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The Productivity Effects of Privatization in Ukraine: Estimates from Comprehensive Manufacturing Firm Panel Data, 1989-2005

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Abstract

This paper estimates the effect of domestic and foreign privatization on multifactor productivity (MFP) using long panel data for nearly the universe of initially state-owned manufacturing firms in Ukraine. The longitudinal dimension of the data is used to measure and control for pre-privatization selection bias and to estimate long-run impacts. The data imply steadily increasing MFP as a result of domestic privatization, reaching about 25 percent relative to state-owned firms after six years. Until recently, Ukraine has had relatively few cases of privatization to foreign investors, and estimates of the MFP impact are more sensitive to controls for selection bias, but the results suggest foreign privatization produces a productivity advantage of about 40 percent in 2004–2005.

1. Introduction

This paper estimates the effects of privatization on multifactor productivity of manufacturing firms in Ukraine, updating the analysis of Brown et al. (2006). While the original analysis relied on data starting in 1989 and running only through 2002, this paper adds three recent years: 2003–2005. Because many firms were privatized in the late 1990s, and indeed even in the early 2000s, the extra years provide a longer window to assess any privatization effects. In addition, the original paper was forced to rely on crude indicators of ownership, particularly for foreign investor participation, while this paper uses greatly improved data on shareholdings by types of investors, including foreigners.

The paper estimates the productivity-privatization relationship within industry-year cells to control for aggregate and sector-specific shocks as well as mismeasurement of deflators across industries. The analysis permits differences in estimated production functions across industries to avoid biases associated with technology mismeasurement, and it takes into account selection bias associated not only with fixed differences among firms but also with differing trend productivity growth rates. Either of these factors—level or trend differences— may affect the probability of privatization and whether the new owners are domestic or foreign investors. The availability of several years of pre-privatization data is also useful for evaluating anticipatory effects and for comparing possible selection bias across specifications. The several years of post-privatization data help shed light on how quickly any benefits from privatization are realized and whether they are sustained or tend to diminish over time. The paper also distinguishes between the effects of different types of new private ownership structures— domestic versus foreign— although the relatively small sample size for the latter limits the strength of the inferences that can be drawn.

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Section 2 describes the data and evolution of ownership. Section 3 describes the estimation procedures, and Section 4 presents results. Conclusions are summarized in Section 5.

2. Data

The main data source is the national statistical office (*Derzhkomstat* in Ukrainian), which supplies annual industrial enterprise registries for 1989 and 1992–1998 and universal firm data for 1999–2005. These data are supplemented by databases from the State Property Committee and the State Securities Commission. The industrial registries are supposed to include all industrial firms with more than 100 employees plus those more than 25-percent owned by the state or by legal entities themselves included in the registry. In fact, the practice seems to be that once firms enter the registries they continue to report even if the original conditions for inclusion are no longer satisfied. The data may therefore be taken as corresponding to the "old" sector of firms (and their successors) inherited from the Soviet system. Certainly with respect to this set of firms, the databases are quite comprehensive. At the beginning of the transition process in 1992, the firms in the industrial registry accounted for 94 percent of officially reported total industrial employment.

The sample is restricted to manufacturing (NACE 15-36). Recycling (NACE 37) is excluded because of noncomparability with *OKONKh*. Only firms that are majority state-owned at first observation are included, while all non-profit organizations are excluded. Firm-years are retained in the sample only when they contain complete information (nonmissing values for ownership, employment, output, and capital).

The total number of firms ever in the regression sample is 7,050. On average, each firm is observed about 9 years, and the total number of firm-year observations is 62,899.

Summary statistics and definitions for the basic variables used to estimate productivity—

output, capital, and employment—are provided for selected years in Table 1. Data on material costs are unfortunately not available for all years in the data; the specification of production technologies therefore assumes the only inputs are capital and labor. Reflecting aggregate statistics, the data imply declining average employment, capital, and output, except for the most recent period since 1999. These patterns for capital and output may reflect imperfect deflators that fail to distinguish true price and quantity changes; therefore, the econometric analysis handles this problem by controlling for a full set of industry-year interactions.

