When Does Privatization Process Begin? Total Effects of Privatization in Turkey

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Abstract

We examine the effects of privatization process as a whole in Turkey. Using the 1993-2015 Istanbul Chamber of Industry Top 500 Manufacturing Firms database, we find that the privatization causes firm-level workforce to decline by 65%, and a proportionate increase in real sales per employee in the long-run. On average, real sales performances of the privatized firms do not change; yet the profit margins (profit per sales) rise rapidly after the sale. In addition, taking advantage of the existence of Privatization Administration, the government agency that takes over the firm's assets before the sale, we show that the privatization is a process that starts before the date of sale of the firm. During the pre-privatization restructuring, firm-level real sales and workforce decline. Therefore, overlooking the downsizing of the firm before the sale severely biases the results, underestimates the disemployment effect, and overestimates the rise in real sales. Based on the evidence presented, we conclude that privatization results in an income transfer from wage-earners to profit-earners.

Keywords: difference-in-differences, panel data, Turkey, privatization, pre-privatization restructuring.

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1. Introduction

Systematically selling public assets to private agents is a marking feature of the post-1980s world. The privatization has been supported by international organizations, such as IMF and World Bank, and opposed by left-wing parties and unions (Brune 2004; Shirley 1991). Generally, scholars have argued that empirical evidence supports that the privatization has raised real sales (output) without reducing employment substantially, hence it brings about important social benefits (Bortolotti and Milella 2008). Governments of both developed and developing countries have initiated privatization programs, and by the 2000s, the privatization was a global phenomenon.

In this paper, using 1993-2015 TOP 500 manufacturing firms of Turkey data prepared by Istanbul Chamber of Industry, we examine impacts of the privatization process as a whole on privatized Turkish firms, by focusing on the effects on employment, real sales, and profit margin. The paper makes two main contributions to the literature: First, thanks to the institutional and legal framework of the privatization in Turkey, we empirically assess the pre-sale restructuring by showing changes in employment, real sales and profit margins of publicly owned enterprises (POE) after the government decides to sell it. Second, exploiting the long time dimension of the data (23 years), we show long-run firm-level effects of the privatization on the aforementioned variables. This enables us to directly test the scholars' main argument on the socially beneficial effects of the privatization as well as to document its potential distributional consequences.

Overall, the findings reveal that the employment and real sales decline by 28% and 30% with the privatization decision before the firm is sold to private agents. Even though it is still owned by the government, the firm shrinks in terms of real sales and employment once it is included in the privatization program. This indicates a change in the objectives of the firm. Armed with this knowledge, we build our empirical model that compares actual privatized firms with the counterfactuals that were never included in the privatization program. We show that after the sale of the firm, the real sales recover, yet the workforce declines even further. Our baseline estimates indicate that the privatization has resulted in 65%

decline in firm level workforce, 18% rise in the profit-margin, and statistically no change in real sales, in the long-run. Thus, the argued social benefits of the privatization are not realized in Turkey. On the contrary, the privatization has resulted in an income transfer from the wage-earners to profit-earners.

Disregarding the pre-sale restructuring implies that the government makes no alteration before the sale. We show the invalidity of the assumption, and the size of the bias it causes. The size might be particularly large when only couple of pre-sale years are observed. In these cases, the estimated rise in real sales is larger and the fall in employment is smaller than the truth. Specifically, when only 3 pre-sale years are observed, more than 30% of the employment decline is missed by the regressions; while the real sales is estimated to rise by 24%. This causes the social benefits of the privatization to be incorrectly overestimated.

There is a large literature on the firm-level effects of the privatization.[2] Arguably, the most popular approach, employed in Ben Naceur et al. (2007), Boubakri and Cosset (1998), Chen et al. (2017), Dewenter and Maletesta (2001), La Porta and Lopez-de Silanes (1999), Ökten and Arin (2006), Villalonga (2000), is comparing pre- and post-sale averages of the variables of interest. Although La Porta and Lopez-de Silanes (1999) and Dewenter and Malatesta (2001) note that significant changes occur before the date of sale, the studies pick it for the first year of the privatization process. This paper improves upon these studies by explicitly addressing the pre-sale restructuring. In addition, to establish causality, we utilize a range of specifications to control for industry trends, and assess whether the control sample is valid by examining pre-existing trends.

The paper is structured as follows: Section 2 briefly describes the privatization process in Turkey and the data. Section 3 presents empirical results and discusses them. Section 4 concludes.

2. Privatization in Turkey and the Data

[2] Some of the reviews are provided by Megginson et al. (2001), Mühlenkamp (2015), and Parker and Kirkpatrick (2006).

Most of the countries have launched large-scale privatization programs and gathered revenues from them in 1990s. Turkey's privatization revenue, on the other hand, has remained low compared to the size of its public sector until 2000s (Atiyas 2009). The large-scale privatizations take place in the 2000s. However, the privatization has entered the political agenda in 1984 (Ökten and Arin, 2006). The Housing Public Participation Council (HPPC) was founded in 1984, and authorized to making privatization-related decisions. The HPPC collects and analyzes data on firms when they are included into the privatization program, and the firm's assets are transferred to the HPPC. In other words, once a POE is decided to be privatized, its assets are transferred to some other entity within the government. Between 1984 and 1994, due to legal gaps and court overrulings, various councils and administrations with privatization-related decision-making authorization, similar to the HPPC, are founded and abolished. In 1994, still surviving Privatization Administration (PA) is established (for a thorough examination on institutional and legal framework of privatization in Turkey, see Güran 2011). Thanks to these institutions, we have information on the exact date for the start of the privatization process: the year when the firm's assets are transferred to the PA.[3] Block sales are the most common privatization method in Turkey (Ben Naceur et al. 2007; Atiyas 2009).

The primary database used in this paper is 1993-2015 TOP 500 manufacturing firms (in terms of sales) of Turkey, prepared by Istanbul Chamber of Industry (ICI). It contains information on employment, sales, pre-tax profits, and value added of the largest manufacturing firms in Turkey on a yearly basis. The dates of privatization and of the asset transfer to PA, and the government's share before and after the privatization are from Privatization Administration database. These dates and the privatized firms are reported in Table 1.

Unlike sources that rely on stock exchange databases, such as Compustat (Global Vintage), one of the greatest advantages of the ICI dataset is that we observe public firms that are not considered for

[3] For brevity, henceforth we call all the councils and administrations as Privatization Administration, even if Privatization Administration does not exist in the particular year.

privatization. Put differently, we possess information on the performances of the POEs that are entirely government owned and are not to be privatized, and the pre-privatization-process information of the privatized firms. Furthermore, the surviving firms report over a 23-year period, hence the data allows us to better assess the validity of the comparison sample based on the existence of the pre-existing trends as well as the long-term effects of the privatization.

On the other hand, we only observe the largest firms in Turkey. Although all privatized firms, and large private and public firms are always among the top 500, the selection causes shrinking (rising) firms to disappear from (appear in) the data. To alleviate the problem, first, we employ the second largest 500 manufacturing firm dataset for some of the missing firm-years as well as the stock exchange database when available. Second, to decrease measurement error and to obtain the comparison sample of firms similar to the privatized firms, we exclude firms that are observed for fewer than 10 years.

