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Multinationals and the Shutdown of State-Owned Enterprises

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Abstract

MNEs impact shutdown of SOEs. The model incorporates productivity of SOEs and international trade costs. The privatization process is modeled as a second-price auction and permits strategic interaction between …rms in order to analyze the decision to shutdown SOEs. The model predicts that increasing productivity of SOEs and increasing international trade costs provide incentives for the MNEs to produce locally and this decreases the likelihood of SOEs shutdown.

The predictions of the model are tested using novel …rm-level privatization data from Central and Eastern Europe. Controlling for SOEs productivity, age, and size, the results show that SOEs acquired during privatization by MNEs have a significantly lower probability of shutdown as compared to SOEs acquired by domestic private …rms. The data also shows that higher levels of SOEs productivity are associated with lower probability of SOEs shutdown, both by MNEs and domestic private …rms.

This work adds to the emerging international trade literature on MNEs and the shutdown of …rms. While many of the theoretical arguments for MNE involvement in …rm shutdowns are inconclusive, this model provides arguments that MNEs have incentives for long commitments to sustain SOEs. Empirical …ndings from Central and Eastern Europe support the theoretical predictions of the model and contradict previous empirical studies conducted in developed and developing countries that have found evidence that MNEs ownership is positively associated with exit of local …rms[4].

[4]See Bernard and Jensen (2007), Görg and Strobl (2003), Van Beveren (2006) on studies done in developed countries. For evidence from developing countries see Bernard and Sjöholm (2003)

SOEs that were directly sold in the privatization process. A model incorporating international trade costs and productivity of SOEs is developed to provide theoretical predictions on the shutdown of SOEs. Privatization data from Central and Eastern Europe is then used to show that SOEs owned by MNEs have a lower probability of shutting down than SOEs acquired by domestic …rm. Transitional economies and SOEs have not been previously studied in this context. Evidence in this paper supports the notion that FDI has a positive e¤ect on SOEs.

This paper also expands the work on privatization. The interaction between privatizing …rms and foreign MNEs has received little attention as compared to the literature on privatization and performance of SOEs[5]. The literature on SOEs performance can be classi…ed into two categories. The …rst string of privatization literature compares pre- and post-privatization performance of SOEs. The second compares the performance of SOEs to privately owned …rms. A summary of these studies can be found in Megginson and Netter (2001). There are relatively few studies that look speci…cally at how post-privatization ownership of SOEs a¤ects the performance of SOEs. Studies that do compare performance of SOEs based on foreign or domestic ownership limit the domestic post-privatization ownership to management or non-managerial employees, i.e. SOEs are taken over by former management and employees from the government (Frydman et al. 1999). This paper contributes and expands this literature by examining SOEs shutdown probability as

[5] For one of the few studies that analyzes MNEs and privatization see Norbäck and Persson (2004).

a result of foreign ownership. Prior to privatization, the decision to shutdown SOEs

where z is the numeraire good and the u(Q) is quadratic[6]:

