Foreign Ownership, State Ownership and Energy Efficiency in Indonesia's Private Manufacturing Plants

Eric D. Ramstetter
ICSEAD and Graduate School of Economics, Kyushu University
and
Dionisius Narjoko
Economic Research Institute for ASEAN and East Asia

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Eric D. Ramstetter (ramst@icsead.or.jp)
International Centre for the Study of East Asian Development and Kyushu University
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Abstract

This paper examines correlations between the shares of foreign multinational enterprises (MNEs) or state-owned enterprises (SOEs) in Indonesian manufacturing industries and energy efficiency in local, private plants in those industries using data on medium-large plants from the industrial censuses for 1996 and 2006. The econometric results suggest that energy intensities in private plants were often positively correlated with the presence of SOEs and majority-foreign MNEs but negatively correlated with the presence of heavily- and minority-foreign MNEs in 1996. However, the results were often reversed for 2006 and were sensitive to the sample analyzed as well as the measure of SOE or MNE presence and its level of aggregation.

Keywords: multinational enterprise, energy efficiency, spillover, Malaysia, manufacturing
JEL Categories: F23, L60, O53, Q40
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1. Introduction

This paper asks whether energy intensities, defined as ratios of purchased energy (electricity and fuel) to output, in local, private plants were correlated with the shares of foreign multinational enterprises (MNEs) or state-owned enterprises (SOEs) in Indonesia's large energy using industries. Answering this question is important because purchased energy consumption generates a large portion of pollution (mainly air pollution) emitted by manufacturing plants and improving energy efficiency or energy conservation is thus an important way to limit pollution by manufacturers. The question is also closely related to the question of whether larger MNE or SOE presence affects the productivity of private plants, or whether there are intra-industry spillovers from MNEs or SOEs to private plants.

MNEs in particular are often thought to have relatively high productivity and be the source of positive productivity spillovers on local firms. These spillovers result because larger MNE presence can facilitate intensified competition and labor mobility among MNEs and local firms, as well as strengthen linkages between MNEs and local firms that foster higher productivity in local firms. Productivity spillovers from MNEs to local in Indonesian manufacturing plants have been studied extensively, with most studies finding positive spillovers in some respect. If MNE presence affected productivity in private plants, then energy intensity (the inverse of average energy productivity) may have been affected as well.

This paper first reviews literature on productivity spillovers and how it relates to potential energy efficiency spillovers (Section 2). Second, it describes the database used and how patterns observed in the energy expenditures and energy intensities of private plants correlate with MNE or SOE shares of employment (Section 3). Third, it analyzes whether shares of MNEs or SOEs were correlated with the energy intensities of private plants, accounting for scale and input mix, as well as factors affecting technology and thus energy intensity (Section 4). The final section concludes.

2. Productivity Spillovers and Energy Efficiency in Developing Economies

In recent years, theoretical analyses have highlighted the role of what have been called knowledge-based, intangible assets (terminology from Markusen 1991) in MNEs. The key goals of many theoretical analyses are to explain why the MNE chooses to invest abroad when it (at least) initially has several cost disadvantages compared to local firms, and why the MNE chooses to spread out production across countries rather than concentrate it in one location. Most observers agree that MNEs tend to possess relatively large amounts of technological knowledge and networks, marketing expertise and networks, especially international ones, and generally have relatively sophisticated and capable management.[1] The first two characteristics are evidenced by relatively high research and development (R&D) intensities (ratios to total sales), relatively large proportions of patent applications and approvals, relatively high advertising-sales ratios, and relatively high dependence on international trade (generally on both exports and imports). Correspondingly, when asking what makes a firm decide to assume the extra costs of investing in a foreign country (compared to the costs of local firms in the host), Dunning (1988) asserted that a firm must first have "ownership advantages" such as those afforded by possession of relatively large amounts intangible assets, as well as "location advantages" and "internalization advantages" before investing.[2]

The important implication is that, if one accepts the idea that MNEs have relatively large amounts of knowledge-based, intangible assets, MNEs will tend to be relatively efficient producers compared to non-MNEs, at least in some respect. They are also a potentially important source of spillovers that foster higher productivity in local firms. In this context, spillovers refer to the effects that foreign MNE presence has on local plants. These spillovers

[1] Caves (2007) and Dunning and Lundan (2008) provide thorough literature reviews. The work of Markusen (2002) has also been influential.

[2] Dunning's OLI (ownership-location-internalization) paradigm has been influential, but others (Buckley and Casson 1992, Casson 1987, Rugman 1980, 1985) emphasize that the concept of internalization alone can explain the existence of the MNE and its characteristics.

operate through at least three major channels.

The first channel is direct linkages between MNEs and local plants. Most often these are backward linkages created when MNEs source raw materials, parts, or services from local plants. In many cases, local plants are not able to produce the required materials, parts or services of acceptable quality and/or meet the logistic requirements of the MNE. And in many of these cases, MNEs will work closely with local suppliers to help them increase production capacity, improve quality, and meet the logistic requirements involved. The MNE may source inputs from local firms in the same industry or in different industries. In other cases, MNEs may create forward linkages to local firms by supplying intermediate goods (materials, parts, services) or final goods of superior quality. Here again MNEs may find it profitable to help the local firms involved improve their production processes or marketing efforts to better take advantage of the goods or services provided by the MNE. The literature and casual observation suggest that spillovers through backward linkages are probably more common than through forward linkages.

The second channel is labor mobility. MNEs often require workers that are relatively skilled and often seek to recruit them from local firms. The relative shortage skilled labor (middle-level technicians and managers) is of the most severe constraints affecting Southeast Asian economies, including Indonesia. Thus, not only do MNEs attempt to poach relatively scare, skilled workers from local plants, but local plants often try to woo workers from MNEs. Other MNE workers realize that their experience has given them the skills to become an entrepreneur and start their own firms. In some instances, the firms created by ex-MNE employees end up supplying parts, materials, and/or services to their former MNE employers. Here again, the spillovers can be either intra- or inter-industry, though they are probably more likely to be intra-industry, to the extent that skills are industry specific.

The third major channel is a demonstration or competition effect. The entry or expansion of foreign MNEs usually increases the competitive pressure on local plants producing goods or services that compete with those produced by the MNE. The increased competitive pressure can motivate local firms to increase their own competitiveness in various ways such as developing or upgrading technology, cutting input costs, or expanding marketing efforts. This effect is predominantly intra-industry in nature, provided that industry definitions are broad enough to include competing firms or plants in the same industry.[3]

Much of the existing research on spillovers focuses on intra-industry productivity spillovers. In other words, these studies examine the effect MNE presence has on the productivity of local firms in the industry where the MNE operates. More recent studies have also examined inter-industry spillovers through forward and backward linkages. Several reviews emphasize that empirical evidence regarding productivity spillovers has been mixed (Görg and Stobl 2001; Fan 2002; Görg and Greenaway 2004; Lipsey and Sjöholm 2005; Pessoa 2007).[4] Previous studies of Asian economies also suggest that estimates of spillovers vary substantially depending on the economies and industry groups studied, the measure of foreign presence used (i.e., whether foreign shares are measured in terms of employment, output, or fixed assets, for example), and estimation methodology. In general, estimates of spillovers are larger when cross sectional methodologies are used, but recent studies generally use fixed effects estimators used when panel data are available.[5]

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[3] The presence of multi-product firms and plants, including many MNEs, creates substantial divergence between theory, which often assumes single-product, single-plant firms, and statistical compilations, which usually classify multi-product plants and firms by their largest product or service. In Indonesia, there are several, large multi-product plants and multi-plant firms, both local and MNE, which makes this divergence of particular concern. Correspondingly, relatively narrow industry definitions (e.g., 4- or 5-digit level) probably create important outliers among these important, large, multi-product firms or plants.

[4] A recent meta-analysis by Mebratie and van Bergeijk (2013) argues that accounting for firm heterogeneity in terms of R&D and exporting changes many ambiguous results and provides stronger evidence of positive spillovers.

[5] Fixed effects panel estimates are usually preferred because they control for unobserved characteristics among local plants or firms and because they are less vulnerable simultaneity problems that may arise if MNEs are attracted to high productivity industries. However, fixed effects estimates address the question of how changes in foreign shares are related to changes in local firm productivity, not the static question of whether large or small foreign presence affects productivity in local plants or firms. These subtle, but important distinctions are often ignored in the literature.

Some of the earliest research on spillovers from MNEs in Asian hosts examined Indonesia, because manufacturing surveys and censuses are rich and easily obtainable. For example, cross section evidence for 1980 and 1991 from Blomström and Sjöholm (1999) and Sjöholm (1999a, 1999b) indicated that productivity spillovers tended to be positive, and that spillovers tended to be relatively strong in industries where competition among local plants was relatively intense and within regions with diversified industrial structures; there was also some evidence that spillovers were relatively large in industries with large technological gaps between MNEs and local plants, but it was inconsistent, while the degree of foreign ownership, and geographical proximity did not affect the extent of spillovers. Subsequent, more rigorous, panel analysis for 1990-1995 (Takii 2005, 2006) revealed evidence positive intra-industry spillovers that were more prevalent in industries with small technical gaps and where minority foreign MNEs had relatively large shares. Similarly, Blalock and Gertler (2008) found strong evidence of productivity gains, greater competition, and lower prices among local firms in markets that supplied foreign entrants in 1988-2006. Suyanto et al. (2009) analyze spillovers chemical and pharmaceutical plants in 1998-2000, using a stochastic frontier approach and a generalized Malmquist output-oriented index to decompose productivity growth. Their results show positive productivity spillovers from foreign MNEs that are larger with higher competition and in local plants with R&D. Results from Lipsey and Sjöholm (2004, 2006) and Sjöholm and Lipsey (2006) also suggest the existence of positive wage spillovers; i.e., they indicate that local plants tended to pay relatively high wages in industries with large foreign presence. Their results also suggested that foreign takeovers led to higher wages in target plants, but that targeted firms were not high-wage plants before the takeover.

More recently, a number of studies also indicate positive productivity spillovers in China, but the details are again varied. Using industry level data, Buckley et al. (2007) find a curvilinear relationship with foreign direct investment from HMT (Hong Kong, Macau and Taiwan) firms, but not for other (Western) firms, which is most pronounced for low-technology host industries. In contrast, using a firm-level panel for 1998-2005, Lin et al.

(2009) find that HMT firms generated negative horizontal spillovers, while non-HMT firms tended to create positive horizontal spillovers. They also find strong and robust vertical spillover effects on both state-owned firms and non-state firms. Liu's (2008) evidence for 1995-1999 suggest that intra-industry spillovers are negative in the short term but positive in the long term, and that backward linkages seem to be the most important channel through which spillovers occur. Xu and Sheng's (2012) results for 2000-2003 indicate that positive spillovers arise from forward linkages where domestic firms purchase high-quality intermediate goods or equipment from foreign firms in upstream sectors, and that the extent of spillovers varies greatly among domestic firms. Meanwhile, Du et al. (2012) find that non-HMT MNE presence had positive effects on all individual firm level productivity in 1998-2007, while HMT presence did not. They find only weak evidence of positive horizontal externalities and evidence of positive productivity spillovers to domestic firms via backward linkages to local suppliers in downstream as well as forward linkages to their local buyers in the upstream sectors. On the other hand, Galina and Long (2011) use over 6,000 specifications that take into account forward and backward linkages, but fail to find evidence of systematic, positive productivity spillovers.

For Malaysia we know of only two studies. Khalifah and Adam (2009) analyze a balanced panel for 2000-2004 using a simplified Cobb-Douglas specification (assuming constant returns to scale) and samples of all manufacturing plants combined. They find that productivity spillovers were positive when MNE presence is measured as the share of value added or fixed assets, but insignificant or negative when MNE presence is measured as the share of employment. Spillovers are also found to depend on the foreign ownership shares. Haji Ahmad (2010, Ch. 6) finds little evidence of significant spillovers using the same data set, a translog specification, and both balanced and unbalanced panels,. Her results also examined several groups of manufacturing industries, finding that the results varied greatly depending on the industry group examined.

Most studies of spillovers in Thailand analyze the first census year, 1996. Industry level results from Kohpaiboon (2006a, 2006b) and firm-level Ramstetter (2006) and suggested positive productivity spillovers from MNEs, despite the fact that evidence from Ramstetter (2006) suggests that positive productivity differentials between MNEs and local plants not common were generally significant statistically. Kohpaiboon's results suggest that spillovers were relatively strong in industries with relatively low protection. Movshuk and Matusoka-Movshuk (2006) also found evidence of positive wage spillovers in 1996. Using a more limited sample of manufacturing firms in 2001-03, Kohpaiboon (2009) finds positive horizontal spillovers in industries where import protection is relatively low. Sajarattanochote and Poon (2009) examine the geography of technology flows among a sample of MNEs in the Greater Bangkok area, finding evidence of limited regional spillovers to first- and second-order neighbors and large variation in technology transfers depending on nationality, sector, size, and age of the MNEs involved.

For Vietnam, Nguyen, T.T.A. et al. (2006) examine four channels of potential spillovers, labor turnover, technology diffusion and transfer, production linkages, and competition. Their cross section, Cobb-Douglas estimates indicated that "there is little evidence of positive spillover effects at the firm level", though there are also "no signs of negative spillover effect either" (p. 56). In contrast, Pham's (2008) cross section, Cobb-Douglas estimates generally suggested positive spillovers that were largest in Hanoi and Ho Chi Minh City, and from MNEs that were not wholly-foreign. Combining firm-level data for 2000-2005 with the 2000 input-output table, Nguyen, P.L. (2008) estimates cross section Cobb Douglas functions finding that both horizontal and vertical spillovers were generally positive, and largest in more advanced regions and in more sophisticated local firms. In analysis using an unbalanced panel of the same data, Nguyen, N.A. et al. (2008) finds that backward, vertical spillovers were positive in manufacturing, while horizontal spillovers were positive in services. Le and Pomfret (2011) also use a similar approach to estimate spillovers in an unbalanced panel of all industrial firms (including mining and utilities) for 2000-2004, finding positive backward spillovers in manufacturing but negative horizontal spillovers, which were relatively strong on private firms, domestic-oriented firms, firms without R&D, and firms in low technology industries.[6] Translog estimates for 2000, 2002, and 2004 from Ramstetter and Phan (2008) also suggest the existence of positive spillovers from MNEs to private firms in cross sections, but Ramstetter and Phan (2013) find no significant spillovers in unbalanced panels. In sum, the results usually suggest some degree of positive spillovers, especially in cross sections, but results vary markedly depending on specification, sample, and productivity measures, and evidence from panel analysis is relatively weak.[7]

In the same way that MNE presence may affect the productivity of local firms, it is also possible to conjecture that MNE presence may affect energy efficiency in those local firms. Indeed, greater energy efficiency might be one of the more important advantages of MNEs over local firms, as Eskeland and Harrison (2003) demonstrated from Côte d'Ivoire, Mexico, and Venezuela. A related study suggests that similar results are not common in Indonesian industries in 1996 and 2006 (Ramstetter and Narjoko 2012), but it is still interesting to see if foreign presence is correlated with energy intensities in local plants. Accounting for the effects of SOE presence is also important because of the prominent roles SOEs play in some Indonesian industries.

3. The Data, Energy Consumption, and Energy Intensities

This paper uses data from the two industrial censuses conducted by BPS-Statistics (various years) for 1996 and 2006 primarily because the censuses contain greater detail on the technical characteristics of plants than annual surveys conducted for other years. Focus on census years is also advantageous because sample coverage tended to be higher in these years and because data for some plants were estimated by the statistical authority in the survey years between the censuses. In other

[6] The use of the 2000 input-output table in these studies may be unrealistic because of large changes in Vietnam's industrial structure during 2000-2005, for example.

[7] Ramstetter and Phan (2008, 2013), Nguyen, N.A. et al. (2008), Nguyen, T.T.A. et al. (2006) use value-added-based estimates of productivity, while Le and Pomfret (2008) and Nguyen, P.L. (2008) use a sales-based measure. Value added data must be compiled from product-level data and omit some portions of sales, and the coverage of the value added samples varies from year to year (Ramstetter and Phan 2013, Table 1).

words, the data for the census years are more comprehensive and probably more accurate than data for survey years.

Because a number of plants are jointly owned by MNEs, SOEs, and/or private firms, the distinctions between these three ownership forms are potentially ambiguous. In order to avoid ambiguity, joint ventures with foreign shares of 33 percent or more are classified as MNEs and non-MNE joint ventures with state shares of 33 percent or more are classified as SOEs. This cutoff for the definition of MNEs is somewhat higher than the standard one (foreign shares of 10 percent or more), but we know of no similar standard for defining SOEs.

Table 1 shows expenditures on total energy (fuel and electricity) and energy intensities (ratios of energy expenditures to output) for private plants, as well as SOE and MNE shares of labor and output in total manufacturing and 12 large energy using industries. The energy expenditure data do not account for energy generated or sold by the plant, but purchased energy accounts for the vast majority of energy used by most plants. Industry definitions for 1996 are based on version 2 of the Indonesia's Standard Industrial Classification (ISIC) and differ in some respects from 2006 definitions, which are based on version 3 of the ISIC. Thus, caution is necessary when interpreting industry-level trends over time.[8] These 12 industries accounted for 93 percent of the energy expenditures in 1996 and 92 percent in 2006 and are the largest sources of energy-related pollution in Indonesian manufacturing.[9] Moreover, the five largest energy using industries accounted for 69 percent of the manufacturing total in 1996 (textiles, non-metallic mineral products, food and beverages, wood, and paper) and 65 percent in 2006 (non-metallic mineral products, textiles, food and beverages, chemicals, basic metals, and paper).

