

Ownership and
Firm Performance: Evidence from 25
Countries in Central and Eastern
Europe and the Former Soviet Union

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Introduction

There has been much debate on whether firms perform better after they are privatised, but so far the empirical evidence is mixed. This is an interesting dilemma because it seems clear that state ownership would hamper the performance of a firm. After all, state-owned firms are not solely profit-maximising. There are often other incentives, such as keeping employment and wages above competitive equilibrium levels¹. Firms may also be state-owned to protect consumers, as is the case of those in industries that favour a natural monopoly, such as electricity. Following this line of reasoning, one comes to the conclusion that privatising such a firm would allow the new (profit-maximising) owner to restructure by cutting employment or raising prices, for example. The conclusion that privatisation would increase the firm performance seems even more straightforward in the transition countries of Central and Eastern Europe (CEE) and the Former Soviet Union (FSU). In these countries, state-owned enterprises (SOEs) were even more bloated in terms of employment. Their workers received wages in cash, but also in the form of services, such as housing and kindergartens located on site or near to the firm. The firms were not profit-maximising and were often extremely inefficient, more so than many firms in the West. This inefficiency was due to the nature of the Soviet system where the only incentive was the threat of punishment if the planned level of output was not maintained. The incentive to overproduce was small because of the ‘ratchet effect’; the next year’s planned output level was set to the previous year’s attained output. In addition, because of the nature of the shortage economy, it was guaranteed that the output would be sold. However, once the Soviet system was abolished, many markets were opened to foreign competition, many firms were privatised and budget constraints were hardened². Section I reviews the literature on

privatisation, both in CEE and the FSU and the rest of the world, Section II describes the data,

¹ See Shleifer (1998) for a discussion on the changing view of economists towards public and private ownership.

² However, many firms, privatised and state-owned, received subsidies, both explicit and implicit. An example of the latter form of subsidies is the toleration of tax arrears by the government.

Section III presents empirical evidence, and Section IV concludes.

I. Literature Review

The topic of the effect of privatisation on firm performance has been extensively studied. This review is hardly comprehensive, especially of the vast literature on non-transition countries. Where possible, I have noted where further references can be obtained.

A. Non-Transition Literature

There is an extensive literature measuring the gains from privatisation of SOE in non-Transition countries, much of which is inconclusive. However, much of this literature is empirical. Errunza and Mazumdar (1995) develop one of the most rigorous theoretical models. Their model predicts that the greatest gains from privatisation come from selling off the most heavily subsidised firms first. They postulate an inverse relationship between firm size and the percentage gains from privatisation. They also suggest that selling the SOE that are the smallest part of the government first is most beneficial. However, this could be due to the possibilities for error in early privatisations, which suggests that there is a learning curve for governments beginning privatisations and that cross-country differences lead to different optimal methods of privatisation. Further, they predict that if firms are restructured *before* they are privatised, the government will gain because of the higher revenue from the future sale. However, this policy is unlikely to be optimal if the cost of the government restructuring the firm are significantly higher than private restructuring. Kikeri, Nellis and Shirley (1994) give slightly different advice than Errunza and Mazumdar, but develop less of a theoretical framework; they mostly use examples from history. They state that the primary motive of privatisation should be efficiency gains

rather than maximising short-term government revenue. Kikeri, Nellis and Shirley agree with Errunza and Mazumdar in that small and medium sized SOE in a competitive environment should be privatised first because of the presence of a learning curve in privatisation. However, they note that selling a large enterprise first will gain more political credibility. They present an interesting alternative to privatisation: hiring management from the private sector to manage SOE. Provided enough incentives for improving efficiency are included (performance based pay, for example), they believe that this method could be as effective as privatisation³. If the government does privatise, it may be optimal to cut employment before selling because investors will be wary of buying a firm that needs large employment cuts because of the possibility of future labour disputes. Megginson, Nash and van Randenborgh (1994) test whether firms perform better after privatisation using data on 61 companies in 18 countries across 32 industries that were privatised between 1961 and 1990⁴. They used data from the firms 3 years on either side of privatisation. They found that privatised firms had higher profit, higher efficiency, more capital investment, more output, more employment (!), less debt, and a higher payout. The most surprising result of their study was that firms, on the whole, *increased* employment after privatisation, which makes one question why labour unions are so opposed to privatisation. One explanation is that, with privatisation (and the increased employment), wages will fall; the union premia will be eroded by competitive pressures and the presence of more (possibly non-union) workers.

³ However, the gains from hiring private managers could be lost if the management is not given enough autonomy from politicians pressuring them to maintain higher employment, as is predicted by the Shleifer-Vishny (1994) model described below.

