THE DETERMINANTS OF FIRM PERFORMANCE AFTER OWNERSHIP TRANSFORMATION IN SLOVENIA

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Abstract

In the last decade there has been an extensive debate in transition countries on whether ownership matters for company performance. The key issue has been whether outsider ownership outperforms insider ownership. This paper examines the influence of several variables - insider ownership, ownership by the state and municipalities, market share and the share of exports - on company performance in a sample of 488 Slovenian industrial companies after their ownership transformation. Econometric estimations demonstrate, contrary to the expectations based on previous Slovenian studies, that insider ownership does enhance performance. Market share has the expected positive influence on value added, whereas the influence of exports is negative due to the export reorientation to Western markets and the exchange rate policy in 1998. The effect of state ownership is statistically insignificant.

Introduction

The findings of academic research around the world show that privately-owned companies are more efficient and profitable than comparable state-owned ones. Moreover, the empirical evidence available suggests that deregulation and market liberalisation can improve the efficiency of state-owned companies, but it seems that these reforms would be even more effective if accompanied by privatisation. As a consequence, privatisation, aiming to enhance the performance of state-owned companies, has been regarded as one of the rectifying processes in transition economies. However, some disappointment followed mass privatisation. It was soon recognised that privatisation does not always bring its merits. It has in particular fallen short of the expectations in institutionally weak economies, mainly in the former Soviet Union. The reason for privatisation's failure lies in the failure to provide the necessary supportive institutional environment such as the enforcement of financial discipline, competition and the free entry of new companies (Nellis, 1999). This leads to the conclusion that ownership is not the only determinant of company performance. Tandon (1995) argued that competition and market structure are just as, if not more, important as ownership when determining the efficiency outcomes of a firm. Similarly, by analysing the Chinese experience, Stiglitz (1998) showed that an economy might achieve more effective growth by focusing on competition first, leaving privatisation only until later.[1] Another economist in the line is Rawski (1997), who stated that economists overemphasise the importance of ownership. However, in response to these economists Shirley (1998) pointed out that very few transition governments actually ever have the luxury of choosing between enhancing competition or changing ownership.

There have been many attempts in transition economies to identify the determinants of firm performance in all stages of the mass privatisation process, including the post-privatisation period. It is surprising just how little international interest Slovenia has attracted in these attempts. This is particularly striking if we recall that Slovenia is in the first group of accession countries for EU membership and, second, that Slovenia as one of the former Yugoslav republics had a different pre-transition governance structure than other CEE countries. Unlike in CEE countries, whose enterprises were state-owned, Slovenian firms and their managers were allowed a considerable degree of autonomy by the prevalent pattern of social ownership facilitating a self-management type of governance. To fill this gap, the aim of our paper is to present an initial assessment of the determinants affecting firm performance[2] following mass privatisation in Slovenia and to contrast them with the findings for other transition countries.

To select the most significant factors of performance we refer to the theoretical foundations and empirical studies in transition countries at all stages of privatisation. One factor widely examined in the empirical studies on transition in CEE countries is the impact of insider – outsider ownership. Another commonly investigated and theoretically supported factor is competition. In former socialist countries operating within the framework of centrally planned systems this factor should have received special attention after the shift towards market economies. In a small economy, which Slovenia with its less than 2 million inhabitants clearly is, the export orientation of companies could be another decisive performance factor. Our analysis aims to investigate the role of all these factors in

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[1]   For a survey of empirical findings, see Nellis (1999).
[2]   Empirical studies use various names for performance measured by value added. In addition to performance, other terms such as productive efficiency and productivity have been used. In our paper, we use the terms performance and efficiency as synonyms.

the post-privatisation period in Slovenia. Some studies for Slovenia have already addressed this issue, but were unable to control simultaneously for the various factors that could influence performance. They, for example, clearly show that outsider-dominated companies perform better (Simoneti et al., 1998a, 1998b) but it is not clear whether this is in fact the result of the ownership form involved or if there are some other factors at work that make outsider companies outperform their insider counterparts.

The outline of the paper is as follows. In the first section we review the theoretical foundations in order to select the relevant variables. We then examine empirical studies, investigating the influence of these variables in transition economies (i.e. former European socialist and communist countries). In the two following sections we explain the sample and the measurement of the variables selected. In the last section, we present the econometric framework and report the results. Finally, our findings are summarised and briefly contrasted with other empirical studies.

1. The determinants of firm performance: theoretical background and empirical studies on transition economies

Ownership

Private versus public ownership

On the basis of theoretical premises and numerous empirical studies it is now universally acknowledged that ownership is an important factor of company performance. There is a common theoretical belief that private ownership is superior to public or state ownership. The lower efficiency of public firms is demonstrated in their higher costs. Two theoretical explanations strive to explain the poor behaviour of public firms (Rowthorn, Chang, 1993): the "residual claimant theory" (its most important founders are Alchian and Demsetz, 1972) and the "dispersed knowledge theory".[3] The residual claimant theory states that the absence of control over organised team production, which is typical of modern production and where individual working efforts are hard to measure, can lead to the problem of free-riding and low effort. In private companies, the function of control lies in the hands of private owners who are entitled to the profit as "residual owners" and, therefore, aspire to profit maximisation. On the other hand, in state companies the aim of the state, as a company's supervisor, is not profit maximisation. The absence of this aim leads to inefficient control. The dispersed knowledge theory arose in the framework of the Austrian School and claims that human knowledge is always dispersed and can never be transferred to others entirely (Hayek, 1949, 1986). The failure of central planning is only evidence of the inability to centralise dispersed knowledge within a hierarchical system. Consequently, the process of decision-making would be more efficient if handed over to private owners and their agents rather than to the state. Numerous modifications and antitheses have followed both theories.[4] The debate on the comparative efficiency of private and state companies has mostly been limited to the issue of managerial incentives, to the functioning of competitive forces and to the differing goals of both types of companies, which argue