The mean energy intensity (ratio of energy expenditures to output) of local plants in the 12 large

[8] It is impossible to construct a precise correspondence between the two classifications, because several detailed categories (i.e., at the 5- or 4-digit level) in one classification are split among detailed categories in the other classification; see Ramstetter and Narjoko (2012, Appendix Table 8) for detailed definitions used in this paper.

[9] The remaining eight 2-digit manufacturing industries (ISIC revision 3: tobacco, leather and footwear, printing and publishing, oil and coal products, metal products, general machinery, miscellaneous manufacturing, and recycling) are excluded from the analysis below.

energy using industries combined was 6.0 percent in 1996 and 6.5 percent in 2006 (Table 1). Not surprisingly, both of these means were somewhat larger than the overall means for manufacturing, 5.4 and 5.8 percent, respectively. By far the highest energy intensity was observed in non-metallic mineral products, 16 and 15 percent, respectively. Energy intensities in other industries were much lower, close to or below the means for all 12 large energy using industries. Among these 12 industries, the lowest energy intensities (4.0 percent or less in 1996, 5.1 percent or less in 2006) were observed in apparel, electronics-related machinery, and motor vehicles in both years.

In these 12 industries, mean MNE labor shares were 17 percent in 1996 and 25 percent in 2006 (Table 1). Mean output shares were somewhat larger, 27 and 37 percent, respectively. In 1996, MNE labor shares were largest in electronics-related machinery (51 percent), followed distantly by motor vehicles (29 percent), apparel (23 percent), and basic metals (20 percent). MNE output shares were also largest in motor vehicles (58 percent) and electronics-related machinery (56), but the order was reversed. Output shares were also relatively large in chemicals (38 percent), paper (31 percent), and apparel (27 percent). In 2006, MNE labor shares were again largest in electronics-related machinery (66 percent) and motor vehicles (55 percent), followed distantly by other transportation machinery (33 percent) and apparel (30 percent). Output shares were also largest in motor vehicles (81 percent), electronics-related machinery (72 percent), and other transportation machinery (62 percent), followed by apparel, chemicals, and textiles (32-36 percent). In other words, as well documented in previous studies (e.g., Takii 2006) MNEs tended to have relatively high average labor productivity, though these labor productivity differentials were not always statistically significant if factor usage, scale, and industry differences in all production function slopes are accounted for. Similarly, cross section evidence from Ramstetter and Narjoko (2012) also indicates that MNE-private differentials in energy intensities were generally insignificant statistically.

The large increase in MNE shares between 1996 and 2006 was largely a result of the financial crisis in 1997-1998, which created severe financial difficulty for many Indonesian firms and led to large declines in asset prices. The rupiah also fell from precipitously from an average of 2,242 per

U.S. dollar in 1996 to between 7,855 and 10,260 in 1998-2006 (Asian Development Bank various years). These events created a fire sale, making mergers and acquisitions as well as new investments relatively cheap after the crisis, and encouraged foreign direct investment (FDI) by foreign MNEs. In addition, Indonesian policy makers stepped up implementation of reforms mandated by the 1994 Investment Law, which greatly reduced restrictions on foreign ownership and streamlined the FDI approval process. Correspondingly, increases employment and output by heavily-foreign MNEs with foreign ownership shares of 90 percent or more were conspicuous (Table 2). Heavily-foreign shares of both labor and output were only 6-7 percent in 1996 (for both total manufacturing and the 12 large energy using industries combined, but they more than doubled to 15-16 percent of labor and 20-21 percent of output by 2006. In contrast, shares of majority-foreign (foreign shares of 50-89 percent) and minority foreign (33-49 percent) both declined some.

Heavily-foreign shares were largest in electronics-related machinery in both years (Table 2). They were also relatively large in motor vehicles in 2006 and apparel in both years. Majority foreign shares were also relatively large in motor vehicles in 2006, as well as other transportation machinery and rubber and plastics in that year. In 1996, majority-foreign shares were largest in chemicals, motor vehicles, and basic metals if measured by output, and in electronics-related machinery, basic metals, chemicals, and motor vehicles if measured by labor. In 1996, minority-foreign shares were largest in motor vehicles, non-metallic mineral products, paper, and other transportation machinery in 1996 and in non-metallic mineral products, motor vehicles, and paper in 2006.

Industry-level correlations of local plant energy intensities to total MNE labor shares were negative and relatively strong, -0.40 in 1996 and -0.36 in 2006 (Table 1). Correlations to MNE output shares were also negative but substantially weaker, -0.21 and -0.29, respectively. Correlations to heavily-foreign shares were relatively strong for both labor and output in both years (-0.36 to -0.44) and slightly weaker for majority-foreign MNEs in 1996 (-0.27 to -0.34; Table 2). However, correlations to majority-foreign shares in 2006 were essentially zero and correlations to minority-foreign shares were positive in both years and quite strong in 2006 (0.66-0.67). Thus, these simple, industry-level calculations provide some evidence of a negative correlation of MNE shares to private plant energy intensities for MNEs on average, and particularly for heavily-foreign MNEs. However, these industry-level calculations can be misleading because they do not account for levels of factor usage or other technical characteristics of plants that might influence energy intensities.

Although the effect of MNE presence on private plant energy intensities is the main focus of this paper, it is also potentially important to control for the possible effects of SOE presence on private plants in Indonesia. We know of no studies of spillovers from SOEs in Indonesia, but SOE presence has been substantial in some Indonesian industries, notably basic metals in 1996, other transportation machinery, non-metallic mineral products, food and beverages, and chemicals in both years, and paper in 2006 (Table 1). In general, SOE shares declined over this period as a result of privatization. Declines in central government controlled SOE shares were particularly conspicuous, as was the rise in the share of local government controlled SOEs increased rapidly from a very low base, mainly as the result of privatization.[10]

Because SOEs are generally thought to have weak profit incentives, they are often thought to be relatively inefficient. In Indonesian manufacturing, SOE labor shares were substantially larger than output shares in food and beverages, rubber and plastics, and other transportation machinery in both years and in paper in 2006, suggesting that SOEs had relatively low labor productivity in these industries. On the other hand, the reverse pattern is observed in basic metals in 1996 and non-metallic mineral products in 2006. Perhaps most importantly, inefficient SOEs often lobby governments to protect them from competition, and this can potentially encourage inefficiency among all plants in industries where SOE presence is large. In this respect, it is notable that SOE presence was positively correlated with local plant energy intensities in 2006, though the correlation was not that strong (0.21); in 1996 this correlation was essentially zero.

[10] For example, energy expenditures of local SOEs increased much more rapidly than those of central SOEs (45-fold vs. 4.5 fold), but expenditures of central SOEs remained 3.4-fold larger in 2006 (authors' calculations). Many central SOEs were privatized or transferred to local authorities after the 1997 crisis and the promulgation of the decentralization law in 1999.

4. Energy Intensities and Foreign Shares after Accounting for Scale and Factor Usage

This section analyzes the determinants of energy intensities in private plants using a factor demand model similar to that used by Eskeland and Harrison (2003, 16-18). The model is based on a translog production function and derives energy demand, measured as the share of the energy's income (expenditure) in gross output (i.e., energy intensity), as a function of the logs of other factor inputs (other intermediate consumption, fixed assets, and labor), the quantity of the energy input (proxied with the quantity of electricity purchased), and factors related to a plant's technological sophistication. In the Indonesian census data, there are four potentially important indicators of technological sophistication that might affect energy intensities, the ratio of research and development (R&D) expenditures to gross output, shares of moderately educated workers and highly educated workers in the total workforce, and information on a plant's startup which can be used to calculate a vintage variable.[11] The effects of SOE or MNE presence is then captured by adding shares of either labor or output to this function. The simplest version of the model assumes that the presence of all MNE ownership groups has the same effect on private plant energy intensities, as follows:

$$EP_{ij}=a0+a1(LL_{ij})+a2(LK_{ij})+a3(LM_{ij})+a4(LE_{ij})+a5(SM_{ij})+a6(SH_{ij})+a7(RD_{ij})+a8(YR_{ij}) \\ +a9(SS_j)+a10(SF_j) \quad (1)$$

where

EP_{ij}=energy intensity or ratio of energy expenditures to gross output of plant i in industry j (percent)

LE_{ij}=natural log of the quantity of electricity used by plant i in industry j + 1 (kilowatt hours of electricity)

LL_{ij}=natural log of the number of workers of plant i in industry j (number)

LK_{ij}= natural log of the fixed assets less depreciation at yearend of plant i in industry j (thousand rupiah)

LM_{ij}=natural log intermediate consumption excluding energy of plant i in industry j (thousand rupiah)

RD_{ij}=ratio of R&D expenditures to gross output in plant i (percent)

[11] Eskeland and Harrison (2003) include the R&D ratio and the vintage variable in their model. They also include machinery imports, but that variable is not available in the Indonesian census data.

SF_j=the percentage share of MNEs in the labor or output of industry j
SS_j= the percentage share of SOEs in the labor or output of industry j
SM_{ij}=percentage of workers with secondary education of plant i in industry j
SH_{ij}=percentage of workers with tertiary education of plant i in industry j
YR_{ij}=number of years in operation of plant i in industry j.

The coefficients *a9* and *a10* reveal the direction and strength of correlations of SOE and MNE shares to private plant energy intensities (comparable to the industry level correlations in Table 1) after accounting for the influences of scale and factor usage, and the four indicators of technological sophistication. A modification of equation (1) is also used to examine the question of whether these intra-industry spillovers vary among MNE ownership groups:

$$EP_i=b0+b1(LL_i)+b2(LK_i)+b3(LM_i)+b4(LE_i)+b5(SM_i)+b6(SH_i)+b7(RD_i)+b8(YR_i)$$
$$+b9(SS_j)+b10(SFMIN_j)+b11(SFMAJ_j)+b12(SFHVY_{ij}) \quad (2)$$

where (other variables as defined above):
$SFMIN_j$= the percentage share of minority-foreign MNEs in the labor or output of industry j
$SFMAJ_j$= the percentage share of majority-foreign MNEs in the labor or output of industry j
$SFHVY_j$= the percentage share of heavily-foreign MNEs in the labor or output of industry j

In this case, the coefficients *b10*, *b11*, and *b12* reveal the direction and strength of correlations between minority-foreign, majority-foreign and heavily-foreign MNE shares to private plant energy intensities, after accounting for the influences of scale and other factor usage, and four indicators of technological sophistication.

Because energy requirements differ greatly among manufacturing industries, determinants of energy intensities, including spillovers from SOEs and MNEs, are likely to differ across industries and previous analyses suggest this is the case (Ramstetter and Narjoko 2012). This presents a problem when examining spillovers because several industries must be combined to do meaningful analysis. Some industry-related differences in intercepts are accounted for by adding industry dummies for the 12 2 to 3-digit categories in Tables 1-2. However, even this level of aggregation can create problems requiring the omission of industry dummies altogether (see below). Regional dummies are also included to account for the effects of plant location on intercepts.[12] Because the data cover two years spanning a period of severe economic crisis and large structural change, and because there are important differences in industrial classifications between the two years, the models are estimated in cross section only.

Even after excluding plants that reported extreme values of production or the average product of labor, only 68 percent of the local plants in large energy consuming industries reported initial fixed assets and 73 percent reported yearend fixed assets in 1996 (Table 3). In 2006, these coverage rates were much smaller 53 and 57 percent, respectively. The following analysis focuses on analyses of relatively small samples for which capital measures are available because omitted variable biases are likely to be severe if the variable is not included. Although estimates using initial capital are probably preferable because they reduce the possibility of simultaneity-related problems, estimates using ending capital are also reported as robustness checks, primarily because samples are up to 15 percent larger using this measure. Estimates in large samples that omit the capital variable altogether are also provided for reference in Appendix Tables 1-5. Fortunately, the choice of the capital variable, or its omission, does not appear to affect estimates of spillovers from MNEs or SOEs a lot.

In order to examine the robustness of spillover estimates four measures of MNE or SOE presence are tried, labor or output shares at the 3- or 4-digit level. Here again it is important to note important differences in the ISIC between 1996 and 2006; revision 2 (1996) is somewhat more aggregate than revision 3 (2006). Thus, the analyses for 1996 and 2006 are not exactly equivalent. Although this complicates the comparison of spillover coefficients, the alternative of converting revision 2 to revision 3 or vice versa would introduce measurement errors and also lead to misleading inference of trends over time.[13] We opt for using original classifications in each year because the differences in

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[12] Jakarta is used as the reference region and regional dummies are used to identify plants in Sumatra, West Java, Central Java (including Yogyakarta), East Java, and East Indonesia (including Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Irian Jaya).

[13] Measurement errors result because several of the most detailed categories in one classification must be split among several of the most detailed categories in the other classification.

definitions are more transparent than the conversion alternative.

In large sample of all local plants in the 12 large energy consuming industries, coefficients on capital, labor, the quantity of electricity, the share of workers with secondary education, and vintage were always positive and significant at the 5 percent level or better when capital was included in the equations (Appendix Table 1). On the other hand, coefficients on other intermediate inputs were consistently negative and significant. In other words, capital and labor were complements to purchased energy in the production process, while other intermediate consumption was a substitute. Plants with relatively large shares of moderately skilled workers and older plants also tended to have relatively high energy intensities. The R-squared was consistently in the 0.32-0.33 range in 1996, but somewhat lower in 2006, 0.24-0.25. Thus, the explanatory power of the equations was not exceptionally high and somewhat lower in 2006. However, the equations performed more or less as expected for cross sections such as these.

Tests of the hypothesis that coefficients on heavily-foreign, majority-foreign, and minority-foreign MNE shares were equal were rejected at the 5 percent level or better for all of the four MNE/SOE presence measures for 2006 and three of the four measures for 1996 (Table 3). The exception was when labor shares were measured at the 4-digit level for 1996. In this case, the results of equation (1) indicated that MNE presence was negatively and significantly correlated with local plant energy intensities in 1996. However, for 2006, equation (2) estimates indicate that minority-foreign and majority-foreign shares were positively and significantly correlated with the minority-foreign coefficient being the largest, while heavily foreign shares were not significantly correlated. When 4-digit output shares were used the result was qualitatively similar, with all MNE shares negatively and significantly correlated in 1996 and positively and significantly correlated in 2006. In absolute value, the minority-foreign coefficient was largest followed by the heavily foreign coefficient and lastly the majority-foreign coefficient. SOE shares were positively and significantly correlated when yearend capital was used in both years and in 2006 when initial capital was used.

When MNE/SOE shares are measured at the three digit level, the hypothesis that all MNE ownership groups impart the same impact is again rejected (Table 3). However, in this case, the results differ in that the coefficient on majority-foreign shares is positive and significant in all 1996 estimates and the 2006 output share estimates, but not in the 2006 labor share estimates. The heavily foreign coefficient is negatively significant for both years except when using output shares and ending capital. Only the minority-foreign coefficient is significantly negative in 1996 and positive in 2006 as in the 4-digit regressions. The SOE coefficient is again positive and significant, except when using output shares and initial capital. In short, the regressions in Table 3 suggest that SOEs presence generally was correlated with higher energy intensity in local plants as was minority-foreign presence in 2006, but minority-foreign presence had a negative effect in 1996. Heavily foreign presence was also negatively correlated in 1996 but results for this group in 2006 differed depending on the level of aggregation. Results for majority-foreign presence also differed depending on the level of aggregation and the choice of labor or output shares.

As discussed in Section 2, analyses of spillovers from MNEs often examine subsamples of industries that are relatively homogeneous in one respect or another to ascertain if there are patterns to the spillovers observed. In this case, our primary concern is whether spillovers differ between large energy consuming (and thus polluting) industries and smaller ones. Thus, we estimate equations (1) and (2) in a sample of the five largest and smallest energy consuming industries in the overall 12 industry sample. Similarly, estimates in samples of the five least and most energy intensive industries are also performed.

In the five smallest energy users among the 12 industries (apparel, electronics-related machinery, motor vehicles, and other transportation machinery in both years, basic metals in 1996 only, and wood in 2006 only), correlations of local plant energy intensities and SOE or MNE presence are generally weaker than in the overall sample (Table 4a). Moreover, equation (2) cannot be estimated using 3-digit measures of SOE/MNE presence for 1996 and results of equation (1) suggest few significant spillovers using this level of aggregation in either year. The major exception is for 2006 when output shares and initial capital were used. In this case, minority and heavily foreign MNE shares were negatively and significantly correlated with local plant energy intensities, while there were positive and weakly significant (at the 10 percent level or better) correlations to SOE and majority-foreign output shares, again only if initial capital was used. If SOE/MNE presence measures are measured at the 4-digit level, a few more significant spillover coefficients are observed. In 1996, all MNE presence imparted the same negative and significant effects on private plant energy intensities, and negative correlations to SOE presence were also significant if presence was measured as shares of labor. In 2006, private plant energy intensity was again negatively and usually significantly correlated to heavily foreign shares, but positively and significantly correlated to minority-foreign presence. SOE labor shares were also positively and significantly correlated if initial capital was used but not if yearend capital is used and SOE output shares were not significantly correlated.

