Labor Productivity in Foreign Multinationals and Local Plants in Thai Manufacturing, 1996 and 1998

Eric D. Ramstetter
Coordinator, Research Division, ICSEAD
and
Visiting Professor, Graduate School of Economics,
Kyushu University

Working Paper Series Vol. 2001-13
June 2001

The International Centre for the Study of East Asian Development, Kitakyushu

Labor Productivity in Foreign Multinationals and Local Plants in Thai Manufacturing, 1996 and 1998

by

Eric D. Ramstetter[1]

Coordinator, Research Division, International Centre for the Study of East Asian Development

11-4 Otemachi, Kokurakita-ku, Kitakyushu, 803-0814, Japan (email ramst@icsead.or.jp)

and Visiting Professor, Graduate School of Economics, Kyushu University

June 2001

Abstract

The purpose of this paper is to compare labor productivity in plants of foreign multinational corporations (MNCs) and plants belonging to local firms in Thai manufacturing in 1996 and 1998. In view of the theoretical expectation that foreign MNCs will be more productive than local firms or plants, perhaps the most important result of this study is the lack of evidence suggesting that foreign MNCs have systematically higher labor productivity than local plants. This result is consistent with results from previous studies of Thai manufacturing, but contrasts with previous results for manufacturing in Indonesia and Mexico. Another important result is the apparent lack of a strong positive correlation between labor productivity and foreign ownership shares. Rather, these estimates indicate wide variation in the relationship between foreign ownership and labor productivity in Thai manufacturing depending on foreign ownership share, type of labor, industry, plant size, and year. Correspondingly, although foreign ownership shares appear to have increased after the 1997 crisis, these results do not suggest systematic changes in the relationship between foreign ownership and labor productivity between 1996 and 1998.

JEL Classification: D24, F23, O53

[1] I would like to thank Somsak Tambunlertchai for assistance in obtaining the data used in this study and for advice on this and other related projects. This paper was completed as a part of ICSEAD's project "Foreign Multinational Corporations and Host-Country Labor Markets in Asia" and I would also like to thank ICSEAD and Kyushu University for funding that supported the study. However, I am solely responsible for all remaining errors and for all opinions expressed.

1. Introduction

The purpose of this paper is to compare labor productivity in plants of foreign multinational corporations (MNCs) and plants belonging to local firms in Thailand in 1996 and 1998. The focus is on labor productivity because the paper is part of a project examining how foreign MNCs affect labor markets in host Asian economies and the effects of MNCs on labor productivity is an important channel through which such effects would be transmitted. Moreover, the effects of MNCs on labor productivity, wages, and employment are perhaps the most obvious effects of MNCs on human beings in host economies and thus worthy of close study.

This analysis is interesting for two additional reasons. First, this study is an important compliment to previous cross sectional studies of Thai manufacturing firms (e.g., Khanthachai et al. 1987; Ramstetter 1993, 1994; Tambunlertchai and Ramstetter 1991), which indicate that foreign firms in Thailand often tended to have higher factor productivity than their local counterparts on average in the 1980s and in 1990, but that variation was usually so large that these differences were not statistically significant. These results contrast markedly with the results of theoretical analysis and with similar cross sectional results obtained for Indonesia (e.g., Hill 1988, pp. 107-120; Okamoto and Sjöholm 2000; Sjöholm 1998; Takii and Ramstetter 2000) or Mexico (e.g., Blomström 1990, pp. 28-34), which suggest that foreign MNCs use more efficient technology than local firms or plants. One possible reason for not observing statistically significant differences in factor productivity in previous studies of Thailand is that those studies were based on firm-level data from the Thai Board of Investment (BOI) or corporate directories that covered only a portion foreign invested firms and a much smaller minority of relatively efficient local firms. This study provides an important check on those previous studies because it employs much more comprehensive samples of plant-level data from the 1997 industrial census and the 1999 industrial survey (National Statistical Office, 1999, 2001a).

Second, this study can provide some insight into how foreign and local firms responded to the financial crisis that affected Thailand from the middle of 1997. Given the large impacts of this crisis on the Thai economy and the large role foreign MNCs have come to play in Thai manufacturing, this insight is of particular to students of the Thai economy.

The paper is organized into three major sections. Section 2 first reviews the economic rationale for examining differences in productivity between foreign MNCs and local firms, and describes the methodology used in this study to examine those differentials. Section 3 summarizes information about the database used, the relative size of foreign MNCs in Thai manufacturing, and average labor productivity in plants belonging to foreign MNCs (hereafter referred to as foreign plants) compared to local plants. Section 4 then examines the results of estimating differences in marginal labor productivity and average labor productivity among foreign ownership groups and local plants, and reports the results of testing whether observed differences were found to be statistically significant. Finally, section 5 summarizes the conclusions emerging from the study.

2. Theoretical Principles and Methodology

The theoretical literature on MNCs provides a very simple and important rationale for expecting MNCs to be more efficient than non-MNCs in at least some respect. A large body of this literature (e.g., Dunning 1988, 1993; Hymer 1960; Markusen 1991) asserts that the possession of firm-specific assets, especially intangible assets related to production techniques and processes, marketing networks, and/or management ability, is a necessary condition for a firm to become a MNC. Another body of literature (e.g., Buckley and Casson 1992; Casson 1987; Rugman 1980, 1985) disputes this view by asserting that internalization alone is a necessary condition for a firm to become a MNC and that ownership advantages such as the possession of firm-specific assets are sufficient but not necessary for a firm to become a MNC. However, all theorists agree that MNCs do tend to possess the firm-specific assets described above in relatively large amounts and there is a large literature documenting the tendency for MNCs to spend relatively large amounts on research and development and advertising, as well as to possess a relatively large number of patents (e.g., Caves 1996; Dunning 1993; Markusen 1991).

An important and related point considered in this paper is the rather common assertion that MNC parents are more reluctant to share their technology-related assets with minority-owned affiliates than with their majority-owned or wholly-owned affiliates (e.g., Chao and Yu 1996; Dunning 1993, ch

7-9, 11; Caves 1996, ch. 3, 7, 9). However, it should also be recognized that MNC parents have two very different sets of motives in this respect. On the one hand, MNC parents may well be hesitant to share technology-related intangible assets with minority-owned affiliates for fear of losing control of those assets as implied by the assertion referred to above. On the other hand, MNC parents also want to secure high productivity levels in affiliates in order to generate profits from those affiliates and may have a competing motive to allow minority-owned affiliates access to the parent's intangible assets in order to increase productivity and profits. The relative importance of these competing motives is an empirical matter.

If one accepts the assumption than MNCs possess relatively large amounts of the firm-specific assets described above, and if local firms are predominantly non-MNCs, which is the case in Thailand, it then follows that foreign firms or plants should be more efficient than local firms or plants in some respect. If one accepts the assumption that MNC parents are more reluctant to share their production-technology related assets with their minority-owned affiliates, it also follows that majority- or wholly-owned foreign plants should be more productive than minority-owned foreign plants in some respect. These are straightforward results that should obtain if the theory is correct and if a meaningful empirical comparison can be made.

Unfortunately, it is not easy to make a meaningful empirical comparison, primarily because the economic theory of production is ambiguous in several important respects. The first and perhaps most important problem is that there are several measures of productivity that could be used and the results obtained from empirical investigations often differ greatly depending on the measure used. Second, it is often very difficult to obtain reliable estimates of relevant productivity measures regardless of the measure chosen for comparison.

The first problem mentioned above is limited in this case because the primary focus is on labor productivity, rather than on productivity of other factors (e.g., fixed assets such land, buildings, and machinery or proxies for intangible assets such as the stock of technical knowledge, the stock of

marketing networks, and the stock of managerial know-how), or unexplained productivity.[2] However, even if the comparison is limited to labor productivity, several important questions remain. First, how many kinds of labor should be considered? In this paper, the productivity of two types of labor, production workers and non-production workers, is analyzed. The ideal solution would be to have data on labor by skill level and this distinction, while correlated with more precise distinctions based on skill levels, is clearly not based entirely on skill levels because some production workers may be more skilled than some non-production workers.[3] Moreover, it is not clear if one should ideally distinguish only two types of labor or more. Unfortunately, the choice of both the number of labor types and the type of distinction is likely to have important effects on the results obtained.

The second problem mentioned above regards the statistical framework used in comparisons of labor productivity. The simplest method is to calculate average labor productivity for each ownership group and make comparisons similar to those in Section 3 below. One could also test for statistical differences among the mean values for various ownership groups using simple t-tests (e.g., Ramstetter 1999a). However, these simple comparisons have the disadvantage of ignoring other factors affecting average labor productivity. For example, even if foreign MNCs have significantly higher average labor productivity than local firms, this difference could result from the fact that foreign plants are more capital intensive, not from differences in ownership. More sophisticated methods of comparing labor productivity attempt to remove the effects of other variables affecting labor productivity such as factor intensities, vintage, and trade orientation. These comparisons all have the firm's or the plant's production function as their basis. Unfortunately, there are many possible forms of the production function and no clearly superior way of making comparisons. Flexible functional forms such as the translog are superior theoretically because they impose the least restrictive assumptions on technology.

---

[2] Much of the recent economic literature on productivity focuses on unexplained productivity or what is often called total factor productivity. Unexplained productivity includes important elements of productivity, for example the productivity of intangible assets that are not measured explicitly, but it also includes errors in productivity measurement that result from the inability to define and measure inputs and outputs with precision, the inability to correctly specify production technology, and/or statistical problems encountered when estimating productivity. Therefore, a focus on unexplained productivity is often misleading because it is impossible to distinguish the productivity of unmeasured factors and errors in productivity measurement.

[3] These questions cannot be investigated in this context because more detailed, skill-based distinctions are not available in the data set used.

However, flexible forms are often difficult to estimate econometrically, especially when a large number of factors of production are included in the model, because they include a large number of cross products that are often highly correlated. More restrictive functional forms such as the Cobb-Douglas function are inferior theoretically because they impose restrictions on technology that may not be warranted, but it is often easier to obtain more reliable econometric estimates for these functions because there are fewer parameters to estimate. In this context, simpler functional forms are also helpful because up to three sets of dummy variables (both intercepts and slopes) are used to test for differences among ownership groups.

The first type of comparison used in this paper calculates the marginal products of production workers and non-production workers from estimates of Cobb-Douglas production functions, where value added is estimated as a function of hours worked by production and non-production workers and a capacity-adjusted measure of the capital stock. This approach is problematic primarily because it assumes a unitary elasticity of substitution among factors of production. However, it is flexible enough to allow for variable scale economies and simple enough to facilitate the use of three sets ownership dummies (both intercepts and slopes) to test for differences among ownership groups in most industries. Here dummy variables are employed because simple t-tests will indicate whether there are significant differences between local plants and foreign plants and it is easy to conduct these tests even in the presence of heteroscedasticity by using White's transformed residuals (e.g., Hall and Cummins, 1999, p. 40; White 1980). A number of previous studies of Thailand (Khanthachai et al. 1987; Ramstetter 1993; Tambunlertchai and Ramstetter 1991) have made comparisons of foreign and local firms using Cobb-Douglas production functions and it is also helpful to use a similar methodology to compare results from the more comprehensive samples used in this study and the less comprehensive samples used in previous studies. Following previous research on productivity differentials in Thailand and Indonesia (e.g., Ramstetter 1994, Takii and Ramstetter 2000, Sjöholm 1999), these functions also include intercept dummies to account for differences among plants promoted by the investment promotion authority (the BOI) and non-promoted plants, as well as differences among plants by vintage and trade orientation. The resulting equations are:

(1) ln(V) = a1 + a2*ln(EP) + a3*ln(EN) + a4*ln(K) + a5*(Df) + a6*Df*ln(EP) + a7*Df*ln(EN)
+ a8*Df*ln(K) + a9*Dboi + a10*Dold + a11*Dx + a12*Dm

(2) ln(V) = b1 + b2*ln(EP) + b3*ln(EN) + b4*ln(K) + b5*(Df001) + b6*Df001*ln(EP) +
+ b7*Df001*ln(EN) + b8*Df001*ln(K) + b9*(Df050) + b10*Df050*ln(EP) + b11*Df050*ln(EN)
+ b12*Df050*ln(K) + b13*(Df100) + b14*Df100*ln(EP) + b15*Df100*ln(EN) +
+ b16*Df100*ln(K) + b17*Dboi + b18*Dold + b19*Dx + b20*Dm

where

Dboi=1 if plant i is BOI-promoted, =0 otherwise,

Df=1 if the foreign ownership share of plant i is 1% or greater, =0 otherwise,

Df001=1 if the foreign ownership share of plant i is 1%-49%, =0 otherwise,

Df050=1 if the foreign ownership share of plant i is 50%-99%, =0 otherwise,

Df100=1 if the foreign ownership share of plant i is 100%, =0 otherwise,

Dm=1 if plant i imports 50% or more of their material inputs, =0 otherwise,

Dold=1 if plant i is BOI started operation in 1986 or earlier, =0 otherwise,

Dx=1 if plant i exports 50% or more of their production, =0 otherwise,

EN=hours worked by non-production workers in plant i,

EP=hours worked by production workers in plant i,

K=average book value of fixed assets multiplied by the percentage of hours used each year in plant i

V=value added in plant i,

The second approach employed in this paper is also common in the previous literature (e.g., Blomström 1990, pp. 28-34; Ramstetter 1994; Takii and Ramstetter 2000). In this approach, average labor productivity is estimated directly as a function of factor intensities, other plant characteristics (e.g., BOI status, vintage, openness to international trade), and then a set of ownership dummies in equations such as the following:

(3) ln(V/EP) = c1 + c2*ln(EN/EP) + c3*ln(K/EP) + c4*(Df) + c5*Dboi + c6*Dold + c7*Dx + c8*Dm

(4) ln(V/EP) = d1 + d2*ln(EN/EP) + d3*ln(K/EP) + d4*(Df001) + d5*(Df050) + d6*(Df100)
+ d7*Dboi + d8*Dold + d9*Dx + d10*Dm

Equations (3)-(4) are equivalent to the Cobb-Douglas functions in equations (1)-(2) under the more restrictive assumptions that (a) there are constant returns to scale, (b) differences in ownership only affect average labor productivity, and (c) productivity differentials between foreign MNCs and local plants are identical in size and statistical significance for production workers and for non-productions workers.[4]. On the other hand, equations (3)-(4) have the advantage of fewer coefficients to be estimated, thereby reducing the potential for multicollinearity-related problems. The formulation in equations (3)-(4) also reduces the potential for heteroscedasticity-related problems by limiting the scope of scale variables such as fixed assets (K). In short, equations (1) and (2) impose less restrictive theoretical assumptions about technology, but it is much more likely that one can obtain reliable econometric estimates of equations (3)-(4), provided that they are a reasonable approximation of the actual technology in use. Again, partially because both specifications have been used in the previous literature, estimates of both specifications are presented in Section 4 below. Another important point here is to illustrate that these two seemingly similar approaches yield very different results in several industries.

3. The Data, Shares of Foreign Multinationals, and Average Labor Productivity

The data used in this study are the factory-level data for 1996 that underlie the Thai industrial census conducted in 1997 (National Statistical Office 1999) and corresponding data for 1998 from the Thai industrial survey conducted in 1999 (National Statistical Office 2001a). The industrial census data for 1996 included data for a total of 32,489 plants of which 23,677 replied to the 1997 census and were included in the final compilation by the National Statistical Office (1999; see Table 1). The survey data for 1998 covered a much smaller number of plants, 8,552, and figures published by the National

[4] For example, if the equation (5) below is estimated and compared to equation (3) above, e1=c1, e3=c3, e4=c4, e5=c5, e6=c6, e7=c7, e8=c8, and e2+e3+c3=c2+c3+e3=1 would obtain.

(5) ln(V/EP) = e1 + e2*ln(EN/EP) + e3*ln(K/EP) + e4*(Df) + e5*Dboi + e6*Dold + e7*Dx + e8*Dm

Statistical Office (2001a; see Table 1) are estimates for 20,807 establishments, presumably extrapolated from the smaller sample of plants for which replies were obtained. A major problem with using these data sets for economic analysis in their original form, especially the census data for 1996, is that they contain several duplicate or near-duplicate records.[5]

Eliminating exact duplicates presents no difficulty but there are several near duplicates, which are much more difficult to deal with. Among the near-duplicate records, information on plant location was often different while most if not all other variables were identical, which suggests that several plants of multi-plant firms all reported firm-wide information. Likewise information on industry affiliation and ownership often differed in some cases while other information was identical. There were also a number of apparent typographical errors and a number of records that were repeated several times. There is no good way to eliminate duplicates given all these problems but to avoid double counting it is clearly necessary to eliminate (1) all duplicates from data set or (2) all records but one record from each set of duplicates.

Option (2) was chosen because it maximizes the coverage of the samples. Duplicates were eliminated in the following manner. First, for large establishments, data were cross checked with published sources (Advanced Research Group Co. Ltd., 1998, various years; Business Research and Development, various years; The Nation, various years; The Brooker Group, 1996, 1997) and the record thought to be most reliable was retained. Second, if there were 3 or more records in a duplicate set, most commonly observed values were retained in the data set. Third, if a plant was reported as both foreign- and locally-owned, it was assumed to be foreign-owned unless other information to the contrary

[5] When checking for duplicate records, the data file was first sorted by (a) sales of goods produced, (b) purchases of materials and components, and (c) persons engaged. Duplicate checking was then conducted for 10 variables as follows: (1) industry, (2) capacity utilization=(number of hours in operation per day * number of days in operation in the year)/(24*number of days in the year)*100), (3) number of employees, (4) wage income paid, (5) purchases of materials and components, (6) total intermediate consumption, (7) sales of goods produced, (8) total gross output, (9) fixed assets at the beginning of the year, and (10) fixed assets at year end. The number of duplicates and near duplicates found by this procedure is summarized below:

	1996 data	1998 data
10/10 variables are duplicates	3,541 plants	91 plants
at least 9/10 variables are duplicates	5,357 plants	124 plants
at least 8/10 variables are duplicates	6,266 plants	135 plants
at least 7/10 variables are duplicates	6,792 plants	145 plants
at least 6/10 variables are duplicates	7,053 plants	163 plants
at least 5/10 variables are duplicates	7,167 plants	191 plants

was available or the above criteria contradicted this one. Fourth, if the year of establishment differed, the older year was used unless other information to the contrary was available or the above criteria were contradictory. Finally, there were a number of records where the choice of the record to retain was arbitrary.

A second problem with the data is that they included a number of unusually small values for a number of variables. Correspondingly, plants reporting 1,000 baht or less for sales of goods produced, purchases of raw materials and components, fixed asset stocks at the beginning of the year, and fixed assets at the end of the year, were eliminated from the sample before checking for duplicates. Third, the data included a large number of small plants (10-19 employees), which were also eliminated before duplicate checking because comparisons of foreign MNCs and local plants are not thought to be meaningful in samples that include these small plants. This reduced the sample that was checked for duplicates to 13,834 plants in 1996 and 8,552 plants in 1998. After duplicates were removed 11,113 plants remained in the sample in 1996 and 4,887 plants remained in the sample in 1998.[6]

After duplicate checking was complete, plants that reported non-positive values for production workers, non-production workers, intermediate consumption, or value added were also eliminated from the samples used in this study because non-positive values do not make economic sense in this context. This further reduced the sample size to 8,952 for 1996 and 3,974 for 1998 (see Appendix Table A1 for detailed information on the samples used in this study). Finally, because the comparisons of MNCs and non-MNCs are generally thought to be more meaningful in samples of large plants (defined here as plants with gross output of 25 million baht or more), separate compilations and estimates are made for subsamples of large plants as well as for larger samples including all plants.

Before turning to these compilations, it is first helpful to get an idea of how much of Thai manufacturing is covered by the industrial census, the industrial survey, and these samples. For example, according to Thailand's labor force surveys, manufacturing employment averaged about 4.64

[6] Sample sizes for the total sample underlying published data, the checked sample of plants for which duplicates were checked, and the remaining sample after duplicates were eliminated are given below for all plants and for foreign plants:

	1996, all	1996, foreign	1998, all	1998, foreign
Total sample	23,677	2,672	8,552	1,124
Checked sample	13,834	2,465	4,946	1,053
Remaining sample	11,113	1,966	4,887	1,044

million workers in 1996 and 4.58 million in 1998, while published industrial census and survey data covered 2.41 million or 52 percent of the labor force survey average in 1996 and an estimated a total of 2.01 million or 44 percent of the labor force survey average in 1998 (Table 1). These samples covered a total of 1.67 million in 1996 and 0.86 million in 1998, the difference between these samples and the published figures being large for 1998 because the underlying survey covered fewer plants in this year. Coverage appears to be somewhat higher if published census and survey estimates of value added are compared with estimates from the national accounts. In the national accounts, manufacturing GDP was estimated at 1,303 billion baht in 1996 and 1,363 billion baht in 1998, while published estimates indicate that the census data covered 77 percent (998 billion baht) of this total in 1996 but the survey covered only an estimated 48 percent of the total (653 billion baht) in 1998. These samples cover 62 percent of the 1996 total (810 billion baht) and 30 percent of the 1998 total (408 billion baht).

Another problem encountered in studies of this nature is how to deal with inter-industry differences. One possibility is to analyze cross sections across all industries using dummy variables to account for inter-industry differences. This method can increase sample size and thereby the efficiency of estimates but it usually restricts slope coefficients to being equal in all industries because it is not practical to estimate slope dummies for a large number of industries. Because these data indicate large differences in slopes as well as intercepts and there are relatively large in a number of industries for which samples are relatively large, the alternative of making separate estimates for each industry is chosen here. Compilations and estimates are made for 14 industries, food, textiles, apparel, leather and footwear, chemicals and products, rubber products, plastics and products, non-metallic mineral products, metal products, motor vehicles, furniture, and jewelry. Some of these industries are still broadly defined and one might argue that more narrow definitions would be appropriate but the existence of several multi-product plants makes the use of narrower definitions difficult in many cases. These 14 industries accounted for 75 percent or more of all manufacturing value added in both the published compilations and in these samples (Table 1). If one compares value added by industry from these samples with corresponding estimates from the national accounts, these samples appear to cover a relatively large portion of value added (71 percent or more of value added as estimated in the national accounts) in food, chemicals, rubber and plastics, metal products, electric machinery, and transportation

machinery, but a relatively small portion of value added (53 percent or less) in textiles, apparel, leather and footwear, and furniture.[7]

Despite all the problems described above and the clear need for caution when interpreting changes observed over time because the 1998 sample is much smaller than the 1996 one, these data still provide the most comprehensive estimates of foreign MNC presence in Thai manufacturing that have been available to date. In all manufacturing, foreign MNCs' shares of production workers were 43 percent in 1996 and 46 percent in 1998, corresponding shares of non-production workers were 43 percent and 48 percent, respectively, and foreign-owned shares of value added were somewhat higher, 53 percent and 60 percent, respectively (Tables 2, 3).

These shares are much higher that the only previous estimates that included non-promoted firms, for example 30.6 percent of value added as reported in the national accounts in 1990 (Ramstetter 1998a, p. 65). However, because the 1990 estimate includes only promoted foreign firms or large foreign firms and is calculated a ratio of value added as reported in the national accounts, previous estimates for 1990 are underestimates and the shares given in Table 3 are overestimates of actual shares. For example, if one calculates the ratio of value added in large plants (Appendix Table A7) to the national accounts' estimate of manufacturing GDP (Table 1), the foreign share was 33.0 percent in 1996. This estimate of the foreign share is roughly comparable with the 30.6 percent estimate for 1990, suggesting that the foreign share increased somewhat during the 1990-1996 period. If value added in foreign plants is calculated from all plants in this sample or from the larger sample of 11,113 plants that remain after duplicates were removed, the foreign share in 1996 increases slightly, to 33.1 percent and 33.6 percent, respectively.[8] The actual foreign share is likely to be somewhat larger still but the difference is not likely to be large because the most foreign plants are likely to have replied to the 1997 census.[9] In sum, previous estimates of the foreign share in 1990 and the estimates of the 1996 foreign share in this paragraph are likely to be underestimates, but the degree of underestimation does not appear

[7] These comparisons are approximate because industry definitions and compilation methods differ, as indicated by the fact that census or survey totals exceed national accounts' totals in several industries.
[8] Note that similar calculations for 1998 produce much smaller foreign shares, 17.8 percent, 17.8 percent, and 18.4 percent, respectively, because the industrial survey sample is much smaller in that year.
[9] If the value added in foreign plants is calculated from the published sample of 23,677 plants, the foreign share is markedly higher, 37.8 percent, but most of the difference between this share and the shares given in the text appears to be the result of duplication in the published sample.

to be large. On the other hand, the shares in Tables 2 and 3 are clearly large overestimates of actual shares and are relevant for these samples only, but they do suggest a further rise in the foreign share in 1996-1998.

Among the 14 major industries identified in these samples, foreign shares of value added (Table 3) were the largest in both years in electric machinery (90 percent in both years), motor vehicles (89 percent in 1996 and 90 percent in 1998), and general machinery (72 percent in 1996 and 93 percent in 1998). This pattern is generally consistent with similar patterns observed for 1990 (Ramstetter 1994, pp. 37-41). Although one must not attach too much meaning to changes between 1996 and 1998 given differences in the two samples, it is interesting to note the large increase of foreign shares in general machinery, as well as increases of foreign shares to high levels in apparel (35 percent in 1996 and 66 percent in 1998), rubber (46 percent in 1996 and 61 percent in 1998), and nonmetallic metal products (28 percent in 1996 and 61 percent in 1998). On the other hand, there was a decline from high levels in metal products (60 percent in 1996 and 52 percent in 1998), and foreign shares were relatively small in both years in food (25 percent in 1996 and 32 percent in 1998), leather and footwear (26 percent in 1996 and 27 percent in 1998), plastics and products (37 percent in both years), and furniture (24 percent in 1996 and 13 percent in 1998).