The constructed dataset contains 171 firms, where 154 (7) of them are private (public) throughout the period analyzed and 10 are privatized. All the 10 firms have been transferred to the PA before they are sold, 4 of them were already owned by the PA in 1993. All the firms transferred to the PA are privatized eventually.

Although 10 firms might appear a relatively small "treated" number of firms, this sample is arguably representative of the Turkish privatization experience. According to the Privatization Administration database, until 2015, the block sale revenues from all the 10 privatized firms in Turkey amount to $10.9 billion; whereas total block sale revenues of all privatized Turkish non-financial firms is $21.6 billion. Additionally, the privatized firms in the sample are all controlled by the government before the privatization process, and it loses the control with the sale. On average, in the year of the privatization, the public share of the privatized firms in our sample decreases from 85% to 5%. Three years after the privatization, this number is merely 1.25%.

Table 2 reports the means, medians, and standard deviations of the public firms, private firms, privatized firms before the sale, and privatized firms after the sale. It shows that public firms are slightly larger than private firms in terms of sales, yet they employ substantially more workers. Although the mean value of the profit margin (pre-tax profit divided by sales) of the public firms is slightly larger than the private firms, the median value is considerably larger for the latter ones. In all these respects, the privatized firms are relatively similar to the public ones before the sale, and to the private ones after the sale.

3. Empirical Methodology, Findings, and Discussion

3.1 Empirical Implementation

To assess the changes during the pre-sale restructuring, pre-existing trends as well as the effects of the privatization, we initially employ the following model;

$$Y_{i,t} = \beta_1 * PrePA + \beta_2 * PA + \sum_{k=0}^{k=K} \beta_{3,k} * DOS_{i,t+k} + \lambda_i + \mu_t + \epsilon_{i,t}. \qquad (1)$$

i indicates the firm and t year. $Y_{i,t}$ is the log of total workforce of the firm, log of real sales per employee, log of real sales, or pre-tax profit per sales in Turkish Lira.[4] We place all public and private firms in the comparison sample following La Porta and Lopez-de Silanes (1999) and Goldstein (2006). We set the year before the privatized firm's assets are transferred to the PA as the reference to assess the pre-existing trends. Therefore, $PrePA$, PA, and DOS variables are always 0 for non-privatized firms (public or private throughout the sample period). $PrePA$ takes on the value of 1 when the privatized firm is not considered for privatization, except for the year before the firm's assets are transferred to the PA, it is 0. PA is a binary variable that is 1 when the firm's assets are owned by the PA, and 0 otherwise. [5] $DOS_{i,t+k}$ is an

[4] Following the literature (e.g. Megginson et al. 1994, Ben Naceur et al. 2007), we define "real sales" as the inflation-adjusted nominal sales.
[5] The number of PA period varies for the privatized firms, so we pool them.

indicator variable for k years after the date of sale. k ranges from 0 to $K = 8$, to estimate annual changes in the first 9 years after the sale. λ_i and μ_t are firm and year fixed effects.

This specification requires information on at least three exclusive periods of the privatized firms: (i) pre-PA period when the firm is not included in the privatization program; (ii) PA period when it is owned by the government, and is considered for privatization; (iii) the period when the firm is sold to the private owners. 4 of the 10 privatized firms in our sample were already owned by the PA in 1993, hence the regression equation (1) is estimable only for 6 of the privatized firms.[6] In other words, equation (1) does not allow us to employ all the privatized firms in our sample, and we use only 6 of them in this analysis. Finally, to prevent late-privatized firms from having a considerable influence over the estimation of β_1 and early privatized firms from being included in the comparison sample, we construct a window that includes only the observations between the first 5 years before the firms' assets are transferred to the PA and 9 years after the sale.

Figure 1 visually displays the changes in the log employment, log real sales per capita, log real sales, and profit margins relative to the year before the firms' assets are transferred to the PA. There are 7 important points related to the figure that we wish to emphasize: First, it confirms our claim that the privatization process begins before the firm is sold. Compared to the pre-PA years, employment and real sales of the firms decrease by 28% and 30% during the PA years. It implies that the government shrinks the firm for the privatization. Second, the employment further declines rapidly in the first couple of years of the privatization and remains depressed in the long-run. Third, the decline in the real sales is reversed after the firm is sold to its private owners and is essentially the same as the counterfactual firm that has never privatized. Fourth, as an outcome of the second and third points, the real sales per employee, though remains virtually unchanged during the PA period, increases rapidly after the privatization. Fifth, the profit margin rises after the privatization. Sixth, we do not observe a pre-existing trend that would violate

[6] For the 4 firms, in addition to the firm fixed effects, either $PrePA$ or PA or DOS variables take the value of 1 in each year. This is a standard "dummy variable trap" that prevents estimation of/controlling for all four variables simultaneously.

the parallel trends assumption of the regression equation (1) for any of the variables; suggesting our identifying assumption; namely, the counterfactuals of the privatized firms would follow a path similar to our comparison sample after controlling for macroeconomic shocks. Seventh, the firm undergoes post-sale restructuring. Especially real sales levels of the privatized firms change rapidly in the first couple of years after the firm is sold to its private owners. In all cases, however, the graphs display that firms, on average, reach their long-run path after the 4th year of the sale.

Quantifying the effects of the privatization as a whole

Based on the observations from figure 1, we divide the post-sale period into two: POST1[0, 3] (POST2[4, 8]) is 1 from the first (5th) until the end of the 4th (9th) year after the sale for the privatized firms. Otherwise, it takes on the value of 0. To quantify the total effects of the privatization, we exclude the observations when the privatized firm is owned by the PA and employ the following benchmark model;

$$Y_{i,t} = \beta_1 * POST1[0,3] + \beta_2 * POST2[4,8] + \lambda_i + \mu_t + \epsilon_{i,t}. \quad (2)$$

Equation (2) is intuitively very similar to the equation (1). The exclusion of the PA period guarantees that the comparison is between the actual privatized firm after the privatization and the counterfactual firm that never entered the privatization program. The main variable of interest is β_2, captures the effects of the privatization after the post-sale restructuring; whereas the average effect of the latter is captured by β_1. For better precision, equation (2) declares the entire Pre-PA period as the reference and estimates only two variables for the post-sale period.

One major downside of the regression equations (1) and (2) is that we cannot employ all the privatized firms in our sample to quantify the total effects of the privatization, since some firms are already owned by the PA in 1993. Alternative to these models, one can control for the firm-specific PA period trends linearly and estimate the total effects of the privatization:

$$Y_{i,t} = \beta_1 * POST1[0,3] + \beta_2 * POST2[4,8] + \alpha_i * PAtrend_{i,t} + \lambda_i + \mu_t + \epsilon_{i,t}. \quad (3)$$

$PAtrend_{i,t}$ are firm-specific PA period trends that take on the value of j in the j^{th} year of the PA for firm i, and 0 otherwise.[7] Regression equations (2) and (3) are our benchmark and alternative models. For robustness of the estimates, we additionally (i) include two-digit ISIC rev.2 industry-specific trends (ii) control for two-digit ISIC rev.2 industry specific period effects (iii) exclude the firms in the same industry as privatized firm. The former two sets of controls allow industries to follow alternative linear trends, and macroeconomic shocks to affect industries differently. If the estimated effects are not due to change in ownership, but reflects a general trend in the industry; linear trends or industry-by-year fixed effects eliminate the bias. Conversely, if we observe no effect in the baseline model; but significant changes occur in the industry, these models reveal it. From an opposite point of view, the sale of the POE may cause a spillover that affects all the firms in the industry. The potential spillover effects render these firms invalid controls, because they are also affected by the sale.