In the five largest energy consuming industries (food and beverages, textiles, and paper in both years, wood and non-metallic mineral products in 1996 only, and chemicals and basic metals in 2006 only), results resembled those of the overall 12-industry sample more. Part of the reason for this is that samples were much larger for the five largest energy consumers than the five smaller ones.[14] In other words, industries were large energy consumers partially because they had more plants and production than smaller consuming industries. As in the large sample, the effect of MNE presence is found to significantly differ among ownership groups for both years (Table 4b). In 1996, heavily and minority-foreign MNE groups imparted negative effects on energy intensity as in the overall sample, except for 3-digit minority-foreign labor shares combined with initial capital. Heavily foreign MNE presence was also negatively and significantly correlated in 2006 if 3-digit labor shares were used, but this coefficient was positive if 4-digit labor or output shares were used. In 1996, coefficients on minority-foreign shares and SOE shares were also negatively and significantly correlated at the 3-digit level but not at the 4-digit level; in 2006 these correlations varied widely depending on the

[14] In the 5 smaller industries in 1996, there were 1,762 local plants with initial capital, 1,944 with yearend capital, and 2,984 total, including those without capital data; in 2006 these samples were 2,369, 2,577, 4,782, respectively. In the 5 largest industries, these samples were 6,669, 7,137, 9,357, respectively, in 1996 and 4,924, 5,350, and 8,818, respectively, in 2006 (Appendix Tables 2-3).

capital measure, aggregation, and the use of labor or output shares. Coefficients on majority foreign shares tended to be positive at the 3-digit level in both years but at the 4-digit level they were negative in 1996 and positive or insignificant in 2006. SOE coefficients were also positive more often than not, but here again there was wide variation. Thus, although correlations of MNE and SOE shares to local plant energy intensities were stronger in large energy consuming industries, those correlations vary greatly over years and depending on specification.

Finally we examine industries with relatively low energy intensities (apparel, electronics-related machinery, and motor vehicles in both years, wood and other transportation in 1996 only, and paper and basic metals in 2006 only) and those with relatively high energy intensities (food and beverages, rubber and plastics, and non-metallic mineral products in both years, paper and basic metals in 1996 only, and textiles and chemicals in 2006 only). The samples were substantially smaller in the low intensity industries than in the high intensity ones.[15] Correspondingly, results for the high intensity industries resembled those for the overall sample more than results for the low intensity industries.

In the low intensity industries, there was only one significant spillover coefficient in 1996 if ownership presence is measured as labor shares at the three digit level, the negative correlation to majority-foreign shares if yearend capital is used (Table 5a). In 2006, this specification yielded positive coefficients for all MNEs (equation (1)) and for SOEs if yearend capital is used. Use of 3-digit output shares also suggest that all MNEs imparted the same effects in both years, but that they were negative in 1996 and positive in 2006; SOE coefficients were also significantly positive in 2006. The 4-digit results again differ from the three digit ones in several respects. First, the effects of MNE ownership groups differed. Second, the effects of minority-foreign MNEs were consistently negative, while the impacts of majority-foreign MNEs were consistently insignificant. Correlations to SOE shares were also insignificant in most estimates and correlations to heavily foreign shares were

[15] In the 5 low intensity industries in 1996, samples were 2,918 (initial capital), 3,161 (yearend capital), and 4,273 (total); in 2006 these samples were 1,788, 1,957, and 3,702, respectively. In the 5 high intensity industries, these samples were 5,267, 5,656, and 7,527, respectively, in 1996 and 5,940, 6,460, 10,919, respectively, in 2006 (Appendix Tables 4-5).

consistently negative in 1996 but positive in 2006.

In the high energy intensity industries, heavily-foreign MNE presence imparted a negative and significant impact in 1996 and in 2006 if 3-digit labor shares are used with yearend capital (Table 5b). However, this coefficient became positive and significant in 2006 if MNE output shares were was measured at the 4-digit level and all MNE shares seemed to impart the same positive impact if 4-digit labor shares were used. The effects of minority- and majority-foreign MNE presence were also negative in 1996, but positive or insignificant in 2006. SOE presence also had a positive impact in 2006 but a generally insignificant one in 2006.

5. Conclusion

After a brief literature review, this paper has analyzed relationships between the shares of MNEs or SOEs in Indonesian manufacturing industries on the one hand, and energy efficiency in local, private plants in those industries using data on medium-large plants from the industrial censuses for 1996 and 2006. The econometric results suggest that energy intensities in private plants were often positively correlated with the presence of SOEs and majority-foreign MNEs but negatively correlated with the presence of heavily- and minority-foreign MNEs in 1996. However, these results were often reversed in 2006 and were sensitive to the sample examined, the measure of SOE or MNE presence and its level of aggregation. Thus, despite the observation of a large number of significant spillover coefficients, it is thus difficult to make clear conclusions about the nature of energy intensity spillovers in Indonesia based on this evidence.

It is thus desirable to follow up this cross section study with panel analyses using annual survey data. The panel analysis could allow for uses of lags and/or fixed effects estimators that are more standard in the literature and could partially address simultaneity issues that remain in these cross section specifications. However, this advantage would come at a substantial cost because many measures of plant technical characteristics are not available in the annual data and the capital stock data also fluctuate greatly for a large number of plants in the early 2000s in ways that are difficult to explain.

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Table 1: Energy expenditures (billion rupiah) and energy intensities (ratios of energy expenditures to output, %) in private plants and shares of SOEs and MNEs in labor and output (% of industry subtotals)

Industry	1996						2006					
	Private plants		SOE shares		MNE shares		Private plants		SOE shares		MNE shares	
	Energy expen-ditures	Energy inten-sities	Labor	Output	Labor	Output	Energy expen-ditures	Energy inten-sities	Labor	Output	Labor	Output
Manufacturing	4,879	5.37	6.92	8.88	18.11	27.15	35,635	5.83	5.52	6.48	24.97	35.79
Large energy users (12 industries)	4,522	5.96	8.42	9.99	16.50	27.22	32,767	6.54	6.31	7.08	24.83	36.73
Food & beverages	547	5.83	22.31	10.09	9.82	17.72	5,400.9	6.49	11.04	7.19	17.33	28.67
Textiles	1,200	4.94	3.13	2.47	13.22	20.01	5,873.0	6.82	2.10	1.37	17.25	32.05
Apparel	56	2.24	0.95	0.80	23.08	28.05	1,381.7	3.70	3.07	2.91	30.43	35.90
Wood products	430	4.65	1.16	0.78	9.20	11.54	1,264.8	6.05	0.73	0.31	12.94	17.79
Paper products	383	5.38	6.40	4.65	18.64	31.40	3,109.4	5.90	17.09	13.42	18.31	30.32
Chemicals	300	5.07	12.37	13.97	18.97	38.03	5,192.5	6.25	9.00	14.91	21.51	33.44
Rubber & plastic products	322	5.68	9.97	3.23	11.86	20.83	2,190.6	6.57	8.19	4.29	22.32	27.87
Non-metallic mineral products	817	15.61	6.79	13.11	11.86	25.35	2,566.4	14.52	7.95	26.64	21.96	29.37
Basic metals	273	5.61	14.44	46.04	20.66	22.91	3,624.7	5.36	4.70	3.27	20.48	15.43
Electronics-related machinery	94	3.19	1.85	3.44	51.29	55.90	540.5	3.76	1.40	0.33	65.58	71.95
Motor vehicles	46	3.97	0.47	0.09	29.00	57.66	361.0	5.11	-	-	54.74	81.31
Other transportation machinery	53	4.39	38.58	15.69	19.45	14.40	1,261.1	6.17	24.08	12.84	32.97	61.84
Correlation to private energy intensities (12 industries)	0.52	1.00	0.03	0.21	-0.40	-0.21	0.20	1.00	0.12	0.79	-0.36	-0.29

Notes and Sources: - = no plants in the category; industry definitions differ in important respects between 1996 and 2006; see the text for detailed definitions of industries and ownership groups; data are authors' compilations from BPS-Statistics (various years).

Table 2: Shares of minority-foreign, majority-foreign, and heavily-foreign MNEs in labor and output (% of industry subtotals) and correlations to private energy intensities

	1996						2006					
	Minority-foreign		Majority-foreign		Heavily-foreign		Minority-foreign		Majority-foreign		Heavily-foreign	
Industry	Labor	Output	Labor	Output	Labor	Output	Labor	Output	Labor	Output	Labor	Output
Manufacturing	3.36	5.26	8.70	15.22	6.05	6.67	2.39	3.36	7.01	12.17	15.57	20.26
Large energy users (12 industries)	3.36	5.65	7.43	14.71	5.71	6.86	2.18	2.61	7.30	12.95	15.35	21.17
Food & beverages	3.13	3.00	4.65	10.90	2.03	3.82	2.06	1.37	6.11	7.67	9.16	19.63
Textiles	1.36	2.43	7.82	14.23	4.05	3.36	0.66	0.54	8.83	13.37	7.76	18.14
Apparel	4.76	6.70	6.74	8.60	11.58	12.75	2.80	3.10	2.78	2.99	24.86	29.81
Wood products	3.12	4.48	3.73	5.64	2.35	1.42	1.15	2.73	3.81	6.31	7.98	8.76
Paper products	6.95	9.33	6.96	8.91	4.73	13.17	5.12	4.67	6.72	17.80	6.47	7.85
Chemicals	3.25	3.48	11.84	29.08	3.88	5.48	2.18	1.24	7.80	11.77	11.53	20.42
Rubber & plastic products	1.01	1.63	6.64	14.45	4.21	4.75	0.91	1.27	11.11	14.36	10.30	12.23
Non-metallic mineral products	6.72	19.09	4.99	6.21	0.15	0.05	7.76	9.59	8.81	14.20	5.39	5.58
Basic metals	1.78	1.38	14.43	20.61	4.45	0.92	2.90	4.31	7.81	6.66	9.76	4.45
Electronics-related machinery	1.81	1.85	19.74	19.16	29.74	34.90	1.46	3.30	5.53	5.90	58.59	62.75
Motor vehicles	15.91	35.32	11.70	21.63	1.39	0.72	5.06	6.34	20.77	26.27	28.92	48.69
Other transportation machinery	7.00	7.55	7.94	6.03	4.51	0.82	0.81	1.72	21.08	52.85	11.08	7.27
Correlation to private energy intensities (12 industries)	0.06	0.26	-0.34	-0.27	-0.41	-0.36	0.67	0.66	-0.00	-0.00	-0.42	-0.44

Notes and Sources: - = no plants in the category; industry definitions differ in important respects between 1996 and 2006; see the text for detailed definitions of industries and ownership groups; data are authors' compilations from BPS-Statistics (various years).

Table 3: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants from Equations (1) and (2); 12 large energy using industries

Ownership group	1996, initial capital	1996, ending capital	2006, initial capital	2006, ending capital
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0551 a	-0.0601 a	0.1171 a	0.1326 a
MNE	-0.2485 a	-0.2521 a	0.0218 b	0.0210 b
Eq (2), SOE	-0.0794 a	1.6591 a	0.1294 a	1.6013 b
Minority-foreign	-0.4813 a	-0.5493 a	0.5042 a	0.4585 a
Majority-foreign	0.4516 a	0.2883 a	0.0288	0.0376 c
Heavily-foreign	-0.5850 a	-0.3962 a	-0.0377 a	-0.0490 a
Test MNE equality	25.68 a	25.32 a	22.04 a	22.40 a
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.2158 a	-0.2204 a	0.0556 a	0.0666 a
MNE	-0.0031	-0.0071	0.0295 a	0.0317 a
Eq (2), SOE	0.0260	1.5303 a	0.0663 a	1.6572 b
Minority-foreign	-0.2724 a	-0.2681 a	0.2153 a	0.2085 a
Majority-foreign	0.4648 a	0.4436 a	0.0407 a	0.0261 b
Heavily-foreign	-0.3209 a	-0.3245 a	-0.0179 b	-0.0137
Test MNE equality	168.24 a	195.05 a	22.40 a	16.65 a
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	0.0042	0.0044	0.0562 a	0.0622 a
MNE	-0.1102 a	-0.1111 a	0.0458 a	0.0465 a
Eq (2), SOE	0.0048	1.4417 a	0.0568 a	1.6568 b
Minority-foreign	-0.1010 a	-0.1084 a	0.1444 a	0.1103 a
Majority-foreign	-0.1100 a	-0.1031 a	0.0610 a	0.0601 a
Heavily-foreign	-0.1219 a	-0.1294 a	-0.0097	-0.0164
Test MNE equality	0.63	1.26	8.38 a	8.88 a
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0100	-0.0100	0.0571 a	0.0659 a
MNE	-0.0857 a	-0.0855 a	0.0518 a	0.0542 a
Eq (2), SOE	-0.0040	1.3329 b	0.0572 a	1.4836 b
Minority-foreign	-0.1444 a	-0.1431 a	0.1015 a	0.0791 a
Majority-foreign	-0.0323 a	-0.0269 a	0.0399 a	0.0342 a
Heavily-foreign	-0.0992 a	-0.1005 a	0.0662 a	0.0649 a
Test MNE equality	22.20 a	29.05 a	7.15 a	7.94 a

Notes: a=signficant at the 1% level, b=significant at the 5% level, c=significant at the 10% level (all p-values based on robust standard errors); the test MNE equality rows report Wald tests of the hypothesis that MNE shares are equal for all MNE groups and associated p-values; ; for other slope coefficients and equation statistics, see Appendix Table 1.

Table 4a: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants from Equations (1) and (2); 5 smallest energy users of the 12 large energy using industries

Ownership group	1996, initial capital	1996, ending capital	2006, initial capital	2006, ending capital
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0228	0.0005	0.0397	0.0479
MNE	-0.0230	-0.0189	0.0172	0.0220 c
Eq (2), SOE	0.0285	-1.6490 a	0.0559	-0.5767
Minority-foreign	-0.1717	-0.0316	-0.1434	0.0276
Majority-foreign	-	-0.0315	0.0416 c	-0.0011
Heavily-foreign	-	-	0.0220	0.0235
Test MNE equality	-	0.17	1.11	0.18
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0187	-0.0069	-0.0018	0.0056
MNE	-0.0334	-0.0261	0.0001	0.0033
Eq (2), SOE	0.0068	-1.6490 a	-0.2767 a	-0.8303
Minority-foreign	-0.1587	-0.0776	0.1455 c	0.0656
Majority-foreign	-	-0.0222	-0.2127 a	-0.0141
Heavily-foreign	-	-	0.0213 c	0.0030
Test MNE equality	-	0.17	4.20 b	1.07
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0219 b	-0.0201 b	0.0083	0.0171
MNE	-0.0200 a	-0.0261 a	-0.0121	-0.0071
Eq (2), SOE	-0.0082	-1.4892 a	0.1740 a	-0.0908
Minority-foreign	0.0084	0.0129	0.2022 b	0.2779 a
Majority-foreign	0.0069	0.0034	0.1267 a	0.0287
Heavily-foreign	-0.0300 a	-0.0361 a	-0.0635 a	-0.0516 a
Test MNE equality	1.26	3.30 b	11.17 a	6.55 a
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0109 c	-0.0076	-0.0149	-0.0074
MNE	-0.0183 a	-0.0236 a	-0.0104	-0.0072
Eq (2), SOE	-0.0036	-1.5106 a	-0.0953	-0.7320
Minority-foreign	0.0155	0.0024	0.0997 b	0.1210 a
Majority-foreign	0.0020	-0.0044	-0.0776 c	-0.0160
Heavily-foreign	-0.0229 a	-0.0278 a	-0.0187 c	-0.0274 a
Test MNE equality	1.62	1.97	4.30 b	6.68 a

Notes: - =omitted because of collinerity, a=signficant at the 1% level, b=significant at the 5% level, c=significant at the 10% level (all p-values based on robust standard errors); the test MNE equality rows report Wald tests of the hypothesis that MNE shares are equal for all MNE groups and associated p-values; ; for other slope coefficients and equation statistics, see Appendix Table 2.