In 1996, minority-foreign plants were the largest group of foreign plants in most industries but this share is likely to have fallen by 1998 as enforcement of ownership restrictions was loosened in the wake of the 1997 crisis. An exception is in general machinery and electric machinery, where wholly-foreign plants had relatively large shares in 1996, largely because the BOI has often offered foreign investors in these industries (especially exporters and large employers) exemptions to ownership restrictions. Majority-foreign plants also have relatively large shares in chemicals and rubber, probably for similar reasons.

In all manufacturing, mean value added per production worker was 73 percent higher in all foreign plants than in local plants in 1996 and this differential rose to 107 percent in 1998 (Table 4). For non-production workers, these differentials were somewhat smaller 41 percent and 87 percent, respectively. In the sample of larger plants, corresponding differentials were much smaller 32 percent and 81 percent, respectively, for production workers and 9 percent and 51 percent, respectively, for

non-production workers. Thus, on average in all manufacturing, labor was more productive in foreign plants as expected, though these differentials were smaller in the sample of larger plants. The differentials were larger for production workers than for non-production workers and the differentials for both types of labor increased markedly in the 1996 to 1998 period.

When the data are disaggregated by industry, the picture becomes much more complicated, however. Among the 14 industries studied here, in all plants in 1996 differentials for production workers were largest in motor vehicles, chemicals, and metal products, but in 1998 differentials were largest in textiles, motor vehicles, general machinery, and chemicals (Table 4). Among the sample of larger plants, the pattern is similar, except that the differential is much smaller for general machinery in 1998. There were also a number of notable negative differentials. In the sample of all plants in 1996, the largest negative differentials (in absolute value) were observed in jewelry and furniture, followed by food, leather and footwear, and apparel, but in 1998 this list included only furniture and leather and footwear. In the sample of large plants, these negative differentials tended to be somewhat larger and negative differentials were also observed in non-metallic mineral products and electric machinery in 1996 and in plastics in 1998.

For non-production workers, relatively large positive differentials were more common. In the sample of all plants in 1996, positive differentials were largest in motor vehicles, textiles, electric machinery, rubber, apparel, and leather and footwear, and negative differentials were observed in only three industries, furniture, nonmetallic mineral products, and plastics (Table 4). In 1998, large positive differentials were observed in textiles, apparel, non-metallic mineral products, rubber, and general machinery, and there were negative differentials in plastics, leather and footwear, and furniture. In the samples of large plants, most differentials tended to be smaller and negative differentials were somewhat more common.

By ownership group in 1996, in all manufacturing, the average product of production workers was highest for majority-foreign plants followed by minority-foreign plants and lastly by wholly-foreign plants (Table 4). Among large plants, the pattern was similar but the differential for wholly-foreign plants was negative. For non-production workers, average productivity in all plants was highest in majority-foreign plants, followed this time by wholly-foreign plants, and lastly by minority-foreign

plants. However, among large plants, these differentials were very small. Here again there is a wide variation across industries for both production workers and non-production workers and the reader is referred to Table 4 for more details.

These patterns suggest that, while production and non-production workers do both tend to be more productive on average in foreign plants compared to local plants, there was very large variation in productivity differentials across industries and types of labor, and that productivity differentials tended to be smaller in samples of large plants compared to samples of all plants. Second, there is little evidence that foreign plants with higher ownership shares tend to have consistently higher productivity levels for either type of labor.[10]

4. Testing for Differences in Marginal Labor Productivity between Foreign and Local Plants

Previous studies (e.g., Ramstetter 1993, 1994; Tambunlertchai and Ramstetter 1991) have also observed differences in labor productivity between foreign MNCs and local firms similar to those described above. However, as mentioned above, these and other studies (e.g., Khanthachai et al., 1987) have also tended to find that these differences were statistically insignificant at standard levels of significance (the 0.05 level), reflecting large variation among both foreign and local firms. When testing for such differences it is important to account for other factors affecting labor productivity as described in section 2 above and this study attempts to do this by estimating equations (1), (2), (3), and (4) above. Detailed results of estimating these equations are in Appendix Tables C1 to C14 and Tables 5-7 show the percentage differences in marginal products calculated from equations (1) and (2) if they are statistically significant at the 0.05 level or better, percentage differences in average labor productivity calculated from Equations (3) and (4) if they are statistically significant, and adjusted R-squared values for each estimated equation.

Table 5 first shows that comparisons of foreign and local plants in estimates of equation (1) yield very few statistically significant differences in the marginal products of either production or

[10] This is in contrast to studies suggesting a positive relationship between export propensities of firms or plants and foreign ownership shares in Thailand, Indonesia, and Singapore, for example (e.g., Ramsetter 1998b, Ramstetter 1999b).

non-productions workers. For production workers, chemicals is the only industry where significant differentials are rather consistently observed in 1996 and 1998 for all plants and in 1998 for large plants. However, these differentials are negative, not positive as suggested by theory and the simple comparison of average productivity above. Indeed, most significant differentials were negative (e.g., all metal product plants in 1996, large furniture plants in 1996, and large jewelry plants in 1996). Interestingly, the only positive and significant differential emerging from comparisons of local and all foreign plants was in all jewelry plants in 1996, which contrasts markedly with the negative differential in large jewelry plants. Similar comparisons for non-production workers also yield very few significant differentials, significantly positive differentials for large chemicals plants in 1998 and large general machinery plants in 1996, and significantly negative differentials for all textiles plants in 1998 and all jewelry plants in 1996.

Estimates of equation (2), which compare productivity in local plants with productivity in three foreign ownership groups in 1996, suggest that there may be a few more significant differences if foreign plants are grouped by ownership share (Table 5). For production workers, significantly positive differentials are observed for all minority-foreign textiles plants, large minority-foreign textiles plants, all wholly-foreign plastics plants, all wholly-foreign jewelry plants, and all minority-foreign jewelry plants. Significantly negative differentials are observed for large minority-foreign plants in textiles, all wholly-foreign plants in metal products, all minority-foreign plants in metal products, large minority-foreign plants in furniture, and large minority-foreign plants in jewelry. For non-production workers these comparisons reveal significantly positive differentials for large wholly-foreign plants in apparel, all majority-foreign plants in plastics, all majority-foreign plants in general machinery, large majority-foreign plants in general machinery, and large minority-foreign plants in general machinery. Significantly negative correlations are observed in all majority-foreign plants in leather and footwear only. It should also be noted that equation (2) could not be estimated for two industries, non-metallic mineral products and motor vehicles, because of data singularity. This extreme form of multicollinearity is probably related to the small number of wholly-foreign plants in these industries (3 each) but also suggests that one must be aware of the potential for this problem to result in inefficient estimates in other industries as well.

It is also possible that multicollinearity is a factor in estimates of equation (1) in some industries, but the problem is likely to be far less severe in that case. It is also interesting to note that some of the significant labor productivity differentials are accompanied by significant differentials in the other kind of labor, capital, or the constant that are of the opposite sign as can be seen from Tables 5 and 6. For example, in the sample of all textile plants for 1998, there is a negatively significant differential in favor of all foreign plants for non-production workers but a positively significant differential for capital. In the same sample for 1996 for minority-foreign plants had significantly higher production-worker productivity but significantly lower capital productivity. An extreme example of this type of problem is the extremely large negative differential for the non-production worker productivity in large majority-foreign plants in leather and footwear combined with an even larger positive differential in the constant. Thus, in some cases it is very difficult to determine unambiguously which group is more efficient.

Estimates of equations (3) and (4), which estimate average labor productivity directly under much stricter assumptions that equations (1) and (2) as described above, yield somewhat different results in that all but one significant differential is positive. However, the results of estimating equations (3) and (4) are also similar in that significant differentials are still not very common. For all plants and for large plants alike, estimates of equation (3) yielded only 2 positive significant differentials in 1996, in chemicals and in metal products. For the sample of all plants, significant positive differentials from estimates of (3) are observed in more industries in 1998, food, chemicals, nonmetallic mineral products, general machinery, and motor vehicles. In the sample of large plants in 1998, positively significant differentials were observed in apparel, chemicals, and non-metallic mineral products, with a negatively significant differential being observed in furniture. Estimates of equation (4) also reveal some positively significant differentials in 1996 in textiles (both wholly-foreign and majority-foreign plants in the sample of all plants but only wholly-foreign plants in the sample of large plants), chemicals (both wholly-foreign and minority-foreign plants in the sample of all plants but only wholly-foreign plants in the sample of large plants), non-metallic mineral products (all majority-foreign plants only), metal products (both wholly-foreign and minority-foreign plants in the sample of all plants but only wholly-foreign plants in the sample of large plants). It should also be noted that equations (3) and (4)

explain far less variation in the dependent variable than do equations (1) and (2), largely because the scale factor has been limited somewhat.

In sum, the most important result from the econometric estimates presented in this section is that the results do not suggest a strong tendency for foreign plants to have higher labor productivity than local plants. In addition, the results do not suggest that there is a strong positive correlation between labor productivity and foreign ownership shares. Rather, these estimates indicate a wide variation in the relationship between foreign ownership and labor productivity across foreign ownership share, type of labor, industry, plant size, and year.

5. Conclusions

This paper began by reviewing the theoretical literature, which suggests that foreign MNCs tend to be more productive than local firms because they possess firm-specific assets, especially intangible knowledge-based assets, in relatively large amounts. After describing the data set and several problems with it, average products of production workers and non-production workers were compared between foreign and local plants in Thai manufacturing in 1996 and 1998 and between foreign ownership groups on the one hand and local plants on the other in 1996. These comparisons revealed that productivity differentials between foreign and local plants tended to be positive in all manufacturing for both production and non-production workers in 1996 and 1998. However, there was a very wide variation in these differentials across industries and negative differentials were observed in several industries. Moreover, differentials tended to be smaller in samples of large plants, which are thought to be more meaningful for these comparisons, than in samples of all plants. Differentials also tended to widen between 1996 and 1998, though inter-temporal comparisons are not very reliable in this case because of the 1998 sample is much smaller than the 1996 sample.

The statistical significant of differentials in labor productivity were then tested in the context of two Cobb-Douglas production functions. In both formulations, statistically significant differences are not observed in a number of industries. Moreover, in the more general formulation, which allows for scale economies and differences in productivity of production and non-production workers, most

significant differentials were negative, not positive as suggested by theory. In the more restrictive formulation, which assumes constant returns to scale and assumes that production workers and non-production workers are equally productive, positively significant differentials are more common and negatively significant differentials are less common. However, in view of the theoretical expectation that foreign MNCs will be more productive than local firms or plants, perhaps the most important result of this study is the lack of evidence suggesting that foreign MNCs have systematically higher labor productivity than local plants. This result is consistent with results from previous studies of Thai manufacturing, but contrasts with previous results for Indonesia and Mexico. Another important result is the apparent lack of a strong positive correlation between labor productivity and foreign ownership shares. Rather, these estimates indicate wide variation in the relationship between foreign ownership and labor productivity in Thai manufacturing depending on foreign ownership share, type of labor, industry, plant size, and year. Correspondingly, although foreign ownership shares appear to have increased after the 1997 crisis, these results do not suggest systematic changes in the relationship between foreign ownership and labor productivity between 1996 and 1998.

Although the above conclusions seem reasonable, several extensions and refinements would be useful to further scrutinize their validity. First, it is important to see if more flexible functional forms such as the translog could be employed successfully with this data set, though this would probably render the use of dummy variables impractical and mandate separate estimates for foreign and local plants. Second an important problem not addressed in this study is high probability that some of the variables in these production functions are determined simultaneously. For example, it is probably most reasonable to assume that production and factor input levels are determined simultaneously, though it would be very difficult to find appropriate instruments to account for this simultaneity in this data set. Another potentially important simultaneity may involve the trade orientation and foreign ownership dummies, because trade orientation, especially export orientation, may be a function of foreign ownership or foreign ownership shares (e.g., Ramstetter 1994, 1998b, 1999b). If appropriate instruments could not be specified, another approach would be to estimate related equations in a system of seemingly unrelated regressions. Third, it would also be interesting to examine dimensions not considered in this study. For example, it would be interesting experiment with a more detailed classification of industries or with

the use of industry dummy variables in certain industrial clusters. It might also be helpful to distinguish foreign MNCs by nationality. Finally, it could be helpful to distinguish plants by location in Thailand, though this would reduce the sample size because all duplicates would have to be eliminated from the data set in order to avoid confusing the effects of location with the effects of the duplicate removal methodology used in this study.

However, if this and previous studies are to be believed, it seems likely that the major result obtained here, that productivity differentials between foreign MNCs and local plants are not that pervasive in Thai manufacturing, will persist in the final analysis. If so, how does one interpret this result? One interpretation is that foreign MNCs are not that productive in Thai manufacturing. An alternative that this observer tends to find more persuasive is that local plants and firms have been successful in reaching productivity levels that do not differ pervasively from those in generally efficient foreign MNCs. Further attempts to clarify this point would also be helpful.

References

Advanced Research Group Co. Ltd., 1998. Financial Focus, CD-ROM. Bangkok: Advanced Research Group Co., Ltd.

Advanced Research Group Co. Ltd., various years. *Thailand Company Information*, 1996-1997, 1997-1998, 1998-1999, and 1999-2000 issues and diskettes accompanying 1996-1997, 1997-1998, and 1998-1999 issues. Bangkok: Advanced Research Group Co., Ltd.

Blomström, Magnus, 1990. *Foreign Investment and Spillovers*. London: Routledge.

Buckley, Peter J. and Mark Casson, 1992. The Future of the Multinational Enterprise, 2nd Edition. London: Macmillan.

Business Research and Development, various years. *Thailand Business Profiles*, 1996-1997 and 1997-1998 issues. Bangkok: Business Research and Development.

Casson, Mark, 1987. *The Firm and the Market: Studies on the Multinational and the Scope of the Firm*. Cambridge, MA: MIT Press.

Caves, Richard E., 1996. *Multinational Enterprise and Economic Analysis*, second edition. Cambridge, UK: Cambridge University Press.

Chao, C.-C. and Eden Yu, 1996. AAre wholly foreign-owned enterprises better than joint ventures?@ *Journal of International Economics*, vol. 40, no. 1/2, pp. 225-237.

Dunning, John H., 1988. *Explaining International Production*. London: Unwin Hyman.

Dunning, John H., 1993. *Multinational Enterprises and the Global Economy*. Workingham, U.K.: Addison-Wesley Publishing Co.

Hall, Bronwyn H. and Clint Cummins, 1999. *Time Series Processor, User's Guide Version 4.5*. Palo Alto: TSP International.

Hill, Hal, 1988. *Foreign Investment and Industrialization in Indonesia*. Singapore: Oxford University Press.

Hymer, Stephen H., 1960. "The International Operations of National Firms: A Study of Direct Foreign Investment," Ph.D. dissertation, MIT (published by MIT Press, 1976).

Khanthachai, Nathabhol, Kanchana Tanmavad, Tawatchai Boonsiri, Chantana Nisaisook, and Anucha Arttanuchit, 1987. *Technology and Skills in Thailand*. Singapore: Institute of Southeast Asian Studies.

Markusen, James R., 1991. "The Theory of the Multinational Enterprise: A Common Analytical Framework," in Eric D. Ramstetter, ed., *Direct Foreign Investment in Asia's Developing Economies and Structural Change in the Asia-Pacific Region*, Boulder, Co: Westview Press, pp. 11-32.

National Economic and Social Development Board, 2001. *National Income of Thailand 1999*, downloaded from the NESDB website (http://www.nesdb.go.th). Bangkok: National Economic and Social Development Board.

National Statistical Office, 1999. *Report on the 1997 Industrial Census of the Whole Kingdom*. Bangkok: National Statistical Office.

National Statistical Office, 2001a. Compilations of Data from the 1999 Industrial Survey, downloaded from the NSO website (http://www.nso.go.th/eng/stat/industrial/index.htm) in March 2001. Bangkok: National Statistical Office.

National Statistical Office, 2001b. Compilations of data from various Labor Force Surveys, downloaded from the NSO website (http://www.nso.go.th/eng/stat/lfs/lfstab9.htm) in March 2001. Bangkok: National Statistical Office.

Okamoto, Yumiko and Fredrik Sjöholm, 2000. "Productivity in the Indonesian Automotive Industry," *ASEAN Economic Bulletin*, Vol. 17, No. 1, pp. 60-73.

Ramstetter, Eric D., 1993. "Production Technology in Foreign and Local Firms in Thai Manufacturing", Discussion Paper No. 8. Nagoya: Graduate School of International Development, Nagoya University.

_____, 1994. "Comparisons of Japanese Multinationals and Other Firms in Thailand's Nonoil Manufacturing Industries," *ASEAN Economic Bulletin*, Vol. 11, No. 1, pp. 36-58.

_____, 1996. "Trends in Production in Foreign Multinational Firms in Asian Economies: A Note on an Economic Myth Related to Poor Measurement", *Kansai University Review of Economics and Business*, Vol. 24, Nos. 1-2 (March), pp. 49-107

_____, 1998. "Export Propensities and Foreign Ownership Shares in Southeast Asian Manufacturing", in F. Gerard Adams and Shinichi Ichimura, eds., *East Asian Development: Will the East Asian Miracle Survive?* Westport, CN: Praeger, pp. 171-192.

_____, 1999a. "Comparisons of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time ", *Asian Economic Journal*, Vol. 13, No. 3 (June), pp. 163-203.

_____, 1999b. "Trade Propensities and Foreign Ownership Shares in Indonesian Manufacturing in the Early 1990s," *Bulletin of Indonesian Economic Studies*, Vol. 35, No. 2 (August), pp. 43-66.

Rugman, Alan M., 1980. Internalization as a General Theory of Foreign Direct Investment: A Re-Appraisal of the Literature," *Weltwirtschaftliches Archiv*, Band 116, Heft 2, pp. 365-379.

_____, 1985. "Internalization is Still a General Theory of Foreign Direct Investment," *Weltwirtschaftliches Archiv*, Band 121, Heft 3, pp. 570-575.

Sjöholm, Fredrik, 1998. AJoint Ventures, Technology Transfer and Spillovers: Evidence from Indonesian Estblishment Data@, in Economic Planning Agency, ed., *Foreign Direct Investment in Asia*, papers and proceedings of an international symposium, 22-23 October, Tokyo: Economic Planning Agency, pp. 587-616.

_____, 1999. "Exports, Imports and Productivity: Results From Indonesian Establishment Data," *World Development*, Vol. 27, No. 4, pp. 705-715.

Takii, Sadayuki and Eric D. Ramstetter, 2000. "Foreign Multinationals in Indonesian Manufacturing 1985-1998: Shares, Relative Size, and Relative Labor Productivity", Working Paper 2000-18, Kitakyushu: International Centre for the Study of East Asian Development.

Tambunlertchai, Somsak and Eric D. Ramstetter, 1991. "Foreign Firms in Promoted Industries and Structural Change in Thailand," in Eric D. Ramstetter, ed., *Direct Foreign Investment in Asia's Developing Economies and Structural Change in the Asia-Pacific Region*, Boulder, CO: Westview Press, pp. 65-102.

The Brooker Group, 1996. *Directory of Supporting Industries in Thailand 1996*. Bangkok: The Brooker Group (including accompanying diskette).

The Brooker Group, 1997. *Profiles of BOI-Promoted Companies and Sectors - 1997*. Bangkok: Board of Investment Welfare (including accompanying diskette).

The Nation, various years. *Top 1000 Companies*, 1997-1998 issues; *Top 1000*, 1999 issue; *1000 Top Companies*, 2000 issue. Bangkok: The Nation.

White, Halbert, 1980. "A Heterosckedasticity-Consistent Covariance Matrix Estimator and A Direct Test for Heteroskedasticity", *Econometrica*, Vol. 48, No. 4 (May), pp. 817-838.

Table 1: Estimates of Employment and Value Added in Thailand

Industry	1996			1998		
	Labor Force Surveys -a or National Accounts	Industrial Census		Labor Force Surveys -a or National Accounts	Industrial Survey	
		Publi-cation	This sample		Publi-cation	This sample
EMPLOYMENT (NUMBER OF PRODUCTION & NON-PRODUCTION WORKERS)						
Manufacturing	4,644,150	2,413,584	1,669,504	4,577,225	2,008,374	853,697
VALUE ADDED (MILLION BAHT); NSO CLASSIFICATION (based on ISIC rev 3)						
Manufacturing	1,303,417	998,114	809,576	1,362,990	653,238	408,017
Food -b	101,540	113,563	96,725	132,185	100,762	58,860
Textiles	87,150	46,467	32,590	99,783	44,714	21,436
Apparel	151,857	23,940	18,813	157,067	21,513	10,495
Leather & footwear	41,429	15,752	9,642	48,894	14,363	11,397
Chemicals & products	45,122	58,880	53,110	57,503	28,616	26,110
Rubber & plastics	34,402	63,082	51,373	42,164	43,492	27,303
Rubber products	na	36,043	32,248	na	20,359	17,712
Plastics & products	na	27,039	19,124	na	23,133	9,591
Non-metallic mineral products	70,003	65,018	34,914	55,000	57,347	33,620
Metal products	35,634	35,208	27,069	39,277	21,291	12,014
General machinery	na	38,513	32,488	na	34,983	31,805
Electric machinery	na	127,992	110,106	na	85,612	57,635
Office & computing machinery	na	28,024	24,060	na	20,339	14,677
Miscellaneous electric machinery	na	40,073	32,228	na	18,873	16,458
Radio, TV, communication	na	47,977	42,675	na	42,345	23,136
Precision machinery	na	11,918	11,142	na	4,054	3,364
Motor vehicles	na	139,673	129,402	na	72,278	35,043
Furniture	34,029	14,425	10,392	19,814	9,154	4,193
Jewelry	na	9,184	8,023	na	4,474	1,888
Other manufacturing industries	na	246,418	194,929	na	157,053	76,218
Beverages	81,252	69,669	61,691	102,721	69,935	39,259
Tobacco	27,800	30,669	23,651	32,562	689	446
Wood products	8,345	14,983	12,646	5,539	5,496	4,136
Paper products	21,338	32,120	27,234	29,991	11,701	10,085
Printing & publishing	14,945	30,087	12,345	13,876	8,235	2,175
Oil, coal, nuclear, etc.	98,672	33,039	31,301	140,301	1,157	934
Basic metals	19,512	17,822	13,397	15,371	9,967	9,572
Misc. transportation machinery	na	6,667	4,415	na	3,991	819
Other misc. manufacturing	111,030	11,362	8,248	101,246	45,883	8,792
ADDENDUM: Major industries redefined to be consistent with NESDB classification						
General machinery -c	101,050	66,536	56,549	122,319	55,322	46,483
Electric machinery -d	105,410	88,050	74,903	111,068	61,218	39,593
Tranportation machinery -e	112,897	146,340	133,817	36,309	76,269	35,862
Other manufacturing industries -f	382,894	251,669	201,656	348,670	157,117	78,763

Notes: a=Labor Force Survey data refer to the averages of rounds 1 and 3.
b=for 1999 survey publication, one small beverage plant with 10 employees is included in food;
c=includes office & computing machinery; d=excludes office, computing, & precision machinery;
e=includes other transportation machinery; f=excludes other tranportaion machinery, includes precision machinery.
Sources: Compilations from plant-level data underlying National Statistical Office (1999, 2001a); National Statitistical Office (1999, 2001a; 2001b); National Economic and Social Development Board (2001).

Table 2: Shares of Foreign Plants in Thai Manufacturing Employment by Type, Size and Industry in 1996 and 1998 and by Ownership Share in 1996 (percentage)

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
FOREIGN PLANTS' SHARES OF PRODUCTION WORKERS										
Manufacturing	43	11	8	24	46	47	12	9	26	49
Food	32	2	4	26	31	33	2	4	27	33
Textiles	40	1	4	34	30	43	1	5	37	33
Apparel	33	1	2	30	48	35	1	2	32	50
Leather & footwear	30	4	8	19	18	32	4	8	21	19
Chemicals & products	38	8	6	24	37	40	9	7	25	39
Rubber products	42	9	12	20	42	43	10	12	21	42
Plastics & products	32	7	6	18	48	34	8	7	20	50
Nonmetallic mineral products	22	4	4	14	35	26	4	5	17	40
Metal products	39	8	4	27	32	46	10	5	31	35
General machinery	65	33	7	26	84	70	35	8	27	89
Electric machinery	85	49	17	19	88	87	50	17	19	89
Office & computing machinery	100	75	8	17	98	100	75	8	17	98
Miscellaneous electric machine	72	21	25	25	86	75	22	27	26	88
Radio, TV, communication	86	48	18	20	91	87	48	18	20	92
Precision machinery	83	60	14	9	62	86	64	14	8	63
Motor vehicles	59	3	18	39	64	65	3	20	43	71
Furniture	27	3	4	20	15	32	4	4	24	20
Jewelry	62	9	25	28	53	64	9	24	32	55
Other manufacturing industries	31	4	9	18	40	34	5	10	20	44
FOREIGN PLANTS' SHARES OF NON-PRODUCTION WORKERS										
Manufacturing	43	7	7	28	48	46	8	8	30	52
Food	25	2	4	20	31	26	2	4	21	34
Textiles	33	1	4	28	30	36	1	4	30	33
Apparel	28	1	1	26	53	29	1	1	28	56
Leather & footwear	25	1	4	19	10	27	1	5	21	10
Chemicals & products	38	9	8	20	46	39	10	9	21	49
Rubber products	44	5	15	24	45	46	5	16	24	46
Plastics & products	39	7	8	23	50	43	8	9	26	53
Nonmetallic mineral products	21	1	6	14	36	23	1	7	15	41
Metal products	40	4	3	33	32	48	5	4	39	34
General machinery	60	18	10	32	82	65	20	11	34	86
Electric machinery	77	36	15	27	89	79	37	15	27	90
Office & computing machinery	99	77	17	5	99	99	77	17	5	99
Miscellaneous electric machine	71	13	18	41	84	73	13	18	42	86
Radio, TV, communication	77	44	10	23	89	79	45	10	24	91
Precision machinery	72	35	24	13	74	79	39	27	13	77
Motor vehicles	52	2	12	38	82	58	2	13	42	86
Furniture	36	1	3	32	14	43	1	3	39	16
Jewelry	55	9	14	31	36	57	9	13	35	36
Other manufacturing industries	47	2	6	40	32	51	2	6	43	36

Sources: Appendix Tables A2-A3.