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[3]   Clarke and Pitelis (1993) mentioned a third theoretical background, which is the neo-classical theory of ownership rights.
[4]   More about this is found in Rowthorn and Chang (1993). Theoretical and empirical considerations of state ownership in the context of corporate governance are also addressed in the survey by Shleifer and Vishny (1997).

for either the greater profitability or greater cost efficiency of private companies. Bureaucrats, who pursue their own political interests rather than social welfare, impose goals on managers that are different from those being imposed on private firms' managers (Shapiro, Willig, 1990; Shleifer, Vishny, 1994). In line with this, Boycko et al. (1996) suggested that the inefficiency of public firms is primarily due to the over-employment strategies enforced by the politicians who control them. Privatisation leads to restructuring even when politicians try to subsidise former public firms in order to prevent any restructuring. As subsidising is more costly for politicians and harder to sustain than wasted profit through inefficiency, restructuring is more likely to occur so privatisation brings about efficiency gains. However, subsidising on a large scale may only continue in specific conditions of soft budget constraints (Kornai, 1980). State firms perform poorly under soft budget constraints, which were a characteristic of former socialist countries and might continue into the transition period, as their managers know that the government will subsidise them if they incur any losses.

All of these arguments should form the basis for proving the lower efficiency of state companies. However, empirical studies have provided somewhat contentious findings. Based on a survey of single-country, single-industry, multi-national and multi-industry empirical studies, Megginson and Netter (2001) state that the empirical evidence clearly documents a significant (often dramatic) increase in the performance of privatised companies.[5] Although this positive privatisation experience is chiefly drawn from OECD countries, recent assessments for non-OECD countries are also generally positive (Nellis, 1999). Nevertheless, in public services (i.e. utilities) "empirical studies … have failed to establish the supremacy of the private sector when efficiency is assessed" (Tang, 1997, p. 469). Although there are some sectors demonstrating the higher efficiency of private firms, in many services neutral or contradictory results prevailed.

In transition economies, privatisation has proven its worth in Polish manufacturing (Barbone et al., 1999) and in Russia (Earle, Estrin, 1998). The evidence from Polish manufacturing (Barbone et al., 1999) indicates that private firms underwent faster restructuring than public ones, which confirms the theoretical expectations of Boycko et al. (1996). However, several empirical studies for transition economies cast some doubt on these expectations. In many transition countries there have been almost no differences in the performance of state-owned and private firms (see Earle et al., 1994, for Russia and Barrell, Holland, 2000, for Hungary, Poland and the Czech Republic). Frydman et al. (1999) found on a large sample of Czech, Polish and Hungarian firms that privatisation is sensitive to performance measures. It has a most profound beneficial effect on revenue growth but, contrary to expectations, no significant effect on cost reductions. Moreover, privatised firms have boosted rather than hindered employment. Finally, privatisation has fallen short of its expectations in institutionally weak economies, mainly in the former Soviet Union. The reason for privatisation's failure lies in the fact that the necessary supportive institutional environment, enforcing financial discipline, competition and the free entry of new companies, has not been attended to (Nellis, 1999).

Evidence suggesting that many transition governments lack the administrative skills and political capacity to restructure under state ownership is also provided by Djankov (1999), who therefore suggests to privatise rapidly without attempting to restructure enterprises

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[5]   See also Megginson et al. (1994) as the most cited evidence lately on the superior performance of privatised firms.

prior to privatisation. Commander et al. (1999) conclude that while debate continues regarding the extent to which improvements in performance have been exclusively driven by ownership change or associated increases in competition, the empirical evidence points to the joint importance of strong and well-enforced ownership and control structures coupled with effective competition. Similarly, Dutz and Vagliasindi argue that changes in ownership without proper attention to the distribution and subsequent exchange of controlling rights can impede restructuring (Commander et al., 1999). Empirical studies, therefore, lead to the conclusion that privatisation (the ownership structure of a company) is an important, but not the sole, determinant of company efficiency. Without being accompanied by deregulation and enhanced competition, privatisation simply does not deliver the expected results.

Insider versus outsider ownership

Ambiguous findings on how privatisation affects company performance have inspired numerous studies that sought to find out whether the different ownership forms of privatised companies have distinct effects. The influence of insider versus outsider ownership has attracted particular attention.

There is no theoretical consensus on how insider or outsider ownership influences company performance. The advocates of insider ownership within the framework of the theory of the economics of participation stress the positive effects of employee participation in decision-making and/or in profit-sharing (Vanek, 1970, 1977; Jones, Svejnar, 1982). Nuti (1988) pointed to three positive consequences of employees' participation in decision-making: 1. participation increases workers' motivation for work and decreases their discontent with work and work alienation as workers have a say in the division of labour and work organisation; 2. participation in decision-making reduces the number and intensity of conflicts in the work place as it increases workers' identification with the company and enhances workers' acceptance of unpopular managerial decisions; and 3. participation in decision-making compensates workers' exposure to job- and income-risk by increasing their power. Further, participation in profit-sharing increases labour productivity through the more intelligent and effective use of effort, through the more intensive co-operation with other workers and management and through the improved employee's morale, which reduces absenteeism at work and betters the monitoring and supervision of each other's efforts, efficiency and co-operation. Next, insider companies have a longer average labour tenure, which generates better incentives among employees for further education (increasing human capital) and companies have a greater interest in training their labour force, altogether representing a competitive edge for the company (Estrin et al., 1987). Another positive feature is the internalisation of the principal-agent problem (Ellerman, 1993). Namely, by increasing insider ownership more agents (managers and employees) become principals (owners) at the same time.