Table 4b: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants from Equations (1) and (2); 5 largest energy users of the 12 large energy using industries

Ownership group	1996, initial capital	1996, ending capital	2006, initial capital	2006, ending capital
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.2592 a	-0.2594 a	0.3905 a	0.4061 a
MNE	-0.5043 a	-0.5124 a	0.0228	0.0232
Eq (2), SOE	-0.8914 a	1.7721 b	0.4093 a	2.3176 a
Minority-foreign	0.0688	-0.6949 a	0.0368	0.2600 b
Majority-foreign	-1.5391 a	1.7298 a	0.1519 a	0.0660 c
Heavily-foreign	-4.1221 a	-0.3046 a	-0.0743 a	-0.0765 a
Test MNE equality	98.80 a	13.60 a	6.95 a	5.42 a
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.3886 a	-0.3882 a	0.2192 a	0.2240 a
MNE	-0.0363 b	-0.0385 b	0.0165	0.0250 b
Eq (2), SOE	-0.1250 b	2.0069 a	0.3869 a	2.3777 a
Minority-foreign	-0.1649 a	-0.2427 a	-0.2095 c	0.4323 a
Majority-foreign	0.4263 a	0.4996 a	0.1359 a	0.0585 a
Heavily-foreign	-0.3886 a	-0.3571 a	-0.0103	-0.0024
Test MNE equality	119.68 a	186.40 a	30.01 a	20.38 a
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	0.0114	0.0149 b	0.0472 a	0.0526 a
MNE	-0.1697 a	-0.1674 a	0.0121	0.0130
Eq (2), SOE	0.0119	1.4548 b	0.0449 a	2.1538 a
Minority-foreign	-0.1260 a	-0.1347 a	-0.1633 a	-0.1656 a
Majority-foreign	-0.1913 a	-0.1802 a	-0.0059	-0.0066
Heavily-foreign	-0.2881 a	-0.3012 a	0.0904 a	0.0658 a
Test MNE equality	12.77 a	14.73 a	10.89 a	9.23 a
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0125	-0.0119	0.0339 a	0.0387 a
MNE	-0.1189 a	-0.1182 a	0.0504 a	0.0543 a
Eq (2), SOE	-0.0094	1.2438 c	0.0367 a	2.0612 b
Minority-foreign	-0.1533 a	-0.1528 a	-0.0447	-0.0310
Majority-foreign	-0.0621 a	-0.0536 a	0.0254 a	0.0262 a
Heavily-foreign	-0.1464 a	-0.1477 a	0.0869 a	0.0857 a
Test MNE equality	10.73 a	15.85 a	23.55 a	22.11 a

Notes: a=signficant at the 1% level, b=significant at the 5% level, c=significant at the 10% level (all p-values based on robust standard errors); the test MNE equality rows report Wald tests of the hypothesis that MNE shares are equal for all MNE groups and associated p-values; ; for other slope coefficients and equation statistics, see Appendix Table 3.

Table 5a: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants from Equations (1) and (2); 5 least energy intensive of the 12 large energy using industries

Ownership group	1996, initial capital	1996, ending capital	2006, initial capital	2006, ending capital
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0374 a	-0.0298 b	0.0755	0.1139 b
MNE	-0.0647 a	-0.0637 a	0.0608 a	0.0661 a
Eq (2), SOE	-0.1252	1.2349	-0.0076	-0.3518
Minority-foreign	0.1433	-0.0447	-0.1559	0.0277
Majority-foreign	-0.0870	-0.2260 a	0.0039	-0.0128
Heavily-foreign	-0.0477	0.0247	0.1272 b	0.1125 b
Test MNE equality	3.64 b	5.31 a	0.94	1.91
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0588 c	-0.0371	0.0703 b	0.0870 a
MNE	-0.0626 a	-0.0623 a	0.0538 a	0.0587 a
Eq (2), SOE	-0.0301	1.2288	0.0193	-0.3990
Minority-foreign	-0.0603	-0.0686 a	0.0315	0.0793
Majority-foreign	-0.1064 c	-0.0983 a	0.0192	-0.0050
Heavily-foreign	-0.0488 a	-0.0519 a	0.0800 b	0.0747 a
Test MNE equality	1.01	1.17	0.27	4.13 b
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0286 a	-0.0223 a	0.1101 b	0.1387 a
MNE	-0.0545 a	-0.0550 a	0.0455 a	0.0540 a
Eq (2), SOE	-0.0241 a	1.2239	-0.0018	-0.6671
Minority-foreign	-0.0528 b	-0.0525 b	-0.2576 b	-0.2565 a
Majority-foreign	-0.0079	0.0111	0.0072	-0.0044
Heavily-foreign	-0.0927 a	-0.1031 a	0.1401 a	0.1537 a
Test MNE equality	11.99 a	22.36 a	3.75 b	7.97 a
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES				
Eq. (1), SOE	-0.0212 a	-0.0166 a	0.0721 b	0.0968 a
MNE	-0.0392 a	-0.0397 a	0.0392 b	0.0499 a
Eq (2), SOE	-0.0167 a	1.2295	0.0096	-0.6080
Minority-foreign	-0.0459 a	-0.0455 a	-0.1224 c	-0.1335 a
Majority-foreign	0.0081	0.0185 c	0.0221	0.0138
Heavily-foreign	-0.0762 a	-0.0823 a	0.1285 a	0.1521 a
Test MNE equality	27.69 a	41.74 a	4.57 b	7.76 a

Notes: a=signficant at the 1% level, b=significant at the 5% level, c=significant at the 10% level (all p-values based on robust standard errors); the test MNE equality rows report Wald tests of the hypothesis that MNE shares are equal for all MNE groups and associated p-values; ; for other slope coefficients and equation statistics, see Appendix Table 4.

Table 5b: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants from Equations (1) and (2); 5 most energy intensive of the 12 large energy using industries

Ownership group	1996, initial capital		1996, ending capital		2006, initial capital		2006, ending capital	
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES								
Eq. (1), SOE	-0.0904	a	-0.0887	a	0.1387	a	0.1543	a
MNE	-0.2545	a	-0.2557	a	0.0266	c	0.0239	
Eq (2), SOE	-0.1723	a	1.3273	c	0.1462	a	1.9764	a
Minority-foreign	-0.4550	a	-0.5419	a	0.5098	a	0.4475	a
Majority-foreign	0.7883	a	0.4120	a	0.0322		0.0851	a
Heavily-foreign	-1.0263	a	-0.5856	a	-0.0497	c	-0.0924	a
Test MNE equality	41.66	a	32.17	a	16.80	a	20.85	a
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES								
Eq. (1), SOE	-0.2841	a	-0.2816	a	0.0514	b	0.0631	a
MNE	-0.0289	c	-0.0316	b	0.0478	a	0.0491	a
Eq (2), SOE	-0.0725	c	1.2374	c	0.0581	b	2.0609	a
Minority-foreign	-0.1981	a	-0.2452	a	0.2616	a	0.2431	a
Majority-foreign	0.3798	a	0.4128	a	0.0674	a	0.0791	a
Heavily-foreign	-0.3604	a	-0.3393	a	-0.0095		0.0051	
Test MNE equality	126.38	a	168.70	a	19.42	a	16.75	a
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES								
Eq. (1), SOE	0.0281	a	0.0305	a	0.0658	a	0.0706	a
MNE	-0.1586	a	-0.1556	a	0.0732	a	0.0717	a
Eq (2), SOE	0.0289	a	0.9623		0.0688	a	1.8747	b
Minority-foreign	-0.1308	a	-0.1463	a	0.2082	a	0.1724	a
Majority-foreign	-0.1674	a	-0.1698	a	0.0594	a	0.0602	a
Heavily-foreign	-0.2590	a	-0.2498	a	0.0743	a	0.0503	b
Test MNE equality	3.20	b	2.11		2.98	c	1.97	
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES								
Eq. (1), SOE	-0.0055		-0.0051		0.0568	a	0.0654	a
MNE	-0.1259	a	-0.1244	a	0.0671	a	0.0691	a
Eq (2), SOE	-0.0014		0.6483		0.0591	a	1.7684	b
Minority-foreign	-0.1723	a	-0.1733	a	0.2140	a	0.1786	a
Majority-foreign	-0.0823	a	-0.0771	a	0.0513	a	0.0487	a
Heavily-foreign	-0.1248	a	-0.1228	a	0.0888	a	0.0864	a
Test MNE equality	5.43	a	7.81	a	12.84	a	11.41	a

Notes: a=signficant at the 1% level, b=significant at the 5% level, c=significant at the 10% level (all p-values based on robust standard errors); the test MNE equality rows report Wald tests of the hypothesis that MNE shares are equal for all MNE groups and associated p-values; ; for other slope coefficients and equation statistics, see Appendix Table 5.

Appendix Table 1: Correlations of SOE and MNE Presence to Energy Intensities in Private Plants and Other Slope Coefficients from Equations (1) and (2); 12 large energy using industries

Independent variable, indicator	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2738	0.00	0.2623	0.00	-	-	0.1279	0.00	0.1240	0.00	-	-
LL_{ij}	2.2529	0.00	2.1688	0.00	2.0786	0.00	1.9142	0.00	1.9039	0.00	1.4833	0.00
LM_{ij}	-2.3990	0.00	-2.3320	0.00	-2.0505	0.00	-2.1307	0.00	-2.1575	0.00	-1.9191	0.00
LE_{ij}	0.2756	0.00	0.2818	0.00	0.2778	0.00	0.5022	0.00	0.5165	0.00	0.5437	0.00
RD_{ij}	-0.2904	0.23	-0.2576	0.29	-0.2475	0.00	-0.0881	0.20	-0.0948	0.13	-0.1624	0.02
SM_{ij}	0.0298	0.00	0.0281	0.00	0.0290	0.00	0.0234	0.00	0.0228	0.00	0.0294	0.00
SH_{ij}	0.0220	0.21	0.0202	0.22	0.0217	0.00	0.0272	0.02	0.0347	0.00	0.0262	0.01
YR_{ij}	0.0491	0.00	0.0471	0.00	0.0437	0.00	0.0389	0.00	0.0373	0.00	0.0525	0.00
SS_j	-0.0551	0.00	-0.0601	0.00	-0.0452	0.00	0.1171	0.00	0.1326	0.00	0.0917	0.00
FS_j	-0.2485	0.00	-0.2521	0.00	-0.2380	0.00	0.0218	0.04	0.0210	0.04	0.0243	0.00
Obs./R^2	9,803	0.32	10,576	0.31	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2738	0.00	0.2462	0.00	-	-	0.1541	0.00	0.1288	0.00	-	-
LL_{ij}	2.2147	0.00	2.1113	0.00	2.0124	0.00	1.7771	0.00	1.7531	0.00	1.3666	0.00
LM_{ij}	-2.3893	0.00	-2.3564	0.00	-2.0639	0.00	-2.0303	0.00	-2.0534	0.00	-1.8306	0.00
LE_{ij}	0.2909	0.00	0.3095	0.00	0.3002	0.00	0.4984	0.00	0.5198	0.00	0.5459	0.00
RD_{ij}	-0.2926	0.22	-0.2973	0.22	-0.2816	0.13	-0.0976	0.16	-0.1306	0.05	-0.1850	0.01
SM_{ij}	0.0311	0.00	0.0298	0.00	0.0303	0.00	0.0231	0.00	0.0211	0.00	0.0276	0.00
SH_{ij}	0.0206	0.25	0.0209	0.20	0.0210	0.08	0.0254	0.03	0.0337	0.01	0.0284	0.00
YR_{ij}	0.0470	0.00	0.0395	0.00	0.0372	0.00	0.0359	0.00	0.0342	0.00	0.0507	0.00
SS_j	-0.0794	0.00	1.6591	0.00	1.4333	0.00	0.1294	0.00	1.6013	0.02	0.7698	0.06
$FSMIN_j$	-0.4813	0.00	-0.5493	0.00	-0.4555	0.00	0.5042	0.00	0.4585	0.00	0.4834	0.00
$FSMAJ_j$	0.4516	0.00	0.2883	0.00	0.1781	0.00	0.0288	0.20	0.0376	0.09	0.0315	0.05
$FSHVY_j$	-0.5850	0.00	-0.3962	0.00	-0.3760	0.00	-0.0377	0.01	-0.0490	0.00	-0.0331	0.00
TestFSs	25.68	0.00	25.32	0.00	23.56	0.00	22.04	0.00	22.40	0.00	35.71	0.00
Obs./R^2	9,803	0.32	10,576	0.31	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2874	0.00	0.2722	0.00	-	-	0.1334	0.00	0.1297	0.00	-	-
LL_{ij}	2.0909	0.00	2.0215	0.00	1.9803	0.00	1.8977	0.00	1.8837	0.00	1.4763	0.00
LM_{ij}	-2.2917	0.00	-2.2388	0.00	-1.9820	0.00	-2.0993	0.00	-2.1233	0.00	-1.8936	0.00
LE_{ij}	0.2817	0.00	0.2889	0.00	0.2814	0.00	0.4971	0.00	0.5117	0.00	0.5420	0.00
RD_{ij}	-0.3060	0.21	-0.2766	0.26	-0.2968	0.12	-0.1145	0.10	-0.1150	0.07	-0.1700	0.02
SM_{ij}	0.0290	0.00	0.0276	0.00	0.0287	0.00	0.0225	0.00	0.0218	0.00	0.0286	0.00
SH_{ij}	0.0087	0.63	0.0093	0.58	0.0131	0.27	0.0263	0.02	0.0334	0.01	0.0266	0.01
YR_{ij}	0.0456	0.00	0.0434	0.00	0.0413	0.00	0.0397	0.00	0.0382	0.00	0.0537	0.00
SS_j	-0.2158	0.00	-0.2204	0.00	-0.1865	0.00	0.0556	0.01	0.0666	0.00	0.0167	0.25
FS_j	-0.0031	0.83	-0.0071	0.61	-0.0134	0.26	0.0295	0.00	0.0317	0.00	0.0035	0.64
Obs./R^2	9,803	0.33	10,576	0.32	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20

Appendix Table 1 (continued)

Independent variable, indicator	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2747	0.00	0.2532	0.00	-	-	0.1451	0.00	0.1252	0.00	-	-
LL_{ij}	1.9745	0.00	1.8537	0.00	1.8271	0.00	1.8547	0.00	1.8217	0.00	1.4386	0.00
LM_{ij}	-2.2077	0.00	-2.1489	0.00	-1.8998	0.00	-2.0630	0.00	-2.0976	0.00	-1.8719	0.00
LE_{ij}	0.3434	0.00	0.3559	0.00	0.3394	0.00	0.4886	0.00	0.5127	0.00	0.5373	0.00
RD_{ij}	-0.3569	0.14	-0.3301	0.18	-0.3342	0.08	-0.1259	0.07	-0.1313	0.05	-0.1824	0.01
SM_{ij}	0.0359	0.00	0.0344	0.00	0.0351	0.00	0.0226	0.00	0.0213	0.00	0.0281	0.00
SH_{ij}	0.0242	0.15	0.0187	0.23	0.0208	0.07	0.0248	0.03	0.0341	0.01	0.0284	0.00
YR_{ij}	0.0350	0.00	0.0289	0.00	0.0279	0.00	0.0370	0.00	0.0343	0.00	0.0498	0.00
SS_{j}	0.0260	0.39	1.5303	0.00	1.4490	0.00	0.0663	0.00	1.6572	0.01	0.7738	0.06
$FSMIN_{j}$	-0.2724	0.00	-0.2681	0.00	-0.2427	0.00	0.2153	0.00	0.2085	0.00	0.2086	0.00
$FSMAJ_{j}$	0.4648	0.00	0.4436	0.00	0.3937	0.00	0.0407	0.01	0.0261	0.04	0.0041	0.67
$FSHVY_{j}$	-0.3209	0.00	-0.3245	0.00	-0.2903	0.00	-0.0179	0.04	-0.0137	0.12	-0.0413	0.00
TestFSs	168.24	0.00	195.05	0.00	216.24	0.00	22.40	0.00	16.65	0.00	35.58	0.00
Obs./R^2	9,803	0.36	10,576	0.36	14,522	0.32	8,602	0.25	9,370	0.24	16,362	0.20
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2804	0.00	0.2664	0.00	-	-	0.1020	0.00	0.0960	0.00	-	-
LL_{ij}	2.2854	0.00	2.1985	0.00	2.0885	0.00	1.9341	0.00	1.9237	0.00	1.4784	0.00
LM_{ij}	-2.4169	0.00	-2.3516	0.00	-2.0539	0.00	-2.1552	0.00	-2.1830	0.00	-1.9484	0.00
LE_{ij}	0.2763	0.00	0.2836	0.00	0.2801	0.00	0.5142	0.00	0.5314	0.00	0.5545	0.00
RD_{ij}	-0.3137	0.19	-0.2801	0.24	-0.2762	0.14	-0.1106	0.11	-0.1009	0.13	-0.1748	0.01
SM_{ij}	0.0311	0.00	0.0294	0.00	0.0302	0.00	0.0224	0.00	0.0216	0.00	0.0282	0.00
SH_{ij}	0.0218	0.22	0.0205	0.21	0.0203	0.08	0.0291	0.01	0.0366	0.00	0.0257	0.01
YR_{ij}	0.0403	0.00	0.0384	0.00	0.0370	0.00	0.0380	0.00	0.0368	0.00	0.0524	0.00
SS_{j}	0.0042	0.48	0.0044	0.44	0.0037	0.43	0.0562	0.00	0.0622	0.00	0.0572	0.00
FS_{j}	-0.1102	0.00	-0.1111	0.00	-0.0920	0.00	0.0458	0.00	0.0465	0.00	0.0535	0.00
Obs./R^2	9,803	0.32	10,576	0.31	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2793	0.00	0.2592	0.00	-	-	0.1025	0.00	0.1005	0.00	-	-
LL_{ij}	2.2884	0.00	2.1565	0.00	2.0506	0.00	1.9147	0.00	1.8623	0.00	1.4564	0.00
LM_{ij}	-2.4198	0.00	-2.3451	0.00	-2.0534	0.00	-2.1283	0.00	-2.1177	0.00	-1.8933	0.00
LE_{ij}	0.2765	0.00	0.2867	0.00	0.2842	0.00	0.5062	0.00	0.5179	0.00	0.5424	0.00
RD_{ij}	-0.3119	0.19	-0.2922	0.35	-0.2878	0.12	-0.1062	0.12	-0.1175	0.07	-0.1830	0.01
SM_{ij}	0.0311	0.00	0.0294	0.00	0.0302	0.00	0.0234	0.00	0.0215	0.00	0.0281	0.00
SH_{ij}	0.0220	0.22	0.0180	0.19	0.0195	0.09	0.0302	0.01	0.0343	0.01	0.0264	0.01
YR_{ij}	0.0402	0.00	0.0353	0.00	0.0340	0.00	0.0370	0.00	0.0359	0.00	0.0519	0.00
SS_{j}	0.0048	0.43	1.4417	0.00	1.2908	0.01	0.0568	0.00	1.6568	0.01	0.7923	0.06
$FSMIN_{j}$	-0.1010	0.00	-0.1084	0.00	-0.0708	0.00	0.1444	0.00	0.1103	0.01	0.1015	0.00
$FSMAJ_{j}$	-0.1100	0.00	-0.1031	0.00	-0.0914	0.00	0.0610	0.00	0.0601	0.00	0.0779	0.00
$FSHVY_{j}$	-0.1219	0.00	-0.1294	0.00	-0.1257	0.00	-0.0097	0.46	-0.0164	0.20	-0.0182	0.08
TestFSs	0.63	0.53	1.26	0.28	7.28	0.00	8.38	0.00	8.88	0.00	19.56	0.00
Obs./R^2	9,803	0.32	10,576	0.31	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20