Table 3: Shares of Foreign Plants in Thai Manufacturing Production by Size and Industry in 1996 and 1998 and by Ownership Share in 1996 (percentage)

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
FOREIGN PLANTS' SHARES OF GROSS OUTPUT										
Manufacturing	58	11	12	34	58	59	12	13	34	59
Food	30	2	4	23	32	30	2	4	24	33
Textiles	60	1	7	52	44	61	1	7	53	45
Apparel	38	1	2	35	70	39	1	2	36	71
Leather & footwear	34	3	11	20	12	35	3	11	20	12
Chemicals & products	62	11	24	27	47	62	11	25	27	47
Rubber products	42	4	15	24	49	42	4	15	24	49
Plastics & products	37	11	7	20	37	38	11	7	20	38
Nonmetallic mineral products	34	1	15	18	63	35	1	15	19	65
Metal products	60	5	10	45	56	62	5	10	47	57
General machinery	76	43	8	25	93	77	44	8	26	94
Electric machinery	90	51	14	26	95	90	51	14	26	95
Office & computing machinery	100	75	11	14	98	100	75	11	14	98
Miscellaneous electric machine	81	25	13	43	90	82	25	13	43	90
Radio, TV, communication	90	51	16	23	98	91	51	16	23	98
Precision machinery	88	66	17	5	75	89	67	17	4	75
Motor vehicles	90	1	14	75	92	90	1	14	75	93
Furniture	29	4	7	18	14	31	5	7	19	15
Jewelry	49	13	11	26	45	50	13	11	27	45
Other manufacturing industries	40	1	17	23	41	41	1	17	23	42
FOREIGN PLANTS' SHARES OF VALUE ADDED										
Manufacturing	53	11	9	33	60	54	11	9	34	60
Food	25	2	4	19	32	26	2	4	20	32
Textiles	55	2	7	47	42	57	2	7	49	43
Apparel	35	1	2	33	66	37	1	2	34	66
Leather & footwear	26	2	10	14	13	27	3	10	14	13
Chemicals & products	58	11	25	22	56	58	11	25	22	57
Rubber products	46	4	24	18	61	46	4	24	18	62
Plastics & products	37	7	9	21	37	38	7	10	22	37
Nonmetallic mineral products	28	1	6	20	61	29	1	7	21	63
Metal products	60	8	6	46	52	64	8	7	49	54
General machinery	72	33	12	27	93	74	34	12	27	94
Electric machinery	90	54	14	21	93	90	54	14	21	93
Office & computing machinery	100	76	8	15	99	100	76	8	15	99
Miscellaneous electric machine	85	41	10	34	90	86	41	10	35	91
Radio, TV, communication	87	44	23	20	95	87	44	23	20	95
Precision machinery	90	82	5	4	68	91	83	5	4	69
Motor vehicles	89	1	7	81	95	90	1	8	81	95
Furniture	24	3	8	13	13	26	3	8	14	13
Jewelry	51	16	13	22	48	51	16	13	23	47
Other manufacturing industries	29	1	5	23	44	29	1	5	23	45

Sources: Appendix Table A7.

Table 4: Average Product per Hour for Production and Non-Production Workers in Foreign Plants Relative to Local Plants by Size and Industry in 1996 and 1998 and by Ownership Share in 1996

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
PERCENTAGE DIFFERENCES IN MEAN VALUE ADDED PER HOUR FOR PRODUCTION WORKERS										
Manufacturing	73	5	130	72	107	32	-23	74	34	81
Food	-18	-18	-12	-19	93	-38	-40	-25	-40	46
Textiles	55	19	127	44	430	45	6	99	37	341
Apparel	-1	9	-34	5	119	-8	-2	-48	0	102
Leather & footwear	-14	-47	18	-25	-13	-30	-59	13	-44	-30
Chemicals & products	277	167	878	103	173	227	113	729	79	150
Rubber products	90	-82	334	63	93	61	-86	272	39	77
Plastics & products	35	-22	65	44	6	33	-17	54	39	-17
Nonmetallic mineral products	0	-86	-19	11	37	-33	-89	-49	-26	97
Metal products	126	102	54	153	78	81	48	14	112	55
General machinery	57	-7	59	74	219	28	-37	10	57	110
Electric machinery	24	-9	-25	87	119	-4	-32	-45	58	87
Office & computing machinery	-19	-43	-54	225	55	-14	-40	-54	225	55
Miscellaneous electric machine	73	38	-42	150	141	31	-1	-61	98	104
Radio, TV, communication	-22	-43	-21	3	127	-37	-55	-37	-11	117
Precision machinery	-10	-12	-43	10	83	-25	-35	-58	14	58
Motor vehicles	308	32	353	308	301	158	-23	165	166	152
Furniture	-28	-48	0	-31	-21	-48	-65	-22	-51	-38
Jewelry	-59	-50	-60	-63	129	-74	-62	-75	-77	61
Other manufacturing industries	103	-32	-22	161	50	53	-46	-44	93	17
PERCENTAGE DIFFERENCES IN MEAN VALUE ADDED PER HOUR FOR NON-PRODUCTION WORKERS										
Manufacturing	41	48	52	35	87	9	10	16	6	51
Food	12	129	36	-8	61	-13	71	20	-31	19
Textiles	169	38	204	173	381	160	12	168	171	261
Apparel	63	51	-24	84	250	66	39	-36	91	167
Leather & footwear	60	9	110	41	-19	33	-21	104	12	-29
Chemicals & products	52	98	110	22	40	33	63	81	9	20
Rubber products	65	-62	200	57	153	37	-71	152	33	134
Plastics & products	-6	-12	-17	0	-27	-16	-11	-33	-12	-50
Nonmetallic mineral products	-10	-56	-4	-9	245	-41	-64	-39	-41	308
Metal products	57	177	48	26	60	22	104	9	1	41
General machinery	19	144	-38	1	126	-8	60	-57	-16	85
Electric machinery	73	86	21	97	99	46	52	0	73	63
Office & computing machinery	51	45	-25	294	281	63	64	-25	294	281
Miscellaneous electric machine	69	106	6	88	125	53	80	-4	74	124
Radio, TV, communication	32	-11	38	78	15	-1	-33	5	36	-25
Precision machinery	109	228	7	55	86	55	110	-27	35	42
Motor vehicles	287	78	510	220	85	159	11	279	121	21
Furniture	-28	7	10	-46	-10	-47	-28	-15	-64	-31
Jewelry	19	-3	9	33	28	-15	-26	-24	-8	-11
Other manufacturing industries	14	4	-12	23	10	-14	-17	-40	-8	-15

Sources: Appendix Tables B6, B8.

Table 5: Marginal Product per Hour for Production and Non-Production Workers in Foreign Plants Relative to Local Plants by Size and Industry in 1996 and 1998 and by Ownership Share in 1996 from Estimates of Equations (1) and (2)

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
PERCENTAGE DIFFERENCES EVALUATED AT MEANS FOR PRODUCTION WORKERS										
Food	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Textiles	ns	ns	ns	178	ns	ns	ns	ns	209	ns
Apparel	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Leather & footwear	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Chemicals & products	-85	ns	ns	ns	-80	ns	ns	ns	ns	-192
Rubber products	ns	ns	-442	ns	ns	ns	ns	ns	ns	ns
Plastics & products	ns	232	ns	ns	ns	ns	ns	ns	-115	ns
Nonmetallic mineral products	ns	data singularity			ns	ns	data singularity			ns
Metal products	-82	-111	ns	-82	ns	ns	ns	ns	ns	ns
General machinery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Electric machinery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Motor vehicles	ns	data singularity			ns	ns	data singularity			ns
Furniture	ns	ns	ns	ns	ns	-110	ns	ns	-116	ns
Jewelry	103	698	ns	150	smpl	-533	ns	ns	-666	smpl
PERCENTAGE DIFFERENCES EVALUATED AT MEANS FOR NON-PRODUCTION WORKERS										
Food	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Textiles	ns	ns	ns	ns	-103	ns	ns	ns	ns	ns
Apparel	ns	ns	ns	ns	ns	ns	385	ns	ns	ns
Leather & footwear	ns	ns	ns	ns	ns	ns	ns	-1,463	ns	ns
Chemicals & products	ns	ns	ns	ns	ns	ns	ns	ns	ns	78
Rubber products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Plastics & products	ns	ns	415	ns	ns	ns	ns	ns	ns	ns
Nonmetallic mineral products	ns	data singularity			ns	ns	data singularity			ns
Metal products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
General machinery	ns	ns	767	ns	ns	15,641	ns	19,307	4,970	ns
Electric machinery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Motor vehicles	ns	data singularity			ns	ns	data singularity			ns
Furniture	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Jewelry	-91	ns	ns	ns	smpl	ns	ns	ns	ns	smpl
ADJUSTED R-SQUARED FOR EQUATIONS (1) AND (2)										
Food	0.514	0.512			0.651	0.412	0.408			0.650
Textiles	0.625	0.627			0.676	0.458	0.457			0.565
Apparel	0.601	0.599			0.603	0.465	0.463			0.614
Leather & footwear	0.533	0.523			0.678	0.327	0.348			0.702
Chemicals & products	0.509	0.510			0.612	0.384	0.385			0.538
Rubber products	0.376	0.384			0.743	0.224	0.231			0.652
Plastics & products	0.554	0.560			0.591	0.456	0.462			0.592
Nonmetallic mineral products	0.522	data singularity			0.634	0.359	data singularity			0.616
Metal products	0.528	0.527			0.566	0.435	0.433			0.505
General machinery	0.656	0.660			0.800	0.611	0.621			0.776
Electric machinery	0.672	0.676			0.704	0.568	0.567			0.644
Motor vehicles	0.749	data singularity			0.712	0.695	data singularity			0.695
Furniture	0.487	0.486			0.534	0.376	0.372			0.340
Jewelry	0.550	0.551			smpl	0.320	0.293			smpl

Notes: ns=not significant at the 0.05 level or better; data singularity=estimates could not be obtained because of singularity in the data; smpl=samples to small to faciliate estimates (=34 for all plants and =22 for large plants).
Sources: Appendix Tables C1-C14.

Table 6: Marginal Product per Unit of Capital and Constants in Foreign Plants Relative to Local Plants by Size and Industry in 1996 and 1998 and by Ownership Share in 1996 from Estimates of Equations (1) and (2)

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
PERCENTAGE DIFFERENCES EVALUATED AT MEANS FOR CAPITAL										
Food	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Textiles	ns	ns	ns	-129	26	ns	ns	ns	ns	61
Apparel	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Leather & footwear	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Chemicals & products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Rubber products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Plastics & products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nonmetallic mineral products	ns	data singularity			ns	ns	data singularity			58
Metal products	25	ns	ns	ns	ns	ns	ns	ns	ns	ns
General machinery	ns	ns	ns	ns	ns	ns	ns	-638	ns	ns
Electric machinery	ns	76	ns	ns	ns	ns	ns	ns	ns	ns
Motor vehicles	490	data singularity			ns	ns	data singularity			-279
Furniture	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Jewelry	-73	ns	ns	ns	smpl	ns	ns	ns	ns	smpl
PERCENTAGE DIFFERENCES EVALUATED AT MEANS FOR CONSTANTS										
Food	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Textiles	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Apparel	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Leather & footwear	ns	ns	ns	ns	ns	ns	ns	3E+08	ns	ns
Chemicals & products	ns	ns	ns	2,040	ns	ns	ns	ns	ns	ns
Rubber products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Plastics & products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nonmetallic mineral products	ns	data singularity			ns	-99	data singularity			ns
Metal products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
General machinery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Electric machinery	ns	ns	ns	ns	ns	ns	-98	ns	ns	ns
Motor vehicles	-96	data singularity			ns	-100	data singularity			-164
Furniture	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Jewelry	ns	ns	115650	ns	smpl	ns	ns	ns	ns	smpl

Notes: ns=not significant at the 0.05 level or better; data singularity=estimates could not be obtained because of singularity in the data; smpl=samples to small to faciliate estimates (=34 for all plants and =22 for large plants).
Sources: Appendix Tables C1-C14.

Table 7: Average Product per Hour for Production in Foreign Plants Relative to Local Plants and Adjusted R-squared by Size and Industry in 1996 and 1998 and by Ownership Share in 1996 from Estimates of Equations (3) and (4)

	All plants					Large plants (output>=25 mil. baht)				
	1996				1998	1996				1998
Industry	All	100%	50-99%	1-49%	All	All	100%	50-99%	1-49%	All
PERCENTAGE DIFFERENCES FOR PRODUCTION WORKERS (=differences for non-production workers)										
Food	ns	ns	ns	ns	31	ns	ns	ns	ns	ns
Textiles	ns	117	106	ns	ns	ns	ns	132	ns	ns
Apparel	ns	ns	ns	ns	ns	ns	ns	ns	ns	77
Leather & footwear	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Chemicals & products	57	153	ns	40	48	49	131	ns	ns	48
Rubber products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Plastics & products	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nonmetallic mineral products	ns	ns	101	ns	103	ns	ns	ns	ns	99
Metal products	44	95	ns	37	ns	47	107	ns	ns	ns
General machinery	ns	ns	ns	ns	38	ns	ns	ns	ns	ns
Electric machinery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Motor vehicles	ns	ns	ns	ns	126	ns	ns	ns	ns	ns
Furniture	ns	ns	ns	ns	ns	ns	ns	ns	ns	-47
Jewelry	ns	ns	ns	ns	smpl	ns	ns	ns	ns	smpl
ADJUSTED R-SQUARED FOR EQUATIONS (3) AND (4)										
Food	0.169		0.167		0.191	0.205		0.204		0.198
Textiles	0.089		0.098		0.254	0.086		0.096		0.176
Apparel	0.110		0.110		0.137	0.128		0.131		0.184
Leather & footwear	0.048		0.040		0.279	0.055		0.040		0.256
Chemicals & products	0.218		0.221		0.354	0.179		0.182		0.343
Rubber products	0.089		0.083		0.273	0.106		0.099		0.297
Plastics & products	0.134		0.133		0.120	0.144		0.142		0.179
Nonmetallic mineral products	0.155		0.154		0.242	0.104		0.100		0.271
Metal products	0.146		0.145		0.211	0.225		0.225		0.247
General machinery	0.198		0.198		0.502	0.185		0.189		0.425
Electric machinery	0.203		0.202		0.231	0.231		0.232		0.244
Motor vehicles	0.274		0.271		0.394	0.295		0.288		0.329
Furniture	0.178		0.176		0.383	0.287		0.297		0.191
Jewelry	0.254		0.247		smpl	0.181		0.164		smpl

Notes: ns=not significant at the 0.05 level or better; data singularity=estimates could not be obtained because of singularity in the data; smpl=samples to small to faciliate estimates (=34 for all plants and =22 for large plants).
Sources: Appendix Tables C1-C14.

Appendix Table A1: Number of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	7,214	1,738	284	351	1,103	3,026	948	3,742	1,452	247	301	904	1,669	829
Food	1,069	186	18	31	137	678	113	637	161	16	24	121	395	104
Textiles	474	127	8	19	100	213	54	240	106	7	18	81	116	49
Apparel	508	99	7	17	75	78	30	279	70	6	11	53	42	26
Leather & footwear	206	36	7	13	16	119	20	96	28	7	9	12	86	17
Chemicals & products	343	146	21	31	94	167	93	234	132	21	29	82	113	85
Rubber products	197	71	11	13	47	128	42	141	66	11	12	43	98	40
Plastics & products	431	108	22	22	64	111	58	227	85	15	19	51	59	45
Nonmetallic mineral products	689	57	3	11	43	334	41	325	48	2	9	37	149	35
Metal products	581	117	21	21	75	216	63	252	95	18	19	58	107	45
General machinery	333	103	18	18	67	135	71	168	81	17	16	48	59	65
Electric machinery	237	258	92	67	99	99	148	131	230	86	62	82	60	138
Office & computing machinery	2	30	19	8	3	2	17	2	27	16	8	3	2	17
Miscellaneous electric machinery	142	94	20	26	48	62	60	81	85	19	24	42	38	55
Radio, TV, communication	54	102	41	26	35	23	58	32	92	39	24	29	13	55
Precision machinery	39	32	12	7	13	12	13	16	26	12	6	8	7	11
Motor vehicles	330	76	3	19	54	81	53	117	70	3	19	48	29	50
Furniture	326	43	6	8	29	112	16	151	34	6	7	21	62	13
Jewelry	81	72	16	18	38	16	18	41	56	10	14	32	8	14
Other manufacturing industries	1,409	239	31	43	165	539	128	703	190	22	33	135	286	103
Beverages	81	12	0	1	11	43	6	36	12	0	1	11	20	6
Tobacco	32	3	1	0	2	25	1	3	3	1	0	2	8	1
Wood products	386	27	0	4	23	181	17	189	19	0	2	17	93	10
Paper products	216	40	1	9	30	68	20	138	32	0	7	25	50	16
Printing & publishing	281	18	1	2	15	40	6	122	15	0	2	13	27	5
Oil, coal, nuclear, etc.	13	10	0	2	8	4	1	13	10	0	2	8	4	1
Basic metals	143	35	2	1	32	102	26	85	29	1	1	27	59	23
Misc. transportation machinery	79	14	0	1	13	26	8	39	11	0	1	10	8	7
Other misc. manufacturing	178	80	26	23	31	50	43	78	59	20	17	22	17	34

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A2: Number of Production Workers in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	793,559	605,525	158,627	113,775	333,123	391,166	327,155	670,636	590,853	156,473	110,110	324,270	333,953	321,123
Food	148,413	68,843	4,065	9,332	55,446	98,942	44,463	135,134	67,367	3,974	8,742	54,651	90,368	43,943
Textiles	73,155	48,154	1,412	5,208	41,534	40,176	17,431	63,421	47,244	1,303	5,190	40,751	34,392	17,064
Apparel	74,848	37,301	1,092	2,803	33,406	18,495	16,829	65,376	35,219	971	2,488	31,760	16,320	16,373
Leather & footwear	32,141	13,800	1,618	3,448	8,734	31,942	7,237	28,163	13,529	1,618	3,328	8,583	29,894	7,042
Chemicals & products	29,220	17,965	3,767	2,973	11,225	13,535	8,116	26,079	17,590	3,767	2,938	10,885	11,993	7,800
Rubber products	31,887	22,713	5,035	6,783	10,895	22,260	15,841	29,869	22,194	5,035	6,426	10,733	21,337	15,735
Plastics & products	44,550	20,739	4,720	4,032	11,987	14,736	13,375	37,823	19,817	4,440	3,882	11,495	12,577	12,795
Nonmetallic mineral products	58,682	16,758	2,725	3,343	10,690	28,924	15,386	45,527	16,122	2,643	3,208	10,271	22,496	15,000
Metal products	43,027	27,698	5,947	2,907	18,844	18,361	8,788	31,995	26,744	5,804	2,757	18,183	14,843	7,956
General machinery	25,460	48,315	24,141	5,182	18,992	7,671	40,790	20,171	47,616	24,041	5,142	18,433	4,861	40,651
Electric machinery	27,569	158,321	90,834	31,585	35,902	11,636	86,618	23,636	157,134	90,475	31,479	35,180	10,305	86,099
Office & computing machinery	227	47,203	35,700	3,636	7,867	442	17,727	227	47,069	35,566	3,636	7,867	442	17,727
Miscellaneous electric machinery	14,154	35,905	10,601	12,745	12,559	5,178	31,389	11,786	35,595	10,563	12,728	12,304	4,323	31,078
Radio, TV, communication	10,091	59,986	33,496	12,674	13,816	3,103	32,751	9,249	59,494	33,309	12,617	13,568	2,814	32,684
Precision machinery	3,097	15,227	11,037	2,530	1,660	2,913	4,751	2,374	14,976	11,037	2,498	1,441	2,726	4,610
Motor vehicles	26,983	39,126	1,779	11,718	25,629	6,908	12,109	20,602	38,919	1,779	11,718	25,422	4,948	12,022
Furniture	34,060	12,675	1,337	1,781	9,557	25,138	4,397	25,902	12,217	1,337	1,701	9,179	16,660	4,234
Jewelry	7,650	12,253	1,793	4,886	5,574	2,271	2,568	6,003	10,848	1,536	3,976	5,336	1,986	2,410
Other manufacturing industries	135,914	60,864	8,362	17,794	34,708	50,171	33,207	110,935	58,293	7,750	17,135	33,408	40,973	31,999

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A3: Number of Non-Production Workers in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	155,431	114,989	20,198	18,918	75,873	70,427	64,949	133,145	112,895	19,973	18,503	74,419	59,740	63,939
Food	30,786	10,185	621	1,439	8,125	18,088	8,052	27,770	9,992	612	1,376	8,004	15,616	7,959
Textiles	10,243	5,116	167	620	4,329	4,341	1,866	8,899	4,969	162	617	4,190	3,743	1,838
Apparel	11,683	4,523	103	213	4,207	1,690	1,891	10,296	4,294	87	185	4,022	1,446	1,853
Leather & footwear	4,560	1,486	78	262	1,146	4,678	528	3,862	1,453	78	248	1,127	4,338	498
Chemicals & products	11,868	7,195	1,797	1,578	3,820	4,550	3,870	10,964	7,103	1,797	1,565	3,741	3,973	3,788
Rubber products	3,877	3,067	351	1,051	1,665	2,707	2,226	3,555	2,985	351	1,038	1,596	2,577	2,209
Plastics & products	6,162	3,906	728	825	2,353	2,686	2,729	4,990	3,737	681	809	2,247	2,282	2,605
Nonmetallic mineral products	14,316	3,730	130	1,118	2,482	7,075	3,957	12,155	3,652	121	1,098	2,433	5,612	3,885
Metal products	6,982	4,701	473	382	3,846	3,631	1,690	5,049	4,575	463	372	3,740	2,934	1,532
General machinery	5,144	7,820	2,391	1,274	4,155	1,723	7,649	4,125	7,670	2,384	1,255	4,031	1,217	7,606
Electric machinery	7,390	25,435	11,718	4,900	8,817	2,139	17,207	6,546	25,248	11,681	4,838	8,729	1,845	17,116
Office & computing machinery	57	4,254	3,307	746	201	59	4,758	57	4,240	3,293	746	201	59	4,758
Miscellaneous electric machinery	3,619	8,909	1,579	2,224	5,106	1,170	6,025	3,207	8,827	1,572	2,180	5,075	1,006	5,987
Radio, TV, communication	3,107	10,687	6,056	1,402	3,229	678	5,752	2,863	10,629	6,040	1,389	3,200	581	5,710
Precision machinery	607	1,585	776	528	281	232	672	419	1,552	776	523	253	199	661
Motor vehicles	5,825	6,319	216	1,444	4,659	1,481	6,666	4,608	6,264	216	1,444	4,604	1,101	6,649
Furniture	5,137	2,855	62	205	2,588	2,644	446	3,704	2,789	62	197	2,530	2,216	422
Jewelry	1,490	1,786	293	468	1,025	806	444	1,206	1,601	256	364	981	748	416
Other manufacturing industries	29,968	26,865	1,070	3,139	22,656	12,188	5,728	25,416	26,563	1,022	3,097	22,444	10,092	5,563

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A4: Fixed Asset Stocks in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996
(average of values at 1 January and at 31 December, million baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	613,913	676,857	120,547	202,808	353,502	315,372	448,018	579,393	612,117	120,013	141,678	350,425	293,994	445,632
Food	79,429	38,784	7,585	6,286	24,913	53,443	31,348	74,002	38,201	7,556	6,054	24,592	48,211	31,224
Textiles	33,415	59,854	1,203	5,107	53,544	16,751	25,852	30,904	59,542	1,200	5,102	53,240	15,556	25,770
Apparel	11,339	5,405	137	489	4,779	2,484	4,343	9,912	5,171	127	458	4,586	2,281	4,282
Leather & footwear	5,858	3,253	230	1,061	1,961	9,364	1,458	5,317	3,204	230	1,040	1,933	9,126	1,427
Chemicals & products	40,528	54,212	6,754	7,049	40,410	65,078	39,641	39,347	54,055	6,754	7,008	40,293	64,243	39,492
Rubber products	15,703	16,891	2,258	10,099	4,534	8,828	21,545	14,854	16,636	2,258	10,017	4,361	8,578	21,439
Plastics & products	22,341	16,339	4,194	3,510	8,635	8,240	5,953	20,227	15,930	4,099	3,351	8,480	7,406	5,731
Nonmetallic mineral products	55,393	27,967	764	4,878	22,326	46,523	73,119	50,504	27,538	762	4,797	21,980	42,628	72,955
Metal products	18,070	32,028	1,953	5,415	24,660	10,395	15,993	15,055	31,815	1,913	5,402	24,501	9,394	15,557
General machinery	67,308	47,232	25,184	5,833	16,214	4,397	57,144	65,898	46,905	25,076	5,766	16,063	3,170	57,103
Electric machinery	12,368	170,073	58,567	81,313	30,194	6,492	74,809	11,285	109,390	58,444	21,145	29,801	6,059	74,336
Office & computing machinery	16	16,002	12,903	2,293	806	62	15,301	16	15,960	12,861	2,293	806	62	15,301
Miscellaneous electric machinery	6,872	32,465	9,890	6,825	15,749	3,065	23,002	6,289	32,324	9,869	6,819	15,636	2,816	22,602
Radio, TV, communication	4,967	113,576	30,314	70,212	13,049	2,045	32,268	4,605	53,177	30,254	10,052	12,870	1,941	32,199
Precision machinery	513	8,032	5,459	1,983	590	1,321	4,238	374	7,930	5,459	1,981	489	1,240	4,234
Motor vehicles	23,378	80,155	9,460	11,432	59,264	6,387	46,739	21,133	80,041	9,460	11,432	59,149	5,054	46,651
Furniture	7,759	3,643	372	686	2,585	5,218	1,143	6,579	3,595	372	677	2,546	4,456	1,136
Jewelry	1,903	1,897	320	762	815	815	686	1,638	1,722	275	664	783	793	651
Other manufacturing industries	219,121	119,124	1,566	58,888	58,669	70,956	48,244	212,739	118,372	1,488	58,766	58,118	67,039	47,877