$$u(Q) = \quad Q \square \frac{Q^2}{2}: \tag{2}$$

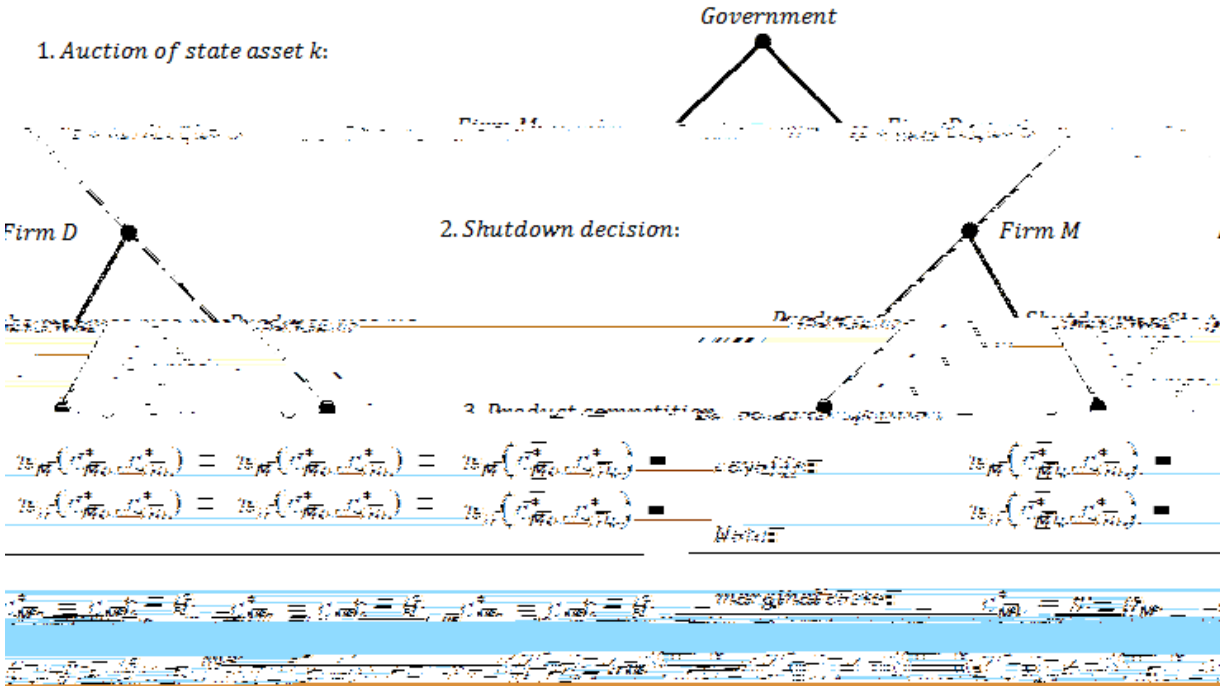

Figure 1: Three stage game

a …xed level. The maximization problem for each …rm is:

$$\max \quad = \quad \max[p(Q)q \quad \square \; c^* \; q \;] \tag{4}$$

$$\max \quad = \quad \max[p(Q)q \quad \square \; c^* \; q \;]$$

Where the Cournot equilibrium outputs supplied by each …rm are:

$$q \quad = \quad \frac{\square \; 2c^* \quad + c^*}{3} \tag{5}$$

$$q \quad = \quad \frac{\square \; 2c^* \quad + c^*}{3}$$

It can then easily be shown that the equilibrium pro…ts are:

$$(c^* \; ; c^* \;) \quad = \quad (q \quad)^2 \tag{6}$$

$$(c^* \; ; c^* \;) \quad = \quad (q \quad)^2$$

Using this method third stage pro…ts for each outcome are obtained.

In the second stage, the winning …rm will decide to either shutdown asset k or to use asset k for production in country H. After the auction, the winning …rm's decision to shutdown asset k will depend on the relative di¤erences between marginal costs and productivity levels at their own plant and at k s plant. For …rm M, the decision to shutdown or produce locally in H will also hinge on the level of existing trade costs between the two countries. The following proposition summarizes the

necessary condition in order for the winner to shutdown asset k:

Proposition 1 The foreign MNE will shutdown the SOE after acquisition i¤ (s □ c t) + > : The domestic …rm will shutdown the SOE after acquisition i¤ (s □ c) + > :

Proof: See the Appendix.

By acquiring asset k, …rm M carries out horizontal FDI where production of q is now performed locally in country H: According to Proposition 1, horizontal FDI will only be successful if the di¤erence between marginal costs at the two plants plus productivity at its own plant is lower than productivity established by M at k; i.e. (s □ c t) + > etd trotitutty 779(s)8(s)8(a)11(l)-1(l)6(i)7(s)8(h)38(o)-(t)3d77(i)7(-377(i)7(i

Figure 2: The decision to shutdown for each …rm displayed in the productivity space and of asset k: Other parameters are set as follows: = = 1; c = c = 0:2; = = 0:3; t = 1; and s = 0:2:

trade costs play an important role in the decision to shutdown asset k after acquisition takes place. Figure 2 simulates Proposition 1 in the space of productivities and : There are four di¤erent regions. First, when and are low, production with k will not be the preferred method to serve the market. Second, when and rise, both …rms will have incentives to produce using asset k. Trade costs impact the level of productivity at which …rm M is willing to produce with asset k. When trade costs go up from t = 1 to t = 1:3 …rm M will produce with lower :

Trade costs do not impact the level of productivity at which …rm D will produce with asset k. Firm D already possesses its own production plant in country H and it will only use asset k if it is more cost e¤ective then to use its own plant. By acquiring

asset k, …rm D captures market share in country H and also forces …rm M to export and incur trade costs.