These data have been extensively cleaned to remove inconsistencies and to improve missing longitudinal linkages due to change of firm identifier from one year to the next (associated with reorganizations and changes of legal form, for instance). The inconsistencies were evaluated using information from multiple sources (including not only separate data providers, but also previous year information available in the registries). The longitudinal linkages were improved using all available information, including industry, region, size, multiple sources for the same financial variables, and some exact linking variables (e.g., firm names and addresses) to match firms that exited the data in a given year with those that entered in the following year. Although this issue has not received much attention in previous research, it is clear that accurate and complete links are crucial to any identification strategy such as ours that requires observations both before and after privatization. For example, if firms that change their legal form are systematically different—engaging in greater restructuring, for example—then it is critical that they not be excluded from the analysis.

Turning to the ownership variables, a firm is defined as privately owned if a strict majority of shares is held in private hands. The private ownership codes are constructed from State Property Committee private share information, while the foreign codes are constructed

from a State Stock Market and Securities Commission database on shareholdings and trading dates for shareholders with at least ten percent stakes in joint stock companies.

The timing of the ownership variables has a bearing on the interpretation of the estimation results. Ownership is measured as of the reporting date, the beginning of the calendar year. The privatization year is thus defined as the year in which the ownership variable changes from state at the beginning of t-1 to private in t. The actual transfer of shares could take place anytime during this year, and the transfer of effective control is even more ambiguous: for instance, it could take place even before the shares are legally conveyed, if it is quite clear who the new owners will be, and it could take place significantly afterwards, if for example it takes time to call a general shareholders' meeting to replace the board and management. These ambiguities imply that the analysis should not be confined to comparisons of the immediate period just before and after the privatization year but instead take a longer perspective on both pre- and post-privatization performance. Our data contain substantial numbers of firms with several observations before and after privatization, facilitating such an analysis.[1]

Table 2 contains the mean values of the domestic and foreign ownership dummy variables, by year. Ukraine's earliest privatization experiences have some similarities to the "spontaneous" period in Hungary, as the central planning system dissolved at the end of the 1980s and decision-making power devolved to managers and work collectives (Frydman et al., 1993). The provisions for leasing enterprise assets (with eventual buyout) represented the first organized transactions in 1990–1992, but the big impetus for most industrial enterprise

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[1] Of the total regression sample of 7,050 firms, 4,534 are privatized to domestic owners, 157 are privatized to foreign investors, and the rest are always state-owned during the observation period. The mean number of observation years for domestic-privatized firms is 5.5 prior to their privatization and 5.6 subsequently; for foreign-privatized firms, the mean numbers of observations are 9.2 pre- and 2.7 post-privatization, consistent with the later privatization to foreign investors shown in the table.

privatization was the mass privatization, somewhat similar to Russia's, but at a delayed and slower pace, and the initial design provided even greater advantages to insiders acquiring shares in their companies (Frydman et al., 1993). The initial consequence of privatization was large-scale ownership by managers and workers, some blockholding by domestic entities, and continued state ownership. Subsequently, blocks formed and foreigners made partial inroads.

This approach to privatization method may affect the impact of the policy on firm productivity. Case-by-case sales of large blocks of shares is usually considered the most effective method, and productivity effects of new foreign owners seem likely to be higher than those of domestic investors, as a result of better management skills and access to finance and new technologies. However, foreigners may face worse obstacles when layoff decisions are highly politicized and when local networks and knowledge of local conditions are nontransparent. Transfers to employees and mass privatization, the more common methods in Ukraine, face disadvantages. Employees may lack the necessary skills, capital, access to markets, and technologies necessary to turn their firms around, and corporate governance by employees may function particularly poorly when the firm requires difficult restructuring choices involving disparate distributional impacts within the firm.[2] Mass and voucher privatization programs were intended to increase the speed of privatization by overcoming the problems of insufficient demand that are due to low domestic savings and reluctance of foreign investors, and if possible to jump-start domestic equity markets with a rapid release of shares. But when combined with strong preferences for employees to use their vouchers in acquiring shares in their employer, as in Ukraine, with highly dispersed ownership structures, the results may be