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A5: Intermediate Consumption in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (million baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	766,900	1,141,366	223,077	264,891	653,398	394,615	526,350	743,283	1,138,893	222,781	264,496	651,616	385,206	525,461
Food	183,463	83,720	6,228	10,826	66,666	127,640	61,775	180,241	83,463	6,213	10,742	66,508	125,458	61,715
Textiles	35,365	55,602	1,014	5,988	48,600	17,669	14,385	33,836	55,364	1,007	5,978	48,379	16,937	14,346
Apparel	27,515	17,369	393	875	16,101	4,496	12,300	26,142	17,167	393	836	15,938	4,327	12,282
Leather & footwear	12,354	7,363	584	2,344	4,435	24,445	3,246	11,679	7,290	584	2,316	4,389	24,228	3,222
Chemicals & products	42,444	73,380	12,240	27,694	33,445	44,235	34,721	41,483	73,240	12,240	27,669	33,330	43,847	34,647
Rubber products	51,985	35,829	3,189	10,119	22,521	29,555	23,623	51,533	35,765	3,189	10,103	22,473	29,269	23,604
Plastics & products	28,752	16,840	5,481	2,483	8,876	9,180	5,539	27,073	16,639	5,408	2,461	8,770	8,714	5,433
Nonmetallic mineral products	43,909	25,923	605	13,076	12,243	18,962	34,798	41,906	25,860	603	13,068	12,189	17,769	34,752
Metal products	29,306	43,371	2,732	8,091	32,548	13,310	18,015	27,035	43,214	2,714	8,076	32,424	12,585	17,891
General machinery	22,365	75,202	44,965	5,798	24,439	4,172	60,326	21,127	74,996	44,961	5,782	24,252	3,706	60,267
Electric machinery	27,373	253,110	138,094	38,924	76,093	6,731	137,665	26,557	252,849	138,015	38,899	75,935	6,478	137,592
Office & computing machinery	49	76,514	57,498	8,898	10,119	528	25,998	49	76,483	57,467	8,898	10,119	528	25,998
Miscellaneous electric machinery	16,271	62,934	14,375	11,616	36,944	3,339	29,420	15,785	62,854	14,362	11,610	36,882	3,188	29,393
Radio, TV, communication	9,624	105,923	61,949	15,490	28,484	1,182	76,435	9,444	105,824	61,914	15,476	28,434	1,109	76,409
Precision machinery	1,429	7,739	4,272	2,920	547	1,681	5,812	1,280	7,688	4,272	2,915	501	1,653	5,791
Motor vehicles	29,617	261,415	2,249	49,549	209,617	6,153	64,756	28,365	261,372	2,249	49,549	209,574	5,784	64,729
Furniture	14,415	6,737	1,105	1,341	4,291	6,220	1,097	13,222	6,662	1,105	1,332	4,224	5,922	1,081
Jewelry	8,822	8,374	1,881	1,661	4,832	2,174	1,677	8,605	8,228	1,836	1,629	4,764	2,141	1,658
Other manufacturing industries	209,216	177,130	2,315	86,123	88,692	79,672	52,428	204,482	176,784	2,263	86,055	88,467	78,041	52,242

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A6: Gross Output in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (million baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	1,145,301	1,572,541	311,806	339,584	921,152	559,402	769,581	1,106,309	1,568,490	311,254	338,910	918,326	544,160	767,972
Food	255,681	108,227	8,520	14,317	85,390	167,775	80,500	250,761	107,870	8,496	14,204	85,170	164,542	80,399
Textiles	49,899	73,657	1,523	8,180	63,954	30,054	23,436	47,325	73,318	1,504	8,167	63,647	28,931	23,370
Apparel	39,666	24,033	584	1,201	22,247	8,101	19,190	37,227	23,632	573	1,124	21,936	7,782	19,135
Leather & footwear	19,496	9,863	824	3,266	5,773	34,314	4,773	18,328	9,749	824	3,223	5,702	33,923	4,731
Chemicals & products	64,739	104,195	17,867	41,018	45,310	55,641	49,425	63,297	103,967	17,867	40,980	45,120	54,951	49,306
Rubber products	69,378	50,685	4,517	17,915	28,253	36,427	34,463	68,692	50,597	4,517	17,892	28,188	36,020	34,432
Plastics & products	40,799	23,918	6,813	4,263	12,841	15,221	9,089	38,188	23,596	6,703	4,229	12,664	14,519	8,899
Nonmetallic mineral products	69,168	35,579	919	15,338	19,321	31,996	55,384	65,574	35,436	914	15,299	19,223	30,035	55,294
Metal products	40,026	59,719	4,887	9,836	44,996	19,046	24,293	36,252	59,456	4,842	9,812	44,802	17,801	24,044
General machinery	31,363	98,692	55,817	9,763	33,111	6,485	89,818	29,350	98,372	55,804	9,732	32,836	5,656	89,726
Electric machinery	38,847	351,742	197,614	54,439	99,689	10,856	191,175	37,469	351,310	197,484	54,389	99,437	10,379	191,028
Office & computing machinery	133	100,490	75,866	10,784	13,840	716	40,488	133	100,431	75,807	10,784	13,840	716	40,488
Miscellaneous electric machinery	21,014	90,420	27,529	14,839	48,052	4,984	44,234	20,193	90,296	27,505	14,829	47,963	4,685	44,161
Radio, TV, communication	15,174	143,048	80,850	25,368	36,829	2,401	98,351	14,900	142,885	80,804	25,339	36,742	2,275	98,304
Precision machinery	2,526	17,784	13,368	3,448	967	2,755	8,102	2,242	17,698	13,368	3,438	892	2,703	8,075
Motor vehicles	43,362	377,072	3,819	59,178	314,074	8,053	97,899	41,046	377,002	3,819	59,178	314,004	7,420	97,850
Furniture	22,304	9,240	1,401	2,146	5,694	9,874	1,636	20,357	9,129	1,401	2,137	5,592	9,423	1,607
Jewelry	12,756	12,462	3,157	2,684	6,622	3,165	2,574	12,368	12,214	3,073	2,617	6,524	3,106	2,524
Other manufacturing industries	347,818	233,457	3,542	96,039	133,876	122,393	85,925	340,075	232,841	3,433	95,927	133,481	119,672	85,627

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A7: Value Added in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (million baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	378,400	431,175	88,729	74,693	267,753	164,787	243,230	363,026	429,597	88,473	74,414	266,710	158,953	242,510
Food	72,218	24,507	2,292	3,491	18,725	40,135	18,725	70,521	24,408	2,283	3,462	18,662	39,085	18,684
Textiles	14,535	18,055	510	2,191	15,355	12,386	9,051	13,489	17,953	496	2,189	15,268	11,994	9,024
Apparel	12,150	6,663	191	326	6,146	3,604	6,890	11,085	6,465	180	287	5,998	3,455	6,853
Leather & footwear	7,142	2,500	240	922	1,338	9,869	1,527	6,649	2,459	240	907	1,313	9,696	1,509
Chemicals & products	22,295	30,815	5,627	13,324	11,864	11,406	14,704	21,813	30,728	5,627	13,311	11,790	11,103	14,659
Rubber products	17,392	14,856	1,328	7,796	5,732	6,871	10,840	17,159	14,833	1,328	7,789	5,715	6,751	10,828
Plastics & products	12,046	7,078	1,332	1,780	3,965	6,041	3,550	11,115	6,957	1,295	1,768	3,893	5,805	3,466
Nonmetallic mineral products	25,259	9,655	315	2,262	7,079	13,034	20,586	23,668	9,576	311	2,231	7,034	12,265	20,542
Metal products	10,721	16,349	2,155	1,746	12,448	5,736	6,278	9,218	16,242	2,127	1,736	12,378	5,215	6,153
General machinery	8,999	23,490	10,852	3,966	8,672	2,313	29,492	8,223	23,377	10,843	3,950	8,584	1,950	29,460
Electric machinery	11,474	98,631	59,520	15,516	23,596	4,125	53,510	10,911	98,461	59,469	15,490	23,502	3,901	53,436
Office & computing machinery	85	23,976	18,368	1,886	3,722	187	14,490	85	23,948	18,340	1,886	3,722	187	14,490
Miscellaneous electric machinery	4,743	27,486	13,154	3,224	11,108	1,645	14,813	4,408	27,442	13,143	3,218	11,081	1,498	14,768
Radio, TV, communication	5,550	37,125	18,901	9,878	8,346	1,219	21,917	5,457	37,061	18,889	9,863	8,308	1,166	21,895
Precision machinery	1,097	10,045	9,096	528	420	1,074	2,290	962	10,010	9,096	522	391	1,050	2,284
Motor vehicles	13,744	115,657	1,571	9,629	104,457	1,901	33,143	12,681	115,630	1,571	9,629	104,430	1,636	33,121
Furniture	7,889	2,503	295	805	1,403	3,654	539	7,136	2,467	295	805	1,367	3,500	526
Jewelry	3,934	4,089	1,276	1,023	1,790	991	898	3,763	3,986	1,237	988	1,761	966	865
Other manufacturing industries	138,602	56,326	1,226	9,916	45,184	42,721	33,497	135,594	56,057	1,170	9,873	45,014	41,631	33,385

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table A8: Mean Number of Hours in Operation by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (million baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	3,031	4,016	4,300	3,941	3,966	2,991	3,607	3,335	4,241	4,451	4,136	4,219	3,273	3,694
Food	3,474	3,998	4,457	3,496	4,051	3,437	3,388	3,517	4,138	4,775	3,503	4,180	3,438	3,500
Textiles	3,642	5,422	4,987	5,046	5,529	3,646	4,719	4,416	5,777	5,310	5,056	5,977	4,467	4,958
Apparel	2,692	2,765	2,357	3,254	2,692	2,750	2,724	2,780	2,836	2,339	3,719	2,709	2,947	2,606
Leather & footwear	2,518	3,046	2,825	3,143	3,065	2,605	3,055	2,623	3,060	2,825	2,954	3,276	2,687	3,010
Chemicals & products	3,088	4,514	4,045	4,720	4,551	3,225	4,136	3,339	4,728	4,045	4,888	4,847	3,682	4,286
Rubber products	3,517	5,084	6,815	6,233	4,361	3,145	4,516	3,657	5,291	6,815	6,570	4,545	3,346	4,624
Plastics & products	4,191	4,961	4,963	4,571	5,094	4,197	4,453	4,822	5,244	4,882	4,813	5,511	4,864	4,869
Nonmetallic mineral products	2,836	4,077	4,307	3,074	4,317	2,655	3,646	3,207	4,194	4,860	3,250	4,387	3,054	3,873
Metal products	2,626	3,799	4,108	4,098	3,628	2,582	3,350	2,842	4,129	4,463	4,297	3,971	2,796	3,355
General machinery	2,605	3,435	4,098	3,341	3,282	2,404	2,837	2,690	3,678	4,315	3,496	3,513	2,503	2,874
Electric machinery	2,863	4,401	4,943	4,488	3,839	2,898	3,940	3,159	4,579	4,996	4,587	4,137	3,014	3,908
Office & computing machinery	3,946	4,429	3,927	4,950	6,221	2,432	3,550	3,946	4,605	4,129	4,950	6,221	2,432	3,550
Miscellaneous electric machinery	2,773	4,158	4,915	3,943	3,958	2,805	3,773	2,932	4,347	5,051	4,071	4,186	2,779	3,584
Radio, TV, communication	3,244	4,799	5,446	4,798	4,040	2,642	4,425	3,760	4,902	5,360	4,820	4,355	3,029	4,500
Precision machinery	2,608	3,826	4,884	4,833	2,306	3,946	3,052	3,012	4,171	4,884	5,236	2,304	4,425	3,114
Motor vehicles	2,567	3,355	3,763	3,106	3,420	2,357	2,571	2,713	3,410	3,763	3,106	3,508	2,387	2,585
Furniture	2,471	2,946	4,114	2,419	2,849	2,364	2,441	2,582	2,984	4,114	2,422	2,848	2,434	2,460
Jewelry	2,540	2,450	2,399	2,608	2,396	2,509	2,259	2,396	2,473	2,335	2,724	2,407	2,400	2,215
Other manufacturing industries	2,907	3,698	3,023	3,465	3,885	2,710	3,477	3,315	3,964	3,021	3,789	4,161	3,074	3,527

Note: In 1996 the maximum number of hours in operation was 8,784 (=366*24); in 1998 the maximum was 8,760 (=365*24)

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B1: Mean Output per Production Worker of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (thousand baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	1,226	3,012	1,869	3,670	3,096	1,354	2,992	1,973	3,523	2,099	4,216	3,682	2,120	3,364
Food	1,929	3,241	3,056	1,619	3,632	1,954	3,170	2,910	3,685	3,405	2,028	4,051	2,994	3,412
Textiles	704	2,077	1,119	1,950	2,178	677	1,418	1,065	2,393	1,253	2,020	2,575	993	1,534
Apparel	553	555	529	411	590	414	1,127	741	675	601	491	721	564	1,279
Leather & footwear	679	751	473	867	778	1,114	978	1,029	824	473	1,035	870	1,432	1,066
Chemicals & products	1,878	6,664	5,632	13,744	4,560	2,782	7,119	2,482	7,297	5,632	14,615	5,135	3,816	7,744
Rubber products	1,869	3,692	867	7,278	3,361	1,702	2,597	2,436	3,940	867	7,879	3,626	2,066	2,712
Plastics & products	874	1,453	870	1,556	1,618	931	972	1,248	1,743	1,091	1,762	1,928	1,347	1,124
Nonmetallic mineral products	1,082	2,294	454	2,122	2,466	946	3,360	1,864	2,660	647	2,525	2,801	1,601	3,883
Metal products	917	2,745	1,584	3,505	2,858	987	2,250	1,550	3,293	1,789	3,856	3,576	1,581	2,967
General machinery	945	2,149	2,359	2,063	2,115	852	3,415	1,416	2,575	2,490	2,217	2,724	1,480	3,667
Electric machinery	1,310	2,540	2,005	1,790	3,545	841	2,471	2,007	2,795	2,109	1,892	4,196	1,118	2,619
Office & computing machinery	1,859	2,423	2,110	2,310	4,706	1,381	2,126	1,859	2,625	2,393	2,310	4,706	1,381	2,126
Miscellaneous electric machinery	1,067	3,552	2,714	1,128	5,216	898	2,362	1,576	3,875	2,823	1,169	5,898	1,223	2,547
Radio, TV, communication	1,818	2,124	1,850	2,423	2,222	739	2,858	2,688	2,310	1,928	2,582	2,598	899	2,972
Precision machinery	1,465	1,002	1,186	1,306	668	651	1,698	2,845	1,153	1,186	1,468	865	878	1,967
Motor vehicles	1,001	5,695	1,720	7,428	5,307	682	3,071	2,081	6,152	1,720	7,428	5,924	1,224	3,221
Furniture	751	779	965	871	715	510	394	1,148	887	965	979	834	707	443
Jewelry	2,263	1,163	1,264	954	1,219	1,281	1,865	4,109	1,374	1,801	1,119	1,351	2,312	2,304
Other manufacturing industries	1,402	4,247	651	4,846	4,766	1,516	3,365	2,386	5,250	817	6,213	5,737	2,522	4,095

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B2: Mean Output per Hour for Production Workers of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	448	922	518	1,140	957	555	1,056	703	1,072	577	1,304	1,130	760	1,186
Food	687	955	580	581	1,088	699	1,036	1,021	1,080	634	731	1,208	1,060	1,109
Textiles	221	465	232	526	472	218	1,248	310	525	256	547	543	293	1,363
Apparel	217	206	232	136	220	159	451	289	248	264	150	267	201	512
Leather & footwear	280	264	172	313	264	462	352	420	292	172	399	282	591	380
Chemicals & products	701	2,160	1,647	5,178	1,280	880	2,075	907	2,357	1,647	5,496	1,428	1,167	2,251
Rubber products	664	943	192	1,040	1,092	714	757	861	1,001	192	1,124	1,174	861	788
Plastics & products	251	327	239	352	349	302	262	333	384	304	393	404	419	290
Nonmetallic mineral products	411	631	84	1,006	573	885	829	681	725	116	1,199	642	580	948
Metal products	363	811	734	744	852	394	699	595	961	823	814	1,053	611	916
General machinery	375	758	687	731	785	356	1,523	556	897	709	772	1,006	612	1,637
Electric machinery	480	845	464	499	1,434	328	915	709	928	484	525	1,697	428	972
Office & computing machinery	497	727	716	641	1,021	568	768	497	784	811	641	1,021	568	768
Miscellaneous electric machinery	423	1,346	505	337	2,243	361	850	622	1,466	517	343	2,537	492	922
Radio, TV, communication	541	589	389	638	787	282	1,080	733	639	406	682	916	312	1,125
Precision machinery	601	304	251	421	290	206	671	1,133	339	251	468	373	256	778
Motor vehicles	401	2,056	429	3,535	1,626	294	1,355	825	2,220	429	3,535	1,811	528	1,422
Furniture	311	285	226	355	278	215	163	472	323	226	399	326	297	183
Jewelry	960	491	545	389	516	555	1,374	1,755	580	786	454	571	1,016	1,728
Other manufacturing industries	498	1,204	260	781	1,492	562	1,061	821	1,477	331	975	1,786	907	1,286

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B3: Mean Value Added per Production Worker in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (thousand baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	390	839	614	1,084	818	357	891	600	973	684	1,237	965	523	993
Food	573	608	821	440	618	371	719	851	687	910	552	684	523	768
Textiles	196	428	381	493	419	239	511	255	488	419	513	489	348	551
Apparel	186	184	179	133	195	170	351	227	207	194	136	223	220	391
Leather & footwear	224	230	139	306	209	312	313	300	245	139	362	220	386	313
Chemicals & products	543	2,146	2,239	4,681	1,290	632	2,200	707	2,345	2,239	4,978	1,441	792	2,388
Rubber products	498	1,687	229	5,805	890	300	799	635	1,806	229	6,287	959	348	833
Plastics & products	253	428	206	558	460	315	379	333	510	241	631	544	464	438
Nonmetallic mineral products	425	736	109	392	868	343	1,374	721	840	143	425	979	588	1,583
Metal products	271	725	600	639	784	326	701	405	858	663	700	970	483	889
General machinery	315	594	460	650	615	298	926	449	699	481	669	786	486	986
Electric machinery	425	675	662	482	818	325	790	624	735	692	500	958	409	833
Office & computing machinery	1,016	788	436	466	3,878	330	615	1,016	845	466	466	3,878	330	615
Miscellaneous electric machinery	329	803	1,157	277	941	328	874	465	868	1,202	273	1,057	417	940
Radio, TV, communication	713	593	517	756	561	316	826	1,060	638	538	797	643	375	849
Precision machinery	344	454	685	250	350	321	473	506	527	685	261	491	451	554
Motor vehicles	324	1,482	677	1,230	1,616	266	1,035	576	1,600	677	1,230	1,804	445	1,081
Furniture	267	208	207	273	191	187	150	397	224	207	312	200	265	164
Jewelry	810	330	394	330	303	294	470	1,464	382	540	375	335	489	540
Other manufacturing industries	465	1,158	282	589	1,471	454	860	768	1,416	350	720	1,760	724	1,037

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B4: Mean Value Added per Hour for Production Workers of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	145	251	153	333	249	148	305	217	287	167	378	290	187	339
Food	207	171	170	182	168	131	253	306	191	183	230	184	184	269
Textiles	67	104	80	152	97	74	390	80	116	85	159	109	96	425
Apparel	73	72	79	48	77	65	142	88	81	86	46	88	78	157
Leather & footwear	92	80	49	110	69	129	113	121	85	49	137	68	159	110
Chemicals & products	188	709	503	1,841	382	214	585	236	772	503	1,956	422	254	635
Rubber products	188	357	34	814	307	113	218	237	381	34	881	330	128	227
Plastics & products	73	98	57	120	105	100	106	86	114	72	133	120	142	118
Nonmetallic mineral products	175	175	25	141	194	270	371	292	195	31	148	215	215	424
Metal products	111	251	224	171	281	134	239	163	294	240	186	345	195	303
General machinery	125	196	116	199	217	126	401	175	224	110	192	275	204	428
Electric machinery	151	187	137	113	283	129	282	209	201	141	115	329	159	298
Office & computing machinery	271	219	154	125	881	136	210	271	232	164	125	881	136	210
Miscellaneous electric machinery	137	236	188	79	341	136	328	193	253	192	75	382	174	355
Radio, TV, communication	194	152	110	153	199	122	276	256	162	114	161	227	131	284
Precision machinery	137	124	121	78	151	105	191	185	139	121	78	211	141	224
Motor vehicles	125	509	164	565	508	115	463	213	549	164	565	567	192	484
Furniture	110	79	57	110	76	79	62	162	84	57	125	79	111	68
Jewelry	341	139	171	137	126	123	281	620	161	237	154	140	208	335
Other manufacturing industries	167	339	113	130	436	169	253	266	409	144	150	515	258	302

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B5: Mean Output per Non-Production Worker of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (thousand baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	8,327	16,302	17,421	20,693	14,617	8,862	15,508	13,190	18,895	19,491	23,627	17,156	13,908	17,361
Food	11,578	15,907	29,411	15,566	14,210	11,281	17,735	17,342	17,855	31,889	19,509	15,672	17,216	19,122
Textiles	6,858	21,602	10,664	21,306	22,533	8,446	15,067	10,505	25,039	11,625	22,261	26,816	13,089	16,154
Apparel	5,776	8,497	10,208	5,767	8,956	6,701	32,275	7,882	10,964	11,790	7,401	11,610	10,341	36,750
Leather & footwear	6,667	9,847	9,902	12,053	8,031	10,251	7,666	10,589	11,301	9,902	15,943	8,636	13,356	8,659
Chemicals & products	8,441	23,167	16,940	60,397	12,280	10,380	16,691	11,165	25,294	16,940	64,358	13,618	14,441	18,078
Rubber products	17,600	24,954	13,826	40,315	23,310	15,420	22,957	23,287	26,756	13,826	43,527	25,383	18,783	23,931
Plastics & products	7,513	7,836	8,139	6,231	8,283	9,583	8,204	11,228	9,302	10,733	6,831	9,801	15,142	9,573
Nonmetallic mineral products	7,817	15,710	5,790	9,488	17,993	4,411	28,855	13,559	18,248	8,381	11,132	20,512	7,127	33,418
Metal products	6,708	14,960	15,980	24,945	11,879	5,857	12,209	11,318	17,710	17,987	27,312	14,478	9,126	16,101
General machinery	8,309	14,638	42,940	7,911	8,842	4,467	13,005	13,296	17,881	45,355	8,692	11,214	6,599	14,003
Electric machinery	7,011	16,844	19,752	15,715	14,906	7,437	18,023	10,165	18,444	20,845	16,867	17,119	10,536	19,190
Office & computing machinery	12,265	30,489	31,369	18,115	57,914	8,763	25,138	12,265	33,315	36,302	18,115	57,914	8,763	25,138
Miscellaneous electric machinery	6,597	16,277	22,693	12,808	15,482	6,450	14,177	8,816	17,634	23,708	13,855	17,045	8,466	15,274
Radio, TV, communication	7,893	14,330	12,441	17,684	14,051	10,532	21,348	11,470	15,447	12,927	18,972	15,919	17,301	22,449
Precision machinery	7,030	13,733	21,438	16,450	5,158	6,380	11,639	14,122	16,259	21,438	18,835	6,559	9,714	13,287
Motor vehicles	6,106	33,317	16,851	43,654	30,595	5,047	9,243	11,906	36,029	16,851	43,654	34,210	9,150	9,499
Furniture	5,872	7,873	19,452	8,930	5,186	4,589	5,054	8,950	9,369	19,452	10,044	6,263	6,424	5,902
Jewelry	9,231	11,075	9,428	13,450	10,643	8,119	6,116	15,213	13,317	12,659	16,539	12,112	14,112	7,272
Other manufacturing industries	8,623	13,672	7,876	14,450	14,558	10,623	12,082	14,132	16,271	9,804	17,095	17,124	17,859	14,351