In the …rst stage, the government will sell asset k through second-price sealed-bid auction where the highest bidder wins and pays a price equal to the second highest bid. In a second-price auction each bidder will bid their true valuation for asset k. If the bids are the same, then each …rm wins asset k with equal probability. Denote the valuation of each bidder by v ; where i = M; D : Also de…ne as the pro…t of …rm i when …rm i wins the auction and as the pro…t of …rm i when …rm j wins the auction. Valuation that each …rm has for asset k is then equal to v = □ :

Lemma 2 Let …rm i be the …rm with the highest valuation. The asset k is then acquired by …rm i; at price equal to …rm j s valuation of obtaining the state asset instead of …rm i; v :

Proof: See Appendix.

3.1 Equilibrium

Solving the three stage game via backward induction, the equilibrium buyer, price, and shutdown decision are obtained. In the third stage, equilibrium pro…ts for each …rm under each outcome were obtained. In the second stage, the necessary conditions for shutdown were derived. In the …rst stage, asset k was auctioned o¤ to the highest bidder where it was shown that if v > v ; then …rm i wins asset k and pays a price equal to v : Rewriting v □ v > 0; and de…ning * ; * ; and $\left(\frac{}{}\right)^{*}$ as the level of

k s productivity under D s acquisition, under M s acquisition, and the ratio of D s productivity to M s productivity, respectively, that makes v □v = 0; the equilibrium can be summarized by:

Proposition 3 The equilibrium buyer, the equilibrium price, and the equilibrium shutdown decision are as follows:

1. If (s □ c t) + > and (s □ c) + > ; then …rm M and D obtain asset k with equal probability at price v = v = 0 and asset k is shutdown after the auction.

2. If (s □ c t) + > and (s □ c) + < ; then for > * …rm D wins asset k at price v and produces with it; and for < * …rm M acquires asset k at a price v and shuts it down.

3. If (s □ c t) + < and (s □ c) + > ; then for > * …rm M wins asset k at price v and produces with it; and for < * …rm D acquires asset k at price v and shuts it down.

4. If (s□c t) + < and (s□c) + < ; then for $\left(\frac{}{}\right) < \left(\frac{}{}\right)^{*}$ …rm M wins asset k at a price of v and produces with it; and for $\left(\frac{}{}\right) > \left(\frac{}{}\right)^{*}$ …rm D acquires asset k at a price v and produces with it.

Proof: See the Appendix.

The equilibrium regions of Proposition 3 are simulated in the space of and in Figure 3. When productivity levels of asset k after acquisition are below * and

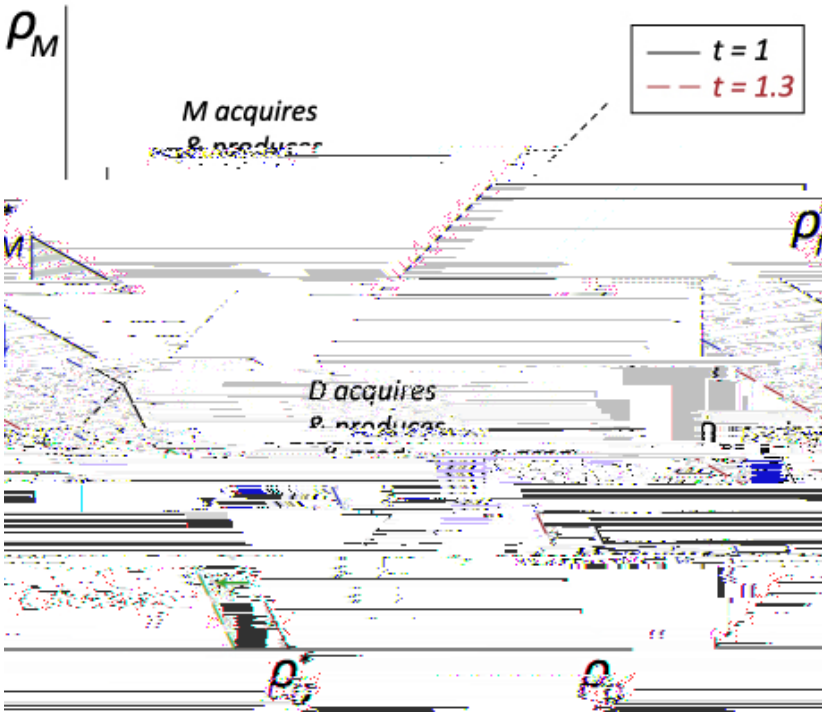

Figure 3: The equilibrium acquirer of asset k and the the shutdown decision displayed in the productivity space and of asset k: Other parameters are set as follows: = = 1; c = c = 0:2; = = 0:3; t = 1; and s = 0:2:

* ; neither …rm will want to produce with asset k. It is more cost-e¤ective for …rm M to export and for …rm D to use its own plant. If productivity of k increases only under …rm D; then D will want to produce and M will want to shutdown. Similarly, if productivity of k increases only under M; then M will want to produce and D will want to shutdown. Finally, if productivity of k increases under acquisition by both …rms, then both …rms will want to acquire and produce with k.