Appendix Table 1 (continued)

Indepen-dent variable, indicator	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2823	0.00	0.2708	0.00	-	-	0.1205	0.00	0.1149	0.00	-	-
LL_{ij}	2.3484	0.00	2.2576	0.00	2.1376	0.00	1.9716	0.00	1.9605	0.00	1.4922	0.00
LM_{ij}	-2.4814	0.00	-2.4142	0.00	-2.1031	0.00	-2.1392	0.00	-2.1682	0.00	-1.9130	0.00
LE_{ij}	0.2765	0.00	0.2828	0.00	0.2831	0.00	0.5015	0.00	0.5193	0.00	0.5432	0.00
RD_{ij}	-0.3077	0.20	-0.2744	0.25	-0.2764	0.14	-0.1125	0.10	-0.1021	0.12	-0.1722	0.02
SM_{ij}	0.0313	0.00	0.0296	0.00	0.0310	0.00	0.0231	0.00	0.0224	0.00	0.0297	0.00
SH_{ij}	0.0271	0.13	0.0262	0.11	0.0245	0.04	0.0311	0.01	0.0380	0.00	0.0278	0.01
YR_{ij}	0.0410	0.00	0.0390	0.00	0.0375	0.00	0.0349	0.00	0.0336	0.00	0.0509	0.00
SS_j	-0.0100	0.15	-0.0100	0.14	-0.0115	0.03	0.0571	0.00	0.0659	0.00	0.0542	0.00
FS_j	-0.0857	0.00	-0.0855	0.00	-0.0790	0.00	0.0518	0.00	0.0542	0.00	0.0463	0.00
Obs./R^2	9,803	0.32	10,576	0.31	14,522	0.28	8,602	0.25	9,370	0.25	16,362	0.20
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2778	0.00	0.2581	0.00	-	-	0.1339	0.00	0.1275	0.00	-	-
LL_{ij}	2.3476	0.00	2.2128	0.00	2.0957	0.00	1.9108	0.00	1.8942	0.00	1.4840	0.00
LM_{ij}	-2.4827	0.00	-2.4128	0.00	-2.1076	0.00	-2.1080	0.00	-2.1337	0.00	-1.9003	0.00
LE_{ij}	0.2766	0.00	0.2894	0.00	0.2890	0.00	0.5030	0.00	0.5191	0.00	0.5424	0.00
RD_{ij}	-0.3109	0.20	-0.2965	0.23	-0.2867	0.13	-0.1140	0.10	-0.1269	0.05	-0.1829	0.01
SM_{ij}	0.0312	0.00	0.0295	0.00	0.0306	0.00	0.0224	0.00	0.0211	0.00	0.0290	0.00
SH_{ij}	0.0252	0.15	0.0203	0.21	0.0219	0.06	0.0290	0.01	0.0362	0.00	0.0284	0.00
YR_{ij}	0.0399	0.00	0.0341	0.00	0.0330	0.00	0.0355	0.00	0.0328	0.00	0.0508	0.00
SS_j	-0.0040	0.57	1.3329	0.02	1.1325	0.01	0.0572	0.00	1.4836	0.03	0.7195	0.08
$FSMIN_j$	-0.1444	0.00	-0.1431	0.00	-0.1117	0.00	0.1015	0.00	0.0791	0.01	0.0526	0.01
$FSMAJ_j$	-0.0323	0.00	-0.0269	0.01	-0.0320	0.00	0.0399	0.00	0.0342	0.00	0.0367	0.00
$FSHVY_j$	-0.0992	0.00	-0.1005	0.00	-0.0961	0.00	0.0662	0.00	0.0649	0.00	0.0435	0.00
TestFSs	22.20	0.00	29.05	0.00	29.87	0.00	7.15	0.00	7.94	0.00	0.77	0.46
Obs./R^2	9,803	0.32	10,576	0.32	14,522	0.28	8,602	0.25	9,370	0.24	16,362	0.20

Notes: in the Obs./R^2 rows, the coefficient column contains the number of observations and the P-value column contains the R-squared; the TestFSs rows show Wald tests of the hypothesis that coefficients on all foreign share variables are equal and associated p-values; all coefficient p-values are based on robust standard errors; industry and region dummies also included (see explanation in the text); full results including the constant and all dummies are available from the authors.

Appendix Table 2: Correlations of SOE and MNC Presence to Energy Intensities in Private Plants and Other Slope Coefficients from Equations (1) and (2); 5 smallest of the 12 large energy using industries

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.0234	0.57	0.0377	0.41	-	-	0.0887	0.00	0.0930	0.00	-	-
LL_{ij}	0.5706	0.00	0.5163	0.00	0.4289	0.00	1.0655	0.00	1.0879	0.00	0.8849	0.00
LM_{ij}	-0.9593	0.00	-0.9199	0.00	-0.9248	0.00	-1.2250	0.00	-1.2628	0.00	-1.4059	0.00
LE_{ij}	0.3746	0.00	0.3520	0.00	0.4187	0.00	0.2863	0.00	0.3095	0.00	0.5092	0.00
RD_{ij}	0.1500	0.60	0.0709	0.80	0.1765	0.55	-0.1251	0.05	-0.1323	0.05	-0.1207	0.08
SM_{ij}	0.0020	0.52	0.0034	0.28	0.0087	0.00	0.0098	0.01	0.0069	0.07	0.0226	0.00
SH_{ij}	0.0052	0.76	0.0077	0.66	0.0147	0.29	0.0016	0.91	0.0190	0.32	0.0080	0.65
YR_{ij}	0.0225	0.01	0.0212	0.01	0.0214	0.00	0.0146	0.20	0.0151	0.19	0.0594	0.00
SS_{j}	-0.0228	0.70	0.0005	0.99	0.0442	0.41	0.0397	0.43	0.0479	0.32	0.1072	0.00
FS_{j}	-0.0230	0.52	-0.0189	0.59	-0.0347	0.32	0.0172	0.14	0.0220	0.06	-0.0062	0.49
Obs./R^2	1,762	0.31	1,944	0.29	2,984	0.27	2,369	0.22	2,577	0.22	4,782	0.14
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.0234	0.57	0.0351	0.45	-	-	0.0892	0.00	0.0928	0.00	-	-
LL_{ij}	0.5706	0.00	0.5325	0.00	0.4424	0.00	1.0663	0.00	1.0912	0.00	0.8806	0.00
LM_{ij}	-0.9593	0.00	-0.9223	0.00	-0.9279	0.00	-1.2199	0.00	-1.2638	0.00	-1.3959	0.00
LE_{ij}	0.3746	0.00	0.3549	0.00	0.4199	0.00	0.2862	0.00	0.3089	0.00	0.5111	0.00
RD_{ij}	0.1500	0.60	0.1611	0.53	0.2799	0.34	-0.1243	0.06	-0.1333	0.04	-0.1118	0.10
SM_{ij}	0.0020	0.52	0.0035	0.27	0.0088	0.00	0.0098	0.01	0.0067	0.08	0.0226	0.00
SH_{ij}	0.0052	0.76	0.0132	0.43	0.0172	0.21	0.0019	0.89	0.0215	0.26	0.0092	0.59
YR_{ij}	0.0225	0.01	0.0234	0.01	0.0231	0.00	0.0143	0.21	0.0159	0.17	0.0610	0.00
SS_{j}	0.0285	0.71	-1.6490	0.00	-1.4645	0.01	0.0559	0.24	-0.5767	0.69	0.2653	0.80
$FSMIN_{j}$	-0.1717	0.52	-0.0316	0.86	0.0328	0.85	-0.1434	0.25	0.0276	0.83	-0.1272	0.27
$FSMAJ_{j}$	-	-	-0.0315	0.57	-0.0935	0.08	0.0416	0.10	-0.0011	0.97	-0.0701	0.01
$FSHVY_{j}$	-	-	-	-	-	-	0.0220	0.14	0.0235	0.12	0.0181	0.21
TestDFs	-	-	0.17	0.84	1.69	0.19	1.11	0.33	0.18	0.84	4.35	0.01
Obs./R^2	1,762	0.31	1,944	0.29	2,984	0.27	2,369	0.22	2,577	0.22	4,782	0.14
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.0234	0.57	0.0377	0.41	-	-	0.0873	0.00	0.0913	0.00	-	-
LL_{ij}	0.5706	0.00	0.5163	0.00	0.4289	0.00	1.0698	0.00	1.0919	0.00	0.9053	0.00
LM_{ij}	-0.9593	0.00	-0.9199	0.00	-0.9248	0.00	-1.2247	0.00	-1.2610	0.00	-1.4143	0.00
LE_{ij}	0.3746	0.00	0.3520	0.00	0.4187	0.00	0.2857	0.00	0.3091	0.00	0.5093	0.00
RD_{ij}	0.1500	0.60	0.0709	0.80	0.1765	0.55	-0.1241	0.05	-0.1310	0.05	-0.1145	0.09
SM_{ij}	0.0020	0.52	0.0034	0.28	0.0087	0.00	0.0097	0.01	0.0068	0.08	0.0228	0.00
SH_{ij}	0.0052	0.76	0.0077	0.66	0.0147	0.29	0.0035	0.80	0.0203	0.29	0.0127	0.47
YR_{ij}	0.0225	0.01	0.0212	0.01	0.0214	0.00	0.0149	0.19	0.0153	0.19	0.0587	0.00
SS_{j}	-0.0187	0.58	-0.0069	0.83	0.0062	0.85	-0.0018	0.95	0.0056	0.83	-0.0042	0.83
FS_{j}	-0.0334	0.52	-0.0261	0.60	-0.0449	0.37	0.0001	0.99	0.0033	0.74	-0.0362	0.00
Obs./R^2	1,762	0.31	1,944	0.29	2,984	0.27	2,369	0.22	2,577	0.22	4,782	0.14

Appendix Table 2 (continued)

Independent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.0234	0.57	0.0351	0.45	-	-	0.0905	0.00	0.0925	0.00	-	-
LL_{ij}	0.5706	0.00	0.5325	0.00	0.4424	0.00	1.0880	0.00	1.0947	0.00	0.9057	0.00
LM_{ij}	-0.9593	0.00	-0.9223	0.00	-0.9279	0.00	-1.2278	0.00	-1.2677	0.00	-1.4160	0.00
LE_{ij}	0.3746	0.00	0.3549	0.00	0.4199	0.00	0.2899	0.00	0.3089	0.00	0.5097	0.00
RD_{ij}	0.1500	0.60	0.1611	0.53	0.2799	0.34	-0.1166	0.07	-0.1327	0.05	-0.1126	0.10
SM_{ij}	0.0020	0.52	0.0035	0.27	0.0088	0.00	0.0100	0.01	0.0070	0.07	0.0231	0.00
SH_{ij}	0.0052	0.76	0.0132	0.43	0.0172	0.21	0.0055	0.69	0.0192	0.32	0.0091	0.60
YR_{ij}	0.0225	0.01	0.0234	0.01	0.0231	0.00	0.0185	0.11	0.0155	0.18	0.0586	0.00
SS_j	0.0068	0.78	-1.6490	0.00	-1.4645	0.01	-0.2767	0.01	-0.8303	0.57	0.1982	0.85
$FSMIN_j$	-0.1587	0.52	-0.0776	0.71	-0.0977	0.64	0.1455	0.05	0.0656	0.15	0.0133	0.71
$FSMAJ_j$	-	-	-0.0222	0.59	-0.0711	0.07	-0.2127	0.01	-0.0141	0.46	-0.0508	0.00
$FSHVY_j$	-	-	-	-	-	-	0.0213	0.05	0.0030	0.77	-0.0264	0.00
TestDFs	-	-	0.17	0.84	1.69	0.19	4.20	0.02	1.07	0.34	1.63	0.20
Obs./R^2	1,762	0.31	1,944	0.29	2,984	0.27	2,369	0.22	2,577	0.22	4,782	0.14
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.0236	0.56	0.0363	0.42	-	-	0.0872	0.00	0.0907	0.00	-	-
LL_{ij}	0.5836	0.00	0.5293	0.00	0.4377	0.00	1.0752	0.00	1.0972	0.00	0.8914	0.00
LM_{ij}	-0.9643	0.00	-0.9253	0.00	-0.9258	0.00	-1.2258	0.00	-1.2614	0.00	-1.4099	0.00
LE_{ij}	0.3680	0.00	0.3487	0.00	0.4199	0.00	0.2870	0.00	0.3101	0.00	0.5106	0.00
RD_{ij}	0.2238	0.39	0.1549	0.56	0.2100	0.47	-0.1204	0.06	-0.1280	0.05	-0.1149	0.09
SM_{ij}	0.0022	0.49	0.0039	0.23	0.0096	0.00	0.0100	0.01	0.0071	0.07	0.0229	0.00
SH_{ij}	0.0094	0.60	0.0101	0.57	0.0138	0.33	0.0021	0.88	0.0193	0.31	0.0112	0.52
YR_{ij}	0.0214	0.01	0.0193	0.02	0.0193	0.01	0.0145	0.21	0.0151	0.19	0.0582	0.00
SS_j	-0.0219	0.02	-0.0201	0.03	-0.0179	0.02	0.0083	0.87	0.0171	0.72	0.0495	0.16
FS_j	-0.0200	0.00	-0.0261	0.00	-0.0338	0.00	-0.0121	0.27	-0.0071	0.52	-0.0417	0.00
Obs./R^2	1,762	0.31	1,944	0.30	2,984	0.27	2,369	0.22	2,577	0.22	4,782	0.14
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.0250	0.54	0.0335	0.46	-	-	0.0791	0.01	0.0810	0.00	-	-
LL_{ij}	0.5847	0.00	0.5442	0.00	0.4536	0.00	1.0747	0.00	1.1165	0.00	0.8820	0.00
LM_{ij}	-0.9659	0.00	-0.9297	0.00	-0.9321	0.00	-1.2652	0.00	-1.3003	0.00	-1.4182	0.00
LE_{ij}	0.3643	0.00	0.3497	0.00	0.4173	0.00	0.2806	0.00	0.2990	0.00	0.5112	0.00
RD_{ij}	0.2198	0.42	0.2226	0.39	0.2984	0.31	-0.1315	0.04	-0.1387	0.03	-0.1157	0.09
SM_{ij}	0.0024	0.44	0.0043	0.18	0.0098	0.00	0.0093	0.02	0.0058	0.13	0.0226	0.00
SH_{ij}	0.0070	0.68	0.0122	0.48	0.0162	0.25	-0.0006	0.97	0.0213	0.26	0.0181	0.29
YR_{ij}	0.0211	0.01	0.0208	0.01	0.0208	0.01	0.0119	0.30	0.0146	0.21	0.0576	0.00
SS_j	-0.0082	0.62	-1.4892	0.01	-1.3285	0.02	0.1740	0.00	-0.0908	0.95	0.6763	0.51
$FSMIN_j$	0.0084	0.86	0.0129	0.67	0.0289	0.26	0.2022	0.05	0.2779	0.01	-0.2373	0.01
$FSMAJ_j$	0.0069	0.73	0.0034	0.84	-0.0242	0.08	0.1267	0.00	0.0287	0.39	0.0103	0.67
$FSHVY_j$	-0.0300	0.00	-0.0361	0.00	-0.0396	0.00	-0.0635	0.00	-0.0516	0.00	-0.0540	0.00
TestDFs	1.26	0.28	3.30	0.04	3.55	0.03	11.17	0.00	6.55	0.00	4.75	0.01
Obs./R^2	1,762	0.31	1,944	0.30	2,984	0.28	2,369	0.23	2,577	0.22	4,782	0.14

Appendix Table 2 (continued)