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B6: Mean Output per Hour for Non-Production Workers of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	3,012	5,086	5,254	6,812	4,493	3,281	5,767	4,634	5,844	5,820	7,745	5,217	4,150	5,934
Food	4,186	4,782	7,905	4,749	4,379	4,150	5,934	6,188	5,313	8,379	5,938	4,784	2,552	14,534
Textiles	1,899	6,243	2,380	4,747	6,836	2,552	14,534	2,599	7,227	2,513	4,964	8,137	2,538	13,245
Apparel	2,240	3,157	4,425	1,842	3,337	2,538	13,245	3,031	4,053	5,113	2,217	4,314	4,223	2,882
Leather & footwear	2,761	3,755	3,364	4,905	2,991	4,223	2,882	4,364	4,293	3,364	6,602	3,102	2,937	4,546
Chemicals & products	2,899	8,641	5,907	26,468	3,372	2,937	4,546	3,692	9,418	5,907	28,200	3,675	6,281	7,241
Rubber products	6,098	6,992	2,985	5,895	8,234	6,281	7,241	8,034	7,484	2,985	6,319	8,960	3,265	2,034
Plastics & products	1,957	1,893	2,169	1,499	1,934	3,265	2,034	2,709	2,180	2,847	1,591	2,202	2,918	6,733
Nonmetallic mineral products	3,247	3,583	1,577	4,050	3,604	2,918	6,733	5,598	4,115	2,270	4,746	4,062	2,297	3,634
Metal products	2,532	4,718	9,193	5,369	3,283	2,297	3,634	4,064	5,494	10,362	5,818	3,878	1,874	5,448
General machinery	3,366	4,690	12,138	2,742	3,212	1,874	5,448	5,371	5,615	12,585	2,986	4,022	2,744	6,635
Electric machinery	2,485	4,649	4,980	4,033	4,757	2,744	6,635	3,457	5,041	5,240	4,320	5,378	3,603	9,023
Office & computing machinery	3,287	8,595	9,880	4,675	10,903	3,603	9,023	3,287	9,359	11,411	4,675	10,903	2,340	4,790
Miscellaneous electric machinery	2,604	4,356	5,206	3,104	4,680	2,340	4,790	3,436	4,663	5,404	3,354	5,077	4,253	8,365
Radio, TV, communication	2,112	3,902	2,584	4,132	5,275	4,253	8,365	2,855	4,169	2,693	4,423	5,943	1,797	4,306
Precision machinery	2,528	4,188	5,030	6,378	2,231	1,797	4,306	4,787	4,877	5,030	7,294	2,836	2,174	3,890
Motor vehicles	2,464	11,449	4,232	19,292	9,091	2,174	3,890	4,757	12,376	4,232	19,292	10,148	1,926	2,092
Furniture	2,434	2,576	4,248	3,641	1,936	1,926	2,092	3,695	2,992	4,248	4,094	2,266	3,524	3,105
Jewelry	3,837	4,607	4,114	5,444	4,419	3,524	3,105	6,435	5,545	5,635	6,675	5,023	3,284	4,242
Other manufacturing industries	3,030	4,164	3,008	3,670	4,509	3,284	4,242	4,726	4,868	3,718	4,066	5,251	2,641	19,705

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B7: Mean Value Added per Non-Production Worker in Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (thousand baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	2,738	4,798	5,570	5,386	4,413	2,603	4,884	4,124	5,510	6,169	6,077	5,141	3,892	5,422
Food	3,159	4,323	10,448	4,131	3,561	2,425	4,149	4,534	4,827	11,391	5,156	3,894	3,507	4,444
Textiles	2,004	5,338	3,727	7,139	5,125	3,216	5,538	2,756	6,179	3,883	7,492	6,085	5,094	5,938
Apparel	1,917	3,024	2,562	1,729	3,360	2,845	8,930	2,375	3,768	2,871	1,964	4,244	4,272	9,990
Leather & footwear	2,016	3,523	2,769	4,228	3,279	3,062	2,625	2,823	4,085	2,769	5,582	3,729	3,824	2,882
Chemicals & products	2,583	3,881	5,542	4,504	3,305	2,450	4,276	3,370	4,192	5,542	4,742	3,651	3,240	4,614
Rubber products	4,330	10,328	3,963	31,707	5,904	2,506	7,961	5,618	11,086	3,963	34,303	6,428	2,899	8,274
Plastics & products	2,288	2,312	1,960	2,238	2,458	3,682	3,485	3,250	2,716	2,470	2,444	2,890	5,888	4,031
Nonmetallic mineral products	3,694	7,323	2,317	3,937	8,538	1,673	12,829	6,413	8,487	3,289	4,438	9,752	2,521	14,902
Metal products	2,139	3,880	5,300	4,724	3,246	2,085	3,665	3,259	4,482	5,798	5,121	3,864	3,109	4,657
General machinery	2,675	4,406	11,495	2,257	3,078	1,784	4,204	4,055	5,352	12,095	2,439	3,934	2,384	4,517
Electric machinery	2,336	5,525	6,630	4,539	5,166	2,692	5,975	3,188	6,023	6,977	4,846	5,912	3,536	6,341
Office & computing machinery	6,605	9,627	8,064	5,212	31,299	2,195	9,453	6,605	10,451	9,162	5,212	31,299	2,195	9,453
Miscellaneous electric machinery	2,102	5,802	8,968	4,110	5,400	2,107	5,869	2,528	6,309	9,356	4,442	5,998	2,292	6,287
Radio, TV, communication	2,839	3,807	3,017	5,398	3,552	4,286	5,595	4,174	4,029	3,128	5,756	3,812	6,990	5,869
Precision machinery	2,273	6,341	12,808	2,175	2,613	2,740	3,615	4,127	7,544	12,808	2,341	3,550	4,261	4,157
Motor vehicles	2,243	10,239	6,579	12,477	9,654	1,623	3,030	3,668	11,060	6,579	12,477	10,780	2,561	3,106
Furniture	2,274	1,964	4,233	2,568	1,328	1,785	1,646	3,395	2,218	4,233	2,930	1,405	2,685	1,902
Jewelry	3,777	4,475	3,419	4,216	5,042	2,042	2,356	6,152	5,300	4,284	4,911	5,787	3,266	2,641
Other manufacturing industries	3,045	3,960	2,863	2,802	4,468	3,602	3,422	4,880	4,609	3,460	3,034	5,181	5,892	3,998

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table B8: Mean Value Added per Hour for Non-Production Workers of Thai and Foreign Plants by Industry and Size in 1996 and 1998 and by Foreign Ownership Share in 1996 (baht)

	All plants							Large plants (output>=25 million baht)						
	1996					1998		1996					1998	
	Thai	Foreign plants				Thai	Foreign	Thai	Foreign plants				Thai	Foreign
Industry	plants	All	100%	50-99%	1-49%	plants	plants	plants	All	100%	50-99%	1-49%	plants	plants
Manufacturing	1,010	1,422	1,496	1,539	1,366	946	1,770	1,475	1,606	1,617	1,713	1,568	1,301	1,961
Food	1,183	1,330	2,706	1,612	1,086	919	1,476	1,690	1,465	2,886	2,022	1,166	1,326	1,575
Textiles	592	1,595	815	1,801	1,619	904	4,348	707	1,836	793	1,893	1,914	1,307	4,722
Apparel	741	1,209	1,121	566	1,363	1,051	3,676	909	1,512	1,260	581	1,734	1,533	4,089
Leather & footwear	834	1,333	910	1,752	1,178	1,259	1,015	1,155	1,539	910	2,351	1,298	1,567	1,110
Chemicals & products	767	1,162	1,516	1,611	935	762	1,069	933	1,243	1,516	1,691	1,014	953	1,145
Rubber products	1,506	2,482	567	4,525	2,365	914	2,314	1,936	2,660	567	4,881	2,575	1,023	2,394
Plastics & products	600	565	526	496	602	1,199	874	769	644	685	515	681	1,886	951
Nonmetallic mineral products	1,614	1,449	712	1,543	1,476	985	3,400	2,814	1,647	1,009	1,722	1,663	963	3,929
Metal products	838	1,316	2,318	1,241	1,056	839	1,343	1,216	1,485	2,484	1,328	1,226	1,211	1,709
General machinery	1,063	1,265	2,589	663	1,070	750	1,697	1,599	1,472	2,557	695	1,346	988	1,823
Electric machinery	812	1,407	1,512	983	1,597	1,046	2,078	1,038	1,511	1,579	1,043	1,793	1,351	2,207
Office & computing machinery	1,766	2,667	2,554	1,326	6,962	902	3,436	1,766	2,878	2,888	1,326	6,962	902	3,436
Miscellaneous electric machinery	849	1,434	1,748	896	1,594	849	1,911	1,004	1,540	1,805	966	1,749	916	2,048
Radio, TV, communication	741	977	659	1,020	1,317	1,735	1,998	1,026	1,012	685	1,079	1,396	2,793	2,097
Precision machinery	728	1,522	2,385	778	1,127	769	1,429	1,136	1,762	2,385	825	1,530	1,162	1,650
Motor vehicles	898	3,472	1,599	5,478	2,871	698	1,288	1,447	3,750	1,599	5,478	3,201	1,089	1,320
Furniture	937	673	1,005	1,033	505	753	680	1,387	731	1,005	1,178	504	1,128	784
Jewelry	1,555	1,851	1,501	1,690	2,075	830	1,062	2,587	2,191	1,919	1,955	2,379	1,351	1,205
Other manufacturing industries	1,065	1,216	1,109	941	1,308	1,052	1,156	1,612	1,379	1,340	964	1,486	1,584	1,350

Source: Compilations from plant-level data underlying National Statistical Office (1998, 2000).

Appendix Table C1: Production Function Estimates for Food

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	6.252	0.00	6.258	0.00	5.310	0.00	7.925	0.00	7.931	0.00	7.041	0.00
ln(EP)	0.244	0.00	0.243	0.00	0.426	0.00	0.173	0.00	0.173	0.00	0.325	0.00
ln(EN)	0.216	0.00	0.216	0.00	0.177	0.00	0.163	0.00	0.162	0.00	0.159	0.00
ln(K)	0.283	0.00	0.283	0.00	0.226	0.00	0.296	0.00	0.297	0.00	0.232	0.00
Df	-1.545	0.15	-	-	1.348	0.22	-1.957	0.18	-	-	0.966	0.40
Df*ln(EP)	-0.135	0.19	-	-	-0.071	0.55	-0.111	0.31	-	-	0.005	0.97
Df*ln(EN)	-0.013	0.92	-	-	-0.056	0.67	0.022	0.87	-	-	-0.020	0.87
Df*ln(K)	0.195	0.09	-	-	0.028	0.73	0.176	0.19	-	-	-0.041	0.61
Df001	-	-	-2.287	0.13	-	-	-	-	-2.649	0.07	-	-
Df001*ln(EP)	-	-	-0.172	0.12	-	-	-	-	-0.102	0.44	-	-
Df001*ln(EN)	-	-	-0.022	0.86	-	-	-	-	0.005	0.97	-	-
Df001*ln(K)	-	-	0.273	0.09	-	-	-	-	0.220	0.07	-	-
Df050	-	-	-1.417	0.58	-	-	-	-	-1.753	0.53	-	-
Df050*ln(EP)	-	-	-0.025	0.95	-	-	-	-	-0.169	0.60	-	-
Df050*ln(EN)	-	-	0.013	0.98	-	-	-	-	-0.161	0.66	-	-
Df050*ln(K)	-	-	0.082	0.80	-	-	-	-	0.339	0.25	-	-
Df100	-	-	1.785	0.70	-	-	-	-	3.958	0.44	-	-
Df100*ln(EP)	-	-	-0.274	0.60	-	-	-	-	-0.545	0.23	-	-
Df100*ln(EN)	-	-	0.042	0.93	-	-	-	-	0.229	0.44	-	-
Df100*ln(K)	-	-	0.071	0.86	-	-	-	-	0.032	0.88	-	-
Dboi	0.306	0.01	0.303	0.01	-	-	0.274	0.02	0.265	0.04	-	-
Dold	0.152	0.04	0.152	0.04	0.072	0.37	0.232	0.01	0.220	0.02	0.151	0.09
Dx	0.508	0.00	0.511	0.00	0.724	0.00	0.286	0.01	0.286	0.01	0.589	0.00
Dm	0.182	0.02	0.185	0.02	0.449	0.00	0.131	0.14	0.140	0.16	0.498	0.00
F-test	121.56	0.00	70.18	0.00	148.65	0.00	51.76	0.00	29.93	0.00	93.43	0.00
White	87.37	0.01	143.87	0.00	39.32	0.75	78.45	0.03	118.61	0.08	29.24	0.97
Adjusted R-sq.	0.514	-	0.512	-	0.651	-	0.412	-	0.408	-	0.650	-
Observations	1,255	-	1,255	-	791	-	798	-	798	-	499	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	519	-	522	-	202	-	2,765	-	2,783	-	1,143	-
EP	31.42	-	31.34	-	51.05	-	23.66	-	23.65	-	41.49	-
EN	137.47	-	137.39	-	105.39	-	111.59	-	111.26	-	103.82	-
K	0.600	-	0.600	-	0.391	-	0.657	-	0.657	-	0.433	-
All Foreign, Constant	111	-	-	-	779	-	391	-	-	-	3,002	-
EP	8.94	-	-	-	42.13	-	5.22	-	-	-	39.44	-
EN	108.00	-	-	-	81.54	-	99.19	-	-	-	94.26	-
K	0.579	-	-	-	0.297	-	0.576	-	-	-	0.224	-
1-49% For., Constant	-	-	53	-	-	-	-	-	197	-	-	-
EP	-	-	5.49	-	-	-	-	-	5.47	-	-	-
EN	-	-	95.88	-	-	-	-	-	83.58	-	-	-
K	-	-	0.841	-	-	-	-	-	0.785	-	-	-
50-99% For., Constar	-	-	127	-	-	-	-	-	482	-	-	-
EP	-	-	20.87	-	-	-	-	-	0.43	-	-	-
EN	-	-	153.74	-	-	-	-	-	0.69	-	-	-
K	-	-	0.418	-	-	-	-	-	0.747	-	-	-
100% For., Constant	-	-	3,111	-	-	-	-	-	145,721	-	-	-
EP	-	-	-4.24	-	-	-	-	-	-51.15	-	-	-
EN	-	-	189.13	-	-	-	-	-	287.71	-	-	-
K	-	-	0.169	-	-	-	-	-	0.156	-	-	-

Appendix Table C1 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.342	0.00	3.343	0.00	3.442	0.00	3.496	0.00	3.488	0.00	3.885	0.00
ln(EN/EP)	0.292	0.00	0.293	0.00	0.229	0.00	0.282	0.00	0.281	0.00	0.245	0.00
ln(K/EP)	0.310	0.00	0.310	0.00	0.233	0.00	0.369	0.00	0.371	0.00	0.237	0.00
Df	-0.223	0.06	-	-	0.267	0.04	-0.224	0.08	-	-	0.138	0.28
Df001	-	-	-0.226	0.08	-	-	-	-	-0.255	0.07	-	-
Df050	-	-	-0.220	0.43	-	-	-	-	-0.002	0.99	-	-
Df100	-	-	-0.196	0.59	-	-	-	-	-0.315	0.36	-	-
Dboi	0.079	0.50	0.078	0.50	-	-	-0.001	0.99	-0.007	0.96	-	-
Dold	0.131	0.08	0.131	0.08	0.069	0.40	0.193	0.05	0.193	0.05	0.145	0.12
Dx	0.247	0.00	0.247	0.00	0.473	0.00	-0.030	0.78	-0.032	0.76	0.186	0.08
Dm	0.089	0.25	0.089	0.25	0.314	0.00	-0.031	0.77	-0.024	0.81	0.289	0.00
F-test	37.34	0.00	29.00	0.00	32.02	0.00	30.38	0.00	23.68	0.00	21.48	0.00
White	52.22	0.01	66.93	0.01	25.05	0.35	41.66	0.08	49.76	0.25	23.19	0.45
Adjusted R-sq.	0.169	-	0.167	-	0.191	-	0.205	-	0.204	-	0.198	-
Observations	1,255	-	1,255	-	791	-	798	-	798	-	499	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	28.272	-	28.293	-	31.260	-	32.981	-	32.730	-	48.660	-
All Foreign	22.629	-	-	-	40.815	-	26.372	-	-	-	55.835	-
1-49% Foreign	-	-	22.561	-	-	-	-	-	25.363	-	-	-
50-99% Foreign	-	-	22.708	-	-	-	-	-	32.671	-	-	-
100% Foreign	-	-	23.267	-	-	-	-	-	23.875	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C2: Production Function Estimates for Textiles

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	7.016	0.00	6.971	0.00	5.669	0.00	9.002	0.00	8.985	0.00	7.962	0.00
ln(EP)	0.360	0.00	0.361	0.00	0.284	0.01	0.283	0.00	0.283	0.00	0.364	0.00
ln(EN)	0.204	0.00	0.207	0.00	0.342	0.00	0.175	0.03	0.178	0.03	0.141	0.18
ln(K)	0.145	0.00	0.145	0.00	0.202	0.00	0.117	0.05	0.118	0.05	0.155	0.03
Df	0.134	0.88	-	-	1.615	0.34	0.485	0.72	-	-	0.871	0.61
Df*ln(EP)	0.232	0.08	-	-	-0.110	0.55	0.203	0.16	-	-	-0.245	0.22
Df*ln(EN)	-0.043	0.78	-	-	-0.348	0.04	-0.125	0.39	-	-	-0.157	0.39
Df*ln(K)	-0.142	0.16	-	-	0.228	0.05	-0.079	0.43	-	-	0.250	0.03
Df001	-	-	-0.118	0.90	-	-	-	-	-0.136	0.92	-	-
Df001*ln(EP)	-	-	0.326	0.01	-	-	-	-	0.315	0.05	-	-
Df001*ln(EN)	-	-	-0.004	0.98	-	-	-	-	-0.064	0.68	-	-
Df001*ln(K)	-	-	-0.230	0.01	-	-	-	-	-0.176	0.11	-	-
Df050	-	-	2.462	0.42	-	-	-	-	4.089	0.28	-	-
Df050*ln(EP)	-	-	-0.058	0.81	-	-	-	-	-0.082	0.76	-	-
Df050*ln(EN)	-	-	-0.351	0.28	-	-	-	-	-0.535	0.14	-	-
Df050*ln(K)	-	-	0.172	0.34	-	-	-	-	0.221	0.26	-	-
Df100	-	-	3.865	0.74	-	-	-	-	2.214	0.86	-	-
Df100*ln(EP)	-	-	-0.384	0.78	-	-	-	-	-0.293	0.84	-	-
Df100*ln(EN)	-	-	-0.032	0.97	-	-	-	-	-0.037	0.97	-	-
Df100*ln(K)	-	-	0.139	0.66	-	-	-	-	0.163	0.63	-	-
Dboi	0.176	0.27	0.143	0.35	-	-	0.090	0.60	0.072	0.69	-	-
Dold	0.237	0.01	0.241	0.01	0.015	0.93	0.209	0.09	0.211	0.09	0.148	0.37
Dx	0.230	0.03	0.194	0.06	0.739	0.00	0.072	0.59	0.039	0.78	0.546	0.00
Dm	0.052	0.59	0.050	0.60	0.202	0.19	0.201	0.15	0.202	0.15	0.188	0.32
F-test	91.97	0.00	54.03	0.00	56.56	0.00	27.49	0.00	16.31	0.00	22.30	0.00
White	85.77	0.01	100.81	0.13	64.93	0.03	62.86	0.28	13.23	1.00	53.93	0.20
Adjusted R-sq.	0.625	-	0.627	-	0.676	-	0.458	-	0.457	-	0.565	-
Observations	601	-	601	-	267	-	346	-	346	-	165	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	1,114	-	1,065	-	290	-	8,119	-	7,982	-	2,870	-
EP	13.81	-	13.84	-	17.39	-	10.93	-	10.92	-	23.98	-
EN	54.84	-	55.65	-	191.50	-	47.13	-	47.89	-	82.54	-
K	0.092	-	0.093	-	0.228	-	0.072	-	0.073	-	0.176	-
All Foreign, Constant	1,274	-	-	-	1,456	-	13,188	-	-	-	6,858	-
EP	34.29	-	-	-	18.71	-	28.30	-	-	-	12.87	-
EN	88.02	-	-	-	-5.28	-	27.59	-	-	-	-15.53	-
K	0.001	-	-	-	0.288	-	0.013	-	-	-	0.271	-
1-49% For., Constant	-	-	947	-	-	-	-	-	6,965	-	-	-
EP	-	-	38.52	-	-	-	-	-	33.73	-	-	-
EN	-	-	105.73	-	-	-	-	-	60.03	-	-	-
K	-	-	-0.027	-	-	-	-	-	-0.019	-	-	-
50-99% For., Constar	-	-	12,497	-	-	-	-	-	476,526	-	-	-
EP	-	-	21.08	-	-	-	-	-	14.01	-	-	-
EN	-	-	-112.67	-	-	-	-	-	-279.39	-	-	-
K	-	-	0.193	-	-	-	-	-	0.207	-	-	-
100% For., Constant	-	-	50,829	-	-	-	-	-	73,055	-	-	-
EP	-	-	-1.80	-	-	-	-	-	-0.84	-	-	-
EN	-	-	114.98	-	-	-	-	-	92.05	-	-	-
K	-	-	0.180	-	-	-	-	-	0.174	-	-	-

Appendix Table C2 (continued)

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	4.151	0.00	4.140	0.00	3.627	0.00	4.478	0.00	4.458	0.00	3.720	0.00
ln(EN/EP)	0.337	0.00	0.335	0.00	0.369	0.00	0.369	0.00	0.364	0.00	0.267	0.00
ln(K/EP)	0.059	0.09	0.065	0.06	0.235	0.00	0.009	0.86	0.016	0.76	0.231	0.00
Df	0.181	0.17	-	-	0.170	0.38	0.302	0.06	-	-	0.058	0.78
Df001	-	-	0.076	0.59	-	-	-	-	0.183	0.27	-	-
Df050	-	-	0.724	0.01	-	-	-	-	0.842	0.01	-	-
Df100	-	-	0.777	0.00	-	-	-	-	0.791	0.09	-	-
Dboi	-0.047	0.78	-0.123	0.49	-	-	-0.129	0.49	-0.194	0.30	-	-
Dold	0.064	0.48	0.070	0.43	-0.076	0.61	-0.055	0.67	-0.045	0.73	-0.047	0.80
Dx	0.046	0.66	0.016	0.88	0.547	0.00	-0.007	0.96	-0.037	0.80	0.425	0.04
Dm	-0.058	0.56	-0.061	0.54	0.093	0.57	-0.010	0.95	-0.012	0.93	0.018	0.93
F-test	9.33	0.00	8.22	0.00	16.08	0.00	5.63	0.00	5.06	0.00	6.85	0.00
White	35.87	0.21	40.54	0.49	24.18	0.39	24.76	0.74	29.09	0.92	15.54	0.87
Adjusted R-sq.	0.089	-	0.098	-	0.254	-	0.086	-	0.096	-	0.176	-
Observations	601	-	601	-	267	-	346	-	346	-	165	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	63.514	-	62.784	-	37.606	-	88.021	-	86.340	-	41.268	-
All Foreign	76.089	-	-	-	44.594	-	119.082	-	-	-	43.726	-
1-49% Foreign	-	-	67.766	-	-	-	-	-	103.672	-	-	-
50-99% Foreign	-	-	129.506	-	-	-	-	-	200.296	-	-	-
100% Foreign	-	-	136.551	-	-	-	-	-	190.520	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C3: Production Function Estimates for Apparel

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	5.572	0.00	5.563	0.00	2.203	0.20	8.396	0.00	8.415	0.00	6.228	0.00
ln(EP)	0.508	0.00	0.508	0.00	0.639	0.00	0.368	0.00	0.366	0.00	0.640	0.00
ln(EN)	0.249	0.00	0.249	0.00	0.396	0.02	0.223	0.00	0.223	0.00	0.062	0.73
ln(K)	0.118	0.00	0.118	0.00	0.122	0.32	0.097	0.05	0.096	0.05	0.116	0.34
Df	0.575	0.72	-	-	3.035	0.39	1.324	0.59	-	-	-0.404	0.90
Df*ln(EP)	-0.031	0.86	-	-	-0.025	0.95	0.006	0.98	-	-	0.020	0.95
Df*ln(EN)	-0.092	0.60	-	-	-0.445	0.17	-0.084	0.67	-	-	-0.131	0.61
Df*ln(K)	0.053	0.71	-	-	0.171	0.42	-0.020	0.93	-	-	0.131	0.44
Df001	-	-	0.111	0.95	-	-	-	-	1.124	0.73	-	-
Df001*ln(EP)	-	-	0.061	0.78	-	-	-	-	0.148	0.59	-	-
Df001*ln(EN)	-	-	-0.212	0.36	-	-	-	-	-0.233	0.38	-	-
Df001*ln(K)	-	-	0.091	0.63	-	-	-	-	-0.018	0.96	-	-
Df050	-	-	1.907	0.49	-	-	-	-	4.692	0.42	-	-
Df050*ln(EP)	-	-	-0.236	0.54	-	-	-	-	-0.380	0.44	-	-
Df050*ln(EN)	-	-	0.289	0.50	-	-	-	-	0.174	0.65	-	-
Df050*ln(K)	-	-	-0.138	0.47	-	-	-	-	-0.110	0.61	-	-
Df100	-	-	-0.947	0.90	-	-	-	-	-2.087	0.75	-	-
Df100*ln(EP)	-	-	-0.262	0.43	-	-	-	-	-0.157	0.60	-	-
Df100*ln(EN)	-	-	0.149	0.27	-	-	-	-	0.251	0.01	-	-
Df100*ln(K)	-	-	0.203	0.59	-	-	-	-	0.119	0.67	-	-
Dboi	0.005	0.98	-0.017	0.91	-	-	0.065	0.70	0.092	0.60	-	-
Dold	0.183	0.03	0.177	0.04	0.356	0.30	0.285	0.01	0.273	0.01	0.455	0.13
Dx	0.037	0.68	0.036	0.70	0.338	0.36	-0.342	0.00	-0.339	0.00	0.007	0.98
Dm	0.115	0.17	0.121	0.14	-0.270	0.48	0.126	0.25	0.131	0.23	-0.021	0.95
F-test	83.84	0.00	48.68	0.00	17.28	0.00	28.50	0.00	16.81	0.00	11.68	0.00
White	96.87	0.00	124.74	0.00	21.74	1.00	153.29	0.00	195.82	0.00	39.18	0.51
Adjusted R-sq.	0.601	-	0.599	-	0.603	-	0.465	-	0.463	-	0.614	-
Observations	607	-	607	-	108	-	349	-	349	-	68	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	263	-	261	-	9	-	4,429	-	4,515	-	507	-
EP	28.45	-	28.47	-	40.63	-	21.21	-	21.14	-	43.22	-
EN	91.08	-	91.18	-	298.31	-	83.55	-	83.80	-	51.44	-
K	0.368	-	0.369	-	0.355	-	0.312	-	0.309	-	0.338	-
All Foreign, Constant	467	-	-	-	188	-	16,641	-	-	-	338	-
EP	30.57	-	-	-	99.20	-	24.50	-	-	-	110.90	-
EN	82.57	-	-	-	-71.03	-	74.65	-	-	-	-101.74	-
K	0.561	-	-	-	1.648	-	0.255	-	-	-	1.405	-
1-49% For., Constant	-	-	291	-	-	-	-	-	13,898	-	-	-
EP	-	-	38.37	-	-	-	-	-	35.58	-	-	-
EN	-	-	19.62	-	-	-	-	-	-5.03	-	-	-
K	-	-	0.768	-	-	-	-	-	0.289	-	-	-
50-99% For., Constar	-	-	1,754	-	-	-	-	-	492,684	-	-	-
EP	-	-	8.72	-	-	-	-	-	-0.41	-	-	-
EN	-	-	224.88	-	-	-	-	-	159.88	-	-	-
K	-	-	-0.021	-	-	-	-	-	-0.013	-	-	-
100% For., Constant	-	-	101	-	-	-	-	-	560	-	-	-
EP	-	-	17.89	-	-	-	-	-	16.16	-	-	-
EN	-	-	305.39	-	-	-	-	-	406.70	-	-	-
K	-	-	1.643	-	-	-	-	-	1.125	-	-	-