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[2] Frydman and Rapaczynski (1994) and Lipton and Sachs (1990), for instance, argue against privatization to employees, while Ellerman (1993), Stiglitz (1999), and Weitzman (1993) argue in favor. Earle and Estrin (1996) discuss the advantages and disadvantages of worker and manager ownership in the transition setting.

unmonitored managerial control and—according to some—unfettered asset-stripping.[3]

The effects of different privatization methods may also manifest themselves differently over time. For example, if concentrated private ownership is necessary to achieve restructuring, then one would expect to see more immediate effects from sales to concentrated outsiders than from voucher or insider privatization, where it takes time for concentrated blocks to form. The subsequent dynamics of the privatization effect may reflect secondary trading leading to increased concentration, however, and firms with high initial levels of inside and dispersed outside ownership may catch up so that the final impact after several years is not very different across ownership types. The paper examines these possibilities empirically below.

3. Econometric Framework

This paper follows the broader literature on the effects of privatization in estimating reduced form equations for firm performance, while trying to account for potential problems of unobserved heterogeneity and simultaneity bias (Djankov and Murrell, 2002; Megginson and Netter, 2001). Brown et al. (2006) report that results are very similar for a wide variety of production function specifications, so this paper limits attention to a simple Cobb-Douglas specification. Also following Brown et al. (2006), technology parameters are permitted to vary across industries, a full set of industry-year effects is included to control for time-varying industry characteristics and shocks that may be correlated with both ownership and productivity, and potential selection bias is addressed using the longitudinal structure of the data to estimate alternative models based on different identifying assumptions.

The simplest model assumes no selection into ownership type (private versus state in one

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[3] See, e.g., Stiglitz (1999); Black, Kraakman, and Tarassova (2000); Kornai (2000); and Roland (2001). Proponents of such programs include Lipton and Sachs (1990), Blanchard et al. (1993), Frydman and Rapaczynski (1994), and Boycko, Shleifer, and Vishny (1994, 1995).

specification, domestic private versus foreign versus state in the other) based on either the level or growth of productivity. This model is estimated by applying ordinary least squares (OLS) to the production function augmented with ownership variables. The second model assumes no selection based on productivity growth, adding firm fixed effects (FE) to the equation. The third model permits each firm to have its own intrinsic growth rate by adding not only FE but also firm-specific time trends (FT); the identifying assumption is that the data-generating process for ownership is independent of productivity once all the other variables, including the FE and FT, are taken into account. These alternative models are evaluated based on the extent to which they generate similar pre-privatization productivity behavior in firms of different ownership types.

The estimating equation takes the following general form:

$$y_{ijt} = \mathbf{f_j}(k_{ijt}, l_{ijt}) + \mathbf{D_{jt}}\boldsymbol{\gamma_{jt}} + \mathbf{w_t}\boldsymbol{\alpha_i} + \boldsymbol{\theta_{it}}\boldsymbol{\delta} + u_{ijt}, \tag{1}$$

where i indexes firms from 1 to N, j indexes industries from 1 to J, and t indexes time periods (years) from 1989 to 2005. y_{ijt} is ln(output), $\mathbf{f_j}$ is a 1 x J vector of industry-specific Cobb-Douglas production functions, k_{ijt} is ln(capital stock), l_{ijt} is ln(employment), $\mathbf{D_{jt}}$ is a vector of industry-year interaction dummies, $\boldsymbol{\gamma_{jt}}$ is the associated vector of coefficients, and u_{it} is an idiosyncratic error. The specifications of the other terms in the equation vary across specifications: $\mathbf{w_t}$ is a vector of aggregate time variables, $\boldsymbol{\alpha_i}$ is the vector of associated individual-specific slopes, $\boldsymbol{\theta_{it}}$ is the vector of ownership measures, and $\boldsymbol{\delta}$ are the ownership effects of interest in this paper.