Independent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.0263	0.52	0.0390	0.39	-	-	0.0865	0.00	0.0902	0.00	-	-
LL_{ij}	0.5790	0.00	0.5252	0.00	0.4315	0.00	1.0779	0.00	1.0992	0.00	0.9216	0.00
LM_{ij}	-0.9657	0.00	-0.9273	0.00	-0.9285	0.00	-1.2272	0.00	-1.2624	0.00	-1.4254	0.00
LE_{ij}	0.3647	0.00	0.3445	0.00	0.4174	0.00	0.2866	0.00	0.3098	0.00	0.5101	0.00
RD_{ij}	0.2143	0.45	0.1534	0.59	0.1812	0.54	-0.1218	0.06	-0.1290	0.05	-0.1100	0.11
SM_{ij}	0.0023	0.46	0.0041	0.21	0.0098	0.00	0.0098	0.01	0.0069	0.07	0.0234	0.00
SH_{ij}	0.0093	0.60	0.0100	0.58	0.0142	0.32	0.0040	0.77	0.0208	0.28	0.0154	0.38
YR_{ij}	0.0218	0.01	0.0197	0.02	0.0201	0.01	0.0149	0.19	0.0154	0.18	0.0575	0.00
SS_j	-0.0109	0.10	-0.0076	0.25	-0.0020	0.74	-0.0149	0.58	-0.0074	0.77	-0.0219	0.26
FS_j	-0.0183	0.00	-0.0236	0.00	-0.0272	0.00	-0.0104	0.27	-0.0072	0.45	-0.0496	0.00
Obs./R^2	1,762	0.31	1,944	0.30	2,984	0.28	2,369	0.22	2,577	0.22	4,782	0.14
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.0261	0.52	0.0353	0.44	-	-	0.0797	0.01	0.0842	0.00	-	-
LL_{ij}	0.5742	0.00	0.5337	0.00	0.4477	0.00	1.1319	0.00	1.1374	0.00	0.9208	0.00
LM_{ij}	-0.9635	0.00	-0.9274	0.00	-0.9320	0.00	-1.2574	0.00	-1.2987	0.00	-1.4320	0.00
LE_{ij}	0.3657	0.00	0.3506	0.00	0.4148	0.00	0.2746	0.00	0.3001	0.00	0.5091	0.00
RD_{ij}	0.2252	0.43	0.2421	0.36	0.2799	0.35	-0.1273	0.04	-0.1372	0.03	-0.1118	0.10
SM_{ij}	0.0028	0.38	0.0046	0.15	0.0100	0.00	0.0095	0.02	0.0067	0.08	0.0232	0.00
SH_{ij}	0.0067	0.69	0.0126	0.46	0.0169	0.24	0.0012	0.93	0.0174	0.35	0.0156	0.37
YR_{ij}	0.0206	0.02	0.0205	0.02	0.0216	0.00	0.0146	0.21	0.0144	0.21	0.0568	0.00
SS_j	-0.0036	0.69	-1.5106	0.01	-1.3208	0.02	-0.0953	0.12	-0.7320	0.61	0.4215	0.68
$FSMIN_j$	0.0155	0.67	0.0024	0.94	0.0083	0.77	0.0997	0.02	0.1210	0.00	-0.0427	0.18
$FSMAJ_j$	0.0020	0.89	-0.0044	0.74	-0.0232	0.03	-0.0776	0.07	-0.0160	0.37	-0.0301	0.02
$FSHVY_j$	-0.0229	0.00	-0.0278	0.00	-0.0288	0.00	-0.0187	0.07	-0.0274	0.01	-0.0561	0.00
TestDFs	1.62	0.20	1.97	0.14	0.96	0.38	4.30	0.01	6.68	0.00	1.35	0.26
Obs./R^2	1,762	0.32	1,944	0.30	2,984	0.28	2,369	0.22	2,577	0.22	4,782	0.14

Notes: - = estimate could not be obtained; in the Obs./R^2 rows, the coefficient column contains the number of observations and the P-value column contains the R-squared; the TestDFs rows show Wald tests of the hypothesis that coefficients on all foreign ownership dummies are equal and associated p-values; industry and region dummies also included as relevant (see explanation in the text); full results including the constant and all dummies are available from the authors.

Appendix Table 3: Correlations of SOE and MNC Presence to Energy Intensities in Private Plants and Other Slope Coefficients from Equations (1) and (2); 5 largest of the 12 large energy using industries

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3119	0.00	0.2834	0.00	-	-	0.1427	0.00	0.1348	0.00	-	-
LL_{ij}	2.8332	0.00	2.7309	0.00	2.6424	0.00	2.0876	0.00	2.0825	0.00	1.6052	0.00
LM_{ij}	-2.8012	0.00	-2.7189	0.00	-2.4142	0.00	-2.4085	0.00	-2.4374	0.00	-2.1125	0.00
LE_{ij}	0.2677	0.00	0.2757	0.00	0.2614	0.00	0.6564	0.00	0.6733	0.00	0.6700	0.00
RD_{ij}	-0.3034	0.68	-0.2376	0.75	-0.4074	0.41	0.0233	0.86	-0.0354	0.77	-0.0613	0.70
SM_{ij}	0.0461	0.00	0.0436	0.00	0.0446	0.00	0.0448	0.00	0.0457	0.00	0.0520	0.00
SH_{ij}	0.0236	0.45	0.0258	0.37	0.0313	0.13	0.0423	0.01	0.0477	0.00	0.0425	0.00
YR_{ij}	0.0652	0.00	0.0613	0.00	0.0601	0.00	0.0436	0.00	0.0420	0.00	0.0508	0.00
SS_j	-0.2592	0.00	-0.2594	0.00	-0.2490	0.00	0.3905	0.00	0.4061	0.00	0.3825	0.00
FS_j	-0.5043	0.00	-0.5124	0.00	-0.4487	0.00	0.0228	0.13	0.0232	0.11	0.0398	0.00
Obs./R^2	6,669	0.34	7,137	0.33	9,357	0.30	4,924	0.24	5,350	0.24	8,818	0.21
SOE & MNE LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3361	0.00	0.2875	0.00	-	-	0.1333	0.00	0.0855	0.01	-	-
LL_{ij}	2.5924	0.00	2.7772	0.00	2.6505	0.00	2.1186	0.00	2.0288	0.00	1.5082	0.00
LM_{ij}	-2.6911	0.00	-2.8793	0.00	-2.5410	0.00	-2.4125	0.00	-2.3602	0.00	-2.0299	0.00
LE_{ij}	0.2875	0.00	0.2736	0.00	0.2644	0.00	0.6505	0.00	0.6869	0.00	0.6704	0.00
RD_{ij}	-0.1934	0.78	-0.1739	0.81	-0.3099	0.51	-0.0054	0.97	-0.2117	0.17	-0.2556	0.13
SM_{ij}	0.0509	0.00	0.0449	0.00	0.0460	0.00	0.0451	0.00	0.0402	0.00	0.0454	0.00
SH_{ij}	0.0292	0.34	0.0377	0.21	0.0327	0.13	0.0416	0.01	0.0362	0.04	0.0322	0.02
YR_{ij}	0.0620	0.00	0.0546	0.00	0.0535	0.00	0.0430	0.00	0.0373	0.00	0.0470	0.00
SS_j	-0.8914	0.00	1.7721	0.01	1.4516	0.02	0.4093	0.00	2.3176	0.01	1.8975	0.00
$FSMIN_j$	0.0688	0.52	-0.6949	0.00	-0.6196	0.00	0.0368	0.76	0.2600	0.03	0.2787	0.00
$FSMAJ_j$	-1.5391	0.00	1.7298	0.00	1.8330	0.00	0.1519	0.00	0.0660	0.10	0.0962	0.00
$FSHVY_j$	-4.1221	0.00	-0.3046	0.00	-0.2395	0.00	-0.0743	0.01	-0.0765	0.01	-0.0722	0.00
TestDFs	98.80	0.00	13.60	0.00	20.72	0.00	6.95	0.00	5.42	0.00	11.15	0.00
Obs./R^2	6,669	0.37	7,137	0.32	9,357	0.29	4,924	0.24	5,350	0.23	8,818	0.20
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3243	0.00	0.2935	0.00	-	-	0.1656	0.00	0.1548	0.00	-	-
LL_{ij}	2.5841	0.00	2.4964	0.00	2.4528	0.00	1.9184	0.00	1.9199	0.00	1.4817	0.00
LM_{ij}	-2.6775	0.00	-2.6039	0.00	-2.3181	0.00	-2.2750	0.00	-2.3021	0.00	-1.9731	0.00
LE_{ij}	0.2644	0.00	0.2730	0.00	0.2611	0.00	0.6586	0.00	0.6737	0.00	0.6683	0.00
RD_{ij}	-0.2468	0.73	-0.1724	0.82	-0.3677	0.45	-0.1312	0.36	-0.1435	0.22	-0.1422	0.33
SM_{ij}	0.0454	0.00	0.0427	0.00	0.0445	0.00	0.0399	0.00	0.0407	0.00	0.0470	0.00
SH_{ij}	0.0094	0.77	0.0151	0.61	0.0182	0.38	0.0346	0.03	0.0402	0.01	0.0378	0.00
YR_{ij}	0.0662	0.00	0.0621	0.00	0.0613	0.00	0.0463	0.00	0.0449	0.00	0.0521	0.00
SS_j	-0.3886	0.00	-0.3882	0.00	-0.3828	0.00	0.2192	0.00	0.2240	0.00	0.2061	0.00
FS_j	-0.0363	0.03	-0.0385	0.01	-0.0439	0.00	0.0165	0.18	0.0250	0.05	0.0022	0.85
Obs./R^2	6,669	0.35	7,137	0.34	9,357	0.31	4,924	0.24	5,350	0.23	8,818	0.20

Appendix Table 3 (continued)

Independent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3429	0.00	0.3034	0.00	-	-	0.1384	0.00	0.1200	0.00	-	-
LL_{ij}	2.5587	0.00	2.4609	0.00	2.4419	0.00	2.0779	0.00	1.9874	0.00	1.5116	0.00
LM_{ij}	-2.6291	0.00	-2.5628	0.00	-2.2748	0.00	-2.3535	0.00	-2.3187	0.00	-1.9897	0.00
LE_{ij}	0.2932	0.00	0.3096	0.00	0.2941	0.00	0.6412	0.00	0.6694	0.00	0.6589	0.00
RD_{ij}	-0.1930	0.78	-0.1677	0.82	-0.3296	0.50	-0.0973	0.47	-0.2216	0.15	-0.2419	0.16
SM_{ij}	0.0539	0.00	0.0525	0.00	0.0533	0.00	0.0422	0.00	0.0405	0.00	0.0462	0.00
SH_{ij}	0.0352	0.24	0.0346	0.21	0.0438	0.03	0.0370	0.02	0.0361	0.04	0.0337	0.01
YR_{ij}	0.0563	0.00	0.0448	0.00	0.0443	0.00	0.0450	0.00	0.0344	0.00	0.0431	0.00
SS_j	-0.1250	0.04	2.0069	0.00	1.8725	0.00	0.3869	0.00	2.3777	0.00	1.9579	0.00
$FSMIN_j$	-0.1649	0.00	-0.2427	0.00	-0.2166	0.00	-0.2095	0.05	0.4323	0.00	0.3482	0.00
$FSMAJ_j$	0.4263	0.00	0.4996	0.00	0.4705	0.00	0.1359	0.00	0.0585	0.00	0.0419	0.01
$FSHVY_j$	-0.3886	0.00	-0.3571	0.00	-0.3276	0.00	-0.0103	0.41	-0.0024	0.85	-0.0274	0.02
TestDFs	119.68	0.00	186.40	0.00	217.90	0.00	30.01	0.00	20.38	0.00	31.01	0.00
Obs./R^2	6,669	0.37	7,137	0.36	9,357	0.33	4,924	0.24	5,350	0.23	8,818	0.20
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3588	0.00	0.3292	0.00	-	-	0.0673	0.04	0.0557	0.08	-	-
LL_{ij}	3.0839	0.00	2.9661	0.00	2.8376	0.00	2.2081	0.00	2.1948	0.00	1.6131	0.00
LM_{ij}	-2.9670	0.00	-2.8872	0.00	-2.5519	0.00	-2.4380	0.00	-2.4649	0.00	-2.1172	0.00
LE_{ij}	0.2301	0.00	0.2391	0.00	0.2386	0.00	0.6764	0.00	0.6969	0.00	0.6793	0.00
RD_{ij}	-0.3140	0.66	-0.2718	0.71	-0.3738	0.43	-0.2473	0.14	-0.1467	0.32	-0.2114	0.20
SM_{ij}	0.0460	0.00	0.0439	0.00	0.0456	0.00	0.0410	0.00	0.0414	0.00	0.0467	0.00
SH_{ij}	0.0360	0.26	0.0400	0.17	0.0435	0.03	0.0340	0.04	0.0401	0.02	0.0333	0.01
YR_{ij}	0.0526	0.00	0.0486	0.00	0.0496	0.00	0.0421	0.00	0.0409	0.00	0.0502	0.00
SS_j	0.0114	0.12	0.0149	0.04	0.0135	0.03	0.0472	0.00	0.0526	0.00	0.0408	0.00
FS_j	-0.1697	0.00	-0.1674	0.00	-0.1333	0.00	0.0121	0.30	0.0130	0.27	0.0190	0.04
Obs./R^2	6,669	0.33	7,137	0.32	9,357	0.29	4,924	0.23	5,350	0.23	8,818	0.20
SOE & MNE LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3516	0.00	0.3188	0.00	-	-	0.0534	0.11	0.0488	0.13	-	-
LL_{ij}	3.1077	0.00	2.9301	0.00	2.8028	0.00	2.2332	0.00	2.1299	0.00	1.5869	0.00
LM_{ij}	-2.9791	0.00	-2.8725	0.00	-2.5420	0.00	-2.4797	0.00	-2.4527	0.00	-2.1199	0.00
LE_{ij}	0.2319	0.00	0.2405	0.00	0.2423	0.00	0.6967	0.00	0.7085	0.00	0.6845	0.00
RD_{ij}	-0.3040	0.66	-0.2562	0.73	-0.3726	0.43	-0.2635	0.15	-0.2041	0.19	-0.2469	0.16
SM_{ij}	0.0467	0.00	0.0444	0.00	0.0463	0.00	0.0393	0.00	0.0392	0.00	0.0449	0.00
SH_{ij}	0.0407	0.21	0.0437	0.14	0.0486	0.02	0.0310	0.06	0.0357	0.04	0.0294	0.03
YR_{ij}	0.0511	0.00	0.0458	0.00	0.0465	0.00	0.0419	0.00	0.0382	0.00	0.0474	0.00
SS_j	0.0119	0.11	1.4548	0.04	1.2040	0.04	0.0449	0.00	2.1538	0.01	1.8475	0.00
$FSMIN_j$	-0.1260	0.00	-0.1347	0.00	-0.0912	0.00	-0.1633	0.00	-0.1656	0.00	-0.1162	0.00
$FSMAJ_j$	-0.1913	0.00	-0.1802	0.00	-0.1635	0.00	-0.0059	0.63	-0.0066	0.61	0.0048	0.64
$FSHVY_j$	-0.2881	0.00	-0.3012	0.00	-0.2957	0.00	0.0904	0.00	0.0658	0.00	0.0537	0.00
TestDFs	12.77	0.00	14.73	0.00	29.43	0.00	10.89	0.00	9.23	0.00	9.92	0.00
Obs./R^2	6,669	0.33	7,137	0.32	9,357	0.29	4,924	0.23	5,350	0.23	8,818	0.20

Appendix Table 3 (continued)

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3588	0.00	0.3311	0.00	-	-	0.0838	0.01	0.0741	0.02	-	-
LL_{ij}	3.2233	0.00	3.0958	0.00	2.9461	0.00	2.3215	0.00	2.3208	0.00	1.6821	0.00
LM_{ij}	-3.0935	0.00	-3.0046	0.00	-2.6385	0.00	-2.4658	0.00	-2.4976	0.00	-2.1183	0.00
LE_{ij}	0.2347	0.00	0.2428	0.00	0.2459	0.00	0.6656	0.00	0.6842	0.00	0.6687	0.00
RD_{ij}	-0.1865	0.78	-0.1374	0.84	-0.2681	0.56	-0.2493	0.15	-0.1636	0.27	-0.2267	0.19
SM_{ij}	0.0469	0.00	0.0446	0.00	0.0469	0.00	0.0417	0.00	0.0423	0.00	0.0495	0.00
SH_{ij}	0.0464	0.15	0.0512	0.08	0.0508	0.01	0.0370	0.02	0.0424	0.01	0.0355	0.01
YR_{ij}	0.0533	0.00	0.0501	0.00	0.0510	0.00	0.0374	0.00	0.0359	0.00	0.0470	0.00
SS_{j}	-0.0125	0.25	-0.0119	0.26	-0.0140	0.10	0.0339	0.00	0.0387	0.00	0.0341	0.00
FS_{j}	-0.1189	0.00	-0.1182	0.00	-0.1060	0.00	0.0504	0.00	0.0543	0.00	0.0482	0.00
Obs./R^2	6,669	0.33	7,137	0.32	9,357	0.29	4,924	0.24	5,350	0.24	8,818	0.20
SOE & MNE OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3521	0.00	0.3176	0.00	-	-	0.1043	0.00	0.0920	0.01	-	-
LL_{ij}	3.2279	0.00	3.0503	0.00	2.9005	0.00	2.1856	0.00	2.1546	0.00	1.5788	0.00
LM_{ij}	-3.1102	0.00	-3.0191	0.00	-2.6558	0.00	-2.3969	0.00	-2.4328	0.00	-2.0763	0.00
LE_{ij}	0.2356	0.00	0.2494	0.00	0.2510	0.00	0.6810	0.00	0.6998	0.00	0.6781	0.00
RD_{ij}	-0.2098	0.76	-0.2122	0.77	-0.2842	0.54	-0.2591	0.15	-0.2116	0.16	-0.2484	0.16
SM_{ij}	0.0463	0.00	0.0440	0.00	0.0462	0.00	0.0398	0.00	0.0401	0.00	0.0478	0.00
SH_{ij}	0.0456	0.16	0.0446	0.13	0.0487	0.02	0.0316	0.05	0.0376	0.03	0.0317	0.02
YR_{ij}	0.0529	0.00	0.0455	0.00	0.0463	0.00	0.0382	0.00	0.0327	0.00	0.0445	0.00
SS_{j}	-0.0094	0.39	1.2438	0.08	0.9796	0.10	0.0367	0.00	2.0612	0.01	1.8372	0.00
$FSMIN_{j}$	-0.1533	0.00	-0.1528	0.00	-0.1108	0.00	-0.0447	0.24	-0.0310	0.39	-0.0410	0.10
$FSMAJ_{j}$	-0.0621	0.00	-0.0536	0.00	-0.0635	0.00	0.0254	0.00	0.0262	0.00	0.0198	0.00
$FSHVY_{j}$	-0.1464	0.00	-0.1477	0.00	-0.1413	0.00	0.0869	0.00	0.0857	0.00	0.0776	0.00
TestDFs	10.73	0.00	15.85	0.00	15.15	0.00	23.55	0.00	22.11	0.00	31.05	0.00
Obs./R^2	6,669	0.33	7,137	0.32	9,357	0.29	4,924	0.24	5,350	0.24	8,818	0.21

Notes: - = estimate could not be obtained; in the Obs./R^2 rows, the coefficient column contains the number of observations and the P-value column contains the R-squared; the TestDFs rows show Wald tests of the hypothesis that coefficients on all foreign ownership dummies are equal and associated p-values; industry and region dummies also included as relevant (see explanation in the text); full results including the constant and all dummies are available from the authors.