On the other hand, economists point to the negative effects of insider ownership. First, the free-rider effect can wipe out any financial incentives from profit-sharing, especially in big companies where neither direct supervision of employees nor supervision among employees themselves is possible, whereas participation in decision-making slows down and hinders the process of decision-making (Jensen, Meckling, 1979). In companies with majority insider ownership the process of restructuring is hindered due to insufficient investment and flexibility. One reason for such low investment is that for risk-averse employees a company's survival (i.e. job maintenance) is more important than any higher

dividends due to higher profits. This argument is particularly strong in the period of transition, which is accompanied by a lack of jobs and an undeveloped job market. Another reason for low investment is that money spent on investment is money not spent on wages, which is not in the (short-term) interest of employees. Finally, low investment is associated with limited access to external financial sources due to the fear of potential investors that the value of their shares and/or the size of their dividend payments will be reduced because employees use the increased profits to increase their wages. This argument is also strongly advocated by Aghion and Blanchard (1999). In their view, restructuring is crucial for improving company performance. It requires outsider ownership as insider firms lack the ability to attract external financial resources and expertise. Their theoretical findings have implications for privatisation programmes. They should be set in such a way to enable a rapid switch of shares to outsiders, if this was not envisaged in the initial stage of privatisation. Boycko et al. (1996) extended their theoretical findings about the superiority of private ownership to expose the advantages of outsider ownership. The objective function of outsider owners (i.e. outsiders) is farther away from politicians, so that even when politicians can use subsidies to convince privatised companies not to restructure it is more likely that restructuring will take place anyway. However, as Boycko et al. (1996) warn, if external investors happen to be mutual funds or industrial holding companies, controlled by politicians, which may be a real threat in Russia or in Poland, outsider ownership may not promote any restructuring. Hence, outsider ownership is effective only when the large block holders are private investors, whose objective is profit maximisation.

Many empirical studies on transition economies have focused on the effects of outsider versus insider ownership using several dependent variables. Their findings are contentious. The only area of agreement regarding the ownership structure seems to be foreign ownership. It has been universally acknowledged that foreign ownership is superior to any other form of ownership (Halpern, Kõrösi, 2000; Barell, Holland, 2000; Smith et al., 1997; Djankov, 1998). Otherwise, several studies have found no significant influence of ownership structure on either performance or restructuring (Earle et al., 1994; Anderson et al., 1999; Djankov, 1998). Anderson et al. (1999) see the reason in highly dispersed outsider ownership in the hands of individual owners whose ownership is therefore not instrumental in exercising effective governance.

Although the majority of studies seem to show no differential ownership structure effect on performance, there is also some evidence in support of the theoretical considerations. A substantial positive effect of outsider-owned firms on revenue and productivity growth has been demonstrated by Frydman et al. (1999) on a sample of 506 mid-size manufacturing firms in the Czech Republic, Hungary and Poland in the autumn of 1994. On the other hand, they found no significant differences in cost reductions among state-owned, insider and outsider firms.

As a response to the somewhat disappointing findings on ownership structure, some studies concentrated on the differential effects of the structure of either insider ownership itself or outsider ownership. The study by Derek et al. (1998) on a sample of Bulgarian companies from the early transition period indicates no differences in performance irrespective of whether companies are managerially controlled, labour-managed, mutually controlled by managers and workers or if they have a moderate degree of workers' influence. This contradicts the later findings of Djankov and Pohl (1998) on a sample of 21 case studies of Slovak enterprises at the end of 1996. Contrary to the expectations of Aghion and Blanchard (1999), insider firms did not hinder restructuring as the owners in

fact behaved as outsiders or were selling controlling stakes to outsiders to attract fresh financial resources. This is more likely to occur when managers purchase their shares rather than receive them for free in voucher privatisation schemes as, in the latter case, managers perceive their newly acquired ownership as a windfall gain, so their incentive for restructuring diminishes (Djankov, 1999, on a sample of firms from Georgia and Moldova in 1995-97). These findings allow us to conclude that insider ownership is not harmful but only if insider owners (i.e. insiders) resemble the behaviour of outsiders. Unfortunately, this is not always the case. Observations made by Filatotchev et al. (1999) on the behaviour of Russian managers in insider companies show, in line with Aghion and Blanchard's (1999) theoretical predictions, that they are hostile towards outsiders and effectively collude with other employees to preserve insider control.

Empirical studies on the ownership structure in Slovenia

Studies on privatised companies carried out in Slovenia have so far mainly examined the influence of a new ownership structure on company performance. Smith et al. (1997) examined the influence of employee and foreign ownership on the performance of manufacturing companies in the early period of spontaneous privatisation (1989-1992). The results showed that companies with dominant employee and foreign ownership were more likely to generate higher revenues, profits and exports. Next, analyses carried out by Simoneti et al. (1998a, 1998b) show that in the 1994-1997 period, when companies were preparing and implementing privatisation under the Law on Ownership Transformation[6], outsider companies were increasing investment in capital (fixed) assets, the number of employees and sales revenues, which is considered as active restructuring, whereas insider companies were still in the phase of passive restructuring accompanied by redundancies, disinvestment, slower growth in sales revenues and more intensive borrowing (Simoneti et al., 1998a, 1998b). However, by comparing the average financial and performance measures for both groups, the study was not able to explain whether ownership structure is the only reason for such differences. Another observation was that insider companies tended to transfer more of their enhanced productivity gains into wages, which resulted in a reduced potential for internal development financing. Prašnikar and Svejnar (2000) also found, on a sample of 458 Slovenian firms in 1991-1995, such a trade-off between wages and investments in insider companies, whereas this trade-off was not present in outsider companies. Nevertheless, the reason for this may be that a lot of these companies incurred losses at that time and therefore did not have the opportunity to divert profits from investment to wages. Further, the study shows the significantly positive effect of value added on investments in internally-owned firms. While outsider firms have developed easier access to external suppliers of funds, insider firms rely more heavily on internally accumulated resources. Finally, outsider firms, which are on average loss-makers, have appropriated part of the money for wages out of depreciation. This behaviour has not been observed in insider companies, as the workers and managers, who will eventually own these companies, tend to replace worn-out capital. However, they pay wages at the expense

