

**Productivity, Ownership, and Producer Concentration
in Transition: Further Evidence
from Vietnamese Manufacturing**

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Productivity, Ownership, and Producer Concentration in Transition:

Further Evidence from Vietnamese Manufacturing

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Abstract

Multinational corporations (MNCs), both wholly-foreign and joint ventures, and state-owned enterprises (SOEs) often had higher labor productivity and lower capital productivity than local, private firms in Vietnamese manufacturing during 2000-2006. After controlling for firm-level variation in factor intensities and scale, and industry-level variation in producer concentration, total factor productivity differentials between MNC joint ventures or SOEs on the one hand, and private firms on the other, were positive and statistically significant in samples of all manufacturing firms combined and in most industry-level samples for 2001-2006 and two subperiods. Differentials between wholly-foreign MNCs and private firms were generally insignificant or negative in a contemporaneous specification, but more often positive and significant when a lagged specification was used to account for potential simultaneity. Estimates of productivity spillovers from SOEs and MNCs to private firms and the productivity effects of concentration tended to be insignificant statistically, both when all manufacturing industries were combined and in subsamples of industries with relatively high or low concentration. These results are consistent with the view that Vietnam's manufacturing firms, especially wholly-foreign MNCs and private firms, are often engaged in assembly operations using relatively simple technologies, and that local firms are often quick to imitate their MNC competitors. However, the substantial variation of estimates among industries and time periods suggests that combining heterogeneous industries or time periods biases productivity estimates in this diverse, rapidly changing economy.

Keywords: productivity; ownership; multinational corporation; state-owned enterprise; producer concentration

JEL Categories: D24, F23, K22, L11, L32, L33, O53

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1. Introduction

There is now a wide ranging literature examining the hypothesis that ownership modes affect firm productivity. More specifically, economists often assert that multinational corporations (MNCs) tend to be relatively efficient and that state-owned enterprises (SOEs) are generally relatively inefficient. MNCs are usually thought to possess relatively large amounts of intangible assets that facilitate efficiency (e.g., patents and other fruits of R&D, management know-how, marketing resources). Meanwhile, motivation to pursue profits and efficiency is generally believed to be relatively weak in SOEs. In addition, MNCs are often thought to generate spillovers that affect the efficiency of non-MNCs through linkages, labor mobility, and competition effects, for example. Similar spillovers can also be imagined for SOEs in transition economies like Vietnam, where SOEs are designated to play leading roles in industry. The degree of competition is another element thought to affect firm productivity and the nature of productivity spillovers.

Vietnam provides an interesting case to study these relationships. The process of *Doi Moi* (reform) which began in 1986 has gradually transformed a command economy into a more market-oriented one. Although the reform process has been uneven, there is now substantial evidence of marked changes in ownership patterns and market structure, especially after the implementation of Enterprise Law in 2000 and subsequent, related reforms. The rapid growth of the local private sector and the marked decrease of producer concentration have been particularly conspicuous.

Firm-level data from Vietnam's enterprise surveys are available annually from 2000 and used to analyze the following three questions:

- (1) Is there a meaningful relationship between ownership modes and firm productivity levels?
- (2) Does the presence of MNCs or SOEs affect the productivity levels in private, local firms (hereafter referred to as private firms)?
- (3) Has variation in producer concentration had an effect on firm productivity?

This paper begins with a brief review of the literature (Section 2), followed by a description of the data and key patterns observed in average productivity differentials and related variables (Section 3). Productivity differentials (Section 4) and productivity spillovers (Section 5) are then analyzed after accounting for (1) firm-level variation in factor intensities and scale, (2) industry-level variation in producer concentration, and (3) generic effects related to a firm's industry affiliation, location, and year of operation. Finally, some concluding remarks are offered (Section 6).

2. Productivity, Spillovers, and Market Structure

There are two major strands of the literature that examines how ownership relates to productivity levels and/or spillovers. One focuses on the determinants and effects of MNC behavior, while the second focuses on analysis of SOE behavior and the effects of privatization, and related issues. Analyses of productivity levels and differentials also differ substantially from spillover analyses.

2a. Productivity Levels and Differentials

The theoretical literature on MNCs often asserts that for a firm to overcome the extra costs of doing business in more than one economy, it must have offsetting cost advantages generated by the

possession of firm-specific assets. These are often intangible assets such as patents or other fruits of research and development (e.g., production techniques and processes), marketing networks, and/or management abilities.¹ In turn, the possession of these assets in relatively large amounts should make MNCs more efficient than non-MNCs. Because MNCs possess firm-specific assets that distinguish them from non-MNCs, they are by definition heterogeneous and must therefore operate in imperfectly competitive industries. Moran (2001) also asserts that affiliates which are closely integrated with the parent company and its network, usually through high parent ownership shares and/or other means of control, are more efficient than more loosely related affiliates. On the other hand, MNC parents are generally thought to be more reluctant to share their firm-specific assets with minority-owned affiliates than with majority-owned or wholly-owned affiliates.²

Many economists believe that SOE managers have weaker motives to pursue profit and efficiency than those in privately owned firms, including MNCs.³ Hence SOEs are often expected to be relatively inefficient compared to other firms. Moreover, governments have often established SOEs in imperfectly competitive or highly regulated industries, where the lack of competition further weakens the pressure to instill efficiency.

Evidence from firm- or plant-level investigations of productivity differentials among ownership

¹ See Dunning (1993), Hymer (1960), and Markusen (1991). Other theorists (e.g., Buckley and Casson 1992; Casson 1987; Rugman 1980, 1985) dispute this view, asserting that internalization is the key necessary condition for a firm to become a MNC. However, all agree that MNCs tend to possess intangible assets in relatively large amounts as evidenced by relatively high technology and advertising intensity compared to non-MNCs.

