, the ownership tends to be less concentrated than in firms privatised through direct sales. METHOD is correlated negatively and significantly to SECTOR and SIZE. Thus, firms privatised through direct sales tend to belong to non regulated industries and are of smaller size. Besides, as firms that belong to regulated industries are larger, the correlation between SECTOR and SIZE is also positive and significant (Table 5, Panel A).

The change in firms' efficiency (VSALES/EMP) is negatively correlated with SECTOR and positively with C1. Firms that belong to regulated sectors seem to show lower efficiency improvements, while firms with higher levels ownership concentration experience higher efficiency improvements (Table 5, Panel B).

It is worth mentioning, however, that although some variables show statistically significant correlations, when applying variance inflaction factors (VIFs), we find no evidence of multicollinearity problems, neither for the first nor for the second step models.

Table 4: Summary Statistics

The sample consists of 38 privatised firms in Spain during the period of 1985-2003. C1 denotes the percentage of shares held by the largest shareholder. LATE takes on value 1 for privatisations during 1996-2003. METHOD denotes if a firm was privatised through direct sales. SECTOR denotes whether the firm belongs to a utilities sector or not. SIZE denotes the amount total assets at the end of the first year following privatisation (million Euros). RISK is defined as the standard deviation of the annual return on assets during the pre- privatisation period. SALESGR denotes the firms' real sales growth during the pre-privatisation period. VSALES/EMP denotes the variation of real sales-to-employees and CYCLE the variation in the gross domestic product in the post versus the pre privatisation period.

Variables	Mean	Median	Maximum	Minimum	Stand. Dev.
Panel A: First stage model					
Dependant variable					
C1	80.708	97.99	100	8.46	25.941
Explanatory variables					
SIZE	1,922.267	84.481	32,668.7	2.108	5,545.598
RISK	4.780	3.386	32.952	0.081	5.798
SALESGR	-0.516	-0.093	5.386	-15.486	2.740
Other explanatory variables		Percentage/(number) or observations			
LATE		60.53% (23)			
METHOD		76.32% (29)			
SECTOR		21.05% (8)			
Panel A: Second stage model					
Dependant variable					
VSALES/EMP	-3.21-04	-0.002	0.083	-0.073	0.029
Explanatory variables					
CYCLE	0.320	0.331	0.644	0.047	0.157
SIZE	1,922.267	84.481	32,668.7	2.108	5,545.598
Other explanatory variables		Percentage/(number) or observations			
SECTOR		21.05% (8)			

Table 5: Correlation matrix for the dependent and explanatory variables

The sample consists of 38 privatised firms in Spain during the period of 1985-2003. C1 denotes the first shareholder stakes in firms' capital. LATE takes on value 1 for privatisations during 1996-2003. METHOD denotes if a firm was privatised through direct sales. SECTOR denotes if it is a utilities sector or not. SIZE denotes the total assets in the first year following privatisation (million Euros). RISK is the standard deviation of the annual return on assets in the pre- privatisation period. SALESGR is the real sales growth in the pre-privatisation period. VSALES/EMP denotes the variation of real sales-to-employees. CYCLE denotes the variation in the gross domestic product in the post versus pre privatisation period.

Panel A: First stage model

Variables	C1	LATE	METHOD	SECTOR	SIZE	RISK
LATE	0.185					
	(0.265)					
METHOD	0.643***	0.056				
	(0.000)	(0.735)				
SECTOR	-0.268	-0.111	-0.471***			
	(0.103)	(0.506)	(0.000)			
SIZE	-0.540***	-0.003	-0.652***	0.462***		
	(0.000)	(0.981)	(0.000)	(0.003)		
RISK	-0.025	-0.052	0.191	-0.147	-0.077	
	(0.877)	(0.752)	(0.249)	(0.376)	(0.642)	
SALESGR	0.147	0.182	-0.103	0.091	0.296	-0.007
	(0.378)	(0.271)	(0.536)	(0.584)	(0.070)	(0.965)