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[6] The legislative basis for privatisation (or, better put, ownership transformation) in Slovenia was laid by the Law on Ownership Transformation (1992). Ownership transformation aimed to find the owners of companies. This may have also involved the state, state funds, managers and employees. Thus, in our paper the notion privatisation in fact refers to ownership transformation. For more on ownership transformation in Slovenia see, for example, Mencinger (1996) and Hrovatin (1999). Most firms selected their pattern of privatisation in 1995 and 1996; however, the majority of the processes started were completed with a one-year delay in 1996 or 1997 (ARP, 1999).

of a current surplus, which may have spillover effects and weaken the competitive position of transition economies (Prašnikar, Svejnar, 2000).

In contrast to studies made by Simoneti et al. (1998a, 1998b), referring to the period when privatisation was still in progress, studies carried out by Prašnikar and Gregoriè (1999) and Prašnikar et al. (1999) examine companies' behaviour in the post-privatisation period. In the post-privatisation period the internal exchange of shares, exchange of shares between investment and state funds and the listing of companies on the stock market have all taken place. All these processes have caused changes in the initial ownership structure of companies in the direction of increased ownership shares of managers, investment funds and state funds. As a result, one can expect that modalities in ownership are no longer dominant factors underlying performance. In insider companies, managers may have started obtaining greater ownership shares and, consequently, pursuing the same goals as outsiders. On the other hand, investment companies and state funds as outsiders have not tended to diversify their portfolios as expected, but have instead concentrated their ownership and actively intervened in the operations of enterprises while pursuing their share of profit in order to recover their management costs.

Another study from the post-privatisation period by Prašnikar and Gregoriè (1999) indicates that, in the group of companies where managerial influence prevails, insiders have the biggest ownership share. Key strategies of this group of companies include company growth, orientation to market niches, expansion of markets, diversification, own R&D activity and the internationalisation of operations. Among strategic goals, the emphasis is on financial goals, liquidity, closing of non-profit-making programmes and assuring appropriate standards of employees. All this confirms that consolidating ownership in the hands of managers makes them behave like outsiders. A study on restructuring of Slovenian companies in the post-privatisation period (Prašnikar et al., 1999) analyses the differences between companies with majority (more than 50%) and companies with minority (less than 50%) employee representation on the supervisory board, which is on the authors' assumption a good alternative variable for employees' influence on decision-making. In accordance with the expectations, the second group of companies is more successful in defensive restructuring with its core problem being dismissing employees who are at the same time owners of the company and participants in decision-making. On average, this group managed to reduce employment by almost 60% in the 1989-1996 period, whereas the reduction in the first group of companies was 35% on average. On the other hand, in terms of profitability, solvency and financing, the difference between the two groups is decreasing on average and the study reveals no relevant differences between the two groups in strategic restructuring.

To conclude, Slovenian studies indicate that certain differences between companies with majority insider or majority outsider ownership existed primarily at the beginning of the restructuring process while, later on in the post-privatisation period, these differences have started to disappear as a consequence of structural changes in ownership and the beginning of the strategic phase of restructuring. However, these studies were either conducted in the early stages of transition in the pre-privatisation period (Smith et al., 1997) or concentrated on other relationships rather than ownership effects on performance, measured by value added or sales (Prašnikar et al., 1999; Prašnikar, Gregoriè, 1999; Prašnikar, Svejnar, 2000) or have not controlled for other factors other than ownership (Simoneti et al., 1998a, 1998b, 2000). Our study attempts to illuminate the effects of the ownership structure on

performance while controlling for other factors that may also influence performance, measured by value added.

Competition and size

The belief that competition is beneficial for society dates back to Adam Smith. However, this belief has not been supported either by strong theoretical arguments or by any substantial empirical evidence (Nickell, 1996). Ignoring the neo-classical theory of market structures, more recent theoretical foundations in support of the advantages of competition have been developed in the framework of managerial and workers' incentives. After giving a survey of these more recent foundations, Nickell (1996) carefully concludes that there is some theoretical support for believing that competition affects productivity, although it is not strong. More persuasive than empirical findings is, in his view, the evidence of low productivity levels in Eastern Europe due to the absence of market forces.

Challenged by this commonly acknowledged fact, several empirical studies seek to identify the effect of competition on performance in transition economies. They have provided mixed results, driven to a certain extent by differences in competition and performance measures. Earle and Estrin (1998) found little support for the belief that competition has started to play a significant role in Russia. On the other hand, Brown and Brown (1998) found a strong positive link between national concentration and profitability when firms are geographically dispersed. Similarly, Djankov (1999) demonstrated a positive influence of competition in the final product market on the restructuring of insider-dominated firms in Georgia and Moldova. Strong positive effects of concentration have also been seen in Bulgaria in the late communist and early transition period (Jones et al., 1998). On the other hand, Konigs (1997) reported mixed results on how competition affects sales in Hungary, Romania and Slovenia. Finally, the influence of concentration on performance can also be reversed, as Halpern and Kõrösi (2000) have demonstrated for Hungary. Efficient firms have been more successful in gaining higher market shares. Besides competition, the size of a firm can also exhibit differing effects on performance. Barbone et al. (1999) have, for example, found that the size of Polish firms, measured by number of employees, has an impact on labour productivity, but only in public companies.