The inclusion of a full set of unrestricted industry-year interactions, the $\mathbf{D_{jt}}$, permits different productivity levels for each industry in each year, controlling for any year- and industry-varying factors, such as price changes not captured by deflators, unmeasured factors of

production, and quality differences that are year-and industry-specific. [4] The methods of controlling for selection bias are embodied in the specification of $\mathbf{w_t}$. The OLS model assumes $\mathbf{w_t} \equiv 0$. The FE model specifies $\mathbf{w_t} \equiv 1$, so that $\mathbf{\alpha_i} \equiv \alpha_i$ is the unobserved effect. Any fixed differences in productivity across firms are removed in the FE model. The FE&FT model with firm-specific trends specifies $\mathbf{w_t} \equiv (1, t)$, so that $\mathbf{\alpha_i} \equiv (\alpha_{1i}, \alpha_{2i})$, where α_{1i} is a fixed unobserved effect and α_{2i} is the random trend for firm i. In practice, the FE&FT model is estimated in two steps, the first detrending all variables for each firm separately and the second estimating the model on the detrended data. Standard errors in the second step are adjusted for the loss of degrees of freedom associated with detrending.

The ownership variables $\mathbf{\theta_{it}}$ are specified to take into account both the nationality of new private owners in majority private companies and the dynamics of the privatization effect before and after privatization takes place. The motivation for distinguishing foreign from domestic ownership is clearly that they may have different consequences for firm performance (a common finding in the literature; see Brown et al., 2006), while that for studying dynamics is threefold: First, estimating pre-privatization dynamics provides information on whether firms were already improving productivity prior to the ownership change. Such behavior could be the result of some dynamic selection bias that the model does not account for, and we use the estimated effects of privatization in the period of 4 to 2 years before the privatization year to evaluate the magnitude of selection bias. Second, estimating dynamics just before the privatization year permits an assessment of changes in incentives in anticipation of privatization; such anticipatory effects could be positive if they reflect career concerns of managers hoping either to show new owners their skills or to acquire their companies themselves, or they could be negative if the

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[4] $J = 10$ industries, chosen based on the trade-off between disaggregation and number of observations.

expectation of post-privatization loss of control—or of job—leads to increased asset-stripping (Aghion, Blanchard, and Burgess, 1994; Roland and Sekkat, 2000). Privatization may be such a disruptive process that any firm suffers a short-run decline in productivity.[5] Finally, examining post-privatization dynamics is useful for ascertaining the speed with which any estimated effect occurs: is the effect immediate or gradual, becoming significant only with a long lag? Does it tend to be a single jump in productivity, or is it more sustained, with a series of increases over several years? Is it only temporary, as state firms tend to catch up, or does the effect appear to be permanent?

The dynamic specification is implemented by interacting dummy variables for the years before and after privatization with domestic and foreign indicators. Designating τ as the index of event time (the number of years since privatization) so that $\tau < 0$ in the pre-privatization years, $\tau = 0$ in the year in which ownership change occurs, and $\tau > 0$ in the post-privatization years, then $\boldsymbol{\theta_{it}} \equiv (\mathbf{Domestic_{it\tau}}, \mathbf{Foreign_{it\tau}})$ and $\boldsymbol{\delta} \equiv (\boldsymbol{\delta_{\tau d}}, \boldsymbol{\delta_{\tau f}})$. Privatization is assumed to have no effect until five years before the ownership change appears in our data, so that $\delta_{\tau d} = \delta_{\tau f} = 0$ for $\tau \leq -5$. We permit the effects to vary by year through $\tau = 7$ for domestic and $\tau = 4$ for foreign, based on the small sample sizes available for estimating separate effects for firms privatized many years before; subsequent years are pooled together. The estimated vector of parameters $\boldsymbol{\delta_{\tau d}}$ corresponds to the vector of variables $\mathbf{Domestic_{it\tau}}$ for $\tau = $ -4, -3…0…7+, where 7+ represents event-time at least 7 years after privatization to domestic investors. Similarly, the model estimates $\boldsymbol{\delta_{\tau f}}$ corresponding to $\mathbf{Foreign_{it\tau}}$ for $\tau = $ -4, -3…0…4+, where 4+ represents event-time at least 5 years after privatization to foreign investors.