Appendix Table 4: Correlations of SOE and MNC Presence to Energy Intensities in Private Plants and Other Slope Coefficients from Equations (1) and (2); 5 least energy intensive of the 12 large energy using industries

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2544	0.00	0.2516	0.00	-	-	0.0573	0.04	0.0759	0.01	-	-
LL_{ij}	1.6350	0.00	1.5524	0.00	1.6218	0.00	0.7577	0.00	0.8161	0.00	0.8419	0.00
LM_{ij}	-1.6084	0.00	-1.5619	0.00	-1.4229	0.00	-1.0730	0.00	-1.1397	0.00	-1.2374	0.00
LE_{ij}	0.2779	0.00	0.2780	0.00	0.2787	0.00	0.4216	0.00	0.4542	0.00	0.6258	0.00
RD_{ij}	0.0750	0.85	0.1271	0.78	-0.0784	0.77	-0.0730	0.11	-0.0842	0.08	0.0094	0.86
SM_{ij}	0.0182	0.00	0.0204	0.00	0.0222	0.00	0.0111	0.02	0.0102	0.03	0.0206	0.00
SH_{ij}	0.0526	0.01	0.0509	0.01	0.0428	0.00	-0.0328	0.03	-0.0323	0.03	0.0030	0.86
YR_{ij}	0.0164	0.12	0.0194	0.05	0.0177	0.04	0.0311	0.02	0.0290	0.03	0.0487	0.00
SS_j	-0.0374	0.00	-0.0298	0.02	-0.0402	0.00	0.0755	0.18	0.1139	0.04	0.0955	0.02
FS_j	-0.0647	0.00	-0.0637	0.00	-0.0630	0.00	0.0608	0.00	0.0661	0.00	0.0385	0.00
Obs./R^2	2,918	0.23	3,162	0.22	4,273	0.20	1,788	0.25	1,957	0.25	3,702	0.17
SOE & MNC LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2441	0.00	0.2431	0.00	-	-	0.0576	0.04	0.0759	0.01	-	-
LL_{ij}	1.6634	0.00	1.5619	0.00	1.6310	0.00	0.7628	0.00	0.8223	0.00	0.8225	0.00
LM_{ij}	-1.6120	0.00	-1.5634	0.00	-1.4296	0.00	-1.0695	0.00	-1.1342	0.00	-1.2347	0.00
LE_{ij}	0.2810	0.00	0.2811	0.00	0.2813	0.00	0.4202	0.00	0.4494	0.00	0.6229	0.00
RD_{ij}	-0.0013	1.00	0.0095	0.98	-0.1432	0.60	-0.0729	0.11	-0.0847	0.07	0.0120	0.83
SM_{ij}	0.0167	0.00	0.0193	0.00	0.0210	0.00	0.0113	0.02	0.0102	0.03	0.0210	0.00
SH_{ij}	0.0504	0.01	0.0459	0.02	0.0396	0.01	-0.0325	0.03	-0.0312	0.03	0.0008	0.96
YR_{ij}	0.0206	0.05	0.0200	0.04	0.0192	0.04	0.0308	0.02	0.0299	0.02	0.0468	0.00
SS_j	-0.1252	0.55	1.2349	0.10	1.1106	0.21	-0.0076	0.93	-0.3518	0.79	1.6514	0.12
$FSMIN_j$	0.1433	0.65	-0.0447	0.19	-0.0605	0.06	-0.1559	0.36	0.0277	0.90	-0.1327	0.39
$FSMAJ_j$	-0.0870	0.77	-0.2260	0.00	-0.2390	0.00	0.0039	0.95	-0.0128	0.73	-0.0320	0.23
$FSHVY_j$	-0.0477	0.76	0.0247	0.44	0.0321	0.29	0.1272	0.02	0.1125	0.01	0.1098	0.00
TestDFs	3.64	0.03	5.31	0.01	10.08	0.00	0.94	0.39	1.91	0.15	4.00	0.02
Obs./R^2	2,918	0.23	3,162	0.22	4,273	0.20	1,788	0.25	1,957	0.25	3,702	0.17
SOE & MNC OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2492	0.00	0.2474	0.00	-	-	0.0576	0.04	0.0763	0.01	-	-
LL_{ij}	1.6471	0.00	1.5639	0.00	1.6330	0.00	0.7589	0.00	0.8205	0.00	0.8426	0.00
LM_{ij}	-1.6107	0.00	-1.5643	0.00	-1.4285	0.00	-1.0756	0.00	-1.1430	0.00	-1.2374	0.00
LE_{ij}	0.2796	0.00	0.2796	0.00	0.2804	0.00	0.4242	0.00	0.4565	0.00	0.6280	0.00
RD_{ij}	0.0458	0.91	0.0997	0.82	-0.0966	0.72	-0.0721	0.11	-0.0836	0.08	0.0110	0.84
SM_{ij}	0.0177	0.00	0.0199	0.00	0.0217	0.00	0.0112	0.02	0.0103	0.02	0.0211	0.00
SH_{ij}	0.0523	0.01	0.0505	0.01	0.0425	0.00	-0.0336	0.03	-0.0324	0.03	0.0018	0.92
YR_{ij}	0.0184	0.08	0.0213	0.03	0.0199	0.02	0.0311	0.02	0.0292	0.03	0.0485	0.00
SS_j	-0.0588	0.08	-0.0371	0.26	-0.0667	0.02	0.0703	0.02	0.0870	0.00	0.0735	0.00
FS_j	-0.0626	0.00	-0.0623	0.00	-0.0603	0.00	0.0538	0.00	0.0587	0.00	0.0348	0.00
Obs./R^2	2,918	0.23	3,162	0.22	4,273	0.20	1,788	0.25	1,957	0.25	3,702	0.17

Appendix Table 4 (continued)

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2441	0.00	0.2430	0.00	-	-	0.0574	0.04	0.0760	0.01	-	-
LL_{ij}	1.6634	0.00	1.5627	0.00	1.6310	0.00	0.7553	0.00	0.8190	0.00	0.8254	0.00
LM_{ij}	-1.6120	0.00	-1.5645	0.00	-1.4304	0.00	-1.0697	0.00	-1.1337	0.00	-1.2380	0.00
LE_{ij}	0.2810	0.00	0.2809	0.00	0.2812	0.00	0.4208	0.00	0.4495	0.00	0.6232	0.00
RD_{ij}	-0.0013	1.00	0.0059	0.99	-0.1463	0.59	-0.0728	0.11	-0.0849	0.07	0.0120	0.83
SM_{ij}	0.0167	0.00	0.0193	0.00	0.0210	0.00	0.0113	0.02	0.0102	0.02	0.0208	0.00
SH_{ij}	0.0504	0.01	0.0463	0.02	0.0398	0.01	-0.0331	0.04	-0.0318	0.03	-0.0001	1.00
YR_{ij}	0.0206	0.05	0.0203	0.04	0.0195	0.03	0.0307	0.02	0.0296	0.03	0.0471	0.00
SS_{j}	-0.0301	0.87	1.2288	0.10	1.1060	0.21	0.0193	0.82	-0.3990	0.76	1.6470	0.12
$FSMIN_{j}$	-0.0603	0.43	-0.0686	0.00	-0.0796	0.00	0.0315	0.60	0.0793	0.24	0.0605	0.23
$FSMAJ_{j}$	-0.1064	0.09	-0.0983	0.00	-0.1027	0.00	0.0192	0.75	-0.0050	0.79	-0.0155	0.24
$FSHVY_{j}$	-0.0488	0.00	-0.0519	0.00	-0.0506	0.00	0.0800	0.02	0.0747	0.01	0.0450	0.05
TestDFs	1.01	0.37	1.17	0.31	3.28	0.04	0.27	0.77	4.13	0.02	5.56	0.00
Obs./R^2	2,918	0.23	3,162	0.22	4,273	0.20	1,788	0.25	1,957	0.25	3,702	0.17
SOE & MNC LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2565	0.00	0.2516	0.00	-	-	0.0556	0.05	0.0735	0.01	-	-
LL_{ij}	1.6786	0.00	1.6007	0.00	1.6603	0.00	0.7302	0.00	0.7844	0.00	0.8336	0.00
LM_{ij}	-1.6126	0.00	-1.5702	0.00	-1.4265	0.00	-1.0661	0.00	-1.1336	0.00	-1.2628	0.00
LE_{ij}	0.2756	0.00	0.2770	0.00	0.2773	0.00	0.4169	0.00	0.4502	0.00	0.6237	0.00
RD_{ij}	0.0785	0.84	0.1137	0.80	-0.0821	0.75	-0.0737	0.10	-0.0872	0.07	0.0071	0.90
SM_{ij}	0.0164	0.00	0.0192	0.00	0.0209	0.00	0.0121	0.01	0.0106	0.02	0.0213	0.00
SH_{ij}	0.0454	0.03	0.0419	0.04	0.0343	0.02	-0.0389	0.02	-0.0363	0.02	-0.0001	1.00
YR_{ij}	0.0135	0.20	0.0164	0.10	0.0151	0.09	0.0284	0.03	0.0261	0.05	0.0469	0.00
SS_{j}	-0.0286	0.00	-0.0223	0.01	-0.0264	0.00	0.1101	0.02	0.1387	0.00	0.1247	0.00
FS_{j}	-0.0545	0.00	-0.0550	0.00	-0.0590	0.00	0.0455	0.01	0.0540	0.00	0.0366	0.00
Obs./R^2	2,918	0.22	3,162	0.21	4,273	0.20	1,788	0.25	1,957	0.26	3,702	0.17
SOE & MNC LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.2491	0.00	0.2374	0.00	-	-	0.0631	0.02	0.0842	0.00	-	-
LL_{ij}	1.6765	0.00	1.5950	0.00	1.6657	0.00	0.7293	0.00	0.7871	0.00	0.7986	0.00
LM_{ij}	-1.6073	0.00	-1.5606	0.00	-1.4278	0.00	-1.0553	0.00	-1.1197	0.00	-1.2325	0.00
LE_{ij}	0.2706	0.00	0.2724	0.00	0.2725	0.00	0.4137	0.00	0.4455	0.00	0.6226	0.00
RD_{ij}	0.1183	0.76	0.0333	0.95	-0.1130	0.67	-0.0774	0.08	-0.0889	0.06	0.0106	0.84
SM_{ij}	0.0162	0.00	0.0185	0.00	0.0196	0.00	0.0113	0.02	0.0099	0.03	0.0210	0.00
SH_{ij}	0.0423	0.04	0.0297	0.13	0.0264	0.07	-0.0325	0.04	-0.0290	0.04	0.0028	0.87
YR_{ij}	0.0112	0.29	0.0095	0.33	0.0090	0.32	0.0279	0.03	0.0271	0.04	0.0455	0.00
SS_{j}	-0.0241	0.00	1.2239	0.11	1.0791	0.22	-0.0018	0.98	-0.6671	0.60	1.5666	0.14
$FSMIN_{j}$	-0.0528	0.02	-0.0525	0.01	-0.0555	0.00	-0.2576	0.04	-0.2565	0.00	-0.1806	0.00
$FSMAJ_{j}$	-0.0079	0.58	0.0111	0.44	0.0053	0.65	0.0072	0.90	-0.0044	0.90	-0.0170	0.51
$FSHVY_{j}$	-0.0927	0.00	-0.1031	0.00	-0.1062	0.00	0.1401	0.01	0.1537	0.00	0.1080	0.00
TestDFs	11.99	0.00	22.36	0.00	29.07	0.00	3.75	0.02	7.97	0.00	9.27	0.00
Obs./R^2	2,918	0.23	3,162	0.22	4,273	0.20	1,788	0.27	1,957	0.26	3,702	0.17

Appendix Table 4 (continued)

Independent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2592	0.00	0.2551	0.00	-	-	0.0553	0.05	0.0731	0.01	-	-
LL_{ij}	1.6818	0.00	1.6088	0.00	1.6660	0.00	0.7473	0.00	0.8070	0.00	0.8474	0.00
LM_{ij}	-1.6177	0.00	-1.5769	0.00	-1.4304	0.00	-1.0734	0.00	-1.1427	0.00	-1.2613	0.00
LE_{ij}	0.2713	0.00	0.2724	0.00	0.2731	0.00	0.4231	0.00	0.4564	0.00	0.6270	0.00
RD_{ij}	0.0079	0.98	0.0618	0.89	-0.1186	0.65	-0.0707	0.12	-0.0841	0.08	0.0085	0.88
SM_{ij}	0.0167	0.00	0.0194	0.00	0.0212	0.00	0.0121	0.01	0.0109	0.02	0.0217	0.00
SH_{ij}	0.0484	0.02	0.0441	0.03	0.0340	0.02	-0.0385	0.02	-0.0369	0.02	-0.0016	0.93
YR_{ij}	0.0169	0.11	0.0197	0.05	0.0182	0.04	0.0296	0.02	0.0274	0.04	0.0473	0.00
SS_j	-0.0212	0.00	-0.0166	0.01	-0.0191	0.00	0.0721	0.04	0.0968	0.00	0.0979	0.00
FS_j	-0.0392	0.00	-0.0397	0.00	-0.0412	0.00	0.0392	0.03	0.0499	0.00	0.0403	0.00
Obs./R^2	2,918	0.22	3,162	0.21	4,273	0.20	1,788	0.25	1,957	0.25	3,702	0.17
SOE & MNC OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.2496	0.00	0.2383	0.00	-	-	0.0604	0.03	0.0810	0.00	-	-
LL_{ij}	1.6650	0.00	1.5861	0.00	1.6647	0.00	0.7257	0.00	0.7868	0.00	0.7992	0.00
LM_{ij}	-1.6127	0.00	-1.5683	0.00	-1.4380	0.00	-1.0622	0.00	-1.1257	0.00	-1.2376	0.00
LE_{ij}	0.2656	0.00	0.2680	0.00	0.2681	0.00	0.4147	0.00	0.4461	0.00	0.6219	0.00
RD_{ij}	0.1355	0.75	0.0965	0.85	-0.1066	0.68	-0.0764	0.09	-0.0888	0.06	0.0075	0.89
SM_{ij}	0.0175	0.00	0.0198	0.00	0.0207	0.00	0.0112	0.02	0.0098	0.03	0.0208	0.00
SH_{ij}	0.0459	0.03	0.0339	0.09	0.0303	0.04	-0.0305	0.06	-0.0264	0.06	0.0046	0.79
YR_{ij}	0.0115	0.27	0.0095	0.33	0.0091	0.31	0.0272	0.04	0.0262	0.05	0.0443	0.00
SS_j	-0.0167	0.00	1.2295	0.11	1.1076	0.21	0.0096	0.89	-0.6080	0.64	1.6351	0.12
$FSMIN_j$	-0.0459	0.00	-0.0455	0.00	-0.0438	0.00	-0.1224	0.07	-0.1335	0.00	-0.0873	0.00
$FSMAJ_j$	0.0081	0.42	0.0185	0.06	0.0118	0.15	0.0221	0.63	0.0138	0.43	0.0041	0.74
$FSHVY_j$	-0.0762	0.00	-0.0823	0.00	-0.0815	0.00	0.1285	0.01	0.1521	0.00	0.0979	0.00
TestDFs	27.69	0.00	41.74	0.00	48.24	0.00	4.57	0.01	7.76	0.00	7.36	0.00
Obs./R^2	2,918	0.23	3,162	0.23	4,273	0.21	1,788	0.26	1,957	0.26	3,702	0.17

Notes: - = estimate could not be obtained; in the Obs./R^2 rows, the coefficient column contains the number of observations and the P-value column contains the R-squared; the TestDFs rows show Wald tests of the hypothesis that coefficients on all foreign ownership dummies are equal and associated p-values; region dummies also included as relevant but industry dummies are omitted (see explanation in the text); full results including the constant and all dummies are available from the authors.