A number of empirical studies controlling for competition has inspired us to examine its importance in the operation of Slovenian firms. We expect that its effect may be even more profound as market forces played more active role in the former self-management environment, as it was the case in other centrally planned societies.

Export orientation

When domestic markets are small, which certainly is the case in Slovenia, domestic competition may have a substantial impact on firm performance. Export-oriented firms should adopt efficient management styles, know-how and organisation to be able to compete with their counterparts in developed economies. In normal economic conditions, mainly successful companies are exporters since they must be able to minimise costs in order to meet strong competition in world markets. Slovenian firms chiefly compete with EU companies, as up to 70% of Slovenian exports go there. Exporting also allows companies to achieve economies of scale (the Slovenian market is for most industries too small to allow such economies) which leads to cost reductions. As former socialist

countries have been recognised for having high levels of industrial concentration, exposure to the pressure of competitive forces in foreign markets may result in even more pronounced benefits (Blanchard et al., 1993). An export-orientation has also been recognised as a relevant factor for Yugoslav firms by Prašnikar et al. (1992) and by Jones et al. (1998) for Bulgaria in the late communism and early transition period.

In spite of the strong arguments supporting the positive impact of exports on performance based on efficiency and economies of scale, it has to be mentioned that in special macroeconomic conditions exports could produce a reversed effect. Such conditions prevailed in Slovenia after its independence. Faced by the loss of ex-Yugoslav markets, companies were forced to export to the more competitive EU markets, where they had to adjust to tremendous competitive pressures. Further, in this period the Slovenian currency (tolar) appreciated in real terms which, in addition, had a negative effect on the competitiveness of Slovenian exporters and, consequently, on their value added. Due to these factors, we can expect that an export orientation could also bring about a negative impact.

2. Selected variables

The existing empirical studies can be split into two groups reflecting whether they use absolute levels of dependent variables (i.e. various performance and efficiency measures) or their changes over a certain period of time. The first approach focuses on how the absolute levels of a dependent variable vary with the variables that may influence performance, whereas the second approach aims to identify those factors that have a decisive impact on restructuring as a dependent variable rather than on performance or efficiency. Examples of the second approach are studies by Djankov and Pohl (1998) and Djankov (1999), although many others have also used at least some restructuring measures. Our study strives to present the initial evidence on the driving factors of performance, so it employs the first approach. Following Jones et al. (1998), we use the theoretically preferable value added as a measure of performance rather than sales. The chosen set of explanatory variables includes: capital, labour, internal ownership, ownership by the state and municipalities, market share and the share of export sales in total sales. [7]

The variables of capital and labour are the basic production resources. The capital input is measured in a standard way, as fixed assets. We use the book value of fixed assets, which accounts for inflation since the Slovenian Accounting Standards require annual adjustments of all accounting categories to reflect inflation. The labour input is measured as the average number of employees. It has been calculated on the basis of working hours. Unfortunately, it was impossible to measure labour input as production-worker equivalents, which would be a preferable indicator.

In order to examine the influence of ownership structure on performance, we tested for insider ownership (and consequently outsider ownership as these two categories are substitutes) and ownership by the state and municipalities. These three ownership forms seem to be prevalent in Slovenia in the post-privatisation period. As Aghion and Blanchard

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[7] Data on all variables was obtained from the data sets of two Slovenian institutions: the Agency of the Republic of Slovenia for Restructuring and Privatisation (ARP) and the Agency of the Republic of Slovenia for Payments, Auditing and Informing. The data set of the latter is based on balance sheets and income statements. The precise calculation of variables is given in Table 4 in the Appendix.

(1999) assumed for transition economies, the political considerations in Slovenia, quite aware of the attitudes of workers and managers towards socially-owned companies, have favoured the insider ownership model. Thus, the combination of: 1. management and employee buy-outs at 50% discounts, 2. free exchange of shares for the vouchers of managers, employees and their relatives and 3. The compulsory transfer of 40% of the initial social capital scheduled for privatisation to two state funds (20% of shares) and investment funds (20%) was the most popular ownership transformation method. Foreign ownership played a negligible part in Slovenia's ownership transformation, so it is omitted in our analysis.

Regarding direct state ownership (i.e. without state funds), the process of ownership transformation led to a quite significant state share in the initial social capital scheduled for privatisation due to the shift of network assets, agricultural land, forests and some insolvent enterprises into the state's hands. This has influenced the ownership structure of some sectors more than others. In our sample, the energy and mining sectors have a large state share because the majority of companies became state-owned. We included this variable in order to test whether state ownership has the theoretically predicted negative effect on company performance. State ownership is expressed as a percentage of state ownership in total ownership.

The next variable included in the analysis is market share as a measure of the degree of concentration and hence competition in product markets. It is measured as the percentage share of a firm's sales in the sales of the industry, where the industry is defined at the two-digit level according to the Standard Classification of Activities[8]. The last variable, export orientation, is measured as the share of exports in sales. As already noted, the effect of this explanatory variable is expected to be positive, although in some special macroeconomic conditions it may be the opposite.

3. The sample

Our study is based on data for all Slovenian industrial[9] companies in 1998 that had by then completed their ownership transformation. This amounted to 509 companies. Before commencing the analysis, we excluded from the sample:
1. companies for which some data was missing;
2. companies with negative or zero value added; and
3. companies with zero employees and/or zero capital.

A large number of companies with zero employees and/or zero capital appeared in Slovenia in the first half of the nineties after the passing of liberal legislation that removed barriers to establishing a new company. Many individuals founded a new company to take advantage of tax exemptions and reductions in purchasing durables and the like. These companies were, in fact, fictitious, as they never *de facto* performed any business operations. After these deductions, our sample consists of 488 companies with 117,120 employees. This was almost one-third of all industrial companies in Slovenia in 1998

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[8] This is a Slovenian classification of activities based on the NACE Rev.1.
[9] Industrial companies in our analysis are companies that under the Standard Classification of Activities belong to the following industries: mining (sector C), manufacturing (sector D) and electricity, gas and water supply (sector E).

employing more than half of all workers (Statistical Yearbook, 1999). Summary statistics for the sample are reported in Table 1.

