Employment Concerns or Productivity Considerations?

An Empirical Analysis of Firms' Political Selection into Privatization Programs [*]

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Abstract
Using a unique institutional feature of the early Romanian privatization setup, when a group of firms were explicitly barred from any privatization program, we test how politicians select firms into privatization programs, or slate them to long-term state ownership. We use simulation methods to test what was the main goal of politicians when selecting firms into privatization programs: efficiency or employment considerations? The results show that employment concerns played the key role in selecting firms for privatization, even if efficiency increase had to be sacrificed.

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1 Introduction

The effects of privatization policies on firm behavior have stimulated a large amount of research.[1] The prerequisite of privatization, the selection of firms into privatization programs, received much less attention, however. Nevertheless, in the recent years there has been a small, but growing number of studies, which focus on this mechanism.[2] This paper is intended to be a contribution to this literature by analyzing Romanian firm-level data and test what was the main objective of the politicians when they made privatization decisions. A peculiar institutional feature of the Romanian privatization process permits us to separate firms that were slated to or banned from becoming private before privatization took place. In early 1991, in advance of launching any privatization program, the Romanian government selected about 370 firms and prohibited their transfer to private owners, and the ban was lifted more than six years later, after the election of a more right-oriented government. Therefore, we do not need to rely on the assumption that only those companies were allowed to become private which were actually privatized and we can precisely separate the privatizable and non-privatizable firms. The data also reveal how important the ex-ante separation of privatizable and not-privatizable companies is, as about three-quarters of the privatizable group were not privatized by 1996, the end of the political cycle we study, despite the fact that the government did not ban their privatization.[3]

To assess politicians' objectives, we also propose an alternative method to studies done so far (De Fraja and Robers, 2008; Guo and Yao, 2005; Gupta et al, 2008). Instead of estimating the effects of pre-privatization characteristics on the probability of privatization (or sequencing of privatization), we use information on actual privatizations and simulate the relationship between pre-privatization firm characteristics and the effect of privatization on both privatizable and not privatizable firms. First we estimate the relation between the effect of privatization on employment and firm efficiency and the firm's pre-privatization characteristics – the information known to politicians when they decided which firm can be privatized. Then we use the estimated partial effects to simulate the employment and

[1] For summaries see Megginson and Netter (2001) and Djankov and Murrell (2002).
[2] Early theoretical work includes Glaeser and Scheinkman (1996), who develop a model on sequencing of privatization. Bortolotti et al (2003) provide a cross-country analysis of the factors that influence the privatization decision. Gupta et al (2008) test sequencing empirically. Guo and Yao (2005) and Dinc and Gupta (2005) analyze which factors influenced the selection of firms into privatization programs.
[3] For the analysis we have to set the time span over which governments were interested in the effects of privatization. The political cycle is a natural choice for this time period: as governments are interested in reelection, they arguably want to maximize public welfare around the time of elections. The first political cycle is 1992-1996 in Romania, when the government changed several times, but the leading party and its emblematic figure, president Iliescu was in office throughout the whole period.

efficiency effects of privatization for the privatizable and not privatizable firms separately (including in the first group both privatized and not yet privatized firms). Our results show that those firms which would have undergone massive employment loss as a consequence of privatization, were sheltered from privatization programs even if efficiency gains had to be sacrificed.

This method has several advantages over the ones used in earlier research, but it also has its drawbacks. Its main benefit is that it does not depend on assumptions made about the effects of privatization on firm behavior, which are crucial when inferences are drawn from correlations between the likelihood of privatization and pre-privatization characteristics.[4] In addition, our method jointly estimates the hypothetical employment and efficiency effects of privatization for a given group of firms, the two objectives we test in this paper. This enables us to assess which effect was more important for the politicians, if employment and efficiency effects had opposite signs: how politicians decided when privatization brought about both an employment reduction and an efficiency increase.

The method's main disadvantage is that it hinges on the assumption that the effect of privatization has the same pattern across privatizable and non-privatizable firms, a common assumption in simulation exercises. While we use as many pre-privatization characteristics as possible, we still cannot be sure that this assumption holds. We also have to assume that politicians have rational expectations and foresee what happens to SOEs after privatization, a common assumption in many fields of economics. With these deficiencies notwithstanding, we believe that this method is a useful complement to the methods used so far.[5]

In the next section we briefly discuss politicians' objectives in privatization programs. Section 3 presents the data and the institutional setting of the early Romanian privatization. The simulation method is discussed in Section 4, followed by the results. The last section concludes.

2 Political Objectives in Privatization Programs

How do politicians choose which firms to privatize? While economic theory recommends privatization as a tool to depoliticize state-owned enterprises (SOEs) and to

[4] Gupta et al (2008), for example, find that pre-privatization efficiency increases the probability of fast privatization. Their conclusion that the government wanted to minimize political costs hinges on the assumption that less productive firms will shed labor after privatization.