Appendix Table 5: Correlations of SOE and MNC Presence to Energy Intensities in Private Plants and Other Slope Coefficients from Equations (1) and (2); 5 most energy intensive of the 12 large energy using industries

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3353	0.00	0.3213	0.00	-	-	0.1605	0.00	0.1506	0.00	-	-
LL_{ij}	3.0863	0.00	2.9647	0.00	2.7899	0.00	2.2859	0.00	2.2429	0.00	1.8400	0.00
LM_{ij}	-3.2612	0.00	-3.1800	0.00	-2.7667	0.00	-2.5167	0.00	-2.5267	0.00	-2.2397	0.00
LE_{ij}	0.2768	0.00	0.2862	0.00	0.2683	0.00	0.5663	0.00	0.5817	0.00	0.5571	0.00
RD_{ij}	-0.2403	0.66	-0.1680	0.76	-0.2358	0.62	-0.2685	0.15	-0.1962	0.14	-0.2964	0.13
SM_{ij}	0.0488	0.00	0.0438	0.00	0.0454	0.00	0.0305	0.00	0.0304	0.00	0.0337	0.00
SH_{ij}	-0.0003	0.99	-0.0006	0.98	0.0163	0.43	0.0448	0.00	0.0483	0.00	0.0389	0.00
YR_{ij}	0.0760	0.00	0.0696	0.00	0.0685	0.00	0.0410	0.00	0.0399	0.00	0.0513	0.00
SS_j	-0.0904	0.00	-0.0887	0.00	-0.0924	0.00	0.1387	0.00	0.1543	0.00	0.0854	0.00
FS_j	-0.2545	0.00	-0.2557	0.00	-0.2378	0.00	0.0266	0.08	0.0239	0.10	0.0484	0.00
Obs./R^2	5,267	0.32	5,656	0.31	7,527	0.28	5,940	0.24	6,460	0.24	10,919	0.21
SOE & MNC LABOR SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3403	0.00	0.3099	0.00	-	-	0.1995	0.00	0.1500	0.00	-	-
LL_{ij}	2.9995	0.00	2.9180	0.00	2.7267	0.00	2.1024	0.00	2.0334	0.00	1.6534	0.00
LM_{ij}	-3.2330	0.00	-3.2914	0.00	-2.8611	0.00	-2.3663	0.00	-2.3674	0.00	-2.0719	0.00
LE_{ij}	0.2966	0.00	0.3318	0.00	0.3092	0.00	0.5611	0.00	0.5905	0.00	0.5609	0.00
RD_{ij}	-0.2012	0.70	-0.2059	0.70	-0.2579	0.57	-0.2731	0.13	-0.2765	0.08	-0.3372	0.09
SM_{ij}	0.0524	0.00	0.0486	0.00	0.0500	0.00	0.0303	0.00	0.0288	0.00	0.0327	0.00
SH_{ij}	-0.0042	0.89	0.0086	0.76	0.0218	0.30	0.0414	0.01	0.0434	0.01	0.0375	0.00
YR_{ij}	0.0765	0.00	0.0572	0.00	0.0562	0.00	0.0373	0.00	0.0337	0.00	0.0471	0.00
SS_j	-0.1723	0.00	1.3273	0.07	1.2135	0.04	0.1462	0.00	1.9764	0.01	0.7004	0.14
$FSMIN_j$	-0.4550	0.00	-0.5419	0.00	-0.4569	0.00	0.5098	0.00	0.4475	0.00	0.5686	0.00
$FSMAJ_j$	0.7883	0.00	0.4120	0.00	0.2920	0.00	0.0322	0.32	0.0851	0.00	0.0908	0.00
$FSHVY_j$	-1.0263	0.00	-0.5856	0.00	-0.5480	0.00	-0.0497	0.08	-0.0924	0.00	-0.0596	0.00
TestDFs	41.66	0.00	32.17	0.00	33.68	0.00	16.80	0.00	20.85	0.00	43.13	0.00
Obs./R^2	5,267	0.33	5,656	0.31	7,527	0.28	5,940	0.25	6,460	0.24	10,919	0.22
SOE & MNC OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3430	0.00	0.3221	0.00	-	-	0.1612	0.00	0.1506	0.00	-	-
LL_{ij}	2.7380	0.00	2.6448	0.00	2.5463	0.00	2.2746	0.00	2.2246	0.00	1.8296	0.00
LM_{ij}	-3.0437	0.00	-2.9862	0.00	-2.6235	0.00	-2.4659	0.00	-2.4724	0.00	-2.1843	0.00
LE_{ij}	0.2938	0.00	0.3037	0.00	0.2839	0.00	0.5588	0.00	0.5747	0.00	0.5497	0.00
RD_{ij}	-0.2638	0.63	-0.1914	0.73	-0.3307	0.50	-0.3442	0.08	-0.2436	0.09	-0.3227	0.11
SM_{ij}	0.0487	0.00	0.0439	0.00	0.0461	0.00	0.0295	0.00	0.0291	0.00	0.0335	0.00
SH_{ij}	-0.0231	0.45	-0.0178	0.52	-0.0004	0.99	0.0416	0.01	0.0450	0.01	0.0377	0.00
YR_{ij}	0.0747	0.00	0.0683	0.00	0.0677	0.00	0.0416	0.00	0.0407	0.00	0.0515	0.00
SS_j	-0.2841	0.00	-0.2816	0.00	-0.2639	0.00	0.0514	0.04	0.0631	0.01	0.0017	0.92
FS_j	-0.0289	0.05	-0.0316	0.03	-0.0372	0.00	0.0478	0.00	0.0491	0.00	0.0452	0.00
Obs./R^2	5,267	0.33	5,656	0.32	7,527	0.29	5,940	0.24	6,460	0.23	10,919	0.21

Appendix Table 5 (continued)

Independent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC OUTPUT SHARES OF 3-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3505	0.00	0.3220	0.00	-	-	0.1757	0.00	0.1350	0.00	-	-
LL_{ij}	2.6720	0.00	2.5431	0.00	2.4561	0.00	2.2198	0.00	2.1639	0.00	1.7667	0.00
LM_{ij}	-2.9883	0.00	-2.9422	0.00	-2.5717	0.00	-2.4021	0.00	-2.4356	0.00	-2.1195	0.00
LE_{ij}	0.3650	0.00	0.3886	0.00	0.3579	0.00	0.5475	0.00	0.5775	0.00	0.5417	0.00
RD_{ij}	-0.3455	0.53	-0.3109	0.58	-0.4260	0.39	-0.3598	0.07	-0.2805	0.08	-0.3474	0.09
SM_{ij}	0.0602	0.00	0.0562	0.00	0.0578	0.00	0.0298	0.00	0.0294	0.00	0.0338	0.00
SH_{ij}	-0.0014	0.96	0.0006	0.98	0.0169	0.39	0.0385	0.01	0.0436	0.01	0.0365	0.01
YR_{ij}	0.0544	0.00	0.0412	0.00	0.0419	0.00	0.0378	0.00	0.0329	0.00	0.0446	0.00
SS_{j}	-0.0725	0.05	1.2374	0.08	1.2896	0.02	0.0581	0.02	2.0609	0.01	0.7745	0.10
$FSMIN_{j}$	-0.1981	0.00	-0.2452	0.00	-0.2222	0.00	0.2616	0.00	0.2431	0.00	0.3161	0.00
$FSMAJ_{j}$	0.3798	0.00	0.4128	0.00	0.3684	0.00	0.0674	0.00	0.0791	0.00	0.0694	0.00
$FSHVY_{j}$	-0.3604	0.00	-0.3393	0.00	-0.2980	0.00	-0.0095	0.46	0.0051	0.71	-0.0231	0.04
TestDFs	126.38	0.00	168.70	0.00	186.95	0.00	19.42	0.00	16.75	0.00	43.50	0.00
Obs./R^2	5,267	0.36	5,656	0.35	7,527	0.32	5,940	0.25	6,460	0.00	10,919	0.21
SOE & MNC LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3591	0.00	0.3470	0.00	-	-	0.1109	0.00	0.0982	0.00	-	-
LL_{ij}	3.1692	0.00	3.0240	0.00	2.8143	0.00	2.3099	0.00	2.2639	0.00	1.8481	0.00
LM_{ij}	-3.3588	0.00	-3.2799	0.00	-2.8436	0.00	-2.5501	0.00	-2.5595	0.00	-2.2845	0.00
LE_{ij}	0.2865	0.00	0.2978	0.00	0.2824	0.00	0.5905	0.00	0.6104	0.00	0.5733	0.00
RD_{ij}	-0.3898	0.48	-0.3140	0.56	-0.3639	0.43	-0.3230	0.09	-0.2073	0.15	-0.3158	0.09
SM_{ij}	0.0512	0.00	0.0464	0.00	0.0487	0.00	0.0289	0.00	0.0283	0.00	0.0316	0.00
SH_{ij}	0.0069	0.82	0.0073	0.79	0.0235	0.24	0.0455	0.00	0.0489	0.00	0.0356	0.01
YR_{ij}	0.0528	0.00	0.0465	0.00	0.0482	0.00	0.0390	0.00	0.0385	0.00	0.0509	0.00
SS_{j}	0.0281	0.00	0.0305	0.00	0.0248	0.00	0.0658	0.00	0.0706	0.00	0.0541	0.00
FS_{j}	-0.1586	0.00	-0.1556	0.00	-0.1256	0.00	0.0732	0.00	0.0717	0.00	0.0955	0.00
Obs./R^2	5,267	0.32	5,656	0.31	7,527	0.28	5,940	0.25	6,460	0.24	10,919	0.22
SOE & MNC LABOR SHARES OF 4-DIGIT INDUSTRIES, eq. (2)												
LK_{ij}	0.3591	0.00	0.3519	0.00	-	-	0.1106	0.00	0.1053	0.00	-	-
LL_{ij}	3.1956	0.00	2.9900	0.00	2.7900	0.00	2.2468	0.00	2.1347	0.00	1.7883	0.00
LM_{ij}	-3.3701	0.00	-3.2099	0.00	-2.7866	0.00	-2.5261	0.00	-2.4646	0.00	-2.2147	0.00
LE_{ij}	0.2866	0.00	0.2845	0.00	0.2745	0.00	0.5922	0.00	0.5979	0.00	0.5648	0.00
RD_{ij}	-0.3972	0.47	-0.2951	0.59	-0.3354	0.47	-0.3047	0.09	-0.2455	0.09	-0.3275	0.08
SM_{ij}	0.0518	0.00	0.0466	0.00	0.0494	0.00	0.0292	0.00	0.0272	0.00	0.0304	0.00
SH_{ij}	0.0106	0.73	0.0102	0.71	0.0275	0.18	0.0471	0.00	0.0450	0.01	0.0343	0.01
YR_{ij}	0.0523	0.00	0.0510	0.00	0.0509	0.00	0.0401	0.00	0.0397	0.00	0.0530	0.00
SS_{j}	0.0289	0.00	0.9623	0.19	0.9426	0.11	0.0688	0.00	1.8747	0.01	0.6481	0.17
$FSMIN_{j}$	-0.1308	0.00	-0.1463	0.00	-0.0993	0.00	0.2082	0.00	0.1724	0.00	0.1948	0.00
$FSMAJ_{j}$	-0.1674	0.00	-0.1698	0.00	-0.1622	0.00	0.0594	0.00	0.0602	0.00	0.0860	0.00
$FSHVY_{j}$	-0.2590	0.00	-0.2498	0.00	-0.2332	0.00	0.0743	0.00	0.0503	0.03	0.0739	0.00
TestDFs	3.20	0.04	2.11	0.12	7.72	0.00	2.98	0.05	1.97	0.14	3.55	0.03
Obs./R^2	5,267	0.32	5,656	0.31	7,527	0.28	5,940	0.25	6,460	0.24	10,919	0.22

Appendix Table 5 (continued)

Indepen-dent variable, statistic	1996						2006					
	Initial capital		Ending capital		No capital		Initial capital		Ending capital		No capital	
	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.	Value	P-val.
SOE & MNC OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3658	0.00	0.3559	0.00	-	-	0.1492	0.00	0.1360	0.00	-	-
LL_{ij}	3.3329	0.00	3.1778	0.00	2.9540	0.00	2.4281	0.00	2.3808	0.00	1.9263	0.00
LM_{ij}	-3.4860	0.00	-3.3958	0.00	-2.9335	0.00	-2.5374	0.00	-2.5501	0.00	-2.2331	0.00
LE_{ij}	0.2911	0.00	0.3013	0.00	0.2921	0.00	0.5665	0.00	0.5868	0.00	0.5509	0.00
RD_{ij}	-0.2698	0.60	-0.1930	0.71	-0.2382	0.59	-0.3199	0.11	-0.2081	0.16	-0.3072	0.14
SM_{ij}	0.0533	0.00	0.0482	0.00	0.0510	0.00	0.0308	0.00	0.0304	0.00	0.0364	0.00
SH_{ij}	0.0171	0.58	0.0178	0.52	0.0317	0.12	0.0489	0.00	0.0518	0.00	0.0422	0.00
YR_{ij}	0.0558	0.00	0.0503	0.00	0.0510	0.00	0.0336	0.00	0.0329	0.00	0.0462	0.00
SS_j	-0.0055	0.60	-0.0051	0.62	-0.0062	0.46	0.0568	0.00	0.0654	0.00	0.0485	0.00
FS_j	-0.1259	0.00	-0.1244	0.00	-0.1121	0.00	0.0671	0.00	0.0691	0.00	0.0690	0.00
Obs./R^2	5,267	0.33	5,656	0.32	7,527	0.29	5,940	0.25	6,460	0.24	10,919	0.22
SOE & MNC OUTPUT SHARES OF 4-DIGIT INDUSTRIES, eq. (1)												
LK_{ij}	0.3614	0.00	0.3466	0.00	-	-	0.1815	0.00	0.1636	0.00	-	-
LL_{ij}	3.3336	0.00	3.1434	0.00	2.9065	0.00	2.2535	0.00	2.2148	0.00	1.8556	0.00
LM_{ij}	-3.4888	0.00	-3.3960	0.00	-2.9326	0.00	-2.4473	0.00	-2.4659	0.00	-2.1769	0.00
LE_{ij}	0.2933	0.00	0.3076	0.00	0.2976	0.00	0.5707	0.00	0.5893	0.00	0.5510	0.00
RD_{ij}	-0.2978	0.57	-0.2353	0.66	-0.2573	0.56	-0.3098	0.11	-0.2544	0.09	-0.3229	0.13
SM_{ij}	0.0522	0.00	0.0473	0.00	0.0503	0.00	0.0292	0.00	0.0285	0.00	0.0352	0.00
SH_{ij}	0.0133	0.66	0.0113	0.68	0.0288	0.16	0.0464	0.00	0.0484	0.00	0.0418	0.00
YR_{ij}	0.0551	0.00	0.0474	0.00	0.0479	0.00	0.0348	0.00	0.0312	0.00	0.0461	0.00
SS_j	-0.0014	0.90	0.6483	0.37	0.6476	0.27	0.0591	0.00	1.7684	0.02	0.6564	0.16
$FSMIN_j$	-0.1723	0.00	-0.1733	0.00	-0.1290	0.00	0.2140	0.00	0.1786	0.00	0.1694	0.00
$FSMAJ_j$	-0.0823	0.00	-0.0771	0.00	-0.0909	0.00	0.0513	0.00	0.0487	0.00	0.0553	0.00
$FSHVY_j$	-0.1248	0.00	-0.1228	0.00	-0.1100	0.00	0.0888	0.00	0.0864	0.00	0.0744	0.00
TestDFs	5.43	0.00	7.81	0.00	1.89	0.15	12.84	0.00	11.41	0.00	7.67	0.00
Obs./R^2	5,267	0.33	5,656	0.32	7,527	0.29	5,940	0.25	6,460	0.24	10,919	0.22

Notes: - = estimate could not be obtained; in the Obs./R^2 rows, the coefficient column contains the number of observations and the P-value column contains the R-squared; the TestDFs rows show Wald tests of the hypothesis that coefficients on all foreign ownership dummies are equal and associated p-values; industry and region dummies also included as relevant (see explanation in the text); full results including the constant and all dummies are available from the authors.