A second specification of the ownership variables permits the effects to vary in calendar

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[5] The dynamics just before the privatization year may show effects analogous to "Ashenfelter's dip" in training evaluations—where workers about to enroll in a training program experience a drop in earnings.

time rather than event time.   In this case, **Domestic$_{it\tau}$** represents indicators distinguishing domestic ownership effects over years τ = 1997, 1998...2005.   Because of the much smaller sample of foreign ownership in earlier years, **Foreign$_{it\tau}$** represents indicators distinguishing foreign effects over years τ = 2000, 2001...2005.

4. Results

Table 3 contains regression results for the event-time model described above, with the coefficients plotted in Figures 1a (for domestic private ownership) and 1b (for foreign ownership). The results for domestic privatization show a declining relative trend prior to the privatization year ("year 0") that is particularly pronounced in the FE specification but considerably lower in OLS and still more so in FE&FT. Despite these differences, neither the FE nor the FE&FT specifications show much change immediately before the privatization year, implying that these may not be anticipatory effects, and all three specifications show a very similar evolution from the privatization year onwards. Taking that year as the base, the specifications all imply an immediate positive but small effect of privatization in the first year of about 0.02, followed by accelerating increases for several years and then smaller increases after about –five to six years. The cumulative effect for seven and more years after privatization is almost exactly the same in all three specifications at 0.25.

The dynamics of the estimated foreign effect are rather different, implying positive selection of firms into this ownership type, which is quite large under OLS but attenuated by FE and still more so by FE&FT. The FE&FT specification shows a significant jump in the privatization year, which could result from anticipatory effects, or possibly from the ambiguity of measuring precise privatization date (aggravated by a small sample). Relative to the privatization year, the estimates are much less consistent than the domestic, the OLS and FE

specifications implying large cumulative effects 4 years and more after privatization of about 0.50, while the FE&FT implies only about 0.10. On the other hand, if the year before privatization is taken as the base, then the FE&FT effect is about 0.25. Because the time period available for studying the foreign-owned firms is shorter, it would not be sensible to disaggregate the effects further out. The small number of firms privatized to foreigners (157, as discussed above) also implies caution in interpreting these results. Yet the data are quite consistent in implying that both types of privatization have substantial positive effects on productivity in Ukraine.

Estimation results concerning the analysis of the variation in estimated privatization effects by calendar year are presented in Table 4, with coefficients plotted in Figures 2a and 2b. As discussed previously, the very small foreign samples in the early years preclude estimation of foreign effects before 2000, and even afterwards these estimates are likely to be noisy: note the much larger standard errors on the foreign than on the domestic coefficients in all years. The domestic effects show a steadily rising pattern under both FE and FE&FT, particularly for the latter, so that the estimated domestic effect in 2005 is 0.394 for FE&FT and 0.223 for FE. The estimated foreign effects are more wobbly but are fairly consistent in 2005, implying a 0.50 effect for that year.

5. Conclusion

The results in this paper provide evidence of a strong contribution of privatization to aggregate manufacturing productivity growth in Ukraine during the transition period. While the possibility of selection bias in estimating the effects of privatization is an important concern in privatization studies, this paper has exploited unusually extensive data that comprehensively cover manufacturing firms for a long period of time before and after privatization and that

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include the state-owned comparison group. The paper employs panel data techniques that are commonly used in the evaluation of labor market programs and that permit evaluations of some important forms of potential selection bias.

The estimation results imply a substantial positive effect of privatization on productivity in enterprises privatized to domestic owners, which comprise well over 90 percent of all privatizations. While results differ in some details across specifications, in particular for what they imply about behavior during the pre-privatization period, they are remarkably consistent in implying a steadily widening advantage of privatized firms relative to state-owned enterprises. By six to seven years after privatization, the productivity gap has widened to about 25 percent. The foreign results are based on a much smaller sample, which creates sampling variability in the estimates, but they too show clear evidence of positive, statistically significant effects. The point estimates vary depending on the base period and the precise specification, but for recent years (2004 and 2005), the estimated foreign effects lie between 40 and 60 percent.