We only examine the coefficient for POST2[4, 8], the long-run effects of the privatization. Panel A of Table 1 reports the employment effects of the privatization. The benchmark specification indicates a sizable and statistically significant employment decline of 1.06 log points in the long-run. This corresponds to 65% decline in the firm-level employment in the long-run due to the privatization.[8] All specifications largely agree with the benchmark specification on the size and the statistical significance of the decline.

Panel B of Table 1 shows that log sales per employee has quickly increased with the privatization. The absolute magnitudes of the estimates are almost the same as those for the Panel A. The similarity suggests that the numerator (real sales) has not changed, but the denominator (employment) has declined. This is confirmed in Panel C of Table 1. None of the columns indicate a statistically significant change in real sales. The estimated effects range between -18% and 9%, depending largely on the importance of the

[7] There are 10 firms, so there are 10 firm-specific PA period trends. This specification extrapolates using the PA Trends when pre-PA period is not observed. Hence, for the 4 firms whose assets are transferred to the PA before 1993, the post-privatization averages are compared with hypothetical pre-PA averages.
[8] Due to the size of the change, the percentage approximation of the log-transformation fails.

firms in the same industry as controls. When only within industry-variation is employed (the specification with industry-by-year fixed effects in column 3), we obtain negative estimates; suggesting that, on average, firms in the same industry as the privatized firm have been able to increase their sales. [9] The fact that the estimates are not statistically significant at conventional levels, on the other hand, prevents us from rejecting the no-effect on real sales hypothesis.

In panel D, we document the rise in the profit-margin, calculated as the ratio of the pre-tax profit to the sales. The benchmark specification indicates 18% increase after the date of sale. The range of the estimates is relatively small, between 0.14 and 0.18, and all of them are statistically significant at 10% level.

Privatized Share

The way the date of sale is defined considerably affects the findings of the models, especially if partial privatizations are prevalent in the sample. This problem is not particularly severe in our case, since Turkish government held 85% of the firms' shares before the date of sale, and sold virtually all of them in the first couple of years following the sale. However, to address the issue of partial privatization, and as a robustness check, we replace the variable of interest in equations (2) and (3) with continuous privatized share variables. Keeping the same dates for privatization, we can employ the following models;

$$Y_{i,t} = \beta_1 * Privatized\ Share1[0,3] + \beta_2 * Privatized\ Share2[4,8] + \lambda_i + \mu_t + \epsilon_{i,t}. \quad (4)$$

$$Y_{i,t} = \beta_1 * Privatized\ Share1[0,3] + \beta_2 * Privatized\ Share2[4,8] + \alpha_i * PAtrend_{i,t} + \lambda_i + \mu_t + \epsilon_{i,t}. \quad (5)$$

[9] Column 3 compares the privatized firms with other firms in the same industry. Column 4 compares the privatized firms with firms in other industries. Therefore, intuitively, the difference in the estimated effects in columns 3 and 4 indicates the difference between two samples of control firms. Hence, estimating no change in real sales in column 4 while column 3 finds negative effect implies a real sales increase for the other firms in the same industry as the privatized firm.

Privatized Share variables range from 0 to 1. Similar to the previous model, we divide post-sale period into two: Privatized Share 1 (2) captures the effects in the first 4 years of the sale (5^{th} to 9^{th} year after the sale). The privatized shares are calculated as the difference between shares government owns in the year before the privatization process begins and after the sale. To prevent PA period to contaminate the results, we are dropping it, or we control for it using firms-specific PA trends. We also exclude all observations outside the time window constructed earlier. The dependent variables we analyze are the log of employment, log of real sales per employee, log of real sales, and profit margin in sales.

Table 4 corroborates our findings in table 3. Panels A and B show that the privatization brings a large employment fall and a large gain in real sales per worker. Panel C indicates that the real sales has not increased with the privatization. Only in column 7, the regression estimate is marginally significant and negative (-0.270 (0.146)). This finding potentially indicates the spill-over effects of the privatization rather than the effect on the privatized firm, because it is not confirmed in other specifications. The profit margin, on the other hand, has increased by between 15%-18%. The findings quantitatively moderately change across columns, yet the qualitative results hold. The privatization substantially reduces employment, increases profit margin, and has no significant positive effect on real sales of the firms.

Heterogeneity by Privatization Cohort, Size, and Industry

Thus far, we have pooled all privatized firms and presented the effects on the average firm. In this part, we split the privatized firm sample into two along three dimensions: The timing of the privatization, size of the firm, and its industry. The reason why some firms are privatized earlier than others may not be random. The firms that are more promising from private owner's point of view could be sold more easily and quickly. Similarly, the firm size may affect the impact. If the effects of privatization on employment or real sales is non-linear in size, pooling them might be misleading. Lastly, factors that are industry specific, such as intensity of competition or availability of different technologies, might as well cause the effects to vary by industry.

To assess potential heterogeneous effects of the privatization by the cohort, we divide the privatized firms into two groups depending on whether the firm is sold by the government before 2005, the median sale year in our sample. The size of the firm is determined according to the pre-sale employment (or real sales) levels compared to the median firm. In terms of privatized firms' industries, we split them into two groups: Basic metal industries (ISIC Rev. 2, code 37) and manufacture of chemicals and chemical products (ISIC Rev. 2, code 35).

We employ a version of equation (3) to use all the privatized firms in the sample. After obtaining the groups of the firms according to each classification, we estimate the following regression equation;

$$\begin{aligned} Y_{i,t} = \beta_1 * POST1[0,3] \times Group1_m + \beta_1 * POST1[0,3] \times Group2_m \\ +\beta_3 * POST2[4,8] \times Group1_m + \beta_3 * POST2[4,8] \times Group1_m + \\ \alpha_i * PAtrend_{i,t} + \lambda_i + \mu_t + \epsilon_{i,t}. \end{aligned} \quad (6)$$

$Group1_m$ and $Group2_m$ variables are indicators for the group of the privatized firms. The former (latter) takes the value of 1 if the privatized firm belongs to group 1 (2) according to classification m, and 0 otherwise.

Table 5 separately reports the long-run performances of the privatized firms that are sold before 2005, and in or after 2005. The results point out that in terms of fall in employment, the difference between early and late privatized firms is small. The similarity is replaced by a sizable difference in real sales. Firms that are sold after 2005 experienced a fall (-0.310 (0.159)) in real sales in the long-run, suggesting that late privatized firms were too large in terms of sales for private owners. The estimate is insignificant in column 4 where we drop all of the firms in the same industry as the privatized ones, yet it is still sizable (-0.187 (0.167)). The firms that are sold earlier do not experience such a fall in real sales. As a result, the per-employee sales improvements are much higher for the latter firms. The difference disappears when we consider the profit margin. On average, all the firms have been able to increase their profit margins by more than 10%.