Panel B: Second stage model

Variables	VSALES/EMP	C1	SECTOR	CYCLE
C1	0.351*			
	(0.030)			
SECTOR	-0.305*	-0.268		
	(0.061)	(0.103)		
CYCLE	-0.083	0.063	0.034	
	(0.618)	(0.704)	(0.839)	
SIZE	-0.160	-0.540***	0.492***	0.301*
	(0.335)	(0.000	(0.000)	(0.066)

(P-value)
* Statistically significant at the 10% level
** Statistically significant at the 5% level
*** Statistically significant at the 1% level

4. RESULTS

4.1. Determinants of ownership concentration

Table 6 reports the results of the first step models. They show that the method of privatisation (METHOD) is positively and significantly related to ownership concentration for all different proxies of ownership concentration (at a 5 or 10 percent level depending on the proxy used for the dependent variable). As already reported by Boubakri *et al.* (2005a) our results show that direct sales privatisations derive more frequently than share issue privatisations in concentrated ownership structures[12]. While for firms privatised through SIPs, the largest shareholder, usually the State, holds, as a median, at the end of the year following privatisation 45.3 percent of the shares, for firms privatised through direct sales, the largest shareholder holds, at the end of year 1, 100 percent of the firms' shares (Table 7). Furthermore, both for the whole sample and for the sub-samples of SIPs, and contrary to Boubakri *et al.* (2005a) who report a significant increase in ownership concentration for a sample of firms privatised mainly by means of SIPS in developed and developing countries, we find a significant decrease in the firms' ownership concentration after privatisation, especially in firms privatised though SIPs. In firms privatised through SIPs, ownership concentration does decrease significantly after privatisation, from a median value of 69.9 percent of the firms' shares held by the largest shareholder at the year before privatisation to a median value of 45.3 percent of shares held by the largest shareholder at the end of the year after privatisation (Table 7). For firms privatised by means of direct sales, the largest shareholder holds, both at the end of the year before privatisation and at the end of the year after privatisation, as a median, 100 percent of the firms' shares. What changes is the identity of the largest shareholder. While in the pre-privatisation period the largest shareholder is the State, most of these firms are totally privatised and a private shareholder (a non financial firm -80.6 percent of the direct sales-, families or individuals -6.9 percent-, a financial firm -0 percent-, the State -9.6 percent-, or both the State together with a non financial firm -3.2 percent-) owns the firm after privatisation (Table 9).

Similarly to Boubakri *et al.* (2005a) we also find that the growth variable, SALESGR, influences positively and significantly divested firms' ownership concentration and that the level of risk (RISK) is negatively associated with the stakes held by the first shareholder (C1) and with H1. This negative relationship between firms' risk and ownership concentration is opposite to the relationship reported by Demsetz and Lehn (1985), but similar to the results reported by Grosfeld and Hashi (2003) for Czech and Polish privatised firms. A possible explanation for this behaviour may be that in environments characterised by a high degree of uncertainty, as is the case when a firm is privatised, managerial initiative may be expected to be particularly important and monitoring managers may turn out to be less important.

In addition, similar to Grosfeld and Hashi (2003) and Boubakri *et al.* (2005a), and as suggested by Demsetz and Lehn (1985), firm size (SIZE) presents a negative and statistically significant coefficient (at the 10 percent level). Lastly, firms' industry (SECTOR) and the timing of privatisation (LATE) present a non-significant coefficient. Thus, contrary to Boubakri *et al.* (2005a) we are not able to conclude that firms' industry influence significantly privatised firms'

[12] Grosfeld (2006) for a sample of privatised firms in Poland also finds that the initial ownership concentration in the early years of listing is strongly determined by the privatisation method (private sales, employee and managerial buyout, mass privatisation scheme and initial public offering). However, after a couple of years listing privatisation methods loose their significance.

ownership concentration, and similarly to Grosfeld and Hashi (2003) and Boubakri *et al.* (2005a), we do not find evidence about the influence of the timing of privatisation on firms' post privatisation ownership concentration. Our results thus reveal that privatised firms' ownership concentration firms is strongly determined by the method of privatisation and firms' growth and that, for divested firms, other factors commonly cited in the literature as determinants of ownership concentration may not be as important for privatised firms.