⁴ See Megginson, Nash and van Randenborgh (1994), fn. 2 for a more complete list of contemporary empirical studies of the effects of privatisation on firm performance.

B. Transition Literature

There have been many studies that have explored the effect of privatisation on firm performance empirically in the transition countries (particularly the Czech Republic). There has also been more work on establishing theoretical explanations of why privatised firms perform better than their state-owned counterparts. There has also been a new econometric perspective added to the debate, which may have some relevance in all empirical studies of privatisation: the possible sample selection bias introduced if the government privatises the more profitable firms first.

One of the earliest theoretical models establishing the benefits of privatisation in a transition context is Shleifer and Vishny (1994). They formulate a model with three agents, the Treasury (which is assumed to play a passive role), politicians and managers. Politicians pressure managers to employ more than the efficient number of employees to increase his political support. The managers, who are assumed to represent the interest of shareholders, prefer to have no excess employment and require subsidies from the government in order to comply with the politician's request. They set up a bargaining model which predicts that in the presence of full corruption, the allocation of control and cash rights to a firm will not matter because the politician will be satisfied with lower employment if he receives enough bribes (the Irrelevance Proposition). However, when bribes are not allowed, privatisation is associated with a transfer of cash flow and control rights from the politician to the manager, who will then choose to employ no excess labour and maximising profits. Furthermore, potentially profitable firms, upon privatisation, are less likely to hold excess employment than unviable firms because they have less of a need to retain government subsidies, which are conditional on excess employment. This model predicts that in the absence of full corruption, privatised and

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corporatised firms will outperform SOEs. Boycko, Shleifer and Vishny (1996) extend this model to show that firm restructuring is more likely when privatisation is accompanied by stabilisation policies. Blanchard and Aghion (1996) focus on the problems associated with insider privatisation. They show that in the presence of higher unemployment and collusion among the inside owners delays restructuring. Insiders oppose outsider ownership because of the layoffs that are necessary (and inevitable with outside ownership). They posit that restructuring is less likely under insider managerial control than worker control because collusion is easier among the smaller group of managers. These problems can be slightly alleviated if shares can be sold anonymously, which reduces the power of enforcement of the collusive agreement. In contrast to Blanchard and Aghion, Roland and Sekkat (2000) demonstrate that career concerns of managers can speed up the process of restructuring by insider managerial owners. In a different line of theoretical papers, Gupta, Ham and Svejnar (2000) present theoretical arguments as to why there will be sample selection bias: better performing firms will be privatised first. Using data on 1121 privatised Czech firms, they show that firm performance is linked to early privatisation⁵. Thus, any study of privatisation and firm performance in the Transition countries should take this bias into consideration.

There have been many empirical studies of the benefits of privatisation on firm performance with mixed results⁶. Using data on mostly medium and large firms in seven CEE countries, controlling for the possible endogeneity bias, Claessens and Djankov (1997) find that privatised firms show increased performance (as measured by TFP with energy consumption used as a proxy for capital). Claessens, Djankov and Pohl (1997) find that concentration of ownership, even when the majority owner is an investment fund with loans to the firm, is associated with firm performance. Frydman et al (1999) use data on medium and large firms in

⁵ Marcincin and van Wijnbergen (1997) also find evidence that better firms were privatised earlier.

⁶ Other papers include Konings (1997), Nitikin and Weiss (2001), Earle (1998), Walsh and Whelan (2001) and Lizal and Svejnar (1997).

Poland, the Czech Republic and Hungary from 1990-1993 to test whether ownership affects firm performance. They find that privatisation has a positive impact on firm performance. For a review of the evidence from other papers, see Estrin (2000), Nellis (1999) or Beven, Estrin and Schaffer (1999).

II. The Data

The data are from the 1999 Business Environment and Enterprise Performance Survey (BEEPS), the transition economies component of the World Business Environment Survey, which was jointly conducted by the World Bank and the European Bank for Reconstruction and Development (EBRD). There are 4104 firms in the sample from 25 transition countries as well as Turkey. The questions asked in the survey encompass the basic questions of firm classification, but the main focus of the survey is the relationship of the firm to the government and corporate governance. For a detailed overview of the survey and the responses, see Hellman et al. (2000). The survey tries to be fully representative across industry (manufacturing and services), number of employees, location (in large and small cities as well as rural areas), ownership (domestic and foreign, private and state-owned), and include a number of firms that export⁷.

⁷ See Table 1a and 1b for some basic summary statistics.