Many questions and criticisms were raised about the nature of the privatization policies in Ukraine, especially in the early to mid-1990s before there was any significant foreign investment. The immediate results of these policies were dispersed ownership structures dominated by insiders (both managers and workers), and few observers expected that well-functioning corporate governance leading to productive restructuring would be the consequence. Indeed, the results in this paper suggest that improved productivity in privatized firms did emerge more slowly than in some well-documented Central European cases, such as Hungary and Romania (Brown et al., 2006). Although it cannot be demonstrated from available data, the insider-owners may have been slow to learn about effective ways to restructure, and ownership concentration may have taken time to develop. Yet what is clear from the data is that the

privatized firms in Ukraine have steadily widened their productivity gap over state-owned enterprises, so that after several years the productivity effect of privatization in Ukraine is actually quite similar to those of its Central European counterparts. These results provide further, updated evidence of the value of privatization in enhancing productivity in this particular economy.

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Table 1: Summary Statistics

	1989	1999	2005
Output	24,575	6,568	8,952
	(73,542)	(35,430)	(55,180)
Employment	881	427	325
	(1,993)	(1,249)	(1,838)
Capital	17,456	13,346	18,985
	(74,105)	(98,192)	(161,409)
N	3,216	4,330	4,247

Note: These are means by year for each variable, with standard deviations in parentheses. Output equals value of gross output in thousands of 1989 rubles; capital equals average book value of fixed assets used in the main activity of the enterprise, adjusted for revaluations, and again in 1989 rubles; employment equals the average number of registered industrial production personnel, which includes non-production workers, but excludes "nonindustrial" employees who mainly provide employee benefits.

**Table 2: Evolution of Domestic Private and Foreign Ownership
in the Regression Sample (Proportions)**

	Domestic	Foreign
1989	0.000	0.000
1992	0.000	0.000
1993	0.000	0.000
1994	0.001	0.000
1995	0.110	0.001
1996	0.231	0.001
1997	0.354	0.002
1998	0.561	0.006
1999	0.646	0.006
2000	0.724	0.008
2001	0.739	0.008
2002	0.703	0.010
2003	0.720	0.017
2004	0.714	0.022
2005	0.598	0.024

Table 3: Estimated Dynamics of Privatization Effects Around Privatization Year

Years before/after Privatization	Domestic			Foreign		
	OLS	FE	FE&FT	OLS	FE	FE&FT
-4	-0.014 (0.021)	-0.108 (0.018)	-0.036 (0.015)	0.495 (0.109)	0.271 (0.080)	0.150 (0.079)
-3	-0.010 (0.022)	-0.106 (0.023)	-0.029 (0.022)	0.540 (0.105)	0.321 (0.089)	0.175 (0.098)
-2	-0.024 (0.023)	-0.109 (0.027)	-0.022 (0.028)	0.550 (0.102)	0.314 (0.095)	0.180 (0.123)
-1	-0.058 (0.026)	-0.139 (0.032)	-0.036 (0.036)	0.466 (0.112)	0.315 (0.105)	0.203 (0.149)
0	-0.087 (0.029)	-0.154 (0.037)	-0.025 (0.044)	0.547 (0.115)	0.417 (0.113)	0.345 (0.172)
1	-0.078 (0.032)	-0.140 (0.042)	-0.000 (0.053)	0.524 (0.107)	0.463 (0.116)	0.406 (0.195)
2	-0.036 (0.035)	-0.111 (0.046)	0.042 (0.061)	0.701 (0.111)	0.590 (0.119)	0.471 (0.220)
3	0.019 (0.037)	-0.063 (0.050)	0.095 (0.071)	0.671 (0.109)	0.569 (0.123)	0.414 (0.234)
4	0.096 (0.040)	0.001 (0.053)	0.156 (0.079)	1.042 (0.246)	0.921 (0.253)	0.440 (0.258)
5	0.127 (0.043)	0.038 (0.057)	0.206 (0.088)			
6	0.152 (0.046)	0.078 (0.060)	0.243 (0.095)			
7+	0.155 (0.053)	0.086 (0.066)	0.272 (0.104)			

Note: Standard errors are reported in parentheses. "4" is four and more years after privatization for the foreign effect. "7+" signifies seven and more years after privatization for the domestic effect. $R^2 = 0.767$ for OLS and within $R^2 = 0.662$ for FE and 0.369 for FE&FT. Observations = 62,899.