² See, for example, Caves 2007 (ch. 3, 7, 9) and Dunning (1993, ch. 7-9, 11).

³ See Stretton and Orchard (1994) for a survey of the theoretical literature on this topic. See Jefferson (1998) for an application of the theory to issues raised by China's SOEs.

modes is more ambiguous than theory suggests. For example, evidence for manufacturing plants in Malaysia (Oguchi et al. 2002; Haji Ahmad 2010) and Thailand (Ramstetter 2004, 2006) suggests that productivity differentials between MNCs and non-MNCs were relatively small and were often statistically insignificant.⁴ Indonesian evidence suggests that productivity differentials were somewhat larger and statistically significant in samples of all manufacturing plants combined (with intercept dummies to capture industry effects). However, differentials often become statistically insignificant when plants are disaggregated by industry (allowing for differences in production function slopes, Takii 2006). Evidence for China suggests significant differences in both capital- and labor-productivity when all manufacturing firms are combined (Jefferson and Su 2006), but we know of no firm-level estimates for disaggregated industries.

For Vietnam, Nguyen, T.T.A. et al. (2006) show that MNCs had relatively high sales per employee in three manufacturing groups (mechanics and electronics, textiles, garments, and footwear, and food processing) in 2001-2003. Athukorala and Tran (2010) indicate that MNCs had relatively high productivity in a sample of all manufacturers for 2000-2005, but industry-level estimates again suggest that MNC- or SOE-private differentials were often insignificant (Ramstetter and Phan 2008). Alternative evidence shows that MNC takeovers of SOEs have generated larger productivity gains than takeovers by local, private companies in Eastern Europe (Brown et al. 2004, 2005).

Direct evidence regarding differences between SOEs and non-SOEs is rather limited and focused on transition economies. For China, Jefferson and Su's (2006) results indicate that capital- and

⁴ Other evidence from Malaysia (Menon 1998, Oguchi et al. 2002) indicates that the growth of total factor productivity (TFP) was often less rapid in MNCs than non-MNCs.

labor-productivity were significantly lower in SOEs than private firms or MNCs, who had the highest productivity by both measures. Their results also indicate that conversion of SOEs to shareholding corporations contributed to increases in productivity. Results from Brown et al. (2004, 2005) suggest that privatization resulted in relatively large productivity gains in manufacturing firms in Hungary and Romania, but relatively small gains in Ukraine, and declines in Russia. Evidence from firms in 25 transition economies located Eastern Europe, the Commonwealth of Independent States (CIS), and Central Asia also suggests that the degree of competition had a key impact on privatization outcomes (Carlin et al. 2001). The survey by Djankov and Murrell (2002) reinforces this finding in the case of Eastern Europe, but not in the case of the CIS. The one known study of privatization in Vietnam (Truong et al. 2006) is also consistent with the proposition that privatization improves firm performance. On the other hand, Nguyen's (no date; 2004) study of textiles and apparel firms found that SOEs are more efficient than locally owned private firms, but less efficient than MNCs in this industry.⁵

Most of this evidence seems consistent with the conclusion of Megginson and Netter's (2001, p. 380) survey that "Research now supports the proposition that privately owned firms are more efficient and more profitable than otherwise-comparable state-owned firms". However, the studies reviewed above, as well as earlier surveys by Aharoni (2000), and Stretton and Orchard (1994), also

⁵ Vu (2003, p. 87) also suggests that Vietnam's SOEs "recorded a rather high level of technical efficiency, as well as a moderate improvement in technical efficiency between 1997 and 1998". Industry-level evidence from Vietnam's industrial survey of 1998 data also suggests SOEs generally had higher labor productivity and wage levels than local plants but lower levels than MNCs (Phan and Ramstetter 2004, pp. 390-391).

highlight a number of cases in which SOE do not appear to be less profitable and/or less efficient than private firms. Thus, the size and direction of productivity differentials between SOEs and non-SOEs, and between MNCs and non-MNCs, remains an empirical matter.

2a. Productivity Spillovers

The spillover literature focuses on how MNCs' possession of ownership advantages and related firm specific assets can result in MNC presence affecting the performance of non-MNCs. For example, MNCs purchase inputs from local suppliers or subcontract certain production lines to local firms. Especially in developing countries such as Vietnam, the local supplier base is relatively weak and MNCs often teach local suppliers how to guarantee quality control commensurate with MNC requirements. Labor mobility, which is rather high among relatively skilled workers in Southeast Asia's developing economies, is a second avenue of spillovers from MNCs. Local firms headhunt talent from MNCs, who have often learned relatively sophisticated business practices in the MNC. There are also examples of local workers quitting an MNC to start firms which produce goods and/or services that compete with and/or serve as inputs for their former MNC employers. The entry of MNCs can also increase the level of competition in a host market, forcing local firms to increase their efforts to become more efficient, and the extent of this kind of spillover may have a close relationship to market structure or producer concentration.

Several reviews emphasize that empirical evidence regarding productivity spillovers is mixed (Görg and Greenaway 2003; Lipsey and 2005). In Asia, there is growing evidence consistent with

the existence of positive productivity spillovers in China (Buckley et al. 2006, 2007; Hale and Long 2006; Tong and Hu 2003; Wei and Lu 2006), Indonesia (Takii 2006), and Thailand (Kohpaiboon 2006, Ramstetter 2006). Kohpaiboon's cross section study of Thai manufacturing highlights how spillovers tend to be higher in industries where import protection is relatively weak, while Kokko (1996) emphasizes how competition between MNCs and local firms appears to have fostered relatively large productivity spillovers in Mexico. However, recent evidence for Malaysia (Khalifah and Adam 2009; Haji Ahmad 2