Table 1: Summary statistics for variables in the sample of privatised Slovenian industrial companies in 1998

Variable	Mean	Minimum	Maximum	Coefficient of variation
VA (in 1000 sit*)	826,732	753	25,774,495	2.550
K (in 1000 sit)	1,964,852	223	80,830,735	3.323
L	240	1	5,482	1.863
MS (%)	15.67	0.00	100.00	1.442
EX (%)	30.67	0.00	98.80	1.016
OWNINT (%)	45.77	0.00	64.30	0.358
OWNS&M (%)	3.03	0.00	96.50	4.663

* SIT – abbreviation and currency code for the Slovenian currency, the tolar

VA – value added, *K* – capital, *L* – number of employees, *MS* – market share, *EX* – the share of exports in sales revenue, *OWNINT* – insider ownership, *OWNS&M* – ownership by the state and municipalities.

The average company is a medium-sized enterprise employing 240 employees. The average market share of 15.67% indicates a certain degree of market power. The Herfindahl index is 1900, indicating that companies operate in tight oligopoly conditions. On average, they generated 31% of sales revenues from exports in 1998. Insiders owned 46% of company's shares on average in 1998, whereas the ownership by the state and municipalities was 3%. Nevertheless, state ownership in manufacturing (D) was on average less than 1%, while in the mining and quarrying sector (C) and in electricity, gas and water utilities (E) the state had 13% and 44%, respectively.

4. Econometric considerations and results

Empirical studies examining the determinants of firm performance in transition economies have applied two fundamental approaches. The first approach uses the conventional production function, which can be specified so that it allows for various technological forms. This approach has been the most common in transition economies. The second approach is based on the estimation of stochastic frontiers and has been implemented for the purposes of estimating privatisation effects on performance in transition countries only by Jones et al. (1998) in addition to conventional production function. Finally, several studies have been conducted within the scope of the production function and stochastic frontier approach. They applied a regression analysis to estimate the effects of various factors such as profitability, labour productivity, employment, payments, capacity utilisation, the vintage of capital stock, asset sales etc. on performance. In our study, we applied the production function which is the dominant econometric approach.

In order to control for production technology, we estimated three forms of the production function: Cobb-Douglas, Kmenta's linear approximation to the CES (Constant Elasticity of Substitution) and the translog production function. The last one is the most flexible as it allows variations in the elasticity of substitution when the volumes of capital and/or labour change (Leighton, 1985). The specifications of estimated[10] production functions in logarithmic forms are as follows:

1. Cobb-Douglas production function

$$\ln VA = b_0 + b_1 \ln K + b_2 \ln L + b_3 MS + b_4 EX + b_5 OWNINT + b_6 OWNS\&M + u \qquad (1)$$

2. Kmenta's linear approximation to the CES production function

$$\ln VA = b_0 + b_1 \ln K + b_2 \ln L + \frac{1}{2} b_3 (\ln K - \ln L)^2 + b_4 MS + b_5 EX + b_6 OWNINT \\ + b_7 OWNS\&M + u \qquad (2)$$

3. Translog production function

$$\ln VA = b_0 + b_1 \ln K + b_2 \ln L + b_3 \frac{1}{2} (\ln K)^2 + b_4 \frac{1}{2} (\ln L)^2 + b_5 \ln K \ln L + b_6 MS + \\ + b_7 EX + b_8 OWNINT + b_9 OWNS\&M + u \qquad (3)$$

First, the F test (and Lagrange multiplier test) shows that for all three specifications the extended model including firm-specific variables is superior to the basic specification with capital and labour as the only inputs.[11] Next, the F test was used for testing the Cobb-Douglas production technology imposed on the model against the CES and translog.

Estimations have confirmed that the translog function best fits the data.[12] All three functional forms were also tested for heteroscedasticity using White's test. As heteroscedasticity was present in all three specifications, we corrected the models accordingly.

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[10]   All three production functions were also estimated separately for sectors C, E and six groups consisting of related subsectors from sector D in order to explore the potential differences among them. Results, mostly confirming findings based on the whole sample, may be obtained from the authors.

[11]   The F statistic was used to test our extended production function [$VA = f(K,L,MS,EX,OWNINT,OWNS\&M)$] against the basic production function [$VA = f(K,L)$]. The F statistics for Cobb-Douglas, CES and translog production functions are 8.55, 8.52 and 8.45, respectively. The 1% critical value of F statistic for all three production functions is 3.48. Thus, the null hypothesis that the regression coefficients of market share, export and both ownership variables are jointly zero is rejected and the extended model is recognised as superior.

[12]   To test the CES production function against the Cobb-Douglas production function we formed the null hypothesis that the coefficient of variable $\frac{1}{2}(\ln K - \ln L)^2$ equals zero. The calculated F statistic is 0.003, which is less than its critical value, i.e. 3.92. The F statistic and its critical value for testing the translog production function against the Cobb-Douglas production function ($H_0 : b_3 = b_4 = b_5 = 0$) are 5.91 and 3.95, respectively, indicating that the translog production function fits the data better.