Table 6 divides the privatized firms according to the pre-sale employment (or real sales) averages.[10] In terms of employment, panel A reports that the downsizing is much more pronounced in large firms than the small ones. Although the real sales estimates are always only slightly smaller for the latter firms, the real sales per employee gains are much bigger. On the other hand, the profit margins have increased by, approximately, 15% for both groups.

Table 7 examines the effects of the privatization by the industry of the privatized firms. We find that the impacts of privatization differ by the industry. For the privatized firms in chemicals and chemical products industry, the privatization has resulted in massive disemployment, and almost no change in real sales, hence a substantial increase in real sales per worker. Surprisingly, on the other hand, such an implied fall in wages with almost no change in revenues has yielded the profit margins to increase by only 5%-6%. One explanation that we discuss in section 3.2 is that the firms have switched to more capital-intensive technologies, hence have been able to produce the same amount without as many workers. Also, it is likely that the rise in other cost items have offset the implied fall in wage-related costs.[11] As Borisova and Megginson (2011) notes, the government might have access to financial markets that provide loans for lower costs. The privatization might cause the firm to lose its access to the markets, and hence increase the borrowing costs. If the weight of the borrowing cost is relatively larger for the privatized firms in chemicals and chemical products industry, then the rise in profit margin would be limited even when value-added per sales remains the same and employment falls.[12]

[10] Large firms are Erdemir, Iskenderun Demir-Celik, Petkim, Petrol Ofisi, and Tupras. One potential concern here is that the pre-sale restructuring shrinks the firm sizes, hence considering the entire pre-sale period might be misleading. When we calculate the average employment (or real sales) of only the last two years of the pre-sale period, we obtain the same firms.

[11] Our examination of value-added per sales performance of the firms suggests no change, implies that the rise in input costs cannot be one of the explanations.

[12] Six firms are in basic metal industries, and three of them were owned by the PA in 1993. One concern here might be that the extrapolation error of the specification is the main reason behind the non-finding of a rise in profit margins. However, when we exclude the privatized firms whose assets were transferred to the PA before 1993, we obtain only 7% increase in the profit margins of the privatized firms in chemicals and chemical products industry, ruling out the extrapolation error as the main reason.

For the privatized firms in basic metal industry, column 1 reports that the employment fall has been less pronounced (the estimate is -0.675 (0.102) instead of -1.386(0.254)), the decline in real sales is statistically indistinguishable from zero, and the profit margins have increased by more than 24%.

One observation here is that the results in first columns of panels A and C qualitatively hold in other columns except the one where we control for industry-by-year fixed effects. The employment as well as real sales declines for the privatized firms in basic metal industries is estimated to be considerably larger in column 3 (-0.881 (0.133) and -0.380 (0.161)). As noted in footnote 8, given that only within-industry variation is accounted for in the column, the findings indicate that the privatized firms in basic metal industry have shrunk in terms of employment and real sales relative to firms in the same industry, but not relative to all other firms. In other words, the privatization of the firms in basic metal industry has caused other firms in the same industry to grow. Nevertheless, the growth is not due to the relative rise in labor productivity in the firms in basic metal industry. Considering the real sales per worker as its indicator, the estimated changes in the variable in columns 3 and 4 are quantitatively close to each other. Similarly, the growth is not due to the relative rise in the intensity of competition in the basic metal industry either, otherwise the estimated profit margin would be smaller in column 3 than column 4.

Perils of overlooking pre-sale restructuring and short panels

Figure 1 implies that overlooking the pre-sale restructuring yields biased results. The bias might be particularly large if only couple of pre-sale years are in the data. In this section, we quantify the extent of the bias using our primary data.

Assume that we begin observing the privatized firms three years before the sale, keep all the post-sale period in the sample, and employ only one variable to estimate the post-sale performance. Specifically, we utilize the following regression equation;

$$Y_{i,t} = \beta_1 * Privatized + \lambda_i + \mu_t + \epsilon_{i,t}. \quad (7)$$

$Privatized$ is a binary variable that takes on the value of 1 for the privatized firms after sale. Otherwise it is 0. λ_i and μ_t are firm and year fixed effects.[13] Other than the time window of the sample, the crucial alteration here is that we keep PA period in the sample, and allow firms that are owned by the PA to be in the control sample. In other words, we only consider whether the government owns the firm, and disregard if it is included in the privatization program. Intuitively, the equation implicitly assumes that the restructuring is instantaneous, and takes place on the day the firm is sold.

Table 8 reports the estimates of the effects of the privatization on log employment, log real sales per employee, log real sales, and profit margin using equation (7). For comparability, we report findings from using only 6 of the privatized firms as well as from all 10. Panel A column 1 reports that the estimated coefficient for the decline in log employment is -0.726. This is 0.337 larger than the estimate in column 1 of table 3 panel A. The difference increases to 0.455 in column 5, where we include all 10 privatized firms. This is expected. Compared to column 1, three of the four additional firms were owned by the PA for more than a decade before the sale. In other words, an important share of the pre-sale restructuring has already been completed for these firms three years prior to the sale. This drives the estimates towards zero. In addition, there are more firms in the privatization process in the control sample, further biasing them upwards.

The estimate for the rise in real sales per employee in panel B, however, is almost the same as the ones in table 3. This suggests that the upward bias in the employment estimates have been offset by another bias in the real sales estimates. Panel C confirms it. Using the equation (7), we obtain that the real sales have increased by more than 20% in all specifications, except the ones that allow macroeconomic shocks to affect industries differently. The estimate obtained from the latter specifications (0.093 (0.101) and 0.105

[13] Splitting post-privatization period into two similar to what is done earlier keeps the direction of the bias the same and exacerbates it.

(0.067) in columns 3 and 7) are still larger than any one in panel C of table 3. Finally, the rise in profit margin is approximately 18%, similar to the previous estimates.

To summarize, ignoring the pre-sale restructuring produces estimates that severely understates the societal costs of the privatization (disemployment), and overestimates its benefits (rise in real sales).

3.2 Discussion

There are non-profit-related aims of publicly owned enterprises, and one of them is sustaining a level of employment (Boycko et al. 1996). Government might decrease the unemployment rate through POEs by employing more workers per unit of production than a privately-owned firm. For private firms, these concerns are non-existent or less important. Differences of objectives among private and public firms require restructuring of a privatized firm. Government might bear a portion of the restructuring cost to boost salability of the firm during the PA period. As shown in Figure 1, the firm-level workforce declines during the PA period when the firm is considered for privatization. The decline is continued by private owners; hence the first effect of the privatization is the annulment or substantial decline of the importance of the employment-related objectives. The rise in the profit-margin only after the privatization suggests that (i) the profit-related objectives of the government have not become more important with the asset transfer to the PA, and (ii) the profit-related objectives are relatively much more important for private owners. Then the immediate outcome of the privatization has been an income transfer from wage-earners to profit-earners.

Secondly, the privatization has substantially increased real sales per employee. Although the ratio as an efficiency measure is arguably not adequate for comparison, since the government puts a much larger weight on employment-related concerns, it is still important to examine the factors behind the rise. Four of the most probable ones are increase in workers' effort levels, rise in product prices, the subcontracting, and change in production technology.