[5] Another disadvantage of the analysis is that it takes into account only two – albeit crucial – political objectives. Other possible objectives and their importance in the Romanian context are discussed in the next section.

provide incentives to restructure them, the designers of privatization programs react to political objectives and face a number of constraints.

The expected advantage of privatization is the efficiency improvement of firms, which is discussed by many, and empirically has also been set (e.g., Sappington and Stiglitz, 1987; *valamit a hianyos szerzodesekbol is be kellene tenni, Megginson at al, 1994; Brown, Earle and Telegdy, 2006). Politicians are indeed interested in the efficiency improvement of the firms for several reasons. Perhaps the most important is that only efficient firms are viable, especially if privatization is accompanied by deregulation of markets and therefore an increase in competition (as it happened in many places of the developed countries, and also in the early years of transition). Efficiency improvement also means excess funds through increased corporate taxes, or sales taxes, if the firm grows and its value of sales increases. It is also likely that privatization hardens the budget constraint of the firms and thus reduces state subsidies – another mechanism that reduces the budget deficit. The increased revenues can be used to pursue social or political objectives (Kay and Thompson, 1986). These may include tax reductions, support of the welfare system or investments in infrastructure, all having a positive effect on chances of reelection.

Politicians also care about the level of employment and wages, two variables that directly affect the welfare of their voters (Shleifer and Vishny, 1994).[6] Layoffs clearly have a negative effect on worker welfare and through this on the number of votes for the reigning party in an election.[7] Wage reduction has similar effects, especially if it comes after privatization of the firm and workers associate it with the government's decision to privatize the firm. The reduction of employment or the wage bill also has a negative effect on state finances, because of lower income and payroll tax revenues and higher unemployment benefit bill.

In addition, politicians care about revenues resulting from the sale of enterprises, another income for the state budget (Bortolotti, Fantini and Siniscalco, 2003). They may also use firms to political patronage (López-de-Silanes et al, 1997). Instead of caring for the state budget, they may also maximize their own wealth by collecting bribes (Shleifer, 1998). Reputation concerns might also play a role in banning firms to become private: if the

[6] Politicians may care about worker welfare for equity reasons or vote maximizing. As these two are observationally equivalent, we do not distinguish between them.

[7] It is far from clear whether privatization results in lower level of employment and wages. While theoretical papers indicate that employment is likely to fall after privatization (e.g., Boycko et al, 1996), the body of empirical analysis provides ambiguous results (see, e.g., Bhaskar and Khan, 1995; Brown et al 2005; Frydman et al, 1999; D'Souza and Megginson, 1999). Nevertheless, for politicians' choices about privatization not the

government foresaw that a given firm cannot be privatized, it is better if it explicitly forbids its transfer to private hands (e.g., Gupta et al, 2008). As we discussed in the Introduction, these factors probably played a secondary role in the early Romanian privatization, at least their weight was not as high as the efficiency improvement of enterprises and worker welfare.

Politicians also face constrains that restrict their privatization decisions. To start with, it is likely that the demand for SOEs shares does not meet supply. This was solved in many countries by using voucher privatization schemes or the sale of companies to their employees at highly subsidized price. Mass unemployment of the labor force or a high share of unemployed among low-skilled workers may lead to social unrest, which is likely to have very large costs. Managers and workers may also resist privatization, especially if they fear losing their job (Lipton and Sachs, 1990; Druk-Gal and Yaari, 2006).

A possible disadvantage of this analysis is that it takes into account only two objectives of politicians: efficiency and employment. These are surely among the most important that induced governments to privatize or keep firms in state ownership. The increase of firm efficiency was one of the early objectives of privatization programs (Kay and Thompson, 1986;). Fear of employment loss has also played an important role in the political decision making process, either because of reelection concerns of the incumbent politicians or as a pressure from workers' interest groups (Lipton and Sachs, 1990; Shleifer and Vishny, 1994). Nevertheless, we are aware that other factors also play a role in general. These may include the maximization of privatization revenues for the state budget or politicians' individual wealth through bribes, or reputation concerns of politicians of maximizing public goodwill (Bortolotti et al, 2003; Gupta et al, 2008; Shleifer, 1998). Most probably, these factors also played a role in the Romanian case, but the early privatization process in Romania was such that they were probably only of secondary importance. An overwhelming majority of the privatizations completed between 1992 and 1996 were management-employee buyouts (MEBOs), which did not bring revenues to the government (Earle and Telegdy, 2002). It is possible that bribes played a role, as the management of the company, for example, might have paid politicians not to let the company be sold to outside investors, in which case the management faced the threat of being replaced by the new owners. Nevertheless, direct sales were so rare in the early 90's that it is likely that the management of the companies did not have to bribe officials to have a MEBO privatization instead of direct sales. It is also unlikely that reputation concerns played a big role in the

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average effect of privatization is of interest, but that it may vary by firm type and thus politicians may choose which firms to privatize.

Romanian case, as only about 20 percent of the firms that were offered, ended up in private hands by the end of the first political cycle. As we cannot measure privatization prices or bribes, these effects could not be taken into account directly in the analysis. To test reputation concerns, information on the privatization price is also necessary as both the quality of the company and the price asked for it determines the likeliness of successful privatization. The fact that factors that we cannot measure – revenue considerations, bribes and reputation concerns – are unlikely to have played an important role during the period studied makes less likely that our estimates are contaminated with omitted variable bias.

3 Data and the Romanian Privatization Program

3.1 Data construction

Our data come from several sources. The value of sales, employment, industry and legal form of firms were drawn from the Romanian Enterprise Registry, a comprehensive database of all Romanian enterprises. These data were cleaned thoroughly with the help of the Ministry of Finance dataset, which provides preceding year information for 1992 from the 1993 file for most of the firms inherited from the communist regime, and for all Romanian enterprises for 1996 (in the analysis we use information on these two years). Cleaning procedures involved comparing information from the different sources for employment and sales, removing spurious changes in the industry code and legal form, the latter being used to identify the non-privatizable firms, as these were assigned a special legal form ("*Regii Autonome*"). As any large panel data, these also suffer from spurious entry and exit of firms. We improved the longitudinal links by looking for possible connections for each entering and exiting firm with at least 50 employees. For this procedure, we used firm name, industry, region and size.

The main source ownership information is the State Ownership Fund (SOF) Transactions Database, which has information on the date, percent transferred and type of buyer for each privatization transaction of over 9,300 SOEs for the period of 1992-2004. Some of these firms were inherited directly from the socialist period and some others were created by using the assets of these firms. Ownership data for firms in the SOF portfolio which had no privatization transactions were obtained from another database of the SOF, which contains the ownership structure of the firms in 1996. For the firms which were not part of the SOF portfolio, we used the ownership information from the Romanian Enterprise Registry data that indicates whether the firm was 100 percent state-owned, a majority or minority of its shares were private or it was totally private. Using all these information on the

ownership structure of the firms, we constructed a dummy variable for each year indicating whether the firm was majority private or majority state-owned.[8]

From the resulting dataset we selected those firms which existed in 1992 and 1996 and had any indication of state ownership (either existed in the SOF portfolio, or the ownership dummy from the Romanian Enterprise Registry indicated state ownership). In order to compare privatizable and non-privatizable firms which are as similar as possible, we kept in the analysis only those 2-digit industries by the NACE classification which contain at least one non-privatizable firm and a privatized firm, the firm's employment was at least 10, as the non-privatizable set does not have such small firms, and the firm had full information on the variables of interest; this resulted in a sample of 2,907 firms.[9] We also removed those firms for which the data indicated that their labor productivity increased (decreased) 10 times between 92 and 96 (36 firms). The final dataset contains 2,871 firms.

3.2 Selection of Firms into the Privatization Program

Similarly to other countries from the region, the reorganization of SOEs started with their corporatization. Already in 1991, before launching any privatization program, the shares of about 6,000 SOEs were transferred in a 70-30 percent ratio to the portfolios of the organizations that were responsible for their privatization: the State Ownership Fund (SOF) and one of the five Private Ownership Funds (POFs).[10] A second group – around 2,300 firms – remained under the supervision of branch ministries. These firms were mostly small (in our data their median employment size is only 22 in 1992), but some large firms were also left in this group. The privatization of these firms started quite early and many of them became private. We do not include them in a separate category, but group them together with the firms in the SOF portfolio and consider them all privatizable.

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[8] There were cases (between 25 and 120 each year) when this variable indicated that a firm was switching from private to state ownership, which is an unlikely event, as firms were not nationalized. In these cases we compared the number of years with indication of state and private ownership (starting with the first year of private ownership indication), and depending on which number was larger, we set the whole time series to state or private.

[9] The NACE codes of these industries are 22, 24, 36, 40, 41, 45, 51, 52, 55, 60, 63, 64, 70, 73, 74, 90, and 92. Agriculture contained 5 non-privatizable firm, but their share in the industry did not reach 0.05 percent, so we did not include this industry in the analysis.

[10] The POFs were founded by the government and they were responsible for transferring the shares of the companies from their portfolio directly to the population in a voucher privatization program, but in practice they were quite passive until 1995-1996, when the voucher privatization program was launched. During the period covered in this study they did not have any real decision making power with regard to the companies in their portfolios, as the SOF possessed in each company 70 percent of the shares. For this reason, when we constructed the ownership variables, we considered the POF shares as state owned. For a discussion of the POFs, see Earle and Telegdy (1998).

A number of companies, however, were not corporatized, and transfer of their ownership to private owners was explicitly prohibited. These firms, called *Regii Autonome*, remained under the supervision of the relevant branch ministries. The declared criteria upon which firms were selected into the non-privatizable group are rather vague: according to Law 15 on State Enterprise Reorganization (1990), "(*Regii Autonome*) are organized and operate within the economy's strategic branches…as well as in other fields of activity established by the Government" (Art 2). The law did not specify what could "other reasons" be, therefore it gave discretion to the political elite to decide which firms to become privatizable and which not. This is crucial for our analysis, as we draw conclusions about politicians' objectives by comparing the *Regii* with the privatizable enterprises.

The non-privatizable group was not numerous, but companies included were large on average. In our data there are 365 firms in 1992 their average employment size being over 3,000. Many of them, however, were restructured and reorganized during the 4 years of our study. We can follow 185 non-privatizable firms, as Table 1 shows. In 1992, the first year in the data, the average employment size of the *Regii* is 2,925, while of privatizable firms 433. Measured by labor productivity (defined as the ratio of the value of sales and average employment), privatizable firms were almost 60 percent more productive. Average wages (the firm's total wage bill divided by the number of employees) were somewhat larger in the privatizable firms. *Regii* were indeed concentrated in branches there are often considered "strategic" – energy and water distribution, transportation, and utilities – but they are also in other sectors of the economy, such as in manufacturing, construction and services. Nevertheless, industry itself does not explain entirely the selection of firms into privatizable and non privatizable, as in each of these industries there are a large number of privatizable firms, too. The mean difference between the characteristics of *Regii* and privatizable firms is statistically significant at the one-percent level for employment only, and for productivity and wages at the 10-percent level. The unconditional mean comparison of pre-privatization performance and employment size suggests that employment, efficiency and wages played a role in the selection of firms into privatization. Nevertheless, the distribution of employment and wages overlap across these two groups (for example, the 75th percentile of the employment distribution of privatizable firms is larger than the employment size of the median non-privatizable firm, and the 25th percentile of the non-privatizable employment distribution is smaller than the median privatizable firm's employment). Therefore, neither of these variables explains entirely whether a firm was slated to privatization or barred from it.

The privatization process started quite late in Romania. Although the Law of Privatization was passed in mid 1991, privatizations of enterprises started quite late. In our sample only 13 firms were privatized by the end of 1992, the first year of our study, which shows that the first year of the data is contaminated by privatization effects to a very small extent.[11] The overwhelming majority of privatizations by 1996 were management – employee buyouts (MEBOs). In the sample used in this study over 90 percent of the firms were sold by this method. The disadvantage of this is that it is questionable whether the results can be generalized to the case of direct sales of voucher privatization. It also has an advantage however, as it reduces the objectives of the politicians. The MEBO method involved very advantageous loans to the Employees' Organizations, a body set up by the employees to buy the shares of the company (Earle and Telegdy, 2002). As these loans usually operated with negative interest rates, we can exclude revenue maximization from the objectives of the politicians. As other studies, we cannot measure privatization prices, therefore we are not able to account for revenue maximization. Excluding this from the objectives of the politicians enables us to concentrate on employment and productivity objectives.

We set the year of investigation to be 1996, which is a natural choice for the time horizon, as elections took place at the end of that year. In order to permit privatization to take its effect on firm behavior, we consider a firm to be privatized if it became majority private in 1995 or before. By this criterion, 704 firms from the sample were privatized, which makes up 26 percent of the privatizable firms.

4 Empirical Method

We use information on privatization outcomes to simulate the effect of privatization on the privatizable and non-privatizable firms separately. First we establish the relation between the effect of privatization and the 1992 characteristics of the firm – the information known to policy makers when deciding upon which firm was going to be privatizable and which not. Having obtained the estimated effects of the pre-privatization firm-level variables on post-privatization outcomes, we construct a counterfactual which shows the effect of privatization on firms that were legally prohibited from privatization, and we compare the effects of privatization between privatizable and non-privatizable firms (including in the latter group both the privatized and the not privatized ones).

[11] If the managers of the SOEs foresaw privatization, there can be a pre-privatization effect already in 1992 which may bias the results (Aghion et al, 1994; Roland and Sekkat, 2000).

The estimating equation used to obtain the effect of privatization in function of pre-privatization firm characteristics is the following:

$$\Delta y_{92\text{-}96,i} = \beta_0 + \beta_1 PO_i + \beta_2 PO_i X_{92,i} + \beta_3 X'_{92,i} + \varepsilon_i, \quad (1)$$

where *i* indexes the firms, $\Delta y_{92\text{-}96,i}$ is the change between 1992 and 1996 of the variable of interest, which is log employment and efficiency (each described in Section 3.1). $PO_i = 1$ if the firm was majority privatized by the end of 1995, and zero otherwise, $X_{92,i}$ and $X'_{92,i}$ are vectors of the firm's 1992 characteristics and ε_i is the residual. In particular, $X_{92,i}$ includes log employment, efficiency, the average wage and industrial dummies. In order to have enough non-privatizable and privatized firms in each industry for estimation, we define four industry dummies: manufacturing and energy, construction, transportation and other services. We control for the level of these variables in $X'_{92,i}$, which differs from $X_{92,i}$ only in not having the level of the dependent variable included: if $\Delta y_{92\text{-}96,i}$ is the change in the log employment, we do not include log employment in 1992 as a control variable. We run this specification by OLS.[12] In order to allow a more flexible functional form between pre-privatization firm characteristics and the effect of privatization, we also include in $X_{92,i}$ and $X'_{92,i}$ interactions between pre-privatization employment-efficiency, wage-efficiency, employment-industrial dummies and efficiency-industrial dummies.

Using the estimated parameters from (11), we compute the simulated effect of privatization between 1992 and 1996 for each firm separately:

$$\Delta \hat{y}_i = \hat{\beta}_1 PO_i + \hat{\beta}_2 PO_i X_{i,92}. \quad (2)$$

With the help of (12), we construct the average difference between non-privatizable and privatizable firms (the privatizable group including both privatized and not yet privatized companies):

$$\Delta^2 \hat{y} = \Delta \bar{\hat{y}}^{NPRIV} - \Delta \bar{\hat{y}}^{PRIV}. \quad (3)$$

This statistic shows the difference in the hypothetical effects of privatization between the two groups, and we use it to assess the motivations of the decision makers. This method allows simulating jointly the employment and efficiency effects of privatization, which makes possible to draw conclusions on the relative importance of employment and efficiency effects in politicians' objectives. If, for example, $\Delta^2 emp < 0$ and $\Delta^2 eff > 0$, politicians were

[12] We cannot use panel data methods that decrease the bias arising in the privatization process, as we have to include in the regression the 1992 values of firm characteristics. These would fall out from a fixed effects regression, as they do not vary by time. Nevertheless, we include in the simulation not only privatized, but also the privatizable, not yet privatized companies, which presence may reduce the bias of the comparison of privatizable and not privatizable companies.

more concerned with the employment effects of privatization than with efficiency gains, as they did not allow privatizing firms that would have had declining employment even if they would have gained efficiency, as a consequence of privatization.

5 Results

Before presenting the results of the simulation, similar to Gupta et al (2008), we run a probit equation which has a dependent variable indicating whether the firm is privatizable or not, and the variables of interest are the firm's 1992 characteristics (employment, labor productivity, wage and industry). Table 2 shows that employment size had a negative effect on the probability of being in the privatizable group: the coefficient is 0.014 and highly significant. More productive firms, on the other hand, had a higher chance to become privatizable, and the effect is similar in magnitude to that of employment. Wages have a small and insignificant effect. These results are similar to those presented by other authors: relatively small and productive firms are more likely to be privatized.

Turning to the simulation excersize, Table 3 presents the estimated coefficients of the first step results without cross terms between firm characteristics.[13] To start with employment growth between 1992 and 1996, the marginal effects of 1992 firm characteristics are all significant. More efficient firms had a higher employment growth rate than less efficient ones, the coefficient being 0.04. Initial wages had a large effect on employment growth: ceteris paribus, two firms with ten percent wage difference in 1992, experienced 5 percentage points difference in the growth rate of employment.[14] Compared to industry, all the other three sectors (construction, transportation and other services) had a lower growth rate of employment. Employment growth is not affected by initial firm size significantly, while wages have a large negative effect on it; the coefficient on average 1992 wages is -0.3. Transportation has the lowest growth rate, followed by other services and industry. The highest growth rate is in the constructions sector.

Turning to the interactions between privatization and initial firm characteristics, we find that the employment effect of privatization is negatively correlated with initial employment size. The coefficient on the interaction between employment size and

[13] These estimations are a simplified version of what we use in the simulation, as the interaction terms make the coefficients difficult to interpret. The results from the specification used for the simulations are available upon request.

[14] This apparent contradiction can be explained either by the ability of high paying firms to lower wages more easily than firms that already had lower wages, or that high wage firms had a higher quality workforce, which was more able to cope with the challenges of transition.

privatization is -0.11 and it is statistically significant at the one-percent level. Initial productivity does not alter the effects of privatization, while wages have a negative effect, albeit the estimated coefficient of -0.24 is significant only at the five-percent level. Compared to industry, only in construction has privatization a positive and significant effect.

Initial employment size does not modify the privatization effect on productivity growth, as the estimated coefficient is very small and insignificant. As expected, initial productivity has a large negative effect: a ten percent increase in the initial productivity decreases the privatization effect by 2.7 percentage points, and the estimated coefficient is highly significant. Firms that are already productive do not gain much from privatization, at least in terms of productivity growth. Initial wages have a positive effect on privatization-induced efficiency growth, but the coefficient is only 0.04 and insignificant. The estimated effects of privatization on labor productivity growth are the largest in transportation, and lowest in other services.

The results of the simulation are shown in Table 4. According to these estimations, if all the privatizable firms were bought out by private investors, privatization would have increased their employment by 5.5 percent. On the contrary, the simulations show that the employment level of the non-privatizable firms would have decreased by 3.4 percent as a consequence of privatization. The diverse privatization effect on employment is further underlined by the high statistical significance of the mean difference between the two groups.

Turning to the efficiency effect of privatization, our results show that this is always positive in both groups of firms, and it is larger for the non-privatizable group. The simulated efficiency increase for these firms is 49 percent, which is larger by ten percentage points than the simulated effect in the privatizable group. The simulations show, therefore, that politicians were more concerned with the negative employment effect of privatization than with efficiency improvement, and they protected labor even when this resulted in sacrificing productivity gains.

A possibility that may contradict our results is that politicians had other objectives in their mind when thinking of the social effects of privatization, or maximizing votes. One such variable is the wage rate which, together with the employment level, directly affects people's well being. To account for this possibility, we do the simulations when wages are the variable of interest. As shown in Table 4, the simulated effect of privatization on wages is very small in both non-privatizable and privatizable firms, and the mean different between the means within these two groups is insignificant. One explanation for this may be that in

the period studied Romania experienced a large decline of output and loss of jobs was common, but wages did not change much.[15]

It is also possible that not labor productivity, but profits are the main interest of the decision makers. Firms' taxes, and therefore the government's revenues are correlated with the profits, and therefore it may be an important variable for politicians. To test the robustness of our results, we change labor productivity with return on assets, defined as the net income of the firm divided by the average level of total capital.[16] The results, presented in Appendix Table 1, show very similar patterns to those presented above. The only significant difference is the magnitude of the employment effect of privatization in the non-privatizable group. According to these estimations, privatization would have resulted in an employment loss of 11.4 percent in this group.

In addition to replacing labor productivity with profits, we did the following robustness checks. The non-privatizable firms are much larger than the privatizable ones, which creates doubts about how good the common support is in the first stage regressions. Te reduce this problem, we dropped those non-privatizable firms that are larger than the largest privatizable firm, and those privatizable firms that are smaller than the smallest non-privatizable firm. Dropping these firms does not change the results. We also tested whether the inclusion of firms that were under the subordination of the ministries and therefore their status is unclear, has an effect on the results and we found that it does not. To allow more flexibility in the first stage regression, we include employment, efficiency and wages in squared terms and their interactions with privatization. The results remain unchanged.

One possibility we did not study so far is that the results are driven by selection of firms by the future private owners (e.g., Brown et al, 2006). It is likely that the new private owners picked firms with most possibilities, so privatized firms are different from the privatizable, but not privatized firms. In this case it is possible that the difference in the simulated privatization effect is not between the privatizable and not-privatizable firms, but between the privatized and not privatized ones. For example, as most of the new owners are the employees of the firm, it is possible that they chose those firms for which maintaining the employment level was easy. To check this possibility, we disaggregate the privatizable group into not privatized and privatized firms, redo the simulation, and compare the effects with the

[15] Between 1992 and 1996 the number of employed persons fell from 10,458 thousand to 9,379 thousand, which is more than 10 percent decline. During this period average wages did not change (Romanian Statistical Yearbook, 1997).

simulations on the non-privatizable firms. The difference in the simulated effects among these groups, shown in Table 5, is very similar to those in Table 4. The privatization effect on the not privatized and privatized groups separately is always employment enhancing and the efficiency effect on non-privatizable firms is always larger than on either of the two groups. The two privatizable groups are very similar in terms of efficiency enhancement, but privatized firms' employment effect is larger than that of the privatizable, but not yet privatized group's. Nevertheless, both effects are positive, and the mean difference between these groups separately and the non-privatizable group is statistically highly significant. This fact provides some evidence that uncontrolled selection is not a large problem.

While these results are very robust, several factors may weaken them, which we list below. The crucial assumption in the simulation is that firms that have not become private would have behaved in the same way as privatized firms if they had they been privatized. Firms in these groups are rather different and we cannot be sure that this assumption is realistic. This is a common problem in any simulation, and we tried to mitigate it by augmenting the regression with different cross-terms in order to control for observable characteristics as well as possible. Nevertheless, we cannot be sure that the unmeasured characteristics of firms in the privatizable and non-privatizable group are similar. However, when we disaggregate the privatizable group into privatized and not privatized, the main results hold, which brings some evidence that this bias is probably not very large.

Second, the privatizations are mainly MEBOs, and it is likely that firm behavior under the control of the management and employees is different from outsider ownership. In particular, it is possible that the employee-owners have sacrificed efficiency increase maintaining the employment level, which is less likely to happen in an outside-owned enterprise. If this is the difference between the behavior of MEBOs and outside-owned firms, sales privatization to investors would have resulted in more layoffs and a stronger productivity increase post-privatization, which may question the applicability of our results on other types that insider privatization.[17] But only 20 percent of the privatizable firms were actually privatized, and the results hold even if we do the simulation by comparing the non-

[16] Because profits are tied to taxes, they are not a reliable variable, especially in early transition. Therefore, our preferred variable is labor productivity. Profits are missing in a larger number of firms than labor productivity, so the samples are smaller.

[17] Earle and Telegdy (2002) find that the Romanian MEBO privatization enhanced the productivity of the firms compared to state ownership, but the effect is smaller than of outsider privatization. Frydman et al (1999) finds that insider privatization does not enhance productivity, while outside privatization does, and there is only weak evidence that the employment levels are different of the firms under the two ownership structures.

privatizable firms and the privatizable, but not privatized ones. In addition, the very fact that the government promoted this type of privatization may also show that they were concerned about the employment effects of privatization. By giving employees some control rights, they could decrease the chance of mass layoffs.

6 Conclusions

In the last two decades much analysis has been directed towards the effects of privatization on firm behavior. The prerequisite of privatization – the political decision on whether to privatize a particular firm – has received much less attention, however. In this paper we take advantage of the fact that a group of state-owned firms was explicitly banned to become private for over seven years in Romania, and use simulation methods to estimate the effect of privatization on privatizable and non-privatizable firms. We find that employment concerns were of first importance when selecting firms into privatization, even if efficiency gains had to be sacrificed. The employment effect of privatization is negative and 3.4 percent of magnitude on average for the non-privatizable group, and it is positive and 5.5 percent large for the privatizable group. The efficiency increase, on the other hand, is higher for the non-privatizable group. According to the analysis, privatization would have enhanced efficiency by 49 percent of the non privatizable group and by 38 percent if all the privatizable firms' assets had been transferred to private hands. When we select privatizable firms into privatized and not privatized groups and redo the simulation, the results are qualitatively similar for both groups.

The analysis therefore is in line with previous research and provides further evidence that privatization is a political process and that efficiency enhancement is only one of those multiple factors which influence the decisions of politicians when they decide which firms should be transferred to private hands. Moreover, employment considerations had a much heavier weight in these decisions than efficiency maximization. The analysis of how the government finally changed its mind and started to sell out these companies initially barred from privatization is left for future research.

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Table 1: Non-Privatizable and Privatizable Firm Characteristics in 1992

	Non-privatizable	Privatizable	Mean difference
Employment	2,971	450	2,521***
	(16,456)	(910)	(324)
Labor productivity	2,041	4,319	-2,279*
	(4005)	(17,092)	(1,269)
Wage	8.33	8.39	-0.055*
	(0.40)	(0.39)	(0.29)
Industry			Percent non-privatizable
Manufacturing	7	260	2.6
Energy	55	29	64.5
Water distribution	52	15	77.6
Construction	7	531	1.3
Transport	25	512	4.7
Utilities	13	12	52.0
Other services	23	1,330	1.7
Number of firms	182	2,689	6.3

Notes: Mean difference represents the difference between the average value of non-privatizable and privatizable firms. NACE codes included in industries: manufacturing (22, 24, 36); energy (40); water distribution (41); construction (45), transportation (60, 63); other services (51, 52, 55, 64, 70, 73, 74, 90, 92). *** = significant at the 1-percent level; * = significant at the 10-percent level.

Table 2: Selection of Firms Into Privatization Programs

Variable	Coefficient
Employment 92	-0.014**
	(0.003)
Efficiency 92	0.012**
	(0.004)
Wage 92	-0.003
	(0.010)
Construction	0.064**
	(0.006)
Transportation	0.047**
	(0.006)
Other services	0.097**
	(0.012)
Mean privatizable	0.937
N	2,871

Notes: N = 2,871. Probit estimates, the coefficients show marginal effects (standard errors in parenthesis). Dependent variable = 1 if the firm is privatizable, = 0 if not. Excluded industry category: industry. Significant at the 1-percent level.

Table 3: Effect of Pre-Privatization Characteristics on Employment and Productivity

	Δ Employment (1992-1996)	Δ Productivity (1992-1996)
Privatized (PO)	2.434**	2.216**
	(0.985)	(0.684)
Interactions with PO		
Employment 92	-0.109**	-0.006
	(0.023)	(0.024)
Efficiency 92	0.031	-0.269**
	(0.029)	(0.021)
Wage 92	-0.242*	0.044
	(0.121)	(0.085)
Construction	0.191*	-0.458**
	(0.099)	(0.081)
Transportation	-0.092	0.328**
	(0.121)	(0.096)
Other services	0.032	-0.067
	(0.097)	(0.080)
Variables 1992		
Employment 92		0.015
		(0.012)
Efficiency 92	0.040**	
	(0.016)	
Wage 92	0.495**	-0.296**
	(0.059)	(0.052)
Construction	-0.300**	0.234**
	(0.048)	(0.039)
Transportation	-0.234**	-0.433**
	(0.042)	(0.038)
Other services	-0.357**	-0.169**
	(0.040)	(0.036)
R^2	0.125	0.247

Note: N = 2,871. Standard errors in parentheses. ** = significant at the 1-percent level, * = significant at the 5-percent level.

Table 4: Simulated Effect of Privatization on Employment and Firm Efficiency

Non-privatizable	Privatizable	Mean Difference
	Employment	
-0.034	0.055	-0.089**
(0.014)	(0.004)	(0.015)
	Efficiency	
0.490	0.384	0.106**
(0.019)	(0.003)	(0.013)

Note: N = 182 for non-privatizable, 2,689 for privatizable firms. The table presents the average simulated effect of privatization (the hypothetical percentage change in the dependent variable) for non-privatizable and privatizable firms. Mean difference = difference in the hypothetical privatization effect between non-privatizable and privatizable firms. ** = significant at the 1-percent level.

Table 4: Simulated Effect of Privatization on Wages

Non-privatizable	Privatizable	Mean Difference
	Wage	
0.005	0.004	0.001
(0.001)	(0.000)	(0.001)

Note: N = 171 for non-privatizable, 2,682 for privatizable firms. The table presents the average simulated effect of privatization (the hypothetical percentage change in the dependent variable) for non-privatizable and privatizable firms. Mean difference = difference in the hypothetical privatization effect between non-privatizable and privatizable firms.

Table 5: Simulated Effect of Privatization for Non-privatizable, Privatizable and Not Privatized, and Privatized Firms

Non-privatizable (1)	Privatizable, not privatized (2)	Privatizable, privatized (3)	Mean Difference (1) – (2)	Mean Difference (1) – (3)
		Employment		
-0.034	0.033	0.115	-0.068**	-0.149**
(0.014)	(0.004)	(0.007)	(0.015)	(0.015)
		Efficiency		
0.490	0.396	0.351	0.094**	0.139**
(0.019)	(0.003)	(0.007)	(0.013)	(0.017)

Note: N = 182 for non-privatizable, 1,985 for privatizable but not privatized and 704 for privatized firms. The table presents the average simulated effect of privatization (the hypothetical percentage change in the dependent variable) for non-privatizable, privatizable and not privatized, and privatized firms. Mean difference = difference in the hypothetical privatization effect between not-privatizable and the two other groups of firms. ** = significant at the 1-percent level. n.a. = not applicable.

Appendix

Table A1: Simulated Effect of Privatization on Employment, Firm Efficiency and Wages, Efficiency Measure: Return on Assets

Non-privatizable	Privatizable	Mean Difference
	Employment	
-0.114	0.052	-0.166**
(0.017)	(0.004)	(0.018)
	Efficiency	
0.138	0.137	0.001
(0.004)	(0.001)	(0.003)
	Wage	
0.004	0.003	0.001
(0.002)	(0.001)	(0.002)

Note: N = 147 for non-privatizable, 2,260 for privatizable firms. The table presents the average simulated effect of privatization (the hypothetical percentage change in the dependent variable) for non-privatizable and privatizable firms. Mean difference = difference in the hypothetical privatization effect between non-privatizable and privatizable firms. ** = significant at the 1-percent level.

Table A2: Simulated Effect of Privatization for Non-privatizable, Privatizable and Not Privatized, and Privatized Firms, Efficiency Measure: Return on Assets

Non-privatizable (1)	Privatizable, not privatized (2)	Privatizable, privatized (3)	Mean Difference (1) – (2)	Mean Difference (1) – (3)
		Employment		
-0.114	0.030	0.110	-0.144**	-0.224**
(0.017)	(0.005)	(0.017)	(0.018)	(0.019)
		Efficiency		
0.138	0.138	0.135	-0.000	0.003
(0.004)	(0.001)	(0.002)	(0.003)	(0.004)
		Wage		
0.004	0.004	-0.000	-0.000	0.005*
(0.002)	(0.001)	(0.001)	(0.001)	(0.003)

Note: N = 147 for non-privatizable, 1,652 for privatizable but not privatized and 608 for privatized firms. The table presents the average simulated effect of privatization (the hypothetical percentage change in the dependent variable) for non-privatizable, privatizable and not privatized, and privatized firms. Mean difference = difference in the hypothetical privatization effect between not-privatizable and the two other groups of firms. ** = significant at the 1-percent level, * = significant at the 10-percent level. n.a. = not applicable.