PRELIMINARY – COMMENTS WELCOME

Productivity and Ownership Structure in Romania: Does Privatization Matter?

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Abstract

This paper analyses the effect of privatization on the performance of initially state-owned manufacturing companies in Romania. Using a matched dataset that provide information on the ownership change of enterprises and labor productivity (defined as the ratio of sales over employment) for the period between 1992-98, we found that privatization has a positive effect on labor productivity. The data also allows the disaggregation of the private share by types of owners (insiders, domestic individuals (dispersed and blockholders) domestic institutions and foreigners). The data supports the hypothesis of the efficiency of foreign owners, and provides some evidence on the positive effect of blockholders on the performance of firms. The two types of owners that are considered inefficient (insiders and dispersed outsiders), also have a positive impact on the firms' performance, however, smaller than foreigners and domestic institutions.

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1. Introduction

One of the key transformation of transitional economies are privatization programs, believed to remove the distorted incentives of the state-owned firms, to harden the budget constraints, restructure firms to perform better and help to raise funds, both for operating and restructuring. Although it is considered that these are among the key issues that a transition economy has to resolve, there is no theoretical agreement on the impact of privatization on firm perfomance and restructuring, and empirical evidence is very controversial. It is unclear whether privatization *per se* helps at all to resolve the problems mentioned above, or special types of owners are necesary to privatize, those who have incentives, funds and expertize to carry out restructuring. If no "good" owner is available, what is a better solution, keeping the firms continously in state ownership, or give them out to a group which do not satsify the requirements of suitable owners?

This paper provides empirical evidence on these issues, using a dataset on Romanian initially state-owned manufacturing firms. This country has not been investigated almost at all from this perspective. It makes the analysis even more interesting that Romania experienced a very eventful privatization process, having three major privatization periods, to say at least.[2] By the virtue of that, many types of owners can be found, which act in a transitional economy: insiders, dispersed outsiders and blockholders, both domestic and foreign. Thus, it is possible to compare the effects of the owners on the firms, all acting in the same environment.

The paper is organized as follows. In the next section we discuss what hypotheses can be drawn from the theory on the relationship of firm performance and owners. Then we describe the data and variables we use in the analysis. Section five deals with the regression framework, followed by the presentation of results. We also discuss possible ways of improvement of the analysis. In the last section there are the conclusions.

2. Firm Restructuring and Types of Owners

The corporate governance literature has two major guidelines, along which one can evaluate, which type of owner is more probable to restructure firms. The first

[2] The first took place between 1992-95, and favoured insiders, the second was the Mass Privatization Program (1995-1996) and the third the sales privatization between 1997-1998. Earle and Telegdy (1998) discuss the insider privatization to some extent, and provide a comprehensive description of the

issue concerns decision making, namely, whether the owner has the right incentives to restructure, and whether it has control rights to push through the decisions he or she made. One can be the most concerned about distorted incentives in the case of insiders, since they are concerned not only about the well-functioning of the firm, but also about the safety of their jobs. Since layoffs are considered to be a necessary step in the restructuring process, it is clearly a conflict of interest in the case of insider owners, and it is questionable whether they are willing to make this sacrifice. Outsiders should not have this type of distortion in their preferences, thus, they are more probable to have better incentives to restructure. However, besides the right incentives, the owner should have the possibility to carry out his or her decisions. Thus, it should have a controlling stake of the shares of the company. Thus, in terms of incentives and control rights, outsiders with large ownership stakes are the most suitable for restructuring the firms.[3]

However, the existence of right incentives and control rights is only a necessary, but not sufficient condition for restructuring. For such an activity the availability of funds and knowledge of how to restructure and run a firm in market conditions are also important factors. Most probably, in the beginning of transition foreigners are the only category who possess both of these. Thus, within the category of outsider blockholders, foreign owners are the ones who would most probably successfully restructure the company they own.

3. Description of the Data and Construction of the Ownership Time Series

The analysis of this paper is based on official data, received from multiple sources. The information on the ownership of the initially state-owned companies is taken from seven databases: the SOF Transactions Database and Portfolio Database,[4] and one database for each SIF. These large amount of data enabled us to construct a rather complete evolution of the ownership of all initially state-owned enterprises (except *regii autonome*), although we had to make a number of assumptions because of incomplete information. We report in this section the construction of ownership

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Mass Privatization Program .

[3] Naturally, this stake does not have to be above 50 percent. In the case when the other shareholders are small, it is possible to control the firm with a substantially smaller percentage of the company's shares.