La Porta and Lopez-de-Silanes (1999) notes that one reason for workers' opposition of privatization is that private owners require more effort from them. Although worker's effort is mostly non-contractable, we can expect that private owners provide incentives for working hard, or disincentives to "shirking" (Bowles 2009). Since the local employment rate is a concern for POEs, its public knowledge renders layoff threat less credible and the average worker's effort is relatively low. The high employment is not a concern for private firms, the layoff threat is credible, the effort level is high. Nonetheless, the fall in the PA period did not coincide with an increase in real sales per employee suggests that the novelty brought by private owners for increased worker effort is not limited to making the threat credible. Better monitoring and supervising might be among these novelties that lead workers to devote more effort.[14] The findings support the rise in the layoff threat, hence we consider increased workers' effort levels as one of the factors.

The second potential reason behind the rise in real sales per employee is the increase in the prices of the privatized firms' outputs. If government artificially lowers the price of the POE's output with the aim of boosting the downstream industries; this aim disappears after the firm is sold to its new owners. We do not possess output price information and we leave this as a possibility.[15]

Subcontracting some of the tasks decreases total workforce of the firm without changing real sales. In this case, the real sales per employee would increase rapidly. Nevertheless, this would also lead the value-added per sales to decline, since the wages of the workers undertaking the subcontracted tasks are no longer a component of the value-added, but outside purchases.

Table 9 reports the value-added per sales effects of the privatization using equation (2) and (3). None of the estimates reject the null hypothesis. In fact, the long-run estimates range between 4.6% and 8.9%,

[14] The real sales records of the public firms in the pre-PA period, on the other hand, demonstrates that the tolerance for "shirking" in POEs is not limitless.
[15] Ökten and Arin (2006) finds that the privatization of cement firms in Turkey did not lead to price increases.

hence are slightly positive in all columns, suggesting that the outsourcing was not the main reason behind the rise in real sales per employee.

Lastly, the decline in the employment-related aims might induce the firm to change production technologies. During the post-sale restructuring, new owners might increase the capital stock of the firm, and switch to capital-intensive production techniques. This would allow the firm to shrink its workforce with no effect on its real sales performance.

The primary dataset we employ does not report firm-level capital stock or investment rate. Using the balance sheets reported to Istanbul Stock Exchange, we construct fixed tangible asset series for four of the privatized firms (Erdemir, Petkim, Petrol Ofisi and Tupras).[16] The data starts from 1998 and is normalized by the fixed tangible asset holdings in the last pre-sale year. In 1998, all of the four firms were owned by government, though their assets were held by the PA. Therefore, we note that the comparison is limited to the PA period and the post-sale restructuring (from the first to the end of the fourth year after the sale). Hence, the evidence presented should be considered suggestive.

Figure 2 reports the evolution of the fixed tangible asset holdings of each of the firms. Among the four firms, only Petrol Ofisi has rapidly increased its capital stock after the date of sale; whereas capital stocks of Tupras and Petkim have declined, and there is limited change for Erdemir. This suggests that the shift to capital-intensive technologies might be true for some industries, yet it is not the main explanation behind the massive rise in real sales per worker for the privatized firms.

4. Concluding Remarks

The public sector still plays a considerable role in many developing as well as developed countries. There are many large POEs that can be subject of privatization in the future. Our findings should caution the

[16] The employment and real sales regressions using only these four firms as privatized firms yield qualitatively the same findings as previous results.

decision makers from making hastily conclusions that privatization improves social welfare by increasing firms' output without changing employment level substantially. In the case of Turkey, privatization primarily led to job losses and increases in profit margins. The real sales (output), on the other hand, has not statistically significantly changed. Therefore, we conclude, it has led to an income transfer from wage-earners to profit-earners. When distributional consequences are considered, the social costs of privatization may surpass the benefits.

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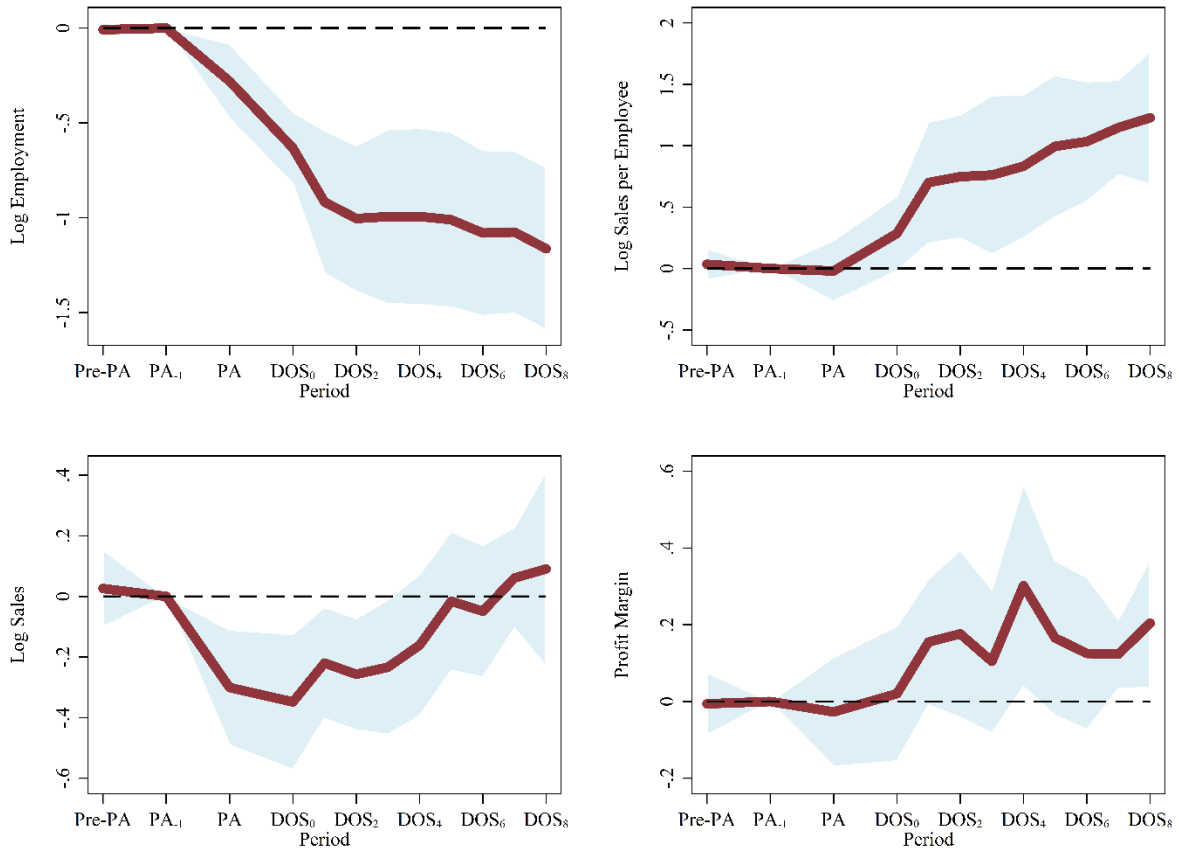
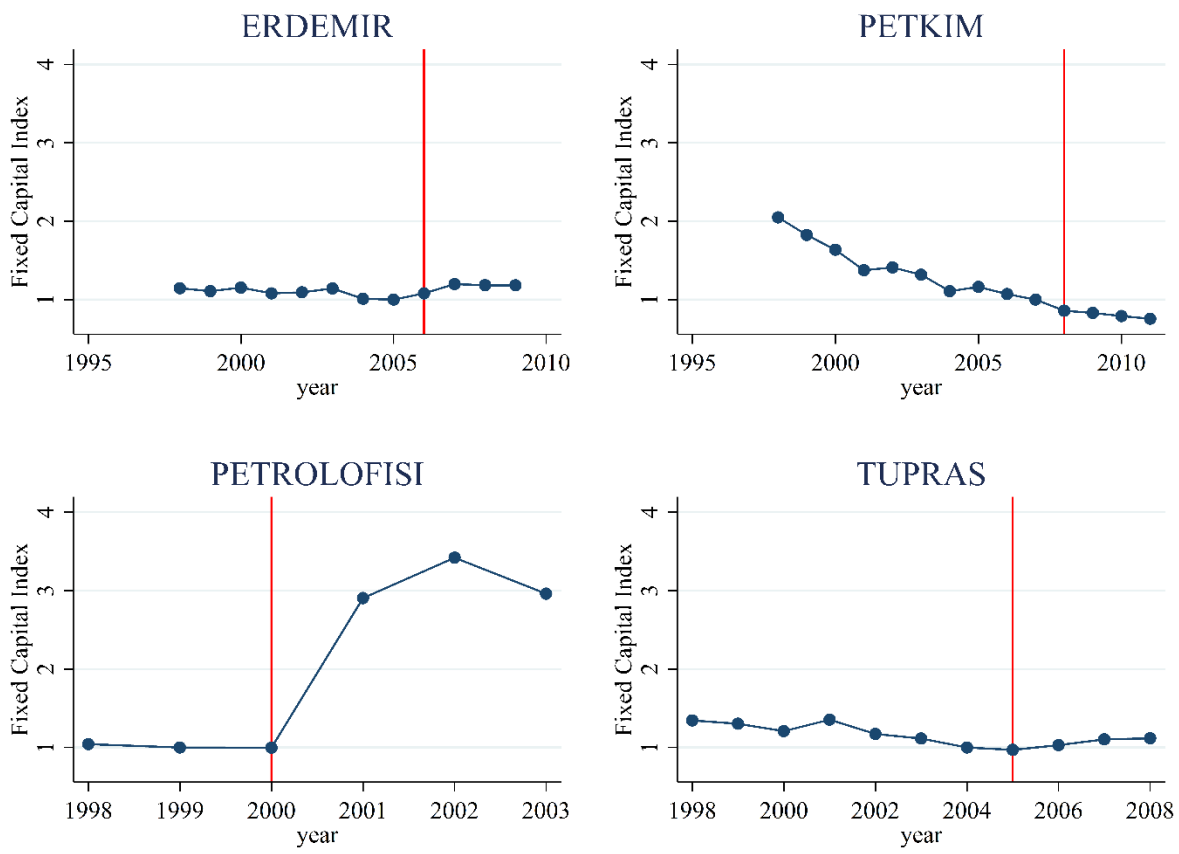
Figure 1: Evolution of Log of Employment, Log of Real Sales, Log of Real Sales per Employee and Profit Margin