Table 6: Determinants of post-privatisation ownership concentration

The sample consists of 38 privatised firms in Spain during the period of 1985-2003. C1 denotes the first shareholder stakes in firms' capital. LATE takes on value 1 for privatisations during 1996-2003. METHOD denotes if a firm was privatised through direct sales. SECTOR denotes if it is a utilities sector or not. SIZE denotes the total assets in the first year following privatisation (million Euros). RISK is the standard deviation of the annual return on assets in the pre- privatisation period. SALESGR is the real sales growth in the pre-privatisation period.

Variable	Model 1[a]	Model 2	Model 3	Model 4
LATE	5.739	12.475	-0.188	0.036
	(0.421)	(0.206)	(0.869)	(0.892)
METHOD	30.958**	40.343**	1.963*	1.183*
	(0.039)	(0.036)	(0.064)	(0.069)
SECTOR	-6.288	-8.881	-0.411	-0.338
	(0.485)	(0.389)	(0.804)	(0.498)
SIZE	-3.491*	-4.657*	-1.008*	-0.140*
	(0.069)	(0.058)	(0.061)	(0.098)
RISK	-0.576*	-1.134*	0.014	-0.005
	(0.079)	(0.059)	(0.729)	(0.711)
SALESGR	2.568**	3.407**	0.127	0.087***
	(0.023)	(0.048)	(0.491)	(0.008)
N	38	38	17	38
R^2	0.551	0.573	0.587	0.473
F	9.28***	18.01***	3.28**	4.14***

(p-value)
[a] In models 1 to 4 the dependant variables are C1, H1, LC1 and LH1, respectively.
* Statistically significant at the 10% level
** Statistically significant at the 5% level
*** Statistically significant at the 1% level

Table 7: Largest shareholder's stake in firm's capital (C1)

Variable	Year -1		Year +1		Differences		Z	
	Mean	Median	Mean	Median	Means	Medians	t-Student	Wilcoxon
Share Issue Privatisations								
C1 N=7	70.883	69.905	43.956	45.300	-26.926	-24.605	-5.631***	-2.201**
Direct Sales								
C1 N=31	94.591	100	89.007	100	-5.584	0	-1.542	-1.715*
Total Sample								
C1 N=38	90.640	100	80.708	98	-9.141	-2	-2.669**	-2.537**

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

4.2. Determinants of post privatisation efficiency

After correcting the endogeneity of ownership concentration, we relate the post privatisation variation in firms' efficiency to the firms' ownership concentration and a set of control variables (the firms' economic and regulatory environment and firms' size). The results are reported in Table 8[13].

For all models, the results suggest that ownership concentration is positively and significantly related to firm efficiency (either at a 5 or at a 1 per cent level -models 1a, 2a and 4a-). This evidence suggests that the higher the firms' ownership concentration, the higher their post privatisation efficiency increase. This result is similar to that reported by Boubakri *et al.* (2005a) for a sample of international firms or by Claessens and Djankov (1999) for the Czech Republic. Ownership concentration may be an adequate corporate mechanism to reduce managerial discretion, and in particular, for privatised firms, a factor that should be considered in order to explain their post privatisation efficiency improvements. When we consider the possible non-linearity of ownership concentration reported by previous studies for the Spanish market (De Miguel *et al.*, 2004), we find that the variable P_CONC continues influencing positively and significantly firms' efficiency, and that the square term $(P\_CONC)^2$, as expected, presents a negative coefficient, although this coefficient is not statistically significant (models 1b, 2b and 4b). Thus, contrary to De Miguel *et al.* (2004) that report a non-linear relationship between ownership concentration and firm value for Spanish quoted firms, we cannot conclude the existence of such non-linear relationship for Spanish privatised firms. Boubakri *et al.* (2005a) also report significant coefficients for the linear and square term of ownership concentration for a sample of firms privatised in developed and developing countries, although they report for both terms positive coefficients. In this sense, our results also differ from those reported by Boubakri *et al.* (2005a). The composition of our sample composed on a large extent of firms totally privatised by means of direct sales may explain the differences in the results obtained.