III. Empirical Results

This paper focuses on demonstrating the negative effects if insider ownership as predicted by Aghion and Blanchard (1996). The nature of the data allow for a test of the hypothesis of Roland and Sekkat (2000) that manager owned firms perform better than SOE. However, it is impossible to test the motives for restructuring. Roland and Sekkat predict that managerial career concerns will hasten restructuring. However, managers could also restructure upon realising it is the best way to be able to increase wages or employment even if they have no plans to sell the firm to an outside owner. It could also be a purely self-enhancing decision; restructuring improves performance and allows greater rents to be extracted. I also test whether foreign, outside domestic, individual and collective farmer ownership increases performance.

The regressions in Table 4 are binomial logit regressions using ownership (private versus state) as the dependent variable and performance (as measured by the growth in employment and sales over the past three years with the 10% extreme values on either end filtered out) along with control variables for industry, country, location, size (where appropriate) and age⁸. The industry variables use farming/forestry/fishing, mining/quarrying, manufacturing, energy, communications and services. The country controls are dummies for country in which the firm operates (with Turkey excluded). The location controls are dummies for whether the firm is in a large city, small city/town or rural area, where the latter is left out. This regression is a test of which direction causality runs between ownership and performance. If the coefficients on the performance variables are significant, that would indicate that better performing firms might be privatised more rapidly than those performing poorly. In all the regressions I ran, excluding the regression for small enterprises using sales growth as the measure of performance, firm

⁸ The description of the variables used are presented in Table 1c.

performance was strongly significant. This gives support for the result found by Gupta, Ham and Svejnar (2000) that there is an endogeneity bias built into the data. Using employment change as the measure of performance, the coefficient was significant at the 1 percent level. In large firms using sales growth as a measure of performance, the result was similar, positive and significant at the 5 percent level. In these three cases, an increase in performance of one percent was associated with between 0.9 and 2.6% increase in the probability of being privatised. However, for small enterprises when using sales growth as the measure of performance, the coefficient was negative and insignificant (-0.7%). This suggests that in all the other regressions excluding the last case, the results should be taken cautiously because it might be the case that better firms are more likely to be privatised or privately owned.

Bearing these results in mind, next I ran several regressions using different measures of performance, ownership aggregation and size of firm. Table 2 uses employment change (with the extreme values filtered out) as the dependent variable. The first three columns are regressions using only large and medium firms, so a size dummy is needed. The dummy is equal to one if the firm is large (defined as having employment over 200) and zero if the firm is medium sized (with employment between 100 and 199). In these regressions, private and privatised firms outperform those that remain state-owned. Foreign and individually owned firms do significantly better than state-owned firms while those owned by insiders or collective farmers perform significantly worse than state-owned firms. Newer firms have significantly better performance than older, while bigger firms do insignificantly worse than smaller firms. These variables could be proxying for whether a firm is *de novo* or whether it is traditional. As the Durbin-Watson statistic shows, there does not appear to be a problem with residual autocorrelation, which makes sense because these data were all collected at once. The regressions in the second three columns for small enterprises show similar results as for large

enterprises.

Moving on to the regressions in Table 3, the results are not nearly so clear and predictable for small firms. For medium and large firms, most of the conclusions drawn in the preceding paragraph still hold, although the coefficient on insider owned firms has become insignificant (but still negative) and the coefficient on manager owned firms is positively significant. In addition, the age variable has lost significance in all the regressions using medium and large enterprises and is negative for the regression with the most disaggregated ownership variables⁹.

The regression results are more inconclusive using sales growth as the dependent variable and only small firms. The results from Table 4 suggested these results would be the most conclusive about the true causal relationship from ownership to performance because sales change with 10 percent extreme values removed is insignificant. In all three regressions, of the ownership variables, only insider and worker owned firms have significant coefficients (both negative). Furthermore, the age of the firm has regained its positive significance at the 5 or 10 percent level. This final set of regressions might indicate that there isn't much in the way of gains from privatisation; the results that show a gain are marred by endogeneity bias.

These results are quite robust. In addition to the 12 regression specifications presented here, I also used the same specifications with both *empch* and *salesch* unfiltered, as well as filtering out only the 5 percent extreme values. The results were similar, but had less significance due, most likely, to outliers (values of the unfiltered variables ranged from -90 to 900 percent growth in the past three years). The results are also robust to the inclusion of a variable indicating whether it is the norm for firms in the industries questioned to use bribes to 'get things done'. That variable turned out to be insignificant in all specifications, which casts

⁹ The negative coefficient would suggest that older firms outperform younger ones; a strange result for which I have no explanation.

some doubt on the Shleifer-Vishny Irrelevance Proposition.