Figure 3 displays the four regions and highlights the importance of trade costs on the equilibrium buyer. Higher trade costs provide …rm M with greater incentives to acquire asset k. As trade costs increase from t = 1 to t = 1:3; …rm M assigns greater value to asset k and acquires asset k for lower levels of : Figure 2 demonstrated that trade costs do not in‡uence D s decision to shutdown, however D s decision to acquire asset k is in‡uenced by higher trade costs. Figure 3 shows that when trade costs rise, …rm D will value asset k more and will be willing to acquire asset k for lower levels of : Firm D s increased valuation for asset k as a result of higher trade costs is caused by an indirect competition e¤ect. As trade costs increase, it is advantageous for D to acquire asset k in order to force M to export with higher trade costs, which leads to lower competition between …rms in the third stage[7].

The equilibrium presents testable hypotheses regarding the shutdown of asset k. First, productivity of asset k after acquisition determines whether or not asset k will

[7] It is assumed in the model that trade costs never reach the level that would prevent M from exporting. However, if trade costs were to pass this level, then M would not be able to export, and if D acquired asset k; then D would be a monopoly in market H:

be used for production. Low levels of asset k s productivity will lead to shutdown and high levels will lead to production. Furthermore, although productivity of asset k prior to acquisition is not modeled, it can be postulated that it is also very important as it should highly in‡uence productivity levels of k after acquisition. Therefore, as productivity of k rises, the likelihood of k s shutdown should decrease.

Trade costs also play a key factor in the shutdown of asset k: As trade costs rise between countries, foreign MNEs have greater incentives to keep local production and therefore, are less likely to shutdown asset k. As shown in Figure 3, domestic …rms are also less likely to shutdown asset k as trade costs increase. However, trade costs in‡uence domestic …rms decision to shutdown only indirectly through post acquisition competition that ensues between …rms. Domestic …rms should have less incentives to keep asset k; as they already have local production. Domestic …rms acquire asset k for market share and in order to deny local production to MNEs.

4 Data and Empirical Model

The theoretical model highlights the shutdown of SOEs that can be caused by post privatization ownership and by SOEs post privatization productivity. MNEs and domestic …rms have incentives to acquire and use SOEs for production but also can shutdown SOEs after acquisition. Again, the hypothesis states that MNEs want to produce locally with the acquired SOEs as these SOEs provide a quick market entry method and allow trade cost savings. Domestic …rms do not need the acquired SOEs

for production but are merely interested in gaining market share. Therefore, MNEs acquisition of SOEs should lower the probability of SOEs shutdown, and domestic …rms acquisition of SOEs should increase the probability of SOEs shutdown. The model also predicts that as productivity of SOEs increases after acquisition, the likelihood of SOEs shutdown should decrease.

4.1 Data

To test the proposed theory, a sample of …rm-level privatization data from 10 Central and Eastern European countries is used[8]. The data only includes SOEs which were privatized via direct sale to either foreign or domestic investor[9]. This method of privatization closely …ts with the auction framework presented in the theoretical model where SOEs exchanged ownership only once directly from government to private. The data was obtained from Bureau van Dijk Electronic Publishing. Two separate databases were used. First using Zephyr merger and acquisition database, 562 privatization transactions were identi…ed where SOEs had at least 50 percent of their assets directly sold to either domestic or foreign investors. Considering only SOEs that had more than 50 percent of ownership transferred directly from government to private investors follows the theoretical model and the assumptions of the second-price auction. All the transactions took place between 1998 and 2006 as

[8] Countries include: Bosnia and Herzegowina, Bulgaria, Croatia, Czech Republic, Estonia, Poland, Romania, Slovakia, Slovenia, Ukraine.

[9] There are other forms of privatization that governments used to dispose SOEs including sale to managers and employees and voucher privatization.

these were the only years available in the database. Next, using a …rm-level database called Orbis, balance sheets and income statements were gathered for the 562 former SOEs. Combining information from both databases, a …rm-level panel data for years 1998 to 2006 was created. Out of the 562 former SOEs, 143 were dropped due either

former SOEs were shutdown within an average of 2.4 years after acquisition.