Appendix Table C3 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	4.160	0.00	4.162	0.00	3.549	0.00	4.635	0.00	4.639	0.00	3.773	0.00
ln(EN/EP)	0.269	0.00	0.269	0.00	0.223	0.08	0.266	0.00	0.265	0.00	0.064	0.61
ln(K/EP)	0.130	0.00	0.129	0.00	0.178	0.08	0.129	0.01	0.127	0.01	0.193	0.03
Df	-0.028	0.81	-	-	0.604	0.07	0.063	0.64	-	-	0.570	0.03
Df001	-	-	-0.019	0.89	-	-	-	-	0.086	0.55	-	-
Df050	-	-	-0.224	0.30	-	-	-	-	-0.291	0.32	-	-
Df100	-	-	0.413	0.08	-	-	-	-	0.512	0.19	-	-
Dboi	-0.103	0.51	-0.129	0.43	-	-	-0.196	0.24	-0.207	0.22	-	-
Dold	0.073	0.39	0.070	0.41	0.329	0.32	0.026	0.81	0.019	0.86	0.332	0.23
Dx	-0.034	0.70	-0.033	0.70	0.456	0.19	-0.386	0.00	-0.386	0.00	-0.037	0.91
Dm	0.036	0.67	0.038	0.65	-0.204	0.57	-0.066	0.58	-0.061	0.61	-0.190	0.53
F-test	11.68	0.00	9.36	0.00	3.83	0.00	8.28	0.00	6.81	0.00	3.52	0.00
White	44.69	0.04	55.62	0.05	10.05	0.99	69.89	0.00	84.76	0.00	19.60	0.61
Adjusted R-sq.	0.110	-	0.110	-	0.137	-	0.128	-	0.131	-	0.184	-
Observations	607	-	607	-	108	-	349	-	349	-	68	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	64.078	-	64.216	-	34.791	-	102.979	-	103.485	-	43.501	-
All Foreign	62.303	-	-	-	63.654	-	109.641	-	-	-	76.912	-
1-49% Foreign	-	-	62.987	-	-	-	-	-	112.808	-	-	-
50-99% Foreign	-	-	51.339	-	-	-	-	-	77.377	-	-	-
100% Foreign	-	-	97.027	-	-	-	-	-	172.659	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C4: Production Function Estimates for Leather & Footwear

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	5.279	0.00	5.360	0.00	4.403	0.00	9.041	0.00	9.177	0.00	6.290	0.00
ln(EP)	0.569	0.00	0.563	0.00	0.438	0.00	0.407	0.00	0.395	0.00	0.347	0.00
ln(EN)	0.225	0.01	0.224	0.01	0.159	0.11	0.217	0.07	0.215	0.07	0.135	0.13
ln(K)	0.113	0.07	0.112	0.07	0.294	0.00	0.035	0.72	0.037	0.70	0.300	0.00
Df	0.738	0.72	-	-	4.582	0.09	-0.244	0.93	-	-	2.685	0.24
Df*ln(EP)	0.171	0.48	-	-	0.229	0.42	0.255	0.38	-	-	0.398	0.08
Df*ln(EN)	-0.277	0.28	-	-	-0.490	0.20	-0.456	0.14	-	-	-0.377	0.21
Df*ln(K)	0.001	1.00	-	-	-0.134	0.47	0.116	0.58	-	-	-0.231	0.12
Df001	-	-	1.353	0.61	-	-	-	-	-0.536	0.87	-	-
Df001*ln(EP)	-	-	0.239	0.45	-	-	-	-	0.363	0.29	-	-
Df001*ln(EN)	-	-	-0.221	0.52	-	-	-	-	-0.381	0.34	-	-
Df001*ln(K)	-	-	-0.126	0.58	-	-	-	-	-0.001	1.00	-	-
Df050	-	-	-0.452	0.90	-	-	-	-	14.947	0.03	-	-
Df050*ln(EP)	-	-	-0.003	0.99	-	-	-	-	-0.628	0.30	-	-
Df050*ln(EN)	-	-	-0.658	0.16	-	-	-	-	-1.525	0.01	-	-
Df050*ln(K)	-	-	0.460	0.24	-	-	-	-	0.626	0.12	-	-
Df100	-	-	-3.991	0.60	-	-	-	-	-7.466	0.30	-	-
Df100*ln(EP)	-	-	-0.513	0.55	-	-	-	-	-0.315	0.70	-	-
Df100*ln(EN)	-	-	0.872	0.44	-	-	-	-	0.838	0.43	-	-
Df100*ln(K)	-	-	0.118	0.85	-	-	-	-	0.192	0.75	-	-
Dboi	0.080	0.72	0.134	0.55	-	-	-0.015	0.95	0.065	0.79	-	-
Dold	0.028	0.87	0.027	0.88	0.151	0.45	0.328	0.20	0.409	0.11	0.219	0.18
Dx	-0.032	0.84	-0.029	0.85	0.703	0.00	-0.100	0.66	-0.104	0.64	0.240	0.18
Dm	0.011	0.95	0.014	0.93	0.369	0.07	-0.109	0.69	-0.133	0.62	0.348	0.07
F-test	25.96	0.00	14.93	0.00	30.05	0.00	6.42	0.00	4.46	0.00	25.01	0.00
White	26.59	1.00	25.49	1.00	30.04	0.95	49.86	0.48	0.00	0.48	22.61	0.99
Adjusted R-sq.	0.533	-	0.523	-	0.678	-	0.327	-	0.348	-	0.702	-
Observations	242	-	242	-	139	-	124	-	124	-	103	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	196	-	213	-	82	-	8,446	-	9,672	-	539	-
EP	44.78	-	44.29	-	44.77	-	33.36	-	32.33	-	36.59	-
EN	123.95	-	123.59	-	115.64	-	127.63	-	126.53	-	102.74	-
K	0.440	-	0.437	-	1.023	-	0.138	-	0.146	-	1.049	-
All Foreign, Constant	411	-	-	-	7,978	-	6,617	-	-	-	7,904	-
EP	42.83	-	-	-	34.28	-	38.38	-	-	-	38.99	-
EN	-30.52	-	-	-	-263.70	-	-143.12	-	-	-	-204.36	-
K	0.250	-	-	-	0.357	-	0.330	-	-	-	0.154	-
1-49% For., Constant	-	-	823	-	-	-	-	-	5,660	-	-	-
EP	-	-	36.37	-	-	-	-	-	34.14	-	-	-
EN	-	-	1.33	-	-	-	-	-	-68.51	-	-	-
K	-	-	-0.025	-	-	-	-	-	0.065	-	-	-
50-99% For., Constar	-	-	135	-	-	-	-	-	3E+10	-	-	-
EP	-	-	60.40	-	-	-	-	-	-26.02	-	-	-
EN	-	-	-530.25	-	-	-	-	-	-1,725	-	-	-
K	-	-	1.650	-	-	-	-	-	1.928	-	-	-
100% For., Constant	-	-	4	-	-	-	-	-	6	-	-	-
EP	-	-	2.30	-	-	-	-	-	3.67	-	-	-
EN	-	-	1,118.42	-	-	-	-	-	1,073.53	-	-	-
K	-	-	0.711	-	-	-	-	-	0.705	-	-	-

Appendix Table C4 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	4.274	0.00	4.269	0.00	3.231	0.00	4.749	0.00	4.747	0.00	3.786	0.00
ln(EN/EP)	0.230	0.00	0.228	0.00	0.201	0.03	0.216	0.06	0.213	0.06	0.206	0.02
ln(K/EP)	0.107	0.04	0.108	0.04	0.293	0.00	0.104	0.22	0.102	0.23	0.289	0.00
Df	0.061	0.74	-	-	0.047	0.84	0.040	0.87	-	-	0.039	0.85
Df001	-	-	0.111	0.66	-	-	-	-	0.044	0.90	-	-
Df050	-	-	0.027	0.94	-	-	-	-	0.126	0.75	-	-
Df100	-	-	0.006	0.98	-	-	-	-	-0.084	0.85	-	-
Dboi	-0.050	0.78	-0.052	0.78	-	-	-0.280	0.24	-0.284	0.24	-	-
Dold	-0.045	0.80	-0.047	0.80	0.166	0.41	-0.021	0.93	-0.027	0.92	0.287	0.11
Dx	-0.085	0.62	-0.081	0.64	0.636	0.00	-0.237	0.31	-0.236	0.31	0.241	0.21
Dm	-0.039	0.83	-0.040	0.82	0.275	0.16	-0.208	0.46	-0.206	0.47	0.148	0.46
F-test	2.73	0.01	2.11	0.03	9.90	0.00	2.03	0.06	1.57	0.13	6.85	0.00
White	21.63	0.87	25.34	0.97	25.03	0.35	31.87	0.33	39.66	0.40	12.11	0.97
Adjusted R-sq.	0.048	-	0.040	-	0.279	-	0.055	-	0.040	-	0.256	-
Observations	242	-	242	-	139	-	124	-	124	-	103	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	71.795	-	71.465	-	25.303	-	115.437	-	115.266	-	44.059	-
All Foreign	76.325	-	-	-	26.533	-	120.158	-	-	-	45.829	-
1-49% Foreign	-	-	79.815	-	-	-	-	-	120.450	-	-	-
50-99% Foreign	-	-	73.447	-	-	-	-	-	130.718	-	-	-
100% Foreign	-	-	71.863	-	-	-	-	-	105.993	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C5: Production Function Estimates for Chemicals & Products

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	5.481	0.00	5.469	0.00	4.743	0.00	7.929	0.00	7.879	0.00	7.482	0.00
ln(EP)	0.335	0.00	0.335	0.00	0.397	0.00	0.276	0.01	0.275	0.01	0.355	0.00
ln(EN)	0.203	0.00	0.202	0.00	0.294	0.00	0.155	0.07	0.154	0.07	0.162	0.09
ln(K)	0.280	0.00	0.281	0.00	0.230	0.00	0.220	0.00	0.223	0.00	0.215	0.00
Df	2.420	0.06	-	-	1.344	0.38	1.200	0.43	-	-	0.952	0.54
Df*ln(EP)	-0.305	0.04	-	-	-0.352	0.03	-0.261	0.12	-	-	-0.325	0.04
Df*ln(EN)	0.160	0.26	-	-	0.216	0.16	0.144	0.36	-	-	0.290	0.05
Df*ln(K)	0.002	0.98	-	-	0.053	0.60	0.051	0.63	-	-	0.006	0.95
Df001	-	-	3.063	0.04	-	-	-	-	2.142	0.23	-	-
Df001*ln(EP)	-	-	-0.331	0.07	-	-	-	-	-0.253	0.21	-	-
Df001*ln(EN)	-	-	0.048	0.80	-	-	-	-	-0.043	0.84	-	-
Df001*ln(K)	-	-	0.051	0.64	-	-	-	-	0.108	0.38	-	-
Df050	-	-	0.089	0.97	-	-	-	-	-1.910	0.54	-	-
Df050*ln(EP)	-	-	-0.443	0.11	-	-	-	-	-0.399	0.18	-	-
Df050*ln(EN)	-	-	0.459	0.07	-	-	-	-	0.507	0.07	-	-
Df050*ln(K)	-	-	0.029	0.89	-	-	-	-	0.076	0.71	-	-
Df100	-	-	2.873	0.38	-	-	-	-	0.662	0.84	-	-
Df100*ln(EP)	-	-	-0.272	0.44	-	-	-	-	-0.240	0.50	-	-
Df100*ln(EN)	-	-	0.110	0.75	-	-	-	-	0.153	0.67	-	-
Df100*ln(K)	-	-	0.021	0.95	-	-	-	-	0.092	0.77	-	-
Dboi	-0.149	0.42	-0.128	0.49	-	-	-0.112	0.59	-0.093	0.66	-	-
Dold	0.309	0.01	0.324	0.01	0.206	0.14	0.393	0.01	0.421	0.00	0.106	0.45
Dx	0.126	0.35	0.117	0.39	0.177	0.24	0.222	0.15	0.205	0.19	0.112	0.47
Dm	0.151	0.31	0.162	0.28	0.310	0.05	0.000	1.00	0.015	0.94	0.055	0.75
F-test	46.99	0.00	27.70	0.00	41.79	0.00	21.71	0.00	13.02	0.00	23.91	0.00
White	36.24	0.99	53.20	1.00	40.28	0.71	36.04	0.99	53.35	1.00	40.98	0.68
Adjusted R-sq.	0.509	-	0.510	-	0.612	-	0.384	-	0.385	-	0.538	-
Observations	489	-	489	-	260	-	366	-	366	-	198	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	240	-	237	-	115	-	2,777	-	2,642	-	1,775	-
EP	67.10	-	67.15	-	89.57	-	58.20	-	57.99	-	83.86	-
EN	129.09	-	128.36	-	218.44	-	103.27	-	102.62	-	128.41	-
K	0.205	-	0.206	-	0.049	-	0.159	-	0.162	-	0.044	-
All Foreign, Constant	2,699	-	-	-	440	-	9,222	-	-	-	4,598	-
EP	9.75	-	-	-	17.65	-	4.88	-	-	-	11.75	-
EN	304.97	-	-	-	447.80	-	252.35	-	-	-	400.97	-
K	0.210	-	-	-	0.133	-	0.201	-	-	-	0.104	-
1-49% For., Constant	-	-	5,076	-	-	-	-	-	22,499	-	-	-
EP	-	-	0.75	-	-	-	-	-	4.50	-	-	-
EN	-	-	141.87	-	-	-	-	-	63.42	-	-	-
K	-	-	0.124	-	-	-	-	-	0.123	-	-	-
50-99% For., Constar	-	-	259	-	-	-	-	-	391	-	-	-
EP	-	-	-85.98	-	-	-	-	-	-99.32	-	-	-
EN	-	-	1,249.69	-	-	-	-	-	1,254.46	-	-	-
K	-	-	0.818	-	-	-	-	-	0.791	-	-	-
100% For., Constant	-	-	4,196	-	-	-	-	-	5,124	-	-	-
EP	-	-	18.28	-	-	-	-	-	10.23	-	-	-
EN	-	-	200.04	-	-	-	-	-	196.81	-	-	-
K	-	-	0.360	-	-	-	-	-	0.376	-	-	-

Appendix Table C5 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.666	0.00	3.659	0.00	4.009	0.00	3.927	0.00	3.891	0.00	4.774	0.00
ln(EN/EP)	0.324	0.00	0.327	0.00	0.445	0.00	0.346	0.00	0.349	0.00	0.455	0.00
ln(K/EP)	0.266	0.00	0.268	0.00	0.238	0.00	0.243	0.00	0.250	0.00	0.181	0.00
Df	0.452	0.00	-	-	0.393	0.01	0.396	0.02	-	-	0.394	0.01
Df001	-	-	0.339	0.05	-	-	-	-	0.275	0.15	-	-
Df050	-	-	0.448	0.14	-	-	-	-	0.367	0.19	-	-
Df100	-	-	0.930	0.00	-	-	-	-	0.835	0.01	-	-
Dboi	-0.355	0.04	-0.342	0.04	-	-	-0.415	0.04	-0.396	0.05	-	-
Dold	0.194	0.11	0.195	0.11	0.212	0.12	0.262	0.08	0.270	0.07	0.077	0.60
Dx	0.016	0.90	0.007	0.96	0.103	0.48	0.031	0.84	0.019	0.90	-0.076	0.61
Dm	0.126	0.39	0.129	0.38	0.262	0.09	0.065	0.75	0.079	0.71	0.054	0.77
F-test	20.46	0.00	16.39	0.00	24.68	0.00	12.40	0.00	10.01	0.00	18.16	0.00
White	17.02	0.97	23.44	0.99	14.35	0.92	17.73	0.96	23.14	0.99	12.57	0.96
Adjusted R-sq.	0.218	-	0.221	-	0.354	-	0.179	-	0.182	-	0.343	-
Observations	489	-	489	-	260	-	366	-	366	-	198	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	39.101	-	38.829	-	55.089	-	50.755	-	48.936	-	118.339	-
All Foreign	61.444	-	-	-	81.640	-	75.418	-	-	-	175.474	-
1-49% Foreign	-	-	54.514	-	-	-	-	-	64.397	-	-	-
50-99% Foreign	-	-	60.772	-	-	-	-	-	70.622	-	-	-
100% Foreign	-	-	98.386	-	-	-	-	-	112.814	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C6: Production Function Estimates for Rubber Products

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	7.735	0.00	7.767	0.00	5.912	0.00	9.858	0.00	9.892	0.00	6.923	0.00
ln(EP)	0.326	0.01	0.328	0.01	0.354	0.00	0.192	0.21	0.198	0.19	0.346	0.00
ln(EN)	0.145	0.22	0.144	0.22	0.175	0.06	0.082	0.56	0.083	0.55	0.154	0.15
ln(K)	0.179	0.04	0.174	0.05	0.293	0.00	0.236	0.02	0.227	0.03	0.266	0.00
Df	-1.585	0.47	-	-	-0.204	0.92	-2.255	0.36	-	-	-0.118	0.95
Df*ln(EP)	-0.160	0.49	-	-	-0.011	0.96	-0.133	0.61	-	-	-0.140	0.47
Df*ln(EN)	0.097	0.71	-	-	-0.201	0.41	0.180	0.53	-	-	-0.168	0.40
Df*ln(K)	0.157	0.36	-	-	0.172	0.34	0.123	0.50	-	-	0.248	0.13
Df001	-	-	1.878	0.52	-	-	-	-	1.870	0.57	-	-
Df001*ln(EP)	-	-	-0.035	0.90	-	-	-	-	-0.102	0.73	-	-
Df001*ln(EN)	-	-	-0.061	0.87	-	-	-	-	0.111	0.77	-	-
Df001*ln(K)	-	-	-0.042	0.87	-	-	-	-	-0.100	0.70	-	-
Df050	-	-	-2.397	0.66	-	-	-	-	-5.228	0.35	-	-
Df050*ln(EP)	-	-	-1.374	0.02	-	-	-	-	-1.137	0.08	-	-
Df050*ln(EN)	-	-	1.000	0.07	-	-	-	-	0.932	0.11	-	-
Df050*ln(K)	-	-	0.547	0.08	-	-	-	-	0.559	0.08	-	-
Df100	-	-	-4.471	0.41	-	-	-	-	-6.742	0.22	-	-
Df100*ln(EP)	-	-	0.635	0.36	-	-	-	-	0.721	0.31	-	-
Df100*ln(EN)	-	-	-0.179	0.79	-	-	-	-	-0.091	0.90	-	-
Df100*ln(K)	-	-	-0.146	0.68	-	-	-	-	-0.141	0.70	-	-
Dboi	-0.083	0.71	0.041	0.86	-	-	-0.264	0.29	-0.157	0.53	-	-
Dold	0.307	0.12	0.305	0.13	0.024	0.87	0.087	0.71	0.074	0.76	0.013	0.94
Dx	0.715	0.00	0.710	0.00	0.129	0.46	0.355	0.17	0.350	0.18	-0.077	0.67
Dm	-0.270	0.14	-0.260	0.16	-0.283	0.04	-0.316	0.13	-0.280	0.20	-0.268	0.11
F-test	15.61	0.00	9.78	0.00	49.87	0.00	6.40	0.00	4.26	0.00	26.62	0.00
White	74.30	0.06	84.71	0.46	72.83	0.01	69.30	0.13	0.00	0.13	57.59	0.12
Adjusted R-sq.	0.376	-	0.384	-	0.743	-	0.224	-	0.231	-	0.652	-
Observations	268	-	268	-	170	-	207	-	207	-	138	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	2,287	-	2,362	-	370	-	19,117	-	19,772	-	1,015	-
EP	45.26	-	45.54	-	28.48	-	27.75	-	28.54	-	28.05	-
EN	155.26	-	154.38	-	114.17	-	92.43	-	93.46	-	101.83	-
K	0.368	-	0.358	-	0.462	-	0.494	-	0.475	-	0.419	-
All Foreign, Constant	469	-	-	-	301	-	2,004	-	-	-	902	-
EP	16.86	-	-	-	38.58	-	6.10	-	-	-	23.19	-
EN	184.77	-	-	-	-24.80	-	201.83	-	-	-	-13.40	-
K	0.367	-	-	-	0.293	-	0.392	-	-	-	0.324	-
1-49% For., Constant	-	-	15,443	-	-	-	-	-	128,277	-	-	-
EP	-	-	29.94	-	-	-	-	-	9.77	-	-	-
EN	-	-	56.35	-	-	-	-	-	133.44	-	-	-
K	-	-	0.300	-	-	-	-	-	0.293	-	-	-
50-99% For., Constar	-	-	215	-	-	-	-	-	106	-	-	-
EP	-	-	-155.85	-	-	-	-	-	-141.84	-	-	-
EN	-	-	1,058.90	-	-	-	-	-	941.73	-	-	-
K	-	-	0.622	-	-	-	-	-	0.679	-	-	-
100% For., Constant	-	-	27	-	-	-	-	-	23	-	-	-
EP	-	-	33.87	-	-	-	-	-	32.30	-	-	-
EN	-	-	-17.96	-	-	-	-	-	-4.29	-	-	-
K	-	-	0.018	-	-	-	-	-	0.055	-	-	-

Appendix Table C6 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.859	0.00	3.866	0.00	4.016	0.00	4.250	0.00	4.249	0.00	4.217	0.00
ln(EN/EP)	0.353	0.00	0.349	0.00	0.235	0.00	0.350	0.00	0.341	0.01	0.259	0.00
ln(K/EP)	0.228	0.01	0.223	0.01	0.293	0.00	0.291	0.00	0.284	0.00	0.319	0.00
Df	-0.198	0.40	-	-	0.263	0.12	-0.157	0.52	-	-	0.317	0.07
Df001	-	-	-0.181	0.53	-	-	-	-	-0.125	0.65	-	-
Df050	-	-	-0.080	0.86	-	-	-	-	-0.054	0.91	-	-
Df100	-	-	-0.426	0.11	-	-	-	-	-0.419	0.40	-	-
Dboi	-0.075	0.76	-0.061	0.80	-	-	-0.239	0.35	-0.219	0.40	-	-
Dold	0.282	0.15	0.282	0.16	-0.029	0.84	0.046	0.85	0.042	0.87	-0.026	0.87
Dx	0.395	0.06	0.399	0.06	-0.139	0.33	0.017	0.95	0.022	0.93	-0.363	0.03
Dm	-0.324	0.07	-0.329	0.07	-0.329	0.02	-0.486	0.02	-0.491	0.03	-0.469	0.00
F-test	4.71	0.00	3.68	0.00	11.56	0.00	4.51	0.00	3.52	0.00	10.64	0.00
White	37.23	0.17	50.81	0.19	48.66	0.00	34.28	0.27	47.38	0.26	41.84	0.01
Adjusted R-sq.	0.089	-	0.083	-	0.273	-	0.106	-	0.099	-	0.297	-
Observations	268	-	268	-	170	-	207	-	207	-	138	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	47.434	-	47.742	-	55.490	-	70.090	-	70.032	-	67.830	-
All Foreign	38.916	-	-	-	72.161	-	59.928	-	-	-	93.157	-
1-49% Foreign	-	-	39.826	-	-	-	-	-	61.805	-	-	-
50-99% Foreign	-	-	44.069	-	-	-	-	-	66.365	-	-	-
100% Foreign	-	-	31.186	-	-	-	-	-	46.071	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C7: Production Function Estimates for Plastics & Products