Table 4: Estimated Effects of Privatization by Calendar Year

Calendar Year	Domestic		Foreign	
	FE	FE&FT	FE	FE&FT
1995	0.007	-0.004		
	(0.034)	(0.027)		
1996	-0.023	-0.009		
	(0.028)	(0.024)		
1997	-0.007	-0.010		
	(0.025)	(0.023)		
1998	0.021	0.030		
	(0.026)	(0.024)		
1999	0.021	0.041		
	(0.032)	(0.030)		
2000	0.026	0.063	0.598	0.378
	(0.035)	(0.030)	(0.137)	(0.127)
2001	0.042	0.098	0.446	0.141
	(0.040)	(0.033)	(0.170)	(0.098)
2002	0.136	0.221	0.366	0.196
	(0.044)	(0.038)	(0.173)	(0.106)
2003	0.175	0.283	0.483	0.274
	(0.048)	(0.046)	(0.133)	(0.107)
2004	0.179	0.299	0.599	0.386
	(0.051)	(0.054)	(0.115)	(0.119)
2005	0.223	0.394	0.534	0.465
	(0.053)	(0.064)	(0.111)	(0.126)

Note: Standard errors are reported in parentheses. There are insufficient foreign privatizations prior to 2000 to obtain reliable estimates in those years. Within $R^2 = 0.660$ for FE and 0.369 for FE&FT. Observations = 62,899.
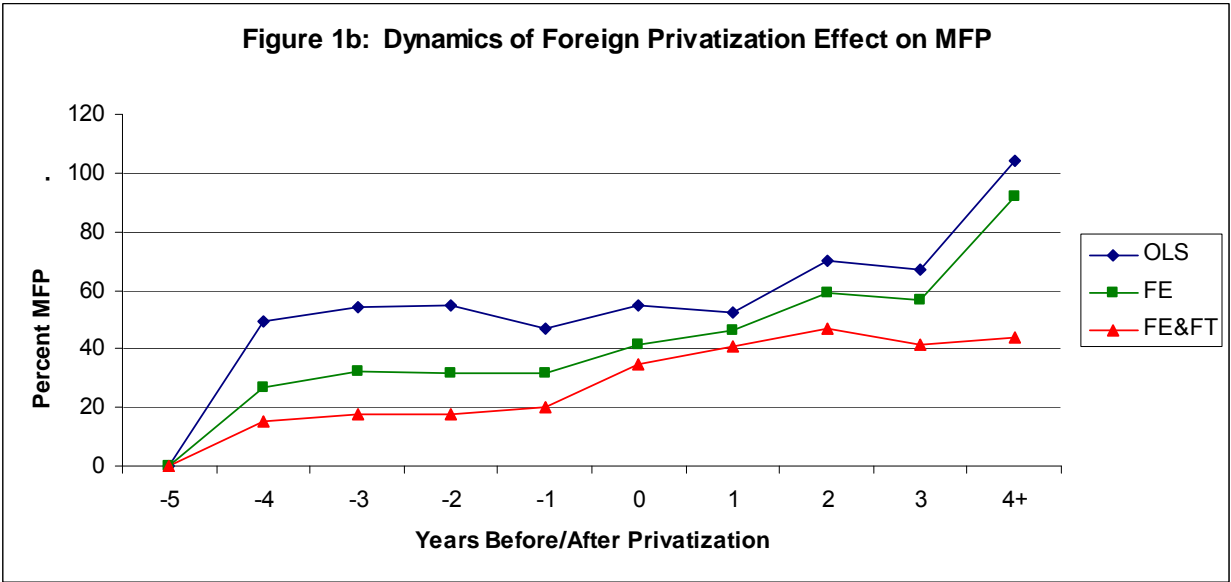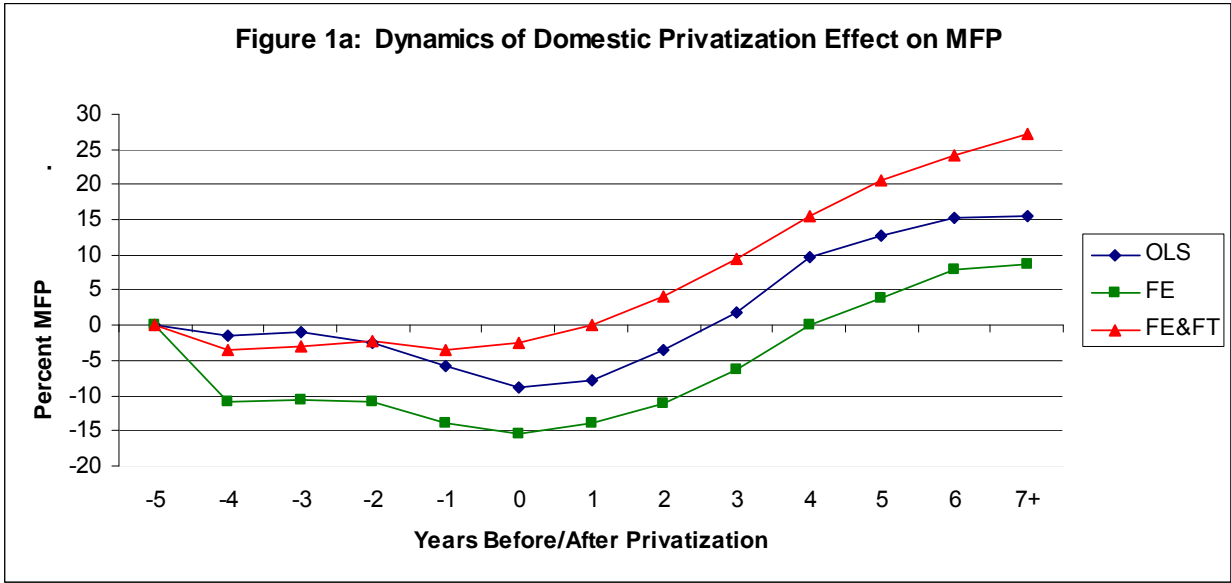
Figure 1a: Dynamics of Domestic Privatization Effect on MFP