4.2 Empirical Model

A probit 1(o)3s665E17(m)21(p)(m)21(p)14(i)6(r)15(i)6(c)12(a)12(l)-368(M)isi(n)9.346Tf42(l6M)i

acteristics lower the probability of shutdown[12]

expenses before taxes are taken out.

Furthermore, two control variables of the acquiring …rms are also included in the estimation:

Acquirer's Age (Acquirer s Age) is calculated using the initial date of incorporation provided for each acquiring …rm.

Acquirer's number of Subsidiaries (Acquirer s num: of Subsid) is a proxy for the size of the acquiring …rm.

A full set of year and country dummies is also used, as well as, industry controls using single digit USSIC codes.

Finally, to address the hypothesis of whether rise in SOEs' productivity under domestic and MNEs ownership leads to lower probability of shutdown, the data is split into two samples. The …rst sample includes only SOEs acquired by domestic …rms and the second sample includes SOEs only acquired by MNEs. The model is then estimated and the impact of TFP on shutdown is obtained.

4.3 Summary Statistics

Table 1 in the Appendix summarizes shutdown statistics for the 419 former SOEs. Out of the 419 privatized SOEs, 53 were shutdown and 366 remained operational

domestic private acquirers and 12 or 23 percent were shutdown by foreign MNEs. Domestic private …rms acquired 249 or 70 percent of all the privatized SOEs and foreign MNEs acquired 117 or 30 percent. Calculating a simple ratio of shutdown SOEs to total acquired SOEs for domestic private …rms and MNEs, it is found that domestic private …rms shutdown 16.5 percent of acquired SOEs and foreign MNEs shutdown 10.3 percent of acquired SOEs. The statistics in this table suggest that foreign MNEs are less likely to shutdown former SOEs.

Table 2 provides acquisition statistics for former SOEs based on industry classi…cations. The SOEs are categorized into manufacturing and service industry classi…cation. Manufacturing SOEs engage in manufacturing, construction, and agricultural business. Service SOEs engage in various service-related industries including …nancial, wholesale, retail, communication, and utilities. Subdividing the SOEs into two industry classi…cations allows for more precise estimates of TFP as it is expected that TFP di¤ers within industries[13]. Coe¢ cient estimates on labor and capital used in obtaining TFP are provided in Table 3.

Table 4 compares characteristics of former SOEs acquired by domestic private …rms versus foreign MNEs. In this table, privatization date is ignored and characteristics are compared for the entire life span of the SOE in the data. Means for revenue, capital, employment, age, TFP, acquisition cost, shareholder's funds, and pro…t and loss before tax are given as well as t-statistics comparing the two groups of

[13] For example see Levinsohn and Petrin 2003.

SOEs[14]. These statistics show that on average SOEs acquired by foreign MNEs were older, more productive, had higher revenues and lower pro…ts. However, looking at Tables 5 and 6, where using date of privatization SOEs characteristics are divided by pre- and post-privatization, respectively, there is no signi…cant di¤erence in many of SOEs characteristics. Table 5 shows that employment, TFP, shareholder's funds, and pro…t and loss before tax were no di¤erent between SOEs acquired by domestic versus foreign MNEs. This implies that privatizing governments were not selling better performing SOEs to foreign MNEs.

Tables 5 and 6 provide information about the growth of TFP after privatization. Before privatization, TFP for SOEs that were going to be acquired by domestic …rms was 15.28 as compared to 15.32 after privatization. SOEs acquired by foreign MNEs had an average TFP of 17.60 before privatization and 18.66 after privatization. Although by statistically insigni…cant amounts, TFP increased for both groups of SOEs after privatization[15].

Tables 7 and 8 show SOEs' characteristics before and after privatization, respectfully, for the 366 SOEs that were not shutdown. It is interesting to observe that before privatization, domestically acquired SOEs had insigni…cantly higher employment levels as compared to SOEs acquired by foreign MNEs. After privatization,

[14] Revenue, capital, shareholder's funds, and pro…t and loss before tax are all in thousand Euro. Capital is de…ned as total assets minus total cash ‡ows, which provides a measure of total value of machinery, buildings and land. TFP is given in levels.

[15] This evidence supports one of the assumptions made in the theoretical model where it was assumed that productivity of the SOE is impacted di¤erently by the MNE and domestic …rm after privatization.

employment levels fall by more than 50 percent at SOEs that were domestically acquired. Whereas after privatization, employment goes up at foreign acquired SOEs. Privatization effects on employment is one of the main concerns of policy makers and this evidence should alleviate fears of selling SOEs to foreign MNEs.