Notes: The figure depicts time paths of the privatized firms' log of employment, log of real sales, log of real sales per employee, and value added per sales. All estimates are relative to the year before the PA (PA_{-1},) hence it is set to 0. Pre-PA and PA periods are composed of multiple years, and the average estimates are reported. DOS_0 to DOS_8 estimates indicate 0 to 8 years after the date of sale of the firm. The straight line indicates the point, and the shaded area the 95% confidence interval estimates.

Figure 2: Evolution of Fixed Capitals of Four of the Privatized Firms



Notes: The figure shows changes in fixed capital indices of ERDEMIR, PETKIM, PETROL OFISI and TUPRAS. The value for the year before the date of privatization is set to 1. The red vertical line indicates the date of privatization for each firm.

Table 1: Dates of Asset Transfer to PA and of Privatization

Company	Industry	Privatization Administration	Privatization
Asil Celik	Basic Metal Industry (Steel Production)	1998	2000
Erdemir	Basic Metal Industry (Steel Production)	1987	2006
Eti Aluminyum	Basic Metal Industry (Aluminum Production)	2003	2005
Gemlik Gubre	Manufacture of Industrial Chemicals (Fertilizer)	2000	2004
IGSAS	Manufacture of Industrial Chemicals (Fertilizer)	2002	2004
Iskenderun Demir-Celik	Basic Metal Industry (Steel Production)	1998	2002
PETKIM	Manufacture of Industrial Chemicals (Petro-chemical)	1987	2008
PETLAS	Manufacture of Tires	1990	1997
Petrol Ofisi	Manufacture of Industrial Chemicals (Petroleum)	1998	2000
TUPRAS	Petroleum Refinery	1990	2005

Notes: The dates of asset transfer to PA and privatization are gathered from Privatization Administration website. The former date indicates the starting date of the pre-privatization restructuring. The last column indicates the year the firm is sold to private owners.

Table 2: Summary Statistics

	Mean	Median	Standard Deviation
Log of employment			
Private	6.493049	6.463029	0.945102
Public	8.125639	8.28223	1.201592
Privatized (before sale)	7.897181	8.361942	1.015378
Privatized (after sale)	7.356836	7.157342	1.017719
Log of real sales per employee (in 2010 TL)			
Private	8.082854	8.123257	0.728408
Public	6.814559	6.742146	0.7558534
Privatized (before sale)	7.953611	7.773273	1.090156
Privatized (after sale)	8.639857	8.369403	1.504467
Log of real sales (in 2010 TL)			
Private	14.56349	14.47167	0.9843518
Public	14.91457	15.23147	1.168878
Privatized (before sale)	15.85079	16.05145	1.628488
Privatized (after sale)	15.91795	15.00904	1.837152
Profit margin			
Private	0.0859068	0.061497	0.1343623
Public	0.092303	0.0185243	0.3136473
Privatized (before sale)	0.0242093	-0.0125681	0.2899206
Privatized (after sale)	0.0480114	0.0355602	0.1493293

Notes. ICI's 1993-2015 Top 500 Manufacturing Firms database is used. The sample includes 10 privatized, 154 private and 7 public firms.

Table 3: Total Effects of the Privatization

Panel A: Log Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST1[0,3]	-0.885***	-0.895***	-0.959***	-0.846***	-0.897***	-0.909***	-0.969***	-0.848***
	(0.166)	(0.166)	(0.144)	(0.169)	(0.166)	(0.167)	(0.148)	(0.167)
POST2[4,8]	-1.063***	-1.081***	-1.177***	-1.008***	-1.054***	-1.074***	-1.150***	-0.994***
	(0.226)	(0.226)	(0.203)	(0.228)	(0.198)	(0.199)	(0.177)	(0.201)
Observations	3429	3429	3429	2225	3522	3522	3522	2318

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST1[0,3]	0.624**	0.608**	0.647***	0.635**	0.674***	0.654***	0.709***	0.692***
	(0.241)	(0.241)	(0.246)	(0.243)	(0.218)	(0.218)	(0.232)	(0.220)
POST2[4,8]	1.038***	1.013***	1.009***	1.081***	0.966***	0.937***	0.978***	1.009***
	(0.263)	(0.263)	(0.295)	(0.267)	(0.235)	(0.235)	(0.263)	(0.239)
Observations	3429	3429	3429	2225	3522	3522	3522	2318