Concerning the control variables, in our models, only the type of industry -regulated or nor not- (SECTOR) seems to influence significantly firm' post privatisation efficiency. Firms belonging to regulated industries, to utilities, tend to experience lower increases in efficiency after privatisation. These results are in line with the evidence provided by Boubakri and Cosset (1998) and by D'Souza and Megginson (1999) who report that the profitability of privatised firms increases more in regulated (or non-competitive) industries, whereas operating efficiency

[13] For variable LC1 only METHOD and SIZE affect significantly firms' ownership concentration. Consequently, as the necessary conditions for identification are not met, the results for the second-step models when considering LC1 as dependant variable are not robust. Thus, we do not refer to them.

increases less. Firms belonging to regulated sectors, usually monopolistic or oligopolistic industries, would not have enough incentives to improve their innovation and performance, as, within these industries, the risk of loosing market share is minimum. On the contrary, firms operating in competitive industries would have more incentives to improve their performance as, after privatisation, they would not be able to receive the political and financial support of the State and would have to compete with their industry's peers.

Summing up, these results show that ownership concentration seems to have a positive influence on divested firms' efficiency, but that other factors such as the firms' industry competitiveness also explain the improvement in firms' efficiency after privatisation. Our results confirm the results reported by Claessens and Djankov (1999) for the Czech Republic, Pivovarsky (2001) for Poland, and by Boubakri *et al.* (2005a) for an international sample as we also find that ownership concentration influences significantly firms' post privatisation performance, but contrary to Boubakri *et al*. (2005a) and we do not find that the economic cycle influences significantly firms' performance.

Table 8: Determinants of post privatisation efficiency

The sample consists of 41 privatised firms in Spain during the period of 1985-2003. VSALES/EMP denotes the variation of real sales-to-employees. P_CONC is the estimated ownership concentration. $(P\_CONC)^2$ is the squared estimated ownership concentration. SECTOR denotes if it is a utilities sector or not. SIZE denotes the total assets in the first year following privatisation (million Euros). CYCLE denotes the variation in the gross domestic product in the post versus the pre privatisation period.

Variable	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
P_CONC	7.44-04** (0.012)	0.003* (0.068)	4.98-04** (0.016)	0.001* (0.090)	0.014* (0.056)	0.014* (0.072)	0.022*** (0.009)	0.150* (0.063)
$(P\_CONC)^2$		-2.14-05 (0.134)		-7.89-06 (0.246)		-3.02-05 (0.973		-0.017 (0.110)
SECTOR	-0.025** (0.025)	-0.029** (0.011)	-0.025** (0.027)	-0.028** (0.015)	-0.037* (0.054)	-0.037** (0.062)	-0.022** (0.041)	-0.026** (0.019)
SIZE	4.09-04 (0.868)	-4.24-04 (0.865)	-1.18-04 (0.960)	-8.45-04 (0.731)	-0.016** (0.042)	-0.016** (0.050)	0.001 (0.582)	8.17-04 (0.756)
CYCLE	-0.006 (0.829)	-0.009 (0.743)	-0.005 (0.840)	-0.005 (0.840)	-0.005 (0.861)	-0.004 (0.887)	-0.006 (0.816)	-0.015 (0.579)
N	41	41	41	41	41	41	41	41
R^2	0.253	0.300	0.244	0.273	0.276	0.276	0.262	0.216
F	3.06**	3.01**	2.91**	2.63**	3.44**	2.68**	3.21**	1.82

(p-value)

In models 1 to 4 the dependant variables are C1, H1, LC1 and LH1, respectively.