Tables 9, 10 and 11 compare the characteristics of SOEs that were shutdown to

to -0.0447 where it still remains highly signi..cant (column I I). All of the coe¢ cients

is to split the data into two subsamples. The …rst sample contains only SOEs that were acquired by MNEs and the second sample contains SOEs acquired by domestic …rms. The same probit model is estimated on the two subsamples and the results are provided in Table 13. In both columns, the coe¢ cient on TFP is negative and signi…cant. This provides some support for the theory that regardless of acquiring …rms origin, if productivity of SOEs increases then the probability of shutdown decreases.

6 Conclusion

Privatization of SOEs in transitional economies is an ongoing process. MNEs are using privatization to acquire SOEs in order to gain quick market entry and avoid

The results of this paper are important from a policy standpoint. Governments going through a privatization process should make every e¤ort to consider MNEs

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Appendix

Proof of Proposition 1:

The proof is derived from analyzing the optimal actions of both …rms in the second stage. First, assume that …rm M

k :

$$(s \square c) + > : \tag{13}$$

■

Proof of Lemma 2

Let v > v without loss of generality. First, consider the equilibrium candidate where …rm i acquires asset k. Consider the equilibrium bid b*, where b* > b*; j = i: Let …rm i be the owner obtaining asset k. Note that b* > v* is a weakly dominated

Proof of Proposition 3:

Starting with outcome 1 in Proposition 3, in this market structure both …rms decide to shutdown asset k after acquisition, i.e. $(s \square c \quad t) + \quad >$ and $(s \square c \quad) + \quad >$: Pro…ts for both …rms are: $(c^* \quad ; c^* \quad) \quad > \quad (c^*$

privatization of asset k is not optimal for the government as asset k will be shutdown by both bidders after the auction.

In outcome 2 of Proposition 3, if (s □ c t) + > and (s □ c) + < then by Proposition 1 …rm M will shutdown asset k after acquisition but …rm D will use asset k to produce. Each …rm's valuation for asset k is:

$$v = (c^*; c^*) \square (c^*; c^*) = \tag{17}$$

$$\frac{[\ + c\ \square 2c\ t + 2\ \square\ ]^2}{9} \square \frac{[\ + s \square 2c\ t + 2\ \square\ ]^2}{9} =$$

$$\square \frac{1}{9}(s + \square\ \square c\ )(s + 4\ + 2\ \square\ \square\ + c\ \square 4c\ t):$$

$$v = (c^*; c^*) \square (c^*; c^*) = \tag{18}$$

$$\frac{[\ \square 2s + c\ t \square\ + 2\ ]^2}{9} \square \frac{[\ \square 2c\ + c\ t \square\ + 2\ ]^2}{9} =$$

$$\square \frac{4}{9}(s + \square\ \square c\ )(\ \square\ \square s + \ +\ \square c\ + c\ t):$$

and the equilibrium buyer will be obtain based on the sign of v □ v ; which when simpli…ed is:

$$v \square v = \frac{1}{9}(s + \square\ \square c\ )(2\ \square 8\ \square 5s + 5\ + 5\ \square 5c\ + 8c\ t) \tag{19}$$

The …rst term in the equality is $\frac{1}{9} > 0$: The second term $(s + \square\ \square c\ ) < 0$

follows from the fact that …rm D would want to produce using asset k. Therefore, the sign of v □ v is determined by the third term. The third term is (2 □ 8 □ 5s + 5 + 5 □ 5c + 8c t): De…ning the value of * as the level of productivity of …rm D that will make 2 □ 8 □ 5s + 5 □ 5c + 8c t + 5 * = 0, and simplifying

$$* = \frac{8 + 5s + 5c \square 5 \square 8c \; t \square 2}{5} \tag{20}$$

which then follows that * is the level of k s productivity under D s ownership that makes v □ v = 0; and both …rms win the auction with equal probability. Now, if > * then (2 □ 8 □ 5s + 5 + 5 □ 5c + 8c t) > 0 and v □ v < 0: Firm D wins the auction and pays acquisition price equal to v . If < * then (2 □ 8 □ 5s + 5 + 5 □ 5c + 8c t) < 0 and v □ v > 0: Firm M wins the auction and pays acquisition price v :