Panel C: Log Sales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST1[0,3]	-0.262**	-0.288***	-0.318**	-0.210*	-0.219**	-0.251**	-0.265*	-0.149
	(0.101)	(0.102)	(0.138)	(0.107)	(0.098)	(0.099)	(0.139)	(0.103)
POST2[4,8]	-0.015	-0.058	-0.158	0.087	-0.088	-0.137	-0.177	0.017
	(0.103)	(0.103)	(0.146)	(0.115)	(0.111)	(0.114)	(0.150)	(0.121)
Observations	3549	3549	3549	2289	3643	3643	3643	2383

Panel D: Profit Margin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST1[0,3]	0.111	0.112	0.111	0.111	0.104	0.105	0.104	0.107
	(0.090)	(0.090)	(0.089)	(0.090)	(0.076)	(0.076)	(0.074)	(0.076)
POST2[4,8]	0.181**	0.183**	0.171**	0.184**	0.142*	0.144*	0.137*	0.145*
	(0.087)	(0.087)	(0.085)	(0.088)	(0.076)	(0.076)	(0.074)	(0.077)
Observations	3450	3450	3450	2225	3543	3543	3543	2318
# Privatized Firms	6	6	6	6	10	10	10	10
Specification	PA excl.	PA excl.	PA excl.	PA excl.	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes	No	No	No	Yes

Notes: ICI's 1993-2015 Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit-margin effects of privatization in the medium- and long-run compared to the counterfactual case that the firm was never included in the privatization program. First four columns drop PA period from the sample (equation (2)). The last four columns employ alternative specification (equation (3)). All columns include firm and year fixed effects. Standard errors, clustered at firm-level, are in the parentheses.

$* p < 0.10, ** p < 0.05, *** p < 0.01$

Table 4: Total Effects of the Privatization; Privatized Share

Panel A: Log Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized Share1	-0.927***	-0.938***	-1.008***	-0.885***	-0.946***	-0.959***	-1.016***	-0.894***
	(0.195)	(0.195)	(0.177)	(0.197)	(0.192)	(0.192)	(0.177)	(0.192)
Privatized Share2	-1.076***	-1.095***	-1.194***	-1.020***	-1.086***	-1.107***	-1.178***	-1.024***
	(0.223)	(0.223)	(0.203)	(0.226)	(0.203)	(0.203)	(0.186)	(0.206)
Observations	3429	3429	3429	2225	3522	3522	3522	2318

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized Share1	0.651**	0.635**	0.646**	0.663**	0.701***	0.682***	0.674***	0.720***
	(0.261)	(0.261)	(0.254)	(0.265)	(0.241)	(0.241)	(0.242)	(0.245)
Privatized Share2	1.056***	1.031***	0.991***	1.097***	0.989***	0.959***	0.913***	1.027***
	(0.258)	(0.258)	(0.275)	(0.263)	(0.240)	(0.240)	(0.256)	(0.245)
Observations	3429	3429	3429	2225	3522	3522	3522	2318

Panel C: Log Sales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized Share1	-0.277***	-0.304***	-0.367***	-0.220*	-0.242**	-0.275***	-0.346**	-0.168
	(0.103)	(0.103)	(0.130)	(0.112)	(0.101)	(0.103)	(0.133)	(0.107)
Privatized Share2	-0.011	-0.055	-0.195	0.090	-0.098	-0.148	-0.270*	0.005
	(0.105)	(0.105)	(0.140)	(0.115)	(0.116)	(0.119)	(0.146)	(0.125)
Observations	3549	3549	3549	2289	3643	3643	3643	2383

Panel D: Profit Margin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized Share1	0.115	0.116	0.117	0.115	0.108	0.109	0.112	0.111
	(0.096)	(0.097)	(0.095)	(0.097)	(0.081)	(0.081)	(0.080)	(0.082)
Privatized Share2	0.187**	0.189**	0.178**	0.190**	0.153*	0.155*	0.150*	0.156*
	(0.088)	(0.088)	(0.086)	(0.090)	(0.078)	(0.078)	(0.076)	(0.080)
Observations	3450	3450	3450	2225	3543	3543	3543	2318
# Privatized Firms	6	6	6	6	10	10	10	10
Specification	PA excl.	PA excl.	PA excl.	PA excl.	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes	No	No	No	Yes

Notes: ICI's 1993-2015 Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit-margin effects of privatization in the medium- and long-run compared to the counterfactual case that the firm was never included in the privatization program. The variables of interest are "Privatized Share 1" and "Privatized Share 2", continuous variables, ranges from 0 to 1, where 1 indicates public share declined from 100% to 0%. Privatized Share 1 (2) estimates the effect in the first four years (from 5th to 9th year) after the firm is sold. First four columns drop PA period from the sample (equation (4)). The last four columns employ alternative specification (equation (5)). All columns include firm and year fixed effects. Standard errors, clustered at firm-level, are in the parentheses.

$*$ p < 0.10, $**$ p < 0.05, $***$ p < 0.01

Table 5: Total Effects of the Privatization; by Cohort

Panel A: Log Employment

	(1)	(2)	(3)	(4)
POST2*Early	-1.089***	-1.106***	-1.186***	-1.031***
	(0.249)	(0.249)	(0.218)	(0.251)
POST2*Late	-0.971***	-0.999***	-1.075***	-0.902***
	(0.289)	(0.292)	(0.271)	(0.286)
Observations	3522	3522	3522	2318

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)
POST2*Early	1.077***	1.052***	1.081***	1.118***
	(0.289)	(0.289)	(0.309)	(0.294)
POST2*Late	0.691***	0.652**	0.694*	0.745***
	(0.258)	(0.254)	(0.353)	(0.263)
Observations	3522	3522	3522	2318

Panel C: Log Sales

	(1)	(2)	(3)	(4)
POST2*Early	-0.000	-0.043	-0.098	0.104
	(0.113)	(0.113)	(0.142)	(0.126)
POST2*Late	-0.310*	-0.378**	-0.415*	-0.187
	(0.159)	(0.162)	(0.211)	(0.167)
Observations	3643	3643	3643	2383

Panel D: Profit Margin

	(1)	(2)	(3)	(4)
POST2*Early	0.152*	0.153*	0.145*	0.155*
	(0.087)	(0.087)	(0.085)	(0.089)
POST2*Late	0.110	0.113	0.105	0.113
	(0.151)	(0.151)	(0.150)	(0.151)
Observations	3543	3543	3543	2318
# Privatized Firms	10	10	10	10
Specification	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes

Notes: ICI's Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit margin effects of privatization in the long-run compared to the counterfactual case that the firm was never included in the privatization program. Alternative specification is employed (equation 6). All columns include firm and year fixed effects. The firms are separated into two cohorts based on the date of sale. Early takes on the value of 1 for the firms that are sold before 2005, and 0 otherwise. Late takes on the value of 1 for the firms that are sold in or after 2005. Standard errors, clustered at firm-level, are in the parentheses.
$* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