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

As ownership structure seems to influence firms' post privatisation efficiency we next try to find a link between the typology of the largest shareholder of privatised firms and their post privatisation efficiency changes. For that purpose, we classified the largest shareholders as State, financial companies, non-financial companies and individuals or families. For more than 68 percent of the firms, the largest shareholder at the end of the year following privatisation is a non-financial company. This fact may help explain the reason for not finding any significant relationship between the identity of the largest shareholder and firms' post privatisation efficiency changes. Nevertheless, as already suggested, the typology of the largest shareholder does change depending of the method of privatisation chosen. While in 71.43 percent of privatised firms by SIPs the State remains the largest shareholder, this percentage amounts to just 9.68 percent for firms privatised through direct sales[14]. Besides, while for more than 80 percent of firms privatised through direct sales, non-financial companies are the largest shareholder, this percentage amounts to just 14 percent for firms privatised through SIPs. It is also interesting to note that in none of the firms privatised through direct sales a financial company is the largest shareholder.

Table 9: Identity of largest shareholder

Variable	Total sample	SIPs[a]	Direct Sales	Chi-Squared Test
	%	%	%	
STATE	21.052	71.428	9.677	14.783***
FINANCIAL	2.631	14.285	0	3.309*
NONFINANCIAL	68.421	14.285	80.645	11.649***
STATE AND NOFINANCIAL	2.631	0	3.225	0.319
INDIVIDUALS	5.263	0	6.900	0.655

[a] SIPs denotes share issue privatization

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

6. CONCLUSIONS

Privatisation processes have constituted an important phenomenon in many countries during the last two decades. They have been considered as a mean to modernize a country's economy and to reduce political and governmental interference in the economic activity. Moreover, in a significant number of these countries, e.g. Spain and other E.U. countries, privatisation processes contributed significantly to reduce the countries' public deficit.

Our study constitutes an additional step in the understanding of one of the largest privatisation programs undertaken by a Western European economy, Spain. We examine the cross-firm

[14] In 3.22 per cent of the cases, the State and a non financial firm are jointly the larger shareholders.

differences in ownership concentration after privatisation and, similarly to Boubakri *et al.* (2005a), we find that direct sales privatisations derive more frequently than share issue privatisations in concentrated ownership structures, although contrary to Boubakri *et al.* (2005a) who report a significant increase in ownership concentration for a sample of firms privatised mainly by means of SIPS in developed and developing countries, we find a significant decrease in the firms' ownership concentration after privatisation, especially in firms privatised though share issue privatisations. We also find that firms' growth and size help explain privatised firms' ownership concentration, but, contrary to Boubakri *et al.* (2005a) we are not able to conclude that firms' industry influence significantly privatised firms' ownership concentration; similarly to Grosfeld and Hashi (2003) and Boubakri *et al.* (2005a), we also find no evidence about an influence of the timing of privatisations in firms' post privatisation ownership concentration.

Besides, using a methodology that controls for the endogeneity of ownership, we show that firm ownership concentration is positively related to firms' efficiency. Thus our results reveal the importance of the post privatisation firm's ownership structure for the success of the privatisation processes. In a different institutional setting, our study supports the findings of previous studies in Eastern European countries (Claessens and Djankov, 1999) and for international samples of firms' privatised in developed and developing economies (Boubakri *et al*., 2005a) for a Western European economy. Our results suggest that the positive relationship between firms' ownership concentration and value reported listed Spanish companies by different authors (De Miguel *et al*., 2004; Alonso-Bonis and De Andrés-Alonso, 2007; Mínguez-Vera and Martín-Ugedo, 2007) holds for privatised firms, although we do not find evidence of a non-linear relationship. Thus, to some extent, and for the Spanish case, our results reinforce for privatised firms the results reported by previous studies for the whole universe of listed firms in Spain suggesting that privatised firms may not be different from non-privatised firms in that which relates to the relationship between ownership concentration and firm performance. Nevertheless, we must say that contrary to previous studies for the Spanish market, we do not find evidence of a non-linear relationship between ownership concentration and firm value. In addition, our findings also do suggest that competition may play an important role in the post privatisation firms' efficiency. Product market competition and ownership concentration seem to be complementary, and consequently competition policies and ownership changes should be promoted simultaneously.

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