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	7.122	0.00	7.187	0.00	4.745	0.00	7.993	0.00	8.057	0.00	7.109	0.00
ln(EP)	0.335	0.00	0.337	0.00	0.441	0.00	0.344	0.00	0.347	0.00	0.153	0.30
ln(EN)	0.183	0.00	0.180	0.00	0.041	0.72	0.069	0.38	0.067	0.39	-0.067	0.57
ln(K)	0.170	0.00	0.165	0.00	0.331	0.00	0.198	0.00	0.193	0.00	0.518	0.00
Df	-1.338	0.22	-	-	2.352	0.21	0.356	0.81	-	-	2.193	0.28
Df*ln(EP)	-0.066	0.64	-	-	-0.042	0.86	-0.240	0.13	-	-	0.155	0.49
Df*ln(EN)	0.199	0.15	-	-	0.017	0.93	0.255	0.12	-	-	0.115	0.56
Df*ln(K)	-0.002	0.98	-	-	-0.107	0.53	-0.006	0.96	-	-	-0.319	0.07
Df001	-	-	-0.349	0.79	-	-	-	-	1.125	0.53	-	-
Df001*ln(EP)	-	-	-0.272	0.13	-	-	-	-	-0.396	0.04	-	-
Df001*ln(EN)	-	-	0.127	0.45	-	-	-	-	0.216	0.26	-	-
Df001*ln(K)	-	-	0.148	0.20	-	-	-	-	0.096	0.48	-	-
Df050	-	-	-2.314	0.32	-	-	-	-	-2.853	0.30	-	-
Df050*ln(EP)	-	-	-0.062	0.82	-	-	-	-	-0.342	0.23	-	-
Df050*ln(EN)	-	-	0.638	0.02	-	-	-	-	0.291	0.36	-	-
Df050*ln(K)	-	-	-0.235	0.27	-	-	-	-	0.239	0.34	-	-
Df100	-	-	-3.348	0.14	-	-	-	-	2.504	0.47	-	-
Df100*ln(EP)	-	-	0.650	0.03	-	-	-	-	0.262	0.44	-	-
Df100*ln(EN)	-	-	-0.282	0.43	-	-	-	-	0.252	0.58	-	-
Df100*ln(K)	-	-	-0.138	0.50	-	-	-	-	-0.518	0.06	-	-
Dboi	-0.118	0.39	-0.040	0.78	-	-	0.171	0.29	0.233	0.17	-	-
Dold	0.325	0.00	0.332	0.00	0.234	0.34	0.290	0.02	0.301	0.02	0.618	0.02
Dx	0.196	0.08	0.204	0.07	0.704	0.00	0.156	0.25	0.173	0.20	0.690	0.00
Dm	0.340	0.00	0.345	0.00	0.038	0.86	0.288	0.04	0.270	0.05	-0.355	0.13
F-test	61.85	0.00	37.10	0.00	25.31	0.00	24.72	0.00	15.07	0.00	15.96	0.00
White	68.06	0.15	107.11	0.21	13.07	1.00	50.76	0.71	66.86	0.98	33.65	0.91
Adjusted R-sq.	0.554	-	0.560	-	0.591	-	0.456	-	0.462	-	0.592	-
Observations	539	-	539	-	169	-	312	-	312	-	104	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	1,239	-	1,322	-	115	-	2,961	-	3,155	-	1,223	-
EP	17.20	-	17.32	-	34.99	-	18.35	-	18.51	-	13.13	-
EN	70.26	-	69.29	-	18.02	-	28.33	-	27.57	-	-31.18	-
K	0.134	-	0.130	-	0.389	-	0.155	-	0.151	-	0.626	-
All Foreign, Constant	325	-	-	-	1,209	-	4,226	-	-	-	10,965	-
EP	16.45	-	-	-	20.89	-	6.41	-	-	-	16.11	-
EN	123.11	-	-	-	13.51	-	106.37	-	-	-	11.13	-
K	0.114	-	-	-	0.196	-	0.130	-	-	-	0.173	-
1-49% For., Constant	-	-	932	-	-	-	-	-	9,718	-	-	-
EP	-	-	3.58	-	-	-	-	-	-2.72	-	-	-
EN	-	-	84.91	-	-	-	-	-	79.25	-	-	-
K	-	-	0.203	-	-	-	-	-	0.185	-	-	-
50-99% For., Constar	-	-	131	-	-	-	-	-	182	-	-	-
EP	-	-	24.20	-	-	-	-	-	0.46	-	-	-
EN	-	-	356.53	-	-	-	-	-	156.98	-	-	-
K	-	-	-0.068	-	-	-	-	-	0.427	-	-	-
100% For., Constant	-	-	46	-	-	-	-	-	38,584	-	-	-
EP	-	-	57.56	-	-	-	-	-	36.76	-	-	-
EN	-	-	-38.68	-	-	-	-	-	126.81	-	-	-
K	-	-	0.014	-	-	-	-	-	-0.174	-	-	-

Appendix Table C7 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.877	0.00	3.877	0.00	2.930	0.00	3.709	0.00	3.690	0.00	2.871	0.00
ln(EN/EP)	0.360	0.00	0.358	0.00	0.129	0.17	0.338	0.00	0.329	0.00	0.092	0.38
ln(K/EP)	0.142	0.00	0.140	0.00	0.279	0.00	0.200	0.00	0.199	0.00	0.416	0.00
Df	-0.099	0.52	-	-	0.237	0.27	-0.067	0.67	-	-	0.081	0.72
Df001	-	-	-0.077	0.64	-	-	-	-	-0.075	0.68	-	-
Df050	-	-	0.003	0.99	-	-	-	-	0.106	0.69	-	-
Df100	-	-	-0.345	0.27	-	-	-	-	-0.320	0.31	-	-
Dboi	-0.255	0.16	-0.210	0.28	-	-	-0.060	0.73	-0.015	0.93	-	-
Dold	0.162	0.12	0.160	0.13	0.166	0.50	0.139	0.30	0.141	0.29	0.298	0.31
Dx	-0.022	0.84	-0.016	0.89	0.433	0.05	-0.042	0.77	-0.045	0.75	0.230	0.36
Dm	0.282	0.00	0.280	0.00	-0.054	0.81	0.206	0.17	0.204	0.17	-0.336	0.20
F-test	12.87	0.00	10.15	0.00	4.83	0.00	8.46	0.00	6.71	0.00	4.75	0.00
White	36.89	0.18	52.10	0.19	7.86	1.00	17.33	0.97	35.17	0.83	16.28	0.84
Adjusted R-sq.	0.134	-	0.133	-	0.120	-	0.144	-	0.142	-	0.179	-
Observations	539	-	539	-	169	-	312	-	312	-	104	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	48.280	-	48.301	-	18.730	-	40.833	-	40.028	-	17.662	-
All Foreign	43.730	-	-	-	23.738	-	38.173	-	-	-	19.152	-
1-49% Foreign	-	-	44.733	-	-	-	-	-	37.153	-	-	-
50-99% Foreign	-	-	48.461	-	-	-	-	-	44.522	-	-	-
100% Foreign	-	-	34.200	-	-	-	-	-	29.073	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C8: Production Function Estimates for Nonmetallic Mineral Products

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	4.179	0.00	cannot be		5.072	0.00	9.363	0.00	cannot be		7.393	0.00
ln(EP)	0.455	0.00	estimated		0.429	0.00	0.351	0.00	estimated		0.385	0.00
ln(EN)	0.172	0.00	because of		0.260	0.00	0.030	0.64	because of		0.213	0.02
ln(K)	0.307	0.00	singularity		0.197	0.00	0.183	0.00	singularity		0.144	0.04
Df	-0.253	0.88	in the data		-1.262	0.60	-4.749	0.01	in the data		-1.086	0.59
Df*ln(EP)	0.027	0.87	-	-	-0.046	0.81	0.115	0.53	-	-	-0.030	0.87
Df*ln(EN)	0.157	0.27	-	-	-0.017	0.94	0.281	0.06	-	-	-0.154	0.41
Df*ln(K)	-0.089	0.48	-	-	0.163	0.15	0.015	0.91	-	-	0.227	0.04
Df001	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Df050	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Df100	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Dboi	-0.497	0.01	-	-	-	-	-0.388	0.06	-	-	-	-
Dold	0.098	0.32	-	-	0.095	0.48	0.149	0.26	-	-	0.383	0.03
Dx	-0.200	0.14	-	-	0.288	0.06	-0.050	0.79	-	-	0.233	0.27
Dm	0.022	0.86	-	-	0.083	0.60	0.074	0.66	-	-	0.009	0.96
F-test	74.92	0.00	-	-	65.81	0.00	19.96	0.00	-	-	30.38	0.00
White	42.27	0.93	-	-	169.72	0.00	54.84	0.56	-	-	27.43	0.99
Adjusted R-sq.	0.522	-	-	-	0.634	-	0.359	-	-	-	0.616	-
Observations	746	-	-	-	375	-	373	-	-	-	184	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	65	-	-	-	159	-	11,647	-	-	-	1,624	-
EP	53.36	-	-	-	59.04	-	46.02	-	-	-	59.46	-
EN	64.36	-	-	-	127.80	-	11.55	-	-	-	114.26	-
K	0.222	-	-	-	0.099	-	0.130	-	-	-	0.071	-
All Foreign, Constant	51	-	-	-	45	-	101	-	-	-	549	-
EP	60.42	-	-	-	120.63	-	59.58	-	-	-	113.22	-
EN	173.22	-	-	-	241.50	-	164.69	-	-	-	58.82	-
K	0.105	-	-	-	0.127	-	0.096	-	-	-	0.131	-
1-49% For., Constant	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
50-99% For., Constar	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
100% For., Constant	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table C8 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.514	0.00	3.510	0.00	3.720	0.00	4.298	0.00	4.285	0.00	4.051	0.00
ln(EN/EP)	0.202	0.00	0.201	0.00	0.280	0.00	0.163	0.01	0.160	0.01	0.257	0.00
ln(K/EP)	0.296	0.00	0.297	0.00	0.223	0.00	0.207	0.00	0.210	0.00	0.235	0.00
Df	0.297	0.11	-	-	0.706	0.00	0.158	0.47	-	-	0.689	0.00
Df001	-	-	0.235	0.27	-	-	-	-	0.123	0.60	-	-
Df050	-	-	0.699	0.01	-	-	-	-	0.404	0.36	-	-
Df100	-	-	-0.142	0.79	-	-	-	-	-0.291	0.74	-	-
Dboi	-0.516	0.01	-0.524	0.01	-	-	-0.399	0.07	-0.403	0.08	-	-
Dold	0.072	0.44	0.070	0.45	0.051	0.69	-0.080	0.55	-0.084	0.53	0.179	0.30
Dx	-0.235	0.08	-0.243	0.07	0.214	0.19	-0.295	0.13	-0.297	0.13	0.020	0.92
Dm	-0.014	0.92	-0.016	0.90	-0.019	0.89	-0.204	0.23	-0.203	0.24	-0.205	0.25
F-test	20.47	0.00	16.12	0.00	20.86	0.00	7.14	0.00	5.61	0.00	12.33	0.00
White	25.36	0.71	28.64	0.91	11.91	0.97	22.73	0.83	27.21	0.92	12.04	0.97
Adjusted R-sq.	0.155	-	0.154	-	0.242	-	0.104	-	0.100	-	0.271	-
Observations	746	-	746	-	375	-	373	-	373	-	184	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	33.577	-	33.448	-	41.283	-	73.526	-	72.632	-	57.462	-
All Foreign	45.204	-	-	-	83.624	-	86.075	-	-	-	114.395	-
1-49% Foreign	-	-	42.329	-	-	-	-	-	82.114	-	-	-
50-99% Foreign	-	-	67.291	-	-	-	-	-	108.776	-	-	-
100% Foreign	-	-	29.017	-	-	-	-	-	54.317	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C9: Production Function Estimates for Metal Products

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	5.396	0.00	5.377	0.00	4.718	0.00	8.241	0.00	8.283	0.00	9.367	0.00
ln(EP)	0.508	0.00	0.506	0.00	0.345	0.00	0.357	0.00	0.352	0.00	0.226	0.05
ln(EN)	0.213	0.00	0.215	0.00	0.382	0.00	0.142	0.08	0.141	0.08	0.094	0.36
ln(K)	0.157	0.00	0.159	0.00	0.217	0.00	0.177	0.00	0.177	0.00	0.230	0.00
Df	1.869	0.07	-	-	-0.092	0.96	1.705	0.17	-	-	-1.859	0.34
Df*ln(EP)	-0.452	0.00	-	-	0.119	0.59	-0.253	0.08	-	-	0.114	0.58
Df*ln(EN)	0.092	0.52	-	-	-0.379	0.12	0.037	0.81	-	-	-0.079	0.74
Df*ln(K)	0.195	0.03	-	-	0.177	0.16	0.097	0.32	-	-	0.097	0.45
Df001	-	-	1.861	0.11	-	-	-	-	1.871	0.18	-	-
Df001*ln(EP)	-	-	-0.464	0.01	-	-	-	-	-0.267	0.13	-	-
Df001*ln(EN)	-	-	0.154	0.39	-	-	-	-	0.069	0.72	-	-
Df001*ln(K)	-	-	0.160	0.11	-	-	-	-	0.076	0.49	-	-
Df050	-	-	4.068	0.24	-	-	-	-	1.939	0.58	-	-
Df050*ln(EP)	-	-	-0.792	0.18	-	-	-	-	-0.649	0.25	-	-
Df050*ln(EN)	-	-	-0.049	0.95	-	-	-	-	-0.039	0.96	-	-
Df050*ln(K)	-	-	0.405	0.14	-	-	-	-	0.407	0.15	-	-
Df100	-	-	1.501	0.59	-	-	-	-	3.604	0.25	-	-
Df100*ln(EP)	-	-	-0.582	0.02	-	-	-	-	-0.119	0.64	-	-
Df100*ln(EN)	-	-	0.171	0.63	-	-	-	-	-0.007	0.98	-	-
Df100*ln(K)	-	-	0.292	0.40	-	-	-	-	-0.067	0.85	-	-
Dboi	-0.150	0.38	-0.211	0.26	-	-	-0.185	0.29	-0.186	0.33	-	-
Dold	0.000	1.00	0.005	0.96	-0.036	0.82	-0.030	0.81	-0.025	0.84	0.003	0.99
Dx	-0.003	0.98	0.007	0.96	0.373	0.04	-0.189	0.14	-0.166	0.21	0.246	0.17
Dm	0.170	0.05	0.170	0.06	0.146	0.32	-0.019	0.88	-0.015	0.91	0.202	0.23
F-test	72.02	0.00	41.89	0.00	37.25	0.00	25.26	0.00	14.93	0.00	16.38	0.00
White	60.67	0.34	98.44	0.53	23.18	1.00	59.35	0.39	89.95	0.73	34.67	0.89
Adjusted R-sq.	0.528	-	0.527	-	0.566	-	0.435	-	0.433	-	0.505	-
Observations	698	-	698	-	279	-	347	-	347	-	152	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	220	-	216	-	112	-	3,792	-	3,956	-	11,695	-
EP	41.25	-	41.12	-	38.84	-	31.39	-	31.03	-	27.68	-
EN	113.38	-	114.11	-	225.99	-	85.11	-	85.04	-	60.98	-
K	0.207	-	0.209	-	0.312	-	0.223	-	0.223	-	0.325	-
All Foreign, Constant	1,429	-	-	-	102	-	20,866	-	-	-	1,822	-
EP	7.44	-	-	-	88.92	-	14.05	-	-	-	71.66	-
EN	244.34	-	-	-	2.45	-	144.14	-	-	-	15.50	-
K	0.258	-	-	-	0.300	-	0.201	-	-	-	0.250	-
1-49% For., Constant	-	-	1,392	-	-	-	-	-	25,697	-	-	-
EP	-	-	7.27	-	-	-	-	-	14.92	-	-	-
EN	-	-	281.22	-	-	-	-	-	161.93	-	-	-
K	-	-	0.226	-	-	-	-	-	0.179	-	-	-
50-99% For., Constar	-	-	12,653	-	-	-	-	-	27,493	-	-	-
EP	-	-	-37.53	-	-	-	-	-	-39.70	-	-	-
EN	-	-	153.23	-	-	-	-	-	95.71	-	-	-
K	-	-	0.273	-	-	-	-	-	0.282	-	-	-
100% For., Constant	-	-	971	-	-	-	-	-	145,407	-	-	-
EP	-	-	-4.49	-	-	-	-	-	13.80	-	-	-
EN	-	-	368.35	-	-	-	-	-	127.65	-	-	-
K	-	-	0.829	-	-	-	-	-	0.202	-	-	-

Appendix Table C9 (continued)

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	4.089	0.00	4.092	0.00	3.968	0.00	4.738	0.00	4.730	0.00	4.330	0.00
ln(EN/EP)	0.298	0.00	0.305	0.00	0.359	0.00	0.331	0.00	0.342	0.00	0.252	0.01
ln(K/EP)	0.195	0.00	0.198	0.00	0.240	0.00	0.212	0.00	0.219	0.00	0.244	0.00
Df	0.366	0.01	-	-	0.234	0.18	0.384	0.01	-	-	0.340	0.07
Df001	-	-	0.316	0.04	-	-	-	-	0.320	0.06	-	-
Df050	-	-	0.339	0.25	-	-	-	-	0.336	0.23	-	-
Df100	-	-	0.666	0.05	-	-	-	-	0.726	0.01	-	-
Dboi	-0.248	0.18	-0.300	0.15	-	-	-0.420	0.02	-0.474	0.01	-	-
Dold	-0.037	0.66	-0.028	0.75	-0.061	0.69	-0.193	0.13	-0.174	0.18	-0.081	0.66
Dx	-0.145	0.17	-0.147	0.17	0.307	0.06	-0.406	0.00	-0.408	0.00	-0.135	0.43
Dm	0.117	0.17	0.116	0.18	0.125	0.39	-0.161	0.23	-0.161	0.23	0.021	0.91
F-test	18.02	0.00	14.19	0.00	13.36	0.00	15.34	0.00	12.14	0.00	9.24	0.00
White	38.62	0.13	60.52	0.05	8.93	1.00	40.67	0.09	58.66	0.07	12.95	0.95
Adjusted R-sq.	0.146	-	0.145	-	0.211	-	0.225	-	0.225	-	0.247	-
Observations	698	-	698	-	279	-	347	-	347	-	152	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	59.703	-	59.860	-	52.872	-	114.211	-	113.303	-	75.923	-
All Foreign	86.048	-	-	-	66.814	-	167.753	-	-	-	106.639	-
1-49% Foreign	-	-	82.138	-	-	-	-	-	155.986	-	-	-
50-99% Foreign	-	-	83.978	-	-	-	-	-	158.566	-	-	-
100% Foreign	-	-	116.545	-	-	-	-	-	234.184	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C10: Production Function Estimates for General Machinery

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	4.892	0.00	4.962	0.00	1.254	0.31	8.734	0.00	8.830	0.00	8.064	0.00
ln(EP)	0.404	0.00	0.400	0.00	0.435	0.00	0.198	0.08	0.194	0.08	0.056	0.73
ln(EN)	0.184	0.00	0.186	0.00	0.328	0.00	0.003	0.97	0.007	0.93	0.280	0.03
ln(K)	0.297	0.00	0.293	0.00	0.418	0.00	0.363	0.00	0.356	0.00	0.324	0.00
Df	-0.116	0.91	-	-	2.223	0.15	-1.957	0.14	-	-	-4.159	0.07
Df*ln(EP)	-0.044	0.75	-	-	-0.033	0.84	0.187	0.26	-	-	0.349	0.07
Df*ln(EN)	0.140	0.25	-	-	-0.065	0.66	0.364	0.01	-	-	-0.024	0.88
Df*ln(K)	-0.039	0.72	-	-	-0.055	0.62	-0.241	0.06	-	-	0.014	0.92
Df001	-	-	-0.374	0.76	-	-	-	-	-1.159	0.49	-	-
Df001*ln(EP)	-	-	-0.153	0.36	-	-	-	-	0.006	0.97	-	-
Df001*ln(EN)	-	-	0.126	0.43	-	-	-	-	0.340	0.05	-	-
Df001*ln(K)	-	-	0.071	0.59	-	-	-	-	-0.132	0.43	-	-
Df050	-	-	-1.096	0.63	-	-	-	-	-3.926	0.13	-	-
Df050*ln(EP)	-	-	-0.280	0.44	-	-	-	-	0.141	0.73	-	-
Df050*ln(EN)	-	-	0.860	0.01	-	-	-	-	0.978	0.00	-	-
Df050*ln(K)	-	-	-0.303	0.16	-	-	-	-	-0.527	0.02	-	-
Df100	-	-	0.663	0.72	-	-	-	-	-2.960	0.13	-	-
Df100*ln(EP)	-	-	0.275	0.36	-	-	-	-	0.514	0.09	-	-
Df100*ln(EN)	-	-	-0.152	0.49	-	-	-	-	0.055	0.80	-	-
Df100*ln(K)	-	-	-0.139	0.59	-	-	-	-	-0.242	0.34	-	-
Dboi	0.059	0.73	0.128	0.47	-	-	0.017	0.93	0.120	0.53	-	-
Dold	0.094	0.37	0.106	0.32	-0.139	0.34	0.189	0.16	0.205	0.12	-0.013	0.94
Dx	0.060	0.62	0.076	0.53	0.301	0.06	-0.021	0.88	-0.010	0.94	0.384	0.03
Dm	0.064	0.55	0.061	0.57	0.017	0.91	-0.173	0.26	-0.167	0.27	0.015	0.95
F-test	76.49	0.00	45.35	0.00	82.95	0.00	36.35	0.00	22.36	0.00	43.56	0.00
White	53.12	0.62	69.56	0.97	23.10	1.00	64.79	0.22	78.12	0.85	30.22	0.94
Adjusted R-sq.	0.656	-	0.660	-	0.800	-	0.611	-	0.621	-	0.776	-
Observations	436	-	436	-	206	-	249	-	249	-	124	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	133	-	143	-	4	-	6,213	-	6,838	-	3,177	-
EP	46.76	-	46.38	-	54.40	-	25.36	-	24.82	-	9.17	-
EN	103.78	-	104.84	-	184.07	-	1.78	-	4.43	-	184.85	-
K	0.044	-	0.044	-	0.777	-	0.050	-	0.049	-	0.690	-
All Foreign, Constant	119	-	-	-	32	-	878	-	-	-	50	-
EP	35.36	-	-	-	124.65	-	37.91	-	-	-	125.71	-
EN	245.46	-	-	-	442.30	-	279.63	-	-	-	431.62	-
K	0.225	-	-	-	0.752	-	0.106	-	-	-	0.701	-
1-49% For., Constant	-	-	98	-	-	-	-	-	2,146	-	-	-
EP	-	-	29.23	-	-	-	-	-	23.90	-	-	-
EN	-	-	198.74	-	-	-	-	-	224.52	-	-	-
K	-	-	0.471	-	-	-	-	-	0.289	-	-	-
50-99% For., Constar	-	-	48	-	-	-	-	-	135	-	-	-
EP	-	-	23.69	-	-	-	-	-	65.68	-	-	-
EN	-	-	909.14	-	-	-	-	-	859.39	-	-	-
K	-	-	-0.015	-	-	-	-	-	-0.263	-	-	-
100% For., Constant	-	-	277	-	-	-	-	-	354	-	-	-
EP	-	-	50.49	-	-	-	-	-	52.90	-	-	-
EN	-	-	28.88	-	-	-	-	-	52.55	-	-	-
K	-	-	0.094	-	-	-	-	-	0.069	-	-	-

Appendix Table C10 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.706	0.00	3.704	0.00	3.259	0.00	3.914	0.00	3.916	0.00	3.938	0.00
ln(EN/EP)	0.246	0.00	0.247	0.00	0.267	0.00	0.188	0.00	0.184	0.01	0.282	0.00
ln(K/EP)	0.298	0.00	0.298	0.00	0.400	0.00	0.348	0.00	0.345	0.00	0.356	0.00
Df	0.156	0.26	-	-	0.319	0.05	0.176	0.32	-	-	0.019	0.91
Df001	-	-	0.216	0.14	-	-	-	-	0.297	0.12	-	-
Df050	-	-	-0.148	0.62	-	-	-	-	-0.195	0.51	-	-
Df100	-	-	0.105	0.65	-	-	-	-	0.010	0.97	-	-
Dboi	-0.048	0.76	-0.003	0.99	-	-	-0.253	0.20	-0.177	0.38	-	-
Dold	0.069	0.49	0.065	0.52	-0.114	0.42	0.102	0.47	0.097	0.49	-0.077	0.65
Dx	0.011	0.92	0.015	0.90	0.388	0.01	-0.091	0.54	-0.087	0.56	0.301	0.07
Dm	0.034	0.75	0.037	0.73	0.039	0.80	-0.241	0.14	-0.242	0.14	-0.024	0.91
F-test	16.36	0.00	12.93	0.00	35.41	0.00	9.04	0.00	7.40	0.00	16.15	0.00
White	21.01	0.89	27.97	0.95	8.63	1.00	37.64	0.16	54.56	0.09	18.35	0.74
Adjusted R-sq.	0.198	-	0.198	-	0.502	-	0.185	-	0.189	-	0.425	-
Observations	436	-	436	-	206	-	249	-	249	-	124	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	40.695	-	40.628	-	26.021	-	50.121	-	50.176	-	51.341	-
All Foreign	47.579	-	-	-	35.781	-	59.759	-	-	-	52.312	-
1-49% Foreign	-	-	50.446	-	-	-	-	-	67.544	-	-	-
50-99% Foreign	-	-	35.031	-	-	-	-	-	41.271	-	-	-
100% Foreign	-	-	45.118	-	-	-	-	-	50.683	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C11: Production Function Estimates for Electric Machinery