[4] Together, they provide information on the ownership structure of over 8,900 companies, all initially state-owned firms which were in the SOF's portfolio. (*Regii autonome* are not included, because they

time-series, our imputations when information was incomplete, and cleaning procedures. At the last part of the section we describe the construction of our performance variable.

3.1 Construction of the Ownership Time-Series

As a starting-point of the development of onwership time-series, we used the SOF transactions database, which contains the date, percentage transferred and type of buyer for all sale transactions. There are four types of buyer, employees' association, domestic individuals, domestic institutions and foreigners.

In this database did not contain, however, companies still 100 percent state-owned by the end of 1998. We added them from the other SOF database, resulting a total number of 8,988 companies. From the same database we included the ownership transfers in the Mass Privatization Program. In this database the date of transaction was not reported, however, all MPP privatization took place in 1996.

The lack of the transaction date presented a larger problem in the case of POF privatization. The only variable the data have on this component of the ownership change is the percentage of shares owned by the POFs in 1996, before these organizations were transferred into SIFs.[5] We cleaned the variable first, because there were companies in which the POF had an ownership stake of more than 30 percent, which is not possible according to our understanding. If the POF stake was above 35 percent, we set the POF share equal to zero (14 cases), if it was between 30-35 percent, we set it to 30 percent, the maximum amount the POF could own.

Because the data did not include the transaction date of POF privatization, we had to make several assumptions in order to this into the time-series. First, we assumed that the POF always privatized together with the SOF. Thus, if there were any sales reported in the SOF database before 1996 (the last year the POFs existed), the POF privatization was included there. (If the SOF privatized in more than one year, or sold to more types of owners, the percentage the POF sold was split among them, weighted by the percentages transferred by the SOF.) For the majority of the POF privatizations the SOF also privatized: out of the number of firms where the POF did some privatization (1619), 212 firms had zero SOF sale. In these cases we distributed

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belonged to the branch ministry and later a number of them were transferred to the local authorities, but the SOF never had them in its portfolio).

the POF privatization evenly among the years 1993-1996, and considered that it was bought up by "others," an ownership category where we included all transactions for which the type of buyer was neither reported nor possible to impute.[6] Finally, the POF's ownership was computed by subtracting the yearly privatization from 30, the initial percentage of the POF, as discussed in the previous section.

At this point we missed from the ownership time-series the SIF holdings (to which the POFs were transformed after 1996). We took this information from five files (one for each SIF), containing the portfolio information. These data were available only for the end of 1998, except SIF Moldova, for which it was provided also for the end of 1997.[7] We combined these information with the 1996 POF portfolio taken from the SOF database.

We computed the SIF holdings in the following way: for the SIF holdings in 1996 we used the POF information, and for the few cases when this variable was missing (0.3 percent of total), we made the 1996 SIF holding equal with the SIF holding which was the closest in time (1997 for SIF Moldova, 1998 for the others). For the four SIFs which did not have information for 1997, we imputed the it by comparing the holdings in 1996 with the those in 1998. If there was no difference among them, we computed the 1997 SIF holding as being equal to these holdings (this was the case for 83.0 percent of the companies). If there was a difference, we computed SIF holding for 1997 as being the average of 1996 and 1998 holdings, and we added the difference to the "others" category, where we included all transactions we did not know the type of owner.

The FPS data had two more variables representing two types of transactions: managerial shares and "others." We distributed the managerial shares evenly between 1994-1998, added to the insiders' share (400 companies with a mean of 0.5 percent).[8] We could not find out what "others" represent, thus we distributed it between 1993-1998 evenly, added in the others' share (227 companies with a mean of 25.6 percent).[9]

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[5] Not only that this is rather incomplete information on the POF privatization, the variable itself is very incomplete, according to a SOF official.

[6] We did not include 1992, because in this privatization hadly began. Only pilot privatizations took place (21 firms) and one other.

[7] Out of the 2825 firms that existed in the SIF portfolio data, 179 were not in the SOF database. These may be aquisitions of the SIFs other than state-owned companies. We did not add these companies to the time-series.

[8] The law on the management contract (66/93) was issued in the second part of 1993, that's why we used only these years.

[9] According to a SOF official, this variable probably indicates capital increases after privatization.

Due to internal inconsistencies, for a number of cases the sum of the total privatization by end 1998 and the SIF holdings exceeded 100 percent. If it was more than 110, we dropped the case (222 companies). If it was between 100-110, we rescaled it to 100.

Out of these data, we selected manufacturing firms for the analysis of firm performance. We do this because our measure of performance, labor productivity is very hard to define and measure in the service sector. Among the initially state-owned companies there were 2,328 firms from these sectors, presenting our object of study.

3.2 Construction of the Performance Measure

The performance measure (the log of sales over employment) was drawn from the 1992-1998 Romanian Enterprise Registry, which is supposed to contain all registered firms that have more than a certain number of employees: for 1992-1996 those firms are included, that had more than 4 employees in 1996.[10] For 1997-98 the selection criteria was to have more than 5 employees in the given year. To diminish the bias towards larger firms, we dropped from all years those firms which had less than 6 employees.[11] Information on the employment level and value of sales is missing, however, for a number of firms, as table 1 shows.

Table 1: Number of Firms with Non-Missing Employment and Turnover Data

4. Description of the Variables

Having discussed the construction of ownership time-series and labor productivity, we present the variables in use for the evaluation of the relationship between ownership structure and performance of firms. In the first part of this section we present the distribution of firms along several dimensions, followed by the description of the evolution of their ownership structure. We end the section by presenting the change in the employment level, real turnover and labor productivity.

The distribution of firms across industries is presented in Table 2. The largest categories are food industry (22.5 percent of the firms), textiles (14.3 percent) and machine building and transportation equipment (12.6 percent).

[10] For example, if a firm had 10 employees in 1992, but its employment fell to 4 in 1996, the firm is not included in the database.

[11] By this we did not canceled completely the biasness, because a firm that had its employment figure above 5 in any of the years 1992-1995 is not present in the sample, if its employment fell under 6 in

Table 2: Distribution of Firms by Industry

Consistent with findings from other transitional countries, the level of employment dropped heavily during the investigated period, as Table 3 shows. On average, the number of employees fell by almost one-half between 1992-1998, from 1190.9 to 625.9 employees. The table also shows that the share of large firms (over 500 employees) shrank (from 59.6 percent of the sample to 35.9 percent), while all other employment categories increased in proportions.

Table 3: Distribution of Firms by Employment Size

In order to capture possible regional effects, we constructed six regions: Bucharest, the capital of the country, Moldova (East), Muntenia (South-East), Oltenia (South-West), Transilvania (middle) and Crisana-Banat (West). The frequency table of firms by these regions is shown in Table 4. These regions are not equal in size, which explains the uneven distribution of firms.

Table 4: Distribution of Firms by Regions

Perhaps the most interesting part of the data is the evolution of ownership of state-owned firms. Table 5 presents the average private ownership share of the companies between 1992-1998, and the share of different types of owners: insiders, the MPP-owners (those citizens who obtained their shares within the Mass Privatization Program), other domestic individuals, domestic institutions, and foreign investors.[12] The domestic individuals, institutions and foreigners are the blockholders of the firms, which is one major requirement for efficient corporate governance structures, as we discussed in section 2. The MPP-owners are domestic individuals, with very small stake in the company.[13]

Table 5. Evolution of Ownership Structure: Average Percent at the End of Year

The Romanian privatization started only at the end of 1992, in this year only 0.3 percent of the commercial companies were privatized, on an average basis. By 1995, almost all privatization was directed towards insiders, as a consequence of the Management-Employee Buyouts, the only privatization method used in this period to a non-trivial extent. At the end of this period, insiders obtained 17.7 percent of the

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1996.

[12] The data does not allow further disaggregation, e.g. different types of domestic institutions are not distinguishable.

[13] The Romanian Mass Privatization Program was designed in a way that no blockholder could emerge (Earle and Telegdy (1998), pp. 320-321).

initially state-owned companies, while the other owners had a mere 1.9 percent.[14] Insiders remained the largest type of owner by the end of 1998, when they owned 23.6 percent of the companies' shares, however, other categories also increased their share to some extent, as we present below.

The type of owner that possess the second largest ownership stake is group of Romanian citizens who obtained their shares through the Mass Privatization Program, taken place in 1995-1996. On average they possess 17.8 percent of the companies. However, each of these individuals had vary small ownership stake, with basically no institution that would coordinate their decisions.[15] It could happen in a number of firms, that the employees, who already had been owners, placed their orders in their own companies to have a larger stake.[16] In this case they could coordinate their actions, however, dispersed ownership changes into insider ownership, with its special corporate governance problems.

Clearly, the most controversial type of player of the Romanian privatization process were the neither state, nor private Private Ownership Funds, later transformed into SIFs.[17] Table 5 shows that their share steadily declined between 1992-95, from almost 30 to 23.8 percent. The MPP was followed by a redistribution of shares between the SOF and the SIFs, with obscure rules and never lasting negotiations. As a result, the five SIFs together had 9.3 percent of the initial state-owned companies on an average basis, which shrunk to 8.3 by the end of 1998.

The types of owners which are considered to lead to efficient corporate governance structures, the outside blockholders (other than the state) had a minority role in the Romanian privatization. On average, outsider individuals, institutions and foreign investors own only very small stakes in the companies on an average basis (1.4, 6.7 and 2.3 percent, respectively). However, these types are blockholders in all cases: although in few companies, they own a large part of the shares. Table 6 shows the number of companies in which blockholders exist and the average percent of shares they owned at the end of 1998. On average, domestic individuals and institutions owned 51 percent of shares, while domestic institutions and foreigners

[14] Out if this number the largest ownership category is "others," (1.2 percent), which we could not categorize. Thus it can be any of the type of owners, even further insiders.
[15] At the end of the MPP, the only large owner in these companies was the state itself, that preserved at least 40, and in the case of the so-called "strategic companies" 51 percent of the shares (Earle and Telegdy (1998), pp. 317-321).
[16] Indeed, anecdotical evidence suggest that this is the case for a non-trivial part of the MPP owners.
[17] Earle and Sapatoru (1994), discuss the early setting of the POFs, and the possible incentive problems

56.2 percent. The median is the highest for foreign investors, most of them own over 50 percent of shares of the companies.

Table 6. Average Percent Owned by Types of Blockholders at the End of 1998

Having discussed changes in the ownership pattern, we turn our attention to the variable we use as the performance indicator of the firms, the labor productivity, defined as total value of sales over the level of employment. Table 7 shows the levels and yearly change in average employment, real value of sales and labor productivity.

Table 7: Descriptives for Employment, Real value of Sales and Labor Productivity (Level and Yearly Change)

According to the data, employment in manufacturing dropped every year, having the largest decrease in the beginning and the end of the period (9.4 and 12.8 percent, respectively), moderating to 1.8 percent drop in 1996.[18] The real value of sales had a much more inhomogenous change. After a drop of almost one-quarter at the beginning of the period it increased for three consecutive years, then it dropped again by more than one-quarter in 1997, followed by a moderate decrease of 1.9 percent in 1998.

Over the whole period, labor productivity remained almost unchanged. Between 1992-1998, it dropped by only 0.6 percentage points on average. However, within the period it had a more hectic behavior, dropping 12.5 percent at the beginning, then having a large increase for three years, then dropping and recovering by the same amount during the last two years.[19]

5. Estimating the Relation of Ownership Change and Firm Performance

In this section we describe our regression framwork set up to test the impact of privatization itself, and the different types of owners on the performance of the firms. We measure the performance by the log labor productivity (real sales over employment). In accordance to Earle, this seems to be a more appropriate measure of firm performance in transitional context, than other measures used in the literature, involving accounting measures and stock prices that are ambiguous in the environment in which firms in transition act (Earle (1998), pp. 15-17).

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they face.

[18] In November 1996 there were elections held in Romania, and the relatively small decrease in the employment level in the mostly state-owned companies may be a consequence of the loose government policy in that year.

[19] When looking at these results, one should keep in mind that the sample of firms changes from one

We made four types of estimations, which differ either in the dependent variable's specification, or how the data is organized (cross section of panel). The first dependent variable is the log labor productivity in 1998, the regressors are the lagged ownership variables, and we controlled for previous performance (log labor productivity in 1992), size (log employment in 1992) region and industry:

$$LOGPR98_i = \alpha + \beta OWN97_i + \gamma LOGPR92_i + \delta LOGEMP92_i + \eta REGION_i + \varphi INDUSTRY_i + \varepsilon_i$$

where OWN97 is either the percent of private ownership in 1997 (PSH97) or the percent owned by different categories:

ISH97: Insiders' share

MPPSH97: Domestic individuals' share obtained in MPP

INDSH97: Domestic individuals' share (blockholders)

INSTSH97: Domestic institutions' share (blockholders)

FORSH97: Foreign investors' share (blockholders)

We also included the SIF holdings (SIFSH97).

The next specification differs from the first one only in the dependent variable, which is now the total logarithmic change of the labor productivity between 1992-1997. Of course, the lagged productivity was removed from the regressors:

$$LOGPR98_i - LOGPR92_i = \alpha + \beta OWN97_i + \delta LOGEMP92_i + \eta REGION_i + \varphi INDUSTRY_i + \varepsilon_i$$

For the following regressions we constructed a panel from the database and ran again the previous regressions on lagged ownership variables, having as dependent variable either the level of log labor productivity, or its yearly difference:

$$LOGPR_i = \alpha + \beta LAGOWN_i + \gamma LAGPR_i + \delta LAGEMP_i + \eta REGION_i + \varphi INDUSTRY_i + \gamma D + \varepsilon_i$$

$$LOGPR_{t,i} - LOGPR_{t-1,i} = \alpha + \beta LAGOWN_i + \delta LAGEMP_i + \eta REGION_i + \varphi INDUSTRY_i + \gamma D + \varepsilon_i$$

where D stands for year dummies, in order to filter out effects related to the time path.

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year to another.

6. Estimation results

Having introduced the regression framework in which we estimate the relationship between ownership change and performance, in this section we present our results. Each from tables 8-11 present the results of one type of regression presented in the previous section, both for the level of privatization and types of owners: insiders, highly dispersed individuals who obtained their shares in the MPP, other domestic individuals (owning a larger stake), domestic institutions and foreign owners.

In accordance with the corporate governance literature discussed in section 2, the most successful type of owners should be the foreigners, having right incentives, controlling stake, expertise and funds available. Second, domestic institutions and individuals (other than MPP owners) should perform successfully, followed by the highly dispersed MPP individuals and insiders.

Our results support these hypotheses to some extent. First, in all regressions where the regressor was the level of privatization, the coefficient of this variable is positive and significant at one-percent level. The magnitude of the coefficient varies between 0.001-0.006, the smallest being when the dependent variable is the yearly difference of the log labor productivity (panel data) and the largest when the dependent variable is the level of log labor productivity. Somewhat surprisingly, the impact of SIF ownership on performance is also positive and significant (both for the aggregated and disaggregated ownership specification), except the last type of regressions when the coefficients loose their significance (change of log labor productivity in panel data).

Table 8: Impact of Ownership Structure on the Level of Productivity (Cross section data)

Table 9: Impact of Ownership Structure on the Level of Productivity (Panel data)

Table 10: Impact of Ownership Structure on the Change in the Level of Productivity (Cross section data)

Table 11: Impact of Ownership Structure on the Change in the Level of Productivity (Panel data)

The disaggregated ownership categories are also always positive and many of them is significant. One hypothesis that is supported by the results is the positive and relatively large impact of the foreign ownership on the performance of firms. For

three out of the four regressions, the coefficient of the foreign ownership variable is the largest (0.004 and 0.008, respectively). In all these regressions the coefficient is significant at the one percent level, and in one case it is equal to the coefficient of domestic institutions.

Out of the other two types of outsider-owners, which own a significant proportion of the companies' shares, the higher performance of domestic institutions is supported by the data. The coefficient on this variable is large and significant. However, the other category, domestic individuals does not have significant coefficient in any regression.

The two types of owners whose effect on the firm is subject to controversy in the corporate governance literature (MPP owners and insiders) have always positive and significant coefficients, although smaller than foreigners and domestic institutions.

However, one should read these results carefully, because it is a high probalbility of selection bias. Insiders probably know they firm well, and they would buy it only if they see some chance of survival. In the MPP the potential owners did probably try to place their shares in the best companies, had they so little information available. The SIFs could clearly see their chance in getting the better companies after the MPP, and the never-ending negotiations with the SOF probably permitted them to try that. The selection bias problem also is present for the blockholders, because they wanted to get the best firms. In conlcusion, it is probable that performance is correlated with the level of privatization, which biases the coefficients upwards.

In all regressions, we controlled for initial conditions (measured by the employment and productivity of the firm in 1992), as well as regional and industry differences. The coefficients of the regional dummies are not robust, suggesting that *ceteris paribus*, firms from different regions do not have differences in their labor productivity. On the contrary, many coefficients of the industry dummies are robust.

7. Further directions of research

The quality of the results can be improved in a number of ways. First, as we mentioned in the previous section, the high probability of selection bias has to be solved. We are going to deal with this problem by using instrumental variable techniques. Second, the performance measure of the firms can be improved. According to the Romanian accounting system, in the turnover all sales are included, either produced by the company or only sold, and the production to inventories is not

included. Naturally, a variable that incorporates these is more precise for computing labor productivity. Third, total factor productivity would be a good alternative measure of firm performance. And finally, cross-ownership effects should also be considered. For example, it makes a difference in decision making if in a firm with a blockholder the second largest owner is the state, or the highly dispersed MPP owners, who have no possibility to have a word in the decision making process.

8. Conclusions

There was a long debate on whether privatization itself would effect firm restructuring and performance, and which type of owner is the most suited for carrying out restructuring. Our data on Romanian firms provide evidence that privatization itself has a positive, robust effect on labor productivity of the firms, and that effect remains in all the specifications we used. It also supports to some extent the fact that outsider blockholders are the most effective owners, and that within them, foreigners have the largest positive impact on the firms. However, the regression coefficients on disaggregated outsider owners and insiders is also positive, thus, these owners seem to have also a positive impact on the firm relative to state ownership.

The major imperfection of the paper in its present form is that it does not correct for selection bias, which is probably present in the regressions.

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Tables

Table 1: Number of Firms with Non-Missing Employment and Turnover Data

Year	1992	1993	1994	1995	1996	1997	1998
Number of firms	1870	2013	2069	2098	2164	2163	2188
Percent of firms	80.3	86.5	88.9	90.1	93.0	92.9	94.0

Total number of firms: 2328

Table 2. Distribution of Firms by Industry

	Percent of firms	
Industry	Number of firms	Percent of firms
Extraction, energy, water supply	121	5.2
Food	524	22.5
Textiles	333	14.3
Leather, footwear	51	2.2
Wood, paper	102	4.4
Editing	73	3.1
Chemistry, plastics, rubber	159	6.8
Ceramics	146	6.3
Metalurgy	69	3.0
Metallic constructions	169	7.3
Machine building and transportation equip.	293	12.6
Electrical and optical equip.	91	3.9
Furniture and ohter unclassified	146	6.3
Recicling	51	2.2
Total	**2328**	**100.0**

Table 3. Distribution of Firms by Employment Size

Employment Size	1992		1998	
	Number of firms	Percent of firms	Number of firms	Percent of firms
6-10	5	0.3	34	1.6
11-50	72	3.9	293	13.4
51-100	103	5.5	234	10.7
101-200	194	10.4	353	16.1
201-500	382	20.4	491	22.4
501-2000	807	43.2	660	30.2
>2000	307	16.4	124	5.7
Total	**1870**	**100.0**	**2189**	**100.0**
Mean emp.	**1190.4**		**625.9**	

Table 4. Distribution of Firms by Region

Region	Number of firms	Percent of firms
Bucuresti	293	12.6
Moldova	413	17.7
Muntenia	508	21.8
Oltenia	205	8.8
Crisana-Banat	310	13.3
Transilvania	599	25.7
Total	**2328**	**100.0**

Moldova (East): Bacau, Botosani, Galati, Iasi, Neamt, Suceava, Vaslui, Vrancea.
Muntenia (South-East): Arges, Braila, Buzau, Calarasi, Constanta, Dâmbovita, Giurgiu, Ialomita, Prahova, Teleorman, Tulcea.
Oltenia (South-West): Dolj, Gorj, Mehedinti, Olt, Vâlcea.
Crisana-Banat (West): Arad, Bihor, Caras-Severin, Satu-Mare, Timis.
Transilvania (Middle): Alba, Bistrita-Nasaud, Brasov, Cluj, Covasna, Harghita, Hunedoara, Maramures, Mures, Salaj, Sibiu.

Table 5. Evolution of the Ownership Structure: Average Percent at the End of Year

Type of Owner	1992	1993	1994	1995	1996	1997	1998
Insiders	0.3	3.0	9.8	17.7	21.4	22.2	23.6
MPP*	0.0	0.0	0.0	0.0	17.8	17.8	17.8
Individuals	0.0	0.0	0.2	0.2	0.4	0.6	1.4
Institutions	0.0	0.0	0.1	0.3	1.8	3.3	6.7
Foreign	0.1	0.1	0.1	0.2	0.3	0.8	2.3
Other**	0.0	0.4	0.8	1.2	1.3	2.1	3.1
Total private	**0.4**	**3.5**	**11.0**	**19.6**	**43**	**46.8**	**54.9**
POF/SIF share	29.8	28.7	26.3	23.8	9.3	8.9	8.3
State share	69.8	67.8	62.7	56.6	47.7	44.3	36.8

Number of firms: 2328
*Individuals who obtained the shares within the Mass Privatization Program
**Owners not classifiable with available information
Note: Population includes all currently and formerly state-owned "commercial companies."

Table 6. Average Percent Owned by Types of Blockholders at the End of 1998

Type of blockholder	Percent	Median	Number of firms
Dom. individual	51.1	40.0	62
Dom. institution	51.2	44.0	307
Foreign investor	56.2	51.0	96

Table 7. Descriptives for Employment, Real value of Sales and Labor Productivity

	1992		1993		1994		1995		1996		1997		1998	
	Mean	Number of firms	Mean	Number of firms	Mean	Number of firms	Mean	Number of firms	Mean	Number of firms	Mean	Number of firms	Mean	Number of firms
Level of employment	1190.4	1870	1040.2	2014	933.1	2071	846.5	2098	805.9	2164	743.7	2163	625.9	2189
Change relative to prev. year			-9.4		-7.9		-6.1		-1.8		-5.9		-12.8	
Real value of sales*	2133.0	1950	1443.8	2014	1603.6	2075	1631.9	2139	1561.5	2164	1206.0	2163	1110.7	2188
Change relative to prev. year			-24.6		3.6		16.5		31.4		-26.5		-1.9	
Labor productivity**	2.20	1870	1.31	2013	1.44	2069	1.62	2098	1.57	2164	1.20	2163	1.33	2188
Change relative to prev. year			-12.5		24.4		32.7		38.4		-18.2		18.7	

*Millions of lei, deflated by 2-digit PPI

**Real value of sales (millions of lei) over employment

In brackets the number of valid observations

Table 8: Impact of Ownership Structure on the Level of Productivity (Cross section data)

Dependent variable: Log labor productivity in 1998

Variable	Level of privatization		Disaggregated ownership	
	Coefficient	Std. Dev	Coefficient	Std. Dev
PSH97	0.006**	0.000		
SIFSH97	0.007**	0.001	0.007**	0.001
ISH97			0.006**	0.001
MPPSH97			0.004**	0.001
INDSH97			0.004	0.003
INSTSH97			0.008**	0.001
FORSH97			0.008**	0.002
OTHSH97			0.009**	0.002
LOGPR92	0.495**	0.022	0.489**	0.022
LOGEMP92	0.086**	0.014	0.082**	0.015
REGBUC	0.065	0.058	0.058	0.058
REGMUNT	-0.016	0.050	-0.027	0.050
REGOLT	-0.110	0.065	-0.118	0.065
REGBAN	0.028	0.059	0.030	0.059
REGTRANS	-0.007	0.048	-0.005	0.048
DEXT	0.639**	0.096	0.623**	0.096
DTEX	-0.092	0.063	-0.113	0.064
DFOOT	-0.396**	0.109	-0.406**	0.109
DWOOD	0.215*	0.102	0.197*	0.102
DEDIT	-0.680**	0.103	-0.713**	0.104
DCHEM	0.657**	0.069	0.647**	0.069
DCERAM	0.429**	0.074	0.425**	0.073
DMET	1.07**	0.098	1.059**	0.098
DMETCONS	0.322**	0.078	0.305**	0.078
DMACHINE	0.126*	0.063	0.114	0.063
DELECTR	0.258	0.093	0.262*	0.093
DFURNIT	0.081	0.076	0.075	0.076
DRECIC	1.011*	0.111	0.979**	0.112
CONSTANT	2.120**	0.196	2.227**	0.198
Adj. R-sq	0.458		0.461	
N = 1822				

Omitted categories: State ownership, Moldova region, Food industry

** = significant at 1 percent level

* = significant at 5 percent level

Table 9: Impact of Ownership Structure on the Level of Productivity (Panel data)

Dependent variable: Log labor productivity

Variable	Level of privatization		Disaggregated ownership	
	Coefficient	Std. Dev	Coefficient	Std. Dev
LAGPSH	0.002**	0.000		
LAGSIFSH	0.002**	0.000	0.002**	0.000
LAGISH			0.002**	0.000
LAGINDSH			0.002	0.001
LAGINSTSH			0.003**	0.001
LAGMPPSH			0.002**	0.000
LAGFORSH			0.006**	0.001
LAGTOTHS			0.002**	0.001
LAGPR	0.800**	0.005	0.799**	0.005
LAGEMP	0.037**	0.003	0.036**	0.003
REGBUC	0.041**	0.014	0.041**	0.014
REGMUNT	0.012	0.012	0.011	0.012
REGOLT	-0.017	0.016	-0.018	0.016
REGBAN	0.027*	0.014	0.027	0.014
REGTRANS	0.012	0.012	0.012	0.012
DEXT	0.121**	0.020	0.120**	0.020
DTEX	-0.072**	0.014	-0.074**	0.014
DFOOT	-0.154**	0.026	-0.153**	0.026
DWOOD	0.021	0.023	0.020	0.023
DEDIT	-0.154**	0.025	-0.152**	0.025
DCHEM	0.189**	0.016	0.187**	0.016
DCERAM	0.073**	0.017	0.072**	0.017
DMET	0.248**	0.023	0.247**	0.023
DMETCONS	0.048**	0.017	0.047**	0.017
DMACHINE	-0.015	0.014	-0.015	0.014
DELECTR	0.009	0.021	0.008	0.021
DFURNIT	-0.027	0.017	-0.028	0.017
DRECIC	0.261**	0.027	0.260**	0.027
D94	0.429**	0.013	0.428**	0.013
D95	0.473**	0.013	0.473**	0.013
D96	0.315**	0.014	0.315**	0.014
D97	0.030	0.015	0.030*	0.016
D98	0.292**	0.015	0.288**	0.016
CONSTANT	0.729**	0.044	0.742**	0.044
Adj. R-sq	0.752		0.752	
N = 12216				

Omitted categories: State ownership, Moldova region, Food industry

** = significant at 1 percent level

* = significant at 5 percent level

Table 10: Impact of Ownership Structure on the Change in the Level of Productivity (Cross section data)

Dependent variable: Change in the level of Log labor productivity 1992-1998

Variable	Level of privatization		Disaggregated ownership	
	Coefficient	Std. Dev	Coefficient	Std. Dev
PSH97	0.004**	0.001		
SIFSH97	0.005**	0.001	0.005**	0.001
ISH97			0.004**	0.001
INDSH97			0.005	0.003
INSTSH97			0.005**	0.001
MPPSH97			0.003**	0.001
FORSH97			0.004	0.003
OTHSH97			0.006*	0.003
LOGEMP92	0.055**	0.016	0.054**	0.017
REGBUC	-0.084	0.066	-0.088	0.066
REGMUNT	-0.092	0.057	-0.098	0.057
REGOLT	-0.157*	0.074	-0.161*	0.074
REGBAN	0.075	0.066	0.075	0.067
REGTRANS	-0.050	0.055	-0.049	0.055
DEXT	1.240**	0.105	1.232**	0.105
DTEX	0.685**	0.060	0.678**	0.061
DFOOT	0.260*	0.119	0.256*	0.119
DWOOD	0.718**	0.112	0.711**	0.113
DEDIT	-0.175**	0.114	-0.196	0.116
DCHEM	0.953**	0.077	0.947**	0.077
DCERAM	1.058**	0.077	1.058**	0.077
DMET	1.407**	0.110	1.404**	0.110
DMETCONS	1.079**	0.080	1.073**	0.080
DMACHINE	0.814**	0.063	0.811**	0.063
DELECTR	1.033**	0.098	1.038**	0.098
DFURNIT	0.782**	0.079	0.780**	0.079
DRECIC	1.482**	0.124	1.468**	0.125
CONSTANT	-1.659**	0.117	-1.638**	0.119
Adj R-sqared	0.294		0.293	
N = 1822				

Omitted categories: State ownership, Moldova region, Food industry

** = significant at 1 percent level

* = significant at 5 percent level

Table 11: Impact of Ownership Structure on the Change in the Level of Productivity (panel data)

Dependent variable: Change in the level of Log labor productivity				
Variable	Level of privatization		Disaggregated ownership	
	Coefficient	Std. Dev	Coefficient	Std. Dev
LAGPSH	0.001**	0.000		
LAGSIFSH	0.001	0.000	0.000	0.000
LAGISH			0.001**	0.000
LAGINDSH			0.001	0.001
LAGINSTSH			0.002**	0.001
LAGMPPSH			0.001**	0.000
LAGFORSH			0.004**	0.001
LAGTOTHS			0.000	0.001
LAGEMP	0.013**	0.003	0.013**	0.003
REGBUC	-0.007	0.015	-0.007	0.015
REGMUNT	-0.009	0.013	-0.009	0.013
REGOLT	-0.019	0.017	-0.019	0.017
REGBAN	0.033*	0.015	0.033*	0.015
REGTRANS	-0.005	0.012	-0.005	0.012
DEXT	0.202**	0.021	0.202**	0.021
DTEX	0.116**	0.013	0.116**	0.013
DFOOT	0.042	0.027	0.044	0.027
DWOOD	0.125**	0.024	0.124**	0.024
DEDIT	-0.015	0.026	-0.011	0.026
DCHEM	0.172**	0.017	0.170**	0.017
DCERAM	0.181**	0.017	0.180**	0.017
DMET	0.219**	0.025	0.219**	0.025
DMETCONS	0.195**	0.017	0.196**	0.017
DMACHINE	0.131**	0.014	0.133**	0.014
DELECTR	0.181**	0.022	0.179**	0.022
DFURNIT	0.144**	0.018	0.143**	0.018
DRECIC	0.280**	0.028	0.281**	0.028
D94	0.508**	0.014	0.508**	0.014
D95	0.534**	0.014	0.535**	0.014
D96	0.355**	0.014	0.357**	0.014
D97	0.084**	0.016	0.075**	0.017
D98	0.405**	0.016	0.394**	0.017
CONSTANT	-0.607**	0.027	-0.600**	0.027
Adj. R-sq	0.196		0.198	
N = 12216				

Omitted categories: State ownership, Moldova region, Food industry

** = significant at 1 percent level

* = significant at 5 percent level