Table 6: Total Effects of the Privatization; by Size

Panel A: Log Employment

	(1)	(2)	(3)	(4)
POST2*Small	-0.859***	-0.878***	-0.958***	-0.809***
	(0.139)	(0.140)	(0.113)	(0.143)
POST2*Large	-1.275***	-1.297***	-1.372***	-1.205***
	(0.351)	(0.351)	(0.300)	(0.358)
Observations	3522	3522	3522	2318

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)
POST2*Small	0.725***	0.701***	0.670***	0.778***
	(0.253)	(0.252)	(0.255)	(0.267)
POST2*Large	1.239***	1.204***	1.331***	1.272***
	(0.348)	(0.351)	(0.388)	(0.349)
Observations	3522	3522	3522	2318

Panel C: Log Sales

	(1)	(2)	(3)	(4)
POST2*Small	-0.115	-0.157	-0.267	-0.006
	(0.156)	(0.156)	(0.200)	(0.169)
POST2*Large	-0.056	-0.114	-0.071	0.048
	(0.137)	(0.145)	(0.163)	(0.139)
Observations	3643	3643	3643	2383

Panel D: Profit Margin

	(1)	(2)	(3)	(4)
POST2*Small	0.148**	0.150**	0.142*	0.150**
	(0.073)	(0.073)	(0.079)	(0.074)
POST2*Large	0.148	0.150	0.145	0.154
	(0.143)	(0.143)	(0.136)	(0.144)
Observations	3543	3543	3543	2318
# Privatized Firms	10	10	10	10
Specification	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes

Notes: ICI's Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit margin effects of privatization in the long-run compared to the counterfactual case that the firm was never included in the privatization program. Alternative specification is employed (equation 6). All columns include firm and year fixed effects. The firms are separated into two groups based on the pre-sale employment (or real sales) averages. Standard errors, clustered at firm-level, are in the parentheses.
$* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

Table 7: Total Effects of the Privatization; by Industry

Panel A: Log Employment

	(1)	(2)	(3)	(4)
POST2*Chemicals	-1.386***	-1.406***	-1.391***	-1.324***
	(0.254)	(0.254)	(0.258)	(0.256)
POST2*Basic Metal	-0.675***	-0.694***	-0.881***	-0.619***
	(0.102)	(0.104)	(0.133)	(0.108)
Observations	3522	3522	3522	2318

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)
POST2*Chemicals	1.314***	1.283***	1.414***	1.364***
	(0.262)	(0.264)	(0.304)	(0.258)
POST2*Basic Metal	0.581***	0.555***	0.496**	0.618***
	(0.190)	(0.189)	(0.193)	(0.199)
Observations	3522	3522	3522	2318

Panel C: Log Sales

	(1)	(2)	(3)	(4)
POST2*Chemicals	-0.065	-0.118	0.003	0.050
	(0.135)	(0.142)	(0.171)	(0.141)
POST2*Basic Metal	-0.101	-0.147	-0.380**	-0.006
	(0.138)	(0.136)	(0.161)	(0.148)
Observations	3643	3643	3643	2383

Panel D: Profit Margin

	(1)	(2)	(3)	(4)
POST2*Chemicals	0.057	0.059	0.062	0.060
	(0.055)	(0.054)	(0.052)	(0.055)
POST2*Basic Metal	0.243*	0.245*	0.227*	0.247*
	(0.129)	(0.129)	(0.134)	(0.131)
Observations	3543	3543	3543	2318
# Privatized Firms	10	10	10	10
Specification	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes

Notes: ICI's Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit margin effects of privatization in the long-run compared to the counterfactual case that the firm was never included in the privatization program. Alternative specification is employed (equation 6). All columns include firm and year fixed effects. The firms are separated into two groups based on the industries. Standard errors, clustered at firm-level, are in the parentheses.
$* p < 0.10, ** p < 0.05, *** p < 0.01$

Table 8: Overlooking Pre-sale Restructuring and Few Observations Before the Sale

Panel A: Log Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized	-0.726***	-0.740***	-0.780***	-0.703***	-0.599***	-0.557***	-0.584***	-0.525***
	(0.220)	(0.220)	(0.208)	(0.223)	(0.161)	(0.137)	(0.137)	(0.139)
Observations	3434	3434	3434	2230	3498	3494	3494	2290

Panel B: Log Sales per Employee

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized	0.960***	0.945***	0.863***	1.011***	0.781***	0.764***	0.690***	0.819***
	(0.207)	(0.207)	(0.237)	(0.212)	(0.134)	(0.134)	(0.151)	(0.139)
Observations	3434	3434	3434	2230	3498	3494	3494	2290

Panel C: Log Sales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized	0.238**	0.207**	0.093	0.312***	0.233***	0.203***	0.105	0.290***
	(0.100)	(0.099)	(0.101)	(0.107)	(0.063)	(0.063)	(0.067)	(0.070)
Observations	3557	3557	3557	2297	3618	3618	3618	2358

Panel D: Profit Margin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Privatized	0.193**	0.194**	0.199**	0.192**	0.183**	0.184**	0.182**	0.183**
	(0.093)	(0.093)	(0.096)	(0.092)	(0.084)	(0.084)	(0.086)	(0.084)
Observations	3456	3456	3456	2231	3514	3514	3514	2289
# Privatized Firms	6	6	6	6	10	10	10	10
Industry-Specific Trends	No	Yes	No	No	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes	No	No	No	Yes

Notes: ICI's 1993-2015 Top 500 Manufacturing Firms database is used. Panels A, B, C and D report firm-level log employment, log real sales per employee, log real sales, and profit margin effects of privatization. Pre-PA period is dropped entirely. Equation (7) is employed. In addition to the ones indicated at the bottom of the table, each regression includes year and firm fixed effects. The variable of interest is "Privatized", a binary variable, where 1 indicates that the firm is sold to private agents. The first four columns omit privatized firms whose assets are transferred to PA after 1993 and the last four columns include all firms in the sample. Standard errors, clustered at firm-level, are in the parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

Table 9: Total Effects of the Privatization; Value-added per Sales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST1[0,3]	0.062	0.075	0.060	0.063	0.099	0.114	0.094	0.101
	(0.069)	(0.068)	(0.073)	(0.071)	(0.074)	(0.073)	(0.075)	(0.076)
POST2[4,8]	0.055	0.076	0.046	0.059	0.066	0.089	0.060	0.068
	(0.057)	(0.054)	(0.061)	(0.062)	(0.069)	(0.066)	(0.069)	(0.074)
Observations	3450	3450	3450	2225	3543	3543	3543	2318
# Privatized Firms	6	6	6	6	10	10	10	10
Specification	PA excl.	PA excl.	PA excl.	PA excl.	PA trends	PA trends	PA trends	PA trends
Industry-Specific Trends	No	Yes	No	No	No	Yes	No	No
Industry-Year Effects	No	No	Yes	No	No	No	Yes	No
Same Industry Dropped	No	No	No	Yes	No	No	No	Yes

Notes: ICI's 1993-2015 Top 500 Manufacturing Firms database is used. Table reports value-added per sales effects of privatization in the medium- and long-run compared to the counterfactual case that the firm was never included in the privatization program. First four columns drop PA period from the sample (equation (2)). The last four columns employ alternative specification (equation (3)). All columns include firm and year fixed effects. Standard errors, clustered at firm-level, are in the parentheses.

$* p < 0.10$, $** p < 0.05$, $*** p < 0.01$