In outcome 3 of Proposition 3; if (s □ c t) + < and (s □ c) + > then by Proposition 1 …rm M will produce using asset k and …rm D will shutdown asset k after the auction. Each …rm's valuation for asset k is:

$$v = (c^* ; c^*) \square (c^* ; c^*) = \tag{21}$$

$$\frac{[+ c \square 2s \square + 2]^2}{9} \square \frac{[+ c \square 2c \; t + 2 \square]^2}{9} =$$

$$\square \frac{4}{9} (s + \square \square c \; t)(\square s + \square + + c \square c \; t):$$

$$v = (c^*; c^*) - (c^*; c^*) = \tag{22}$$

$$\frac{[-2c + ct - + 2]^2}{9} - \frac{[-2c + s + 2 -]^2}{9} =$$

$$-\frac{1}{9}(s + - - ct)(s - + 2 + 4 - - 4c + ct):$$

and the equilibrium buyer will be obtain based on the sign of $v - v$: Again, simplifying $v - v$ and comparing individual terms, the sign of $v - v$ can be obtained.

$$v - v = \tag{23}$$

$$-\frac{1}{9}(s + - - ct)(5 - 5s + 2 - 8 + 5 + 8c - 5c t)$$

The …rst term is $-\frac{1}{9} < 0$: The second term $(s + - - ct) < 0$ follows from the fact that …rm M would want to produce using asset k after acquisition. Finally, the sign of $v - v$ is determined by the third term. The third term is $(5 - 5s + 2 - 8 + 5 + 8c - 5c t)$: De…ning * as the value of …rm M s productivity that makes $5 - 5s + 2 - 8 + 8c - 5c t + 5^* = 0$; and simplifying

$$^* = \frac{5c t + 5s + 8 - 8c - 5 - 2}{5} \tag{24}$$

which then follows that * is the level of k s productivity under M s ownership that makes $v - v = 0$; and both …rms win the auction with equal probability. Now,

if > * then (5 □ 5

$$v \quad \square v \quad = \tag{27}$$

$$\square \frac{1}{9}(8s \quad \square 8s \quad \square 10s \quad + 10s \quad + 5^{\,2} \square 5^{\,2} + 5^{\,2} \square 5^{\,2}$$

$$+5c^2\ t^2 + 8sc \quad \square 5c^2 \ + 2 \quad \square 2 \quad \square 8 \quad + 2 \quad \square 2$$

$$+8 \quad + 2\ c \quad + 10\ c \quad \square 8 \quad c \quad \square 8sc \quad t$$

is estimated

$$v = + l + k + \$ + \qquad (29)$$

where v denotes value added, and l and k are labor and capital, respectively. Labor is de..ned as the natural log of number of employees. Capital, also in natural log, is de..ned as total assets less total cash ‡ows for a given ...rm in a given year. The error term is split into the observable ...rm-level productivity $\$$ and the unobserved error term that captures the measurement error and other unexpected circumstances. The main issue in estimating productivity functions is trying to address the fact that unobservable productivity shock can be correlated with ...rm inputs of production. This method of productivity estimation uses intermediate inputs to production as proxy for the unobservable productivity shocks. After estimating the coe¢ cients on labor and capital, total factor productivity in levels can be back out by

$$TFP = \exp(v \; \hat{} \; l \; \hat{} \; k) \qquad (30)$$

where TFP is given for each ...rm i at time t in industry j. For further details on this methodology see Levinsohn and Petrin (2003).

Table 1: Shutdown Statistics of SOEs by Ownership

SOEs acquired by:	Domestic	Foreign	Total
Shutdown SOEs	41	12	53 (13%)
Operational SOEs	249	117	366 (87%)
Total			

Table 4: SOEs Characteristics by Ownership

SOEs acquired by:	Domestic	Foreign	t-test
Revenue	101194.3	151719.1	-2.25**
Capital	97453.97	142713.8	-2.8***
Employment	1735	1969	-1.17
Age	25	28.3	-2.4**
TFP	15.29	18.05	-2.28**
Acquisition Cost	18480.25	122430.7	-2.50**
Shareholder's Funds	52249.88	62964.46	-1.18
P/L before Tax	7033.83	3552.96	2.05**

Note: Means of all values are given, where Revenue, Capital, Acquisition Costs, Shareholder's Funds, and P/L before Tax are in Thousands Euro. * signi..cant at 10%, **signi..cant at 5%, *** signi..cant at 1%.