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	4.854	0.00	4.856	0.00	4.581	0.00	7.844	0.00	7.931	0.00	6.744	0.00
ln(EP)	0.379	0.00	0.379	0.00	0.561	0.00	0.232	0.05	0.228	0.06	0.500	0.00
ln(EN)	0.316	0.00	0.317	0.00	0.255	0.04	0.211	0.04	0.215	0.04	0.128	0.37
ln(K)	0.228	0.00	0.228	0.00	0.138	0.15	0.259	0.00	0.255	0.00	0.176	0.10
Df	0.556	0.56	-	-	0.469	0.76	-1.444	0.25	-	-	0.340	0.84
Df*ln(EP)	-0.090	0.46	-	-	-0.223	0.19	-0.066	0.65	-	-	-0.240	0.19
Df*ln(EN)	-0.087	0.42	-	-	0.016	0.92	-0.065	0.62	-	-	0.154	0.36
Df*ln(K)	0.101	0.22	-	-	0.152	0.23	0.182	0.09	-	-	0.086	0.53
Df001	-	-	0.812	0.51	-	-	-	-	-0.226	0.88	-	-
Df001*ln(EP)	-	-	-0.276	0.08	-	-	-	-	-0.189	0.28	-	-
Df001*ln(EN)	-	-	-0.027	0.86	-	-	-	-	-0.050	0.77	-	-
Df001*ln(K)	-	-	0.190	0.08	-	-	-	-	0.201	0.13	-	-
Df050	-	-	1.590	0.29	-	-	-	-	-1.440	0.45	-	-
Df050*ln(EP)	-	-	0.208	0.22	-	-	-	-	0.161	0.47	-	-
Df050*ln(EN)	-	-	-0.192	0.25	-	-	-	-	-0.132	0.49	-	-
Df050*ln(K)	-	-	-0.124	0.25	-	-	-	-	0.040	0.81	-	-
Df100	-	-	-1.282	0.40	-	-	-	-	-3.726	0.04	-	-
Df100*ln(EP)	-	-	-0.133	0.46	-	-	-	-	0.029	0.89	-	-
Df100*ln(EN)	-	-	-0.217	0.19	-	-	-	-	-0.116	0.52	-	-
Df100*ln(K)	-	-	0.320	0.02	-	-	-	-	0.260	0.08	-	-
Dboi	-0.212	0.14	-0.186	0.20	-	-	-0.051	0.74	-0.003	0.99	-	-
Dold	0.220	0.10	0.191	0.15	-0.106	0.58	0.136	0.39	0.101	0.53	-0.138	0.48
Dx	0.053	0.72	0.046	0.76	0.134	0.48	-0.084	0.64	-0.044	0.81	0.018	0.93
Dm	0.227	0.15	0.208	0.19	0.411	0.07	0.035	0.87	0.016	0.94	0.033	0.91
F-test	92.86	0.00	55.18	0.00	59.45	0.00	44.03	0.00	25.78	0.00	36.64	0.00
White	74.91	0.06	124.59	0.15	42.46	0.62	57.85	0.44	120.60	0.14	31.94	0.94
Adjusted R-sq.	0.672	-	0.676	-	0.704	-	0.568	-	0.567	-	0.644	-
Observations	495	-	495	-	247	-	361	-	361	-	198	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	128	-	129	-	98	-	2,550	-	2,782	-	849	-
EP	42.43	-	42.49	-	52.07	-	27.55	-	27.07	-	48.14	-
EN	133.04	-	133.42	-	154.56	-	91.42	-	92.87	-	83.28	-
K	0.461	-	0.462	-	0.199	-	0.527	-	0.519	-	0.253	-
All Foreign, Constant	224	-	-	-	156	-	602	-	-	-	1,193	-
EP	34.15	-	-	-	45.50	-	19.71	-	-	-	35.19	-
EN	164.47	-	-	-	204.79	-	104.96	-	-	-	213.46	-
K	0.272	-	-	-	0.367	-	0.591	-	-	-	0.334	-
1-49% For., Constant	-	-	290	-	-	-	-	-	2,218	-	-	-
EP	-	-	12.04	-	-	-	-	-	4.53	-	-	-
EN	-	-	137.04	-	-	-	-	-	77.96	-	-	-
K	-	-	0.504	-	-	-	-	-	0.551	-	-	-
50-99% For., Constar	-	-	631	-	-	-	-	-	659	-	-	-
EP	-	-	60.43	-	-	-	-	-	40.01	-	-	-
EN	-	-	87.92	-	-	-	-	-	58.52	-	-	-
K	-	-	0.027	-	-	-	-	-	0.323	-	-	-
100% For., Constant	-	-	36	-	-	-	-	-	67	-	-	-
EP	-	-	30.49	-	-	-	-	-	31.94	-	-	-
EN	-	-	90.56	-	-	-	-	-	89.98	-	-	-
K	-	-	0.813	-	-	-	-	-	0.766	-	-	-

Appendix Table C11 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.872	0.00	3.859	0.00	3.874	0.00	4.031	0.00	3.995	0.00	4.591	0.00
ln(EN/EP)	0.322	0.00	0.316	0.00	0.315	0.00	0.281	0.00	0.265	0.00	0.326	0.00
ln(K/EP)	0.269	0.00	0.271	0.00	0.224	0.00	0.352	0.00	0.356	0.00	0.220	0.00
Df	0.023	0.87	-	-	0.258	0.15	-0.172	0.31	-	-	0.262	0.15
Df001	-	-	0.083	0.63	-	-	-	-	-0.059	0.75	-	-
Df050	-	-	-0.033	0.86	-	-	-	-	-0.310	0.17	-	-
Df100	-	-	-0.076	0.67	-	-	-	-	-0.351	0.10	-	-
Dboi	-0.329	0.02	-0.297	0.05	-	-	-0.258	0.10	-0.193	0.24	-	-
Dold	0.164	0.14	0.155	0.17	-0.036	0.85	0.001	0.99	-0.036	0.83	0.000	1.00
Dx	-0.047	0.75	-0.041	0.78	0.054	0.76	-0.315	0.08	-0.300	0.10	-0.132	0.50
Dm	0.231	0.09	0.226	0.10	0.372	0.09	0.122	0.59	0.116	0.61	-0.062	0.83
F-test	19.01	0.00	14.85	0.00	13.28	0.00	16.43	0.00	13.10	0.00	11.57	0.00
White	39.29	0.12	58.40	0.07	9.89	0.99	24.52	0.75	44.27	0.46	11.00	0.98
Adjusted R-sq.	0.203	-	0.202	-	0.231	-	0.231	-	0.232	-	0.244	-
Observations	495	-	495	-	247	-	361	-	361	-	198	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	48.019	-	47.427	-	48.118	-	56.294	-	54.334	-	98.557	-
All Foreign	49.136	-	-	-	62.261	-	47.405	-	-	-	128.130	-
1-49% Foreign	-	-	51.514	-	-	-	-	-	51.220	-	-	-
50-99% Foreign	-	-	45.897	-	-	-	-	-	39.839	-	-	-
100% Foreign	-	-	43.977	-	-	-	-	-	38.240	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C12: Production Function Estimates for Motor Vehicles

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	3.591	0.00	cannot be		2.899	0.06	6.911	0.00	cannot be		9.862	0.00
ln(EP)	0.638	0.00	estimated		0.578	0.00	0.343	0.02	estimated		0.508	0.03
ln(EN)	0.227	0.00	because of		0.499	0.00	0.086	0.45	because of		0.422	0.01
ln(K)	0.179	0.00	singularity		0.087	0.33	0.315	0.00	singularity		-0.210	0.13
Df	-3.101	0.02	in the data		0.521	0.82	-6.234	0.00	in the data		-6.286	0.02
Df*ln(EP)	-0.205	0.24	-	-	-0.172	0.53	-0.029	0.90	-	-	-0.110	0.69
Df*ln(EN)	0.020	0.91	-	-	0.081	0.70	0.206	0.38	-	-	0.156	0.47
Df*ln(K)	0.333	0.00	-	-	0.086	0.58	0.250	0.12	-	-	0.376	0.03
Df001	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df001*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Df050	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df050*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Df100	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(EP)	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(EN)	-	-	-	-	-	-	-	-	-	-	-	-
Df100*ln(K)	-	-	-	-	-	-	-	-	-	-	-	-
Dboi	0.312	0.13	-	-	-	-	0.319	0.20	-	-	-	-
Dold	0.163	0.16	-	-	-0.051	0.82	0.268	0.12	-	-	0.042	0.86
Dx	0.106	0.48	-	-	0.119	0.65	-0.051	0.81	-	-	0.027	0.91
Dm	-0.051	0.66	-	-	-0.155	0.48	0.042	0.83	-	-	0.011	0.97
F-test	111.11	0.00	-	-	33.83	0.00	39.58	0.00	-	-	18.80	0.00
White	62.17	0.30	-	-	17.35	1.00	91.23	0.00	-	-	40.87	0.69
Adjusted R-sq.	0.749	-	-	-	0.712	-	0.695	-	-	-	0.695	-
Observations	406	-	-	-	134	-	187	-	-	-	79	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	36	-	-	-	18	-	1,003	-	-	-	19,181	-
EP	117.05	-	-	-	66.00	-	73.91	-	-	-	68.77	-
EN	176.67	-	-	-	272.04	-	75.07	-	-	-	264.46	-
K	0.297	-	-	-	0.097	-	0.522	-	-	-	-0.252	-
All Foreign, Constant	2	-	-	-	31	-	2	-	-	-	36	-
EP	335.69	-	-	-	412.01	-	243.37	-	-	-	406.29	-
EN	1,268.70	-	-	-	1,229.47	-	1,505.06	-	-	-	1,228.90	-
K	1.750	-	-	-	0.463	-	1.930	-	-	-	0.446	-
1-49% For., Constant	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
50-99% For., Constar	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
100% For., Constant	-	-	-	-	-	-	-	-	-	-	-	-
EP	-	-	-	-	-	-	-	-	-	-	-	-
EN	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table C12 (continued)

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.909	0.00	3.905	0.00	4.609	0.00	3.779	0.00	3.746	0.00	5.639	0.00
ln(EN/EP)	0.209	0.00	0.208	0.00	0.501	0.00	0.153	0.14	0.145	0.17	0.538	0.00
ln(K/EP)	0.225	0.00	0.226	0.00	0.125	0.08	0.355	0.00	0.360	0.00	0.035	0.67
Df	0.244	0.22	-	-	0.817	0.00	-0.010	0.97	-	-	0.484	0.07
Df001	-	-	0.235	0.26	-	-	-	-	0.007	0.98	-	-
Df050	-	-	0.308	0.40	-	-	-	-	0.002	1.00	-	-
Df100	-	-	0.040	0.88	-	-	-	-	-0.402	0.55	-	-
Dboi	0.592	0.01	0.585	0.01	-	-	0.504	0.03	0.480	0.04	-	-
Dold	0.176	0.11	0.171	0.13	0.059	0.79	0.173	0.33	0.163	0.37	0.058	0.80
Dx	0.160	0.32	0.160	0.33	0.230	0.35	-0.049	0.80	-0.036	0.85	0.006	0.98
Dm	-0.036	0.74	-0.035	0.75	-0.151	0.48	-0.078	0.70	-0.070	0.73	-0.089	0.72
F-test	22.88	0.00	17.74	0.00	15.40	0.00	12.09	0.00	9.36	0.00	7.36	0.00
White	39.20	0.12	43.93	0.31	14.36	0.92	41.11	0.09	45.02	0.27	22.27	0.50
Adjusted R-sq.	0.274	-	0.271	-	0.394	-	0.295	-	0.288	-	0.329	-
Observations	406	-	406	-	134	-	187	-	187	-	79	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	49.852	-	49.660	-	100.411	-	43.779	-	42.341	-	281.156	-
All Foreign	63.631	-	-	-	227.188	-	43.365	-	-	-	455.991	-
1-49% Foreign	-	-	62.831	-	-	-	-	-	42.637	-	-	-
50-99% Foreign	-	-	67.590	-	-	-	-	-	42.417	-	-	-
100% Foreign	-	-	51.703	-	-	-	-	-	28.324	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C13: Production Function Estimates for Furniture

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	3.860	0.00	3.984	0.00	5.305	0.00	5.834	0.00	5.912	0.00	7.849	0.00
ln(EP)	0.510	0.00	0.502	0.00	-0.051	0.74	0.516	0.00	0.509	0.00	0.419	0.02
ln(EN)	0.218	0.00	0.216	0.00	0.538	0.00	0.197	0.04	0.195	0.04	0.072	0.64
ln(K)	0.272	0.00	0.270	0.00	0.366	0.00	0.190	0.01	0.190	0.01	0.196	0.11
Df	1.355	0.46	-	-	0.919	0.86	0.879	0.73	-	-	1.677	0.79
Df*ln(EP)	-0.438	0.12	-	-	0.141	0.78	-0.592	0.05	-	-	-0.449	0.30
Df*ln(EN)	0.122	0.49	-	-	-0.087	0.86	0.100	0.61	-	-	0.236	0.51
Df*ln(K)	0.188	0.33	-	-	-0.128	0.69	0.362	0.12	-	-	0.071	0.82
Df001	-	-	2.932	0.15	-	-	-	-	3.159	0.32	-	-
Df001*ln(EP)	-	-	-0.462	0.13	-	-	-	-	-0.665	0.05	-	-
Df001*ln(EN)	-	-	0.204	0.30	-	-	-	-	0.241	0.29	-	-
Df001*ln(K)	-	-	0.040	0.85	-	-	-	-	0.175	0.52	-	-
Df050	-	-	-6.838	0.20	-	-	-	-	-2.947	0.58	-	-
Df050*ln(EP)	-	-	-0.618	0.60	-	-	-	-	0.092	0.94	-	-
Df050*ln(EN)	-	-	0.589	0.45	-	-	-	-	0.147	0.84	-	-
Df050*ln(K)	-	-	0.549	0.35	-	-	-	-	0.059	0.92	-	-
Df100	-	-	-4.906	0.54	-	-	-	-	-7.149	0.34	-	-
Df100*ln(EP)	-	-	-0.418	0.69	-	-	-	-	-0.427	0.66	-	-
Df100*ln(EN)	-	-	0.412	0.72	-	-	-	-	0.217	0.84	-	-
Df100*ln(K)	-	-	0.382	0.69	-	-	-	-	0.645	0.47	-	-
Dboi	-0.475	0.02	-0.464	0.03	-	-	-0.507	0.03	-0.522	0.03	-	-
Dold	0.023	0.86	0.049	0.71	-0.586	0.04	0.222	0.20	0.256	0.15	-0.117	0.63
Dx	-0.315	0.05	-0.281	0.08	0.907	0.00	-0.673	0.00	-0.651	0.00	0.153	0.55
Dm	0.058	0.64	0.065	0.60	0.052	0.84	-0.095	0.57	-0.087	0.60	0.128	0.55
F-test	32.77	0.00	19.31	0.00	15.58	0.00	11.09	0.00	6.74	0.00	4.81	0.00
White	47.30	0.82	54.81	0.93	34.54	0.75	39.67	0.94	0.00	0.94	33.29	0.64
Adjusted R-sq.	0.487	-	0.486	-	0.534	-	0.376	-	0.372	-	0.340	-
Observations	369	-	369	-	128	-	185	-	185	-	75	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	47	-	54	-	201	-	342	-	370	-	2,562	-
EP	45.92	-	45.15	-	-3.43	-	53.20	-	52.50	-	36.17	-
EN	131.99	-	131.17	-	317.04	-	145.33	-	143.88	-	47.15	-
K	0.975	-	0.967	-	0.925	-	0.720	-	0.720	-	0.564	-
All Foreign, Constant	184	-	-	-	505	-	824	-	-	-	13,698	-
EP	4.89	-	-	-	4.45	-	-5.23	-	-	-	-1.54	-
EN	86.10	-	-	-	218.96	-	75.89	-	-	-	153.79	-
K	0.978	-	-	-	0.403	-	1.174	-	-	-	0.445	-
1-49% For., Constant	-	-	1,009	-	-	-	-	-	8,702	-	-	-
EP	-	-	2.16	-	-	-	-	-	-8.47	-	-	-
EN	-	-	64.82	-	-	-	-	-	66.99	-	-	-
K	-	-	0.570	-	-	-	-	-	0.665	-	-	-
50-99% For., Constar	-	-	0	-	-	-	-	-	19	-	-	-
EP	-	-	-21.00	-	-	-	-	-	113.05	-	-	-
EN	-	-	1,255.63	-	-	-	-	-	554.18	-	-	-
K	-	-	3.377	-	-	-	-	-	1.041	-	-	-
100% For., Constant	-	-	0	-	-	-	-	-	0	-	-	-
EP	-	-	3.94	-	-	-	-	-	3.85	-	-	-
EN	-	-	695.30	-	-	-	-	-	456.82	-	-	-
K	-	-	0.886	-	-	-	-	-	1.135	-	-	-

Appendix Table C13 (continued)

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	3.884	0.00	3.896	0.00	3.715	0.00	4.699	0.00	4.717	0.00	4.381	0.00
ln(EN/EP)	0.241	0.00	0.245	0.00	0.589	0.00	0.263	0.00	0.272	0.00	0.251	0.07
ln(K/EP)	0.278	0.00	0.275	0.00	0.363	0.00	0.226	0.00	0.218	0.00	0.204	0.08
Df	-0.028	0.88	-	-	-0.234	0.51	0.027	0.90	-	-	-0.640	0.02
Df001	-	-	-0.156	0.47	-	-	-	-	-0.215	0.39	-	-
Df050	-	-	0.326	0.51	-	-	-	-	0.722	0.07	-	-
Df100	-	-	0.218	0.56	-	-	-	-	0.120	0.79	-	-
Dboi	-0.430	0.02	-0.479	0.01	-	-	-0.423	0.05	-0.467	0.03	-	-
Dold	0.011	0.94	0.023	0.86	-0.601	0.02	0.161	0.34	0.201	0.24	-0.246	0.29
Dx	-0.314	0.02	-0.305	0.03	0.741	0.00	-0.759	0.00	-0.728	0.00	-0.042	0.87
Dm	0.065	0.59	0.068	0.57	-0.016	0.95	-0.100	0.54	-0.104	0.52	-0.026	0.90
F-test	12.35	0.00	9.76	0.00	14.16	0.00	11.57	0.00	9.63	0.00	3.92	0.00
White	35.52	0.22	42.83	0.39	28.99	0.18	23.32	0.80	25.56	0.96	20.44	0.62
Adjusted R-sq.	0.178	-	0.176	-	0.383	-	0.287	-	0.297	-	0.191	-
Observations	369	-	369	-	128	-	185	-	185	-	75	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	48.619	-	49.217	-	41.061	-	109.877	-	111.851	-	79.952	-
All Foreign	47.286	-	-	-	32.489	-	112.921	-	-	-	42.162	-
1-49% Foreign	-	-	42.118	-	-	-	-	-	90.196	-	-	-
50-99% Foreign	-	-	68.169	-	-	-	-	-	230.186	-	-	-
100% Foreign	-	-	61.230	-	-	-	-	-	126.114	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.

Appendix Table C14: Production Function Estimates for Jewelry

	All plants						Large plants					
	1996				1998		1996				1998	
Independent Variables, Indicator	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (1)-(2), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V)												
ln(Constant)	3.548	0.03	3.501	0.03	-	-	11.301	0.00	11.228	0.00	-	-
ln(EP)	0.231	0.14	0.240	0.13	-	-	-0.077	0.69	-0.070	0.72	-	-
ln(EN)	0.487	0.00	0.482	0.00	-	-	0.199	0.18	0.199	0.19	-	-
ln(K)	0.331	0.00	0.332	0.00	-	-	0.316	0.01	0.316	0.01	-	-
Df	2.075	0.37	-	-	-	-	-3.556	0.23	-	-	-	-
Df*ln(EP)	0.509	0.03	-	-	-	-	0.688	0.01	-	-	-	-
Df*ln(EN)	-0.439	0.02	-	-	-	-	-0.122	0.58	-	-	-	-
Df*ln(K)	-0.248	0.04	-	-	-	-	-0.255	0.11	-	-	-	-
Df001	-	-	-0.401	0.89	-	-	-	-	-5.176	0.15	-	-
Df001*ln(EP)	-	-	0.708	0.01	-	-	-	-	0.827	0.01	-	-
Df001*ln(EN)	-	-	-0.405	0.09	-	-	-	-	-0.117	0.66	-	-
Df001*ln(K)	-	-	-0.265	0.07	-	-	-	-	-0.265	0.14	-	-
Df050	-	-	7.054	0.05	-	-	-	-	0.642	0.88	-	-
Df050*ln(EP)	-	-	0.227	0.52	-	-	-	-	0.306	0.47	-	-
Df050*ln(EN)	-	-	-0.680	0.06	-	-	-	-	-0.105	0.79	-	-
Df050*ln(K)	-	-	-0.182	0.42	-	-	-	-	-0.219	0.38	-	-
Df100	-	-	-3.749	0.40	-	-	-	-	-16.611	0.12	-	-
Df100*ln(EP)	-	-	1.067	0.05	-	-	-	-	0.845	0.27	-	-
Df100*ln(EN)	-	-	-0.492	0.22	-	-	-	-	-0.067	0.90	-	-
Df100*ln(K)	-	-	-0.271	0.29	-	-	-	-	0.424	0.61	-	-
Dboi	0.134	0.53	0.141	0.53	-	-	0.342	0.13	0.315	0.21	-	-
Dold	0.046	0.84	0.076	0.74	-	-	0.087	0.73	0.110	0.67	-	-
Dx	-0.028	0.91	-0.029	0.91	-	-	-0.227	0.52	-0.259	0.47	-	-
Dm	0.426	0.05	0.388	0.08	-	-	0.242	0.40	0.238	0.43	-	-
F-test	17.92	0.00	10.83	0.00	-	-	5.10	0.00	3.09	0.00	-	-
White	62.48	0.29	0.00	0.29	-	-	65.94	0.17	0.00	0.17	-	-
Adjusted R-sq.	0.550	-	0.551	-	-	-	0.320	-	0.293	-	-	-
Observations	153	-	153	-	34	-	97	-	97	-	22	-
EQUATIONS (1)- (2), CONSTANTS AND MARGINAL PRODUCTS MEASURED AT THE MEANS												
Local, Constant	35	-	33	-	-	-	80,909	-	75,200	-	-	-
EP	48.76	-	50.72	-	-	-	-20.33	-	-18.35	-	-	-
EN	530.30	-	524.85	-	-	-	260.90	-	261.65	-	-	-
K	2.426	-	2.426	-	-	-	2.601	-	2.602	-	-	-
All Foreign, Constant	277	-	-	-	-	-	2,311	-	-	-	-	-
EP	98.86	-	-	-	-	-	87.97	-	-	-	-	-
EN	45.28	-	-	-	-	-	78.94	-	-	-	-	-
K	0.654	-	-	-	-	-	0.510	-	-	-	-	-
1-49% For., Constant	-	-	22	-	-	-	-	-	425	-	-	-
EP	-	-	126.83	-	-	-	-	-	103.95	-	-	-
EN	-	-	57.16	-	-	-	-	-	63.23	-	-	-
K	-	-	0.537	-	-	-	-	-	0.424	-	-	-
50-99% For., Constar	-	-	38,385	-	-	-	-	-	142,929	-	-	-
EP	-	-	36.47	-	-	-	-	-	20.58	-	-	-
EN	-	-	-167.70	-	-	-	-	-	93.34	-	-	-
K	-	-	0.714	-	-	-	-	-	0.501	-	-	-
100% For., Constant	-	-	1	-	-	-	-	-	0	-	-	-
EP	-	-	404.65	-	-	-	-	-	273.85	-	-	-
EN	-	-	-18.13	-	-	-	-	-	272.36	-	-	-
K	-	-	0.917	-	-	-	-	-	12.747	-	-	-

Appendix Table C14 (continued)

Independent Variables, Indicator	All plants						Large plants					
	1996				1998		1996				1998	
	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance	Coeffi-cients, etc.	Sig-nifi-cance
EQUATIONS (3)-(4), ESTIMATION RESULTS, DEPENDENT VARIABLE=ln(V/EP)												
Constant	4.080	0.00	4.048	0.00	-	-	5.187	0.00	5.173	0.00	-	-
ln(EN/EP)	0.362	0.00	0.354	0.00	-	-	0.307	0.00	0.298	0.01	-	-
ln(K/EP)	0.242	0.00	0.246	0.00	-	-	0.210	0.01	0.209	0.01	-	-
Df	0.149	0.44	-	-	-	-	-0.139	0.54	-	-	-	-
Df001	-	-	0.212	0.33	-	-	-	-	-0.119	0.63	-	-
Df050	-	-	-0.036	0.91	-	-	-	-	-0.241	0.48	-	-
Df100	-	-	0.131	0.66	-	-	-	-	-0.073	0.85	-	-
Dboi	0.110	0.59	0.154	0.48	-	-	0.286	0.22	0.300	0.21	-	-
Dold	0.138	0.59	0.128	0.62	-	-	0.201	0.44	0.210	0.43	-	-
Dx	0.057	0.79	0.061	0.78	-	-	-0.376	0.30	-0.377	0.30	-	-
Dm	0.362	0.05	0.363	0.05	-	-	-0.046	0.88	-0.051	0.86	-	-
F-test	8.40	0.00	6.53	0.00	-	-	4.04	0.00	3.10	0.00	-	-
White	36.60	0.19	44.16	0.34	-	-	33.30	0.27	36.66	0.58	-	-
Adjusted R-sq.	0.254	-	0.247	-	-	-	0.181	-	0.164	-	-	-
Observations	153	-	153	-	34	-	97	-	97	-	22	-
EQUATIONS (3)-(4), UNEXPLAINED VALUE ADDED PER PRODUCTION WORKER HOUR												
Local	59.163	-	57.279	-	141.022	-	178.970	-	176.428	-	917.191	-
All Foreign	68.683	-	-	-	341.687	-	155.806	-	-	-	868.911	-
1-49% Foreign	-	-	70.801	-	-	-	-	-	156.616	-	-	-
50-99% Foreign	-	-	55.244	-	-	-	-	-	138.605	-	-	-
100% Foreign	-	-	65.315	-	-	-	-	-	163.980	-	-	-

Note: Heteroscedasticity-consistent standard errors used if White is significant at 0.05 or less.