Figure 1b: Dynamics of Foreign Privatization Effect on MFP
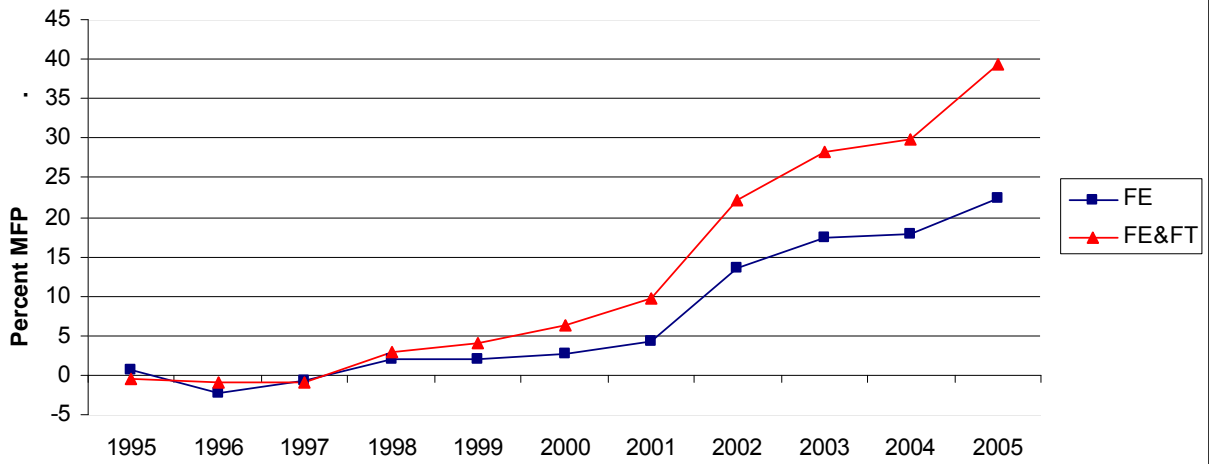
Figure 2a: Domestic Privatization Effects by Calendar Year

Figure 2b: Foreign Privatization Effects by Calendar Year