Table 5: SOEs Characteristics by Ownership Before Privatization

SOEs acquired by:	Domestic	Foreign	t-test
Revenue	103241.6	149635.2	-1.69*
Capital	95220.84	132879.1	-2.03**
Employment	2023	1879	0.58
TFP	15.28	17.60	-1.54
Shareholder's Funds	44126.42	36495.78	1.02
P/L before Tax	3379.56	1140.44	1.6

Note: Means of all values are given, where Revenue, Capital, Acquisition Costs, Shareholder's Funds, and P/L before Tax are in Thousands Euro. * signi..cant at 10%, **signi..cant at 5%, *** signi..cant at 1%.

Table 6: SOEs Characteristics by Ownership After Privatization

SOEs acquired by:	Domestic	Foreign	t-test
Revenue	95748.88	154767.1	-1.57
Capital	104047	157103.9	-1.75*
Employment	1016	2093	-3.50***
TFP	15.32	18.66	-1.51
Shareholder's Funds	73809.44	100076.6	-1.33
P/L before Tax	16769.57	6906.16	2.31**

Note: Means of all values are given, where Revenue, Capital, Acquisition Costs, Shareholder's Funds, and P/L before Tax are in Thousands Euro. * signi..cant at 10%, **signi..cant at 5%, *** signi..cant at 1%.

Table 7: Operational SOEs Characteristics by Ownership Before Privatization

SOEs acquired by:	Domestic	Foreign	t-test
Revenue	114467	159662.1	-1.52
Capital	103007.7	142190.5	-1.95*
Employment	2184	1990	0.71
TFP	15.89	18.16	-1.41
Shareholder's Funds	50014.6	38902.32	1.36
P/L before Tax	4151.59	1249.89	1.87*

Note: Means of all values are given, where Revenue, Capital, Acquisition Costs, Shareholder's Funds, and P/L before Tax are in Thousands Euro. * signi..cant at 10%, **signi..cant at 5%, *** signi..cant at 1%.

Table 8: Operational SOEs Characteristics by Ownership After Privatization

SOEs acquired by:	Domestic	Foreign	t-test
Revenue	104111.2	167913.5	-1.52
Capital	107851.8	171184.4	-1.86*
Employment	935	2154	-3.71***
TFP	16.18	18.92	-1.1
Shareholder's Funds	82530.07	114051.6	-1.40
P/L before Tax	19359.49	400J0.398wTf8272-18136(6)-1338Td[()]TJ/F2.03	

Table 12: Probit Results on All SOEs

Shutdown	I	II	III	IV	V
Foreign Ownership	-0.0962***	-0.0447***	-0.0202***	-0.1761***	-0.0323**
	(0.0094)	(0.0112)	(0.0127)	(0.0300)	(0.0520)
TFP		-0.0016***	0.0003**		0.0001
		(0.0004)	(0.0002)		(0.0001)
Size		-0.0119***	-0.0045***		-0.0012***
		(0.0036)	(0.0027)		(0.0034)
Age		-0.0010***	-0.0003**		-0.0001**
		(0.0004)	(0.0002)		(0.0002)
Acquisition Cost		-0.0021**	-0.0008*		-0.0001
		(0.0009)	(0.0005)		(0.0001)
Shareholder's Funds			-0.0031*		0.0007
			(0.0023)		(0.0020)
P/L before Tax			-0.0044***		-0.0015***
			(0.0029)		(0.0042)
Acquirer's Age				-0.0021***	-0.0001**
				(0.0006)	(0.0002)
Acquirer's # of Subsid.				-0.0013***	0.0001
				(0.0003)	(0.0001)

Note: The coe¢ cients provide marginal e¤ects. Each column also includes year, country and industry ..xed e¤ects. Acquisition Costs are measured in 10 million Euros. * signi..cant at 10%, **signi..cant at 5%, *** signi..cant at 1%. Standard Errors are given in parenthesis and are robust.

Table 13: Probit Results on SOEs

Shutdown	SOEs Acquired by MNEs	SOEs Acquired by Domestic Firms
TFP	-0.0010**	-0.0019***
	(0.0006)	(0.0005)
Size	0.0049	-0.0057
	(0.0046)	(0.0039)
Age	-0.0002	-0.0031***
	(0.0002)	(0.0006)
Acquisition Cost	-0.0031*	-0.0002
	(0.0010)	(0.0009)

Note: The coe¢ cients provide marginal e¤ects. Each column also includes year, country and industry …xed e¤ects. Acquisition Costs are measured in 10 million Euros. * signi…cant at 10%, **signi…cant at 5%, *** signi…cant at 1%. Standard Errors are given in parenthesis and are robust.