IV. Conclusion

In this paper, I have tried to present empirical evidence for the relationship between ownership and performance. However, there appears to be evidence of endogeneity bias that gives false hope for the gains from privatisation. However, not having a suitable instrumental variable to control for this bias, except sales growth in the regressions using only small enterprises, I cannot conclusively assert whether the results from the other regressions are robust to controlling for endogeneity bias.

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Tables

Table 1a: Country-Specific Summary Statistics

Country	Number	Percentage	% SOE	% Private
Albania	163	4.0	20.9	79.1
Armenia	125	3.0	20.0	80.0
Azerbaijan	137	3.3	18.2	81.8
Belarus	132	3.2	18.9	81.1
Bosnia	127	3.1	20.5	79.5
Bulgaria	130	3.2	19.2	80.8
Croatia	127	3.1	21.3	78.7
Czech Republic	149	3.6	16.8	83.2
Estonia	132	3.2	18.9	81.1
Georgia	129	3.1	19.4	80.6
Hungary	147	3.6	17.0	83.0
Kazakhstan	147	3.6	18.4	81.6
Kyrgyzstan	132	3.2	18.9	81.1
Latvia	166	4.0	19.9	80.1
Lithuania	112	2.7	0.0	100.0
Macedonia	136	3.3	18.4	81.6
Moldova	139	3.4	18.0	82.0
Poland	246	6.0	10.2	89.8
Serbia (FYR)	65	1.6	46.2	53.8
Romania	125	3.0	20.0	80.0
Russia	552	13.5	4.5	95.5
Slovakia	138	3.4	18.1	81.9
Slovenia	125	3.0	20.0	80.0
Turkey	150	3.7	16.7	83.3
Ukraine	247	6.0	10.1	89.9
Uzbekistan	126	3.1	19.8	80.2
Total	4104	100.0	15.9	84.1
CEE (1)	1678	40.9	20.7	79.3
FSU (2)	1866	45.5	16.6	83.4
Baltics (3)	410	10.0	12.9	87.1

Source: BEEPS and author's calculations

(1) CEE is defined as Albania, Bosnia, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Poland, Serbia, Romania, Slovenia, and Slovakia.

(2) FSU is defined as Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Ukraine, and Uzbekistan.

(3) Baltics is defined as Estonia, Latvia and Lithuania

Table 1b: Selected Summary Statistics (Whole Sample)

Category	% of sample
Farming/Forestry/Fishing	24.6%
Mining/Quarrying	20.0%
Manufacturing	26.8%
Energy Generation	10.7%
Services	52.1%
Communications	0.4%
Under 100 Employees	64.4%
100-199 Employees	12.9%
Over 200 Employees	22.6%
In Large City	49.1%
In Small City/Town	42.4%
In Rural Area	8.4%
Privately Owned	84.1%
Individually Owned	80.5%
Foreign Owned	6.3%
Outside Domestically Owned	88.4%
Domestic Company Owned	6.1%
Investment Fund Owned	1.4%
Bank Owned	0.4%
Collective Farmer Owned	1.5%
Insider Owned	5.1%
Manager Owned	1.4%
Worker Owned	3.7%
Export	30.4%

Source: Author's calculation from the BEEPS dataset.

Table 1c: Variables

Variable Name	Definition
location	Dummies for city size in which firm is located
country	Dummies for country in which firm is located
industry	Dummies for industry in which firm operates
empch10	Employment change in the last 3 years with 10% extreme values removed
salesch10	Sales change in the last 3 years with 10% extreme values removed
size	Dummy for whether firm is large, used only in med. and lg. firm regressions
age	Date in which firm was founded (1806-1999)
Ownership Dummy Variables	
privown	Private Ownership (All)
forown	Foreign Ownership
indivown	Individual Ownership
outdomown	Outside, Domestic Ownership
domown	Domestic Company Ownership
invown	Investment Fund Ownership
cfarmown	Collective Farmer Ownership
insown	Insider Ownership
manown	Manager Ownership
workown	Worker Ownership

Table 2: Regressions on Employment Growth

	(1)	(2)	(3)	(4)	(5)	(6)
Private	6.287*** (3.175)			12.117*** (4.184)		
Foreign		10.154*** (2.660)	14.371*** (4.019)		8.565** (2.095)	18.295*** (4.081)
Individually			15.426*** (7.082)			13.176*** (5.124)
Outside (Domestic)		3.866 (1.576)			6.074** (2.062)	
Domestic Company			3.435 (1.160)			11.615*** (2.680)
Investment Fund			-3.379 (0.643)			-4.734 (0.383)
Collective Farmers			-14.346** (2.323)			Dropped
Insider		-5.645** (2.516)			-10.709*** (3.819)	
Manager			1.27 (0.259)			3.859 (0.691)
Worker			-0.03175 (0.013)			-0.0816 (0.021)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes
Size	-1.732 (1.009)	-2.541 (1.447)	-1.24 (.743)			
Age (†)	0.04465 (1.352)	0.06767** (1.965)	0.01981 (0.629)	0.07901 (1.199)	0.171*** (2.818)	0.06969 (1.094)
R-squared	0.083	0.089	0.159	0.111	0.119	0.136
Adj. R-squared	0.041	0.043	0.114	0.08	0.086	0.102
Durbin-Watson statistic	1.992	1.994	2.014	2.018	1.997	2.033
<p>The D-W statistic tests for the presence of residual autocorrelation. A problem only occurs if the statistic is outside the range [1.7, 2.3].</p> <p>(†) Age is measured by the year in which the firm was founded. It ranges from 1806-1999.</p> <p>(1) - (3) Uses employment change (without the 10% extreme values) and filters out only the medium and large enterprises so size is a dummy of whether the firm is large.</p> <p>(4) - (6) Uses employment change (minus the 10% extreme values) and includes only small enterprises so there is no size dummy.</p> <p>Note: The number in brackets under the coefficients is the absolute value of the t-statistic.</p> <p>Note: ***, **, * = Sig. at the 1%, 5% and 10% level.</p>						

Table 3: Regressions on Sales Growth

	(1)	(2)	(3)	(4)	(5)	(6)
Private	8.124** (2.158)			-7.149 (1.232)		
Foreign		15.144** (2.315)	23.888*** (3.795)		0.102 (0.015)	-0.802 (0.106)
Individually			16.059*** (3.892)			-3.886 (0.831)
Outside (Domestic)		-1.237 (0.272)			-4.712 (0.866)	
Domestic Company			7.265 (1.140)			12.309 (1.502)
Investment Fund			-5.474 (0.478)			-26.261 (1.251)
Collective Farmers			-21.185** (1.969)			Dropped
Insider		-5.142 (1.160)			-8.968** (2.034)	
Manager			22.532** (2.325)			-6.536 (0.804)
Worker			-2.98 (0.582)			-13.702** (2.046)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes
Size	1.446 (0.452)	0.884 (0.272)	1.532 (0.489)			
Age (†)	0.01805 (0.292)	0.07069 (1.141)	-0.02226 (0.374)	0.245** (2.013)	0.193* (1.664)	0.229* (1.940)
R-squared	0.138	0.145	0.198	0.133	0.135	0.143
Adj. R-squared	0.074	0.075	0.127	0.098	0.097	0.104
Durbin-Watson statistic	2.05	2.067	2.114	1.944	1.938	1.962

The D-W statistic tests for the presence of residual autocorrelation. A problem only occurs if the statistic is outside the range [1.7, 2.3].

(†) Age is measured by the year in which the firm was founded. It ranges from 1806-1999.

(1) - (3) Uses sales change (without the 10% extreme values) and filters out only the medium and large enterprises so size is a dummy of whether the firm is large.

(4) - (6) Uses sales change (minus the 10% extreme values) and includes only small enterprises so there is no size dummy.

Note: The number in brackets under the coefficients is the absolute value of the t-statistic.

Table 4: Binomial
Logit Regressions on Ownership (Private vs. State)

	(1)	(2)	(3)	(4)
PerfCh (a)	0.013***	0.009**	0.026***	-0.007
	(0.002)	(0.022)	(0.000)	(0.198)
Industry	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes
Size	-0.147	-0.011*		
	(0.460)	(0.0964)		
Age	0.028***	0.032**	0.086*	0.102***
	(0.000)	(0.000)	(0.000)	(0.000)
Prediction Accuracy	78.5%	80.6%	92.7%	96.1%
R-squared (b)	0.23	0.277	0.199	0.139
R-squared (c)	0.329	0.392	0.411	0.394
<p>(1) - (4) use sector (1 = private, 0 = state) as dependent variable (1) - (2) use only medium and large enterprises, while (3) - (4) use only small enterprises so the variable size is excluded. (a) Performance is me last 3 years in (1) and (3) and sales growth in the last 3 years for (2) and (4) excluding the 10% extreme values on both ends.</p> <p>(b) Cox & Snell R-square (c) Nagelkerke R-square</p> <p>Note: The values in brackets under the coefficient estimates are p-values.</p> <p>Source: Author's calculations from the BEEPS dataset</p>				