Table 2: Estimated coefficients of the Cobb-Douglas, CES and translog production functions of privatised Slovenian industrial companies in 1998

Variables	Cobb-Douglas	CES (Kmenta's app.)	Translog
Constant	11.147**	10.064*	13.403*
	(18.968)	(2.038)	(2.351)
ln K	0.215**	0.335	0.260
	(6.343)	(0.529)	(0.346)
ln L	0.807**	0.691	-0.574
	(20.189)	(1.090)	(-0.661)
1/2 (ln K - ln L)^2		-0.007	
		(-0.169)	
ln K * ln L			0.114
			(1.915)
1/2 (ln K)^2			-0.0267
			(-0.534)
1/2 (ln L)^2			-0.1975**
			(-2.548)
MS	0.454**	0.424**	0.333*
	(3.338)	(3.136)	(2.300)
EX	-0.260**	-0.264**	-0.236**
	(-2.819)	(-2.872)	(-2.637)
OWNINT	0.553**	0.631**	0.871**
	(2.576)	(2.948)	(3.967)
OWNS&M	0.282	0.292	0.129
	(1.757)	(1.615)	(0.584)
n	488	488	488
R^2*adj.*	0.8633	0.8633	0.8682

n   − number of companies

R^2 *adj.* − adjusted R-squared

Figures in parentheses are *t*-statistics; * and ** indicate the 5% and 1% significance level, respectively.

Econometric results reported in Table 2 show that the market share, the share of exports and the share of insider ownership have a statistically significant influence on value added, whereas ownership by the state and municipalities does not. Market share has a positive influence on value added, although the effect is not very remarkable. In fact, it is far lower than in Bulgarian companies in early transition (Jones et al., 1998). The positive influence is in accordance with the theoretical assumption that companies with a larger market share have on average greater market power which enables them to set prices above the equilibrium level, to price discriminate and/or to exploit economies of scale. However, we cannot determine which of the three effects prevailed in our situation.

The influence of exports is negative. This outcome was somehow expected. First, due to the special macroeconomic circumstances involved and, second, due to the exchange rate policy. As mentioned before, after Slovenia's secession and the collapse of the ex-

Yugoslav market companies had to divert their exports to the highly competitive EU markets, where they faced serious difficulties in their endeavours to catch up with their more efficient counterparts. Another reason was the exchange rate policy causing the steady appreciation of the Slovenian tolar in real terms. In 1998, the Slovenian tolar appreciated even more strongly as a result of nine months of continuous appreciation starting in 1997 and lasting until June 1998. As a consequence, labour costs in the basket of currencies increased substantially (by 3%), whereas at the same time labour costs per product of Slovenia's main trading partners fell by about 2% in 1998, which caused a deterioration in the international competitiveness of Slovenia's manufacturing industry (Economic Mirror, 1999a, 1999b). Our finding of the negative impact of exports is comparable with the results of Jones et al. (1998) for Bulgaria. Their explanations based on the loss of Eastern and Yugoslav markets are partly similar to ours. In addition, they suggest that firms that once sold to domestic markets have diverted their efforts to make exports in order to compensate for the loss of sales. In this way, the "self-selection of the worst firms" (Jones et al., 1998, p. 458) among exporters may have occurred. In Slovenia, exporters have in general been those firms that had been exporting to other Yugoslav republics before secession. Competition there was at least as tough as in the domestic market, so the "self-selection of the worst firms" among exporters was less likely to occur.

Our findings on the positive impact of insider ownership contradict previous Slovenian empirical studies. Following Prašnikar and Gregoriè (1999), this could be explained by structural changes, namely the sufficient consolidation of ownership shares in the hands of managers, who therefore act as outsiders. Taking this into consideration, one may further assume that insiders have already bought out the majority of reserved privatisation shares from the state Development Fund, so that there is no significant outflow of firm resources for their purchases anymore which would in turn reduce investment resources. On the other hand, the concentration of outsider ownership on a larger scale was less likely to occur before the end of 1998, as the majority of firms had not traded their shares on the capital market[13]. Therefore, we argue that the positive effect of internal ownership can also be attributable to the inefficient structure of outsider ownership. It was highly dispersed among outsiders, investment funds and individual owners who, consequently, could not have effectively enforced their ownership rights. In the absence of the effective governance mechanism of the state and investment funds themselves, outsiders were more inclined to passive representation on the management boards involved. In addition, these funds tended to share-out company profits in order to cover their operating costs. Another plausible argument for the positive effect of insider ownership can be seen in the management turnover that took place at the end of the 1980s. As a result, managers in insider companies were highly experienced and knowledgeable in the (post)-privatisation period. Contrary to theoretical expectations, there is also a positive influence of the ownership by the state and municipalities on value added, although this effect is not significant.

The presented analysis reflects only the direct effect of each variable on value added. However, these variables can also influence value added indirectly in conjunction with other variables, or can even have a different influence on value added in some other size ranges. In order to explore these relationships, we calculated the total (aggregate) effect of market share, exports, insider ownership and ownership by the state and municipalities on

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[13]   At the end of 1998 only 29 companies traded their shares on the Ljubljana Stock Exchange and 63 on the free market. Market capitalisation accounted for only 16.6% of GDP at the end of 1997 (Ljubljana Stock Exchange, 1998). This is far less than the EU average (69.9% of GDP) (Lannoo, 1999).

value added. This was achieved by estimating the production function with the original variables, their squared values and the cross products of all variables of the form:

$$\ln(VA) = \boldsymbol{b}_0 + \sum_{i=1}^{n} \boldsymbol{b}_i \ln(x_i) + \frac{1}{2} \sum_{i=1}^{n} \sum_{j=1}^{n} \boldsymbol{b}_{ij} \ln(x_i) \ln(x_j) + e, \tag{4}$$

where *VA* stands for value added, x_i, represents the *i*-th explanatory variable and $\boldsymbol{b}_{ij} = \boldsymbol{b}_{ji}$. Total effects (elasticities) were then explored by calculating the following derivatives of the estimated production function:

$$\frac{d\ln(VA)}{d(MS)} = \boldsymbol{b}_3 + \boldsymbol{b}_9 \overline{MS} + \boldsymbol{b}_{14}\overline{\ln K} + \boldsymbol{b}_{18}\overline{\ln L} + \boldsymbol{b}_{22}\overline{EX} + \boldsymbol{b}_{23}\overline{OWNINT} + \boldsymbol{b}_{24}\overline{OWNS\&M} ; \tag{5}$$

$$\frac{d\ln(VA)}{d(EX)} = \boldsymbol{b}_4 + \boldsymbol{b}_{10}\overline{EX} + \boldsymbol{b}_{15}\overline{\ln K} + \boldsymbol{b}_{19}\overline{\ln L} + \boldsymbol{b}_{22}\overline{MS} + \boldsymbol{b}_{25}\overline{OWNINT} + \boldsymbol{b}_{26}\overline{OWNS\&M} ; \tag{6}$$

$$\frac{d\ln(VA)}{d(OWNINT)} = \boldsymbol{b}_5 + \boldsymbol{b}_{11}\overline{OWNINT} + \boldsymbol{b}_{16}\overline{\ln K} + \boldsymbol{b}_{20}\overline{\ln L} + \boldsymbol{b}_{23}\overline{MS} + \boldsymbol{b}_{25}\overline{EX} + \boldsymbol{b}_{27}\overline{OWNS\&M} ; \tag{7}$$

$$\frac{d\ln(VA)}{d(OWNS\&M)} = \boldsymbol{b}_6 + \boldsymbol{b}_{12}\overline{OWNS\&M} + \boldsymbol{b}_{17}\overline{\ln K} + \boldsymbol{b}_{21}\overline{\ln L} + \boldsymbol{b}_{24}\overline{MS} + \boldsymbol{b}_{26}\overline{EX} + \boldsymbol{b}_{27}\overline{OWNINT}. \tag{8}$$

Table 3: Total effects (elasticities)

Variables	Elasticity
MS	1.029
EX	- 0.330
OWNINT	1.087
OWNS&M	0.428

The elasticities reported in Table 3 have the same signs as in the earlier estimations. However, as expected the total influence of variables is stronger than their direct effect. Insider ownership and market share have the strongest total influence on value added. On the margin, a percentage point increase in insider ownership and market share is associated with an approximately 1% increase in value added. A lower yet still considerable influence on value added is detected for ownership by the state and municipalities. The share of exports in sales revenues shows the lowest aggregate effect among the selected variables.

Concluding remarks

Our econometric analysis has proved that ownership matters for performance, although it is not the only decisive factor. Insider ownership has, contrary to our expectations, a significant positive influence on value added. This can be explained in different ways. One reason may be seen in the inefficient structure of outsider ownership. In 1998, outsider ownership was highly dispersed among outsiders, i.e. the state and investment funds and individual owners. Funds participated with their ownership shares in the majority of companies that had accomplished ownership transformation. The wide dispersion of ownership, envisaged mainly with the formally prescribed ownership transformation scheme, prevented them from effectively enforcing their ownership rights. This was also

noted in Mongolia (Anderson et al., 1999). Another explanation for the supremacy of insider ownership comes from the management turnover that took place at the end of the eighties, resulting in a highly experienced and skilled management structure in insider firms in the (post)-privatisation period. Managerial influence (ownership), according to Prašnikar and Gregoriè (1999), prevailed in companies with the largest ownership share of insiders. These companies were oriented towards active restructuring (i.e. growth, market niches, expansion of markets, diversification, own R&D activity, internationalisation of operations and closing of non-profitable product lines). Similarly, as in the case of Slovak firms (Djankov, Pohl, 1998), we can assume that the consolidation of ownership in the hands of managers makes them behave like outsiders.

This result also suggests that the preferable model of ownership transformation in Slovenia, resulting in the dominance of insider firms, may have been appropriately designed considering Slovenia's unique institutional structure with a relatively high degree of managerial autonomy facilitated by social ownership in conjunction with market socialism. If this is true, then further concentration of ownership in the hands of managers would be welcome. On the other hand, concentration of ownership in the hands of outsiders so that they can *de facto* exercise effective governance may also lead to the improved performance of outsider firms.

Market share has as strong a positive aggregate influence on value added as insider ownership. This finding confirms our expectations that market share could play a more profound role in Slovenia compared to other transition countries since market forces worked more freely in the former Yugoslav socialist self-management system than in centrally-planned economies with dominant state ownership. The negative effect of exports, which would not be expected in normal economic conditions, is the result of the collapse of the former Yugoslav market and the reorientation of exports to competitive Western European markets. This was also the case in Bulgaria (Jones et al., 1998). Another reason for the negative effect in Slovenian firms was the strong appreciation of the Slovenian tolar in 1998. Finally, the ownership share of the state is the only variable having no statistically significant effect on firm performance. This may be due to the fact that manufacturing firms, which comprise the majority of our sample, have a negligible ownership share by the state and municipalities (less than 1%) and, therefore, in fact the state has no influence on their operation.

Appendix

Table 4: Definitions of variables

Variable	Variable calculation
Value added in SIT (*VA*)	gross operating profit − cost of sales − cost of materials − cost of services − current asset abatement − other operating expenses
Capital in SIT (*K*)	fixed assets − long-term financial investments
Average number of employees (*L*)	average number of employees on the basis of working hours in the fiscal period
Market share in % (*MS*)	(sales turnover of the company) / (sales turnover of the industry)
The share of exports in sales revenues % (*EX*)	net sales revenues from exports / total net sales turnover (from exports and domestic sales)
Insider ownership in % (*OWNINT*)	(internal purchase in instalments + internal purchase in cash + shares in exchange for certificates) / equity
Ownership by the state and municipalities (*OWNS&M*)	(equity of the state and municipalities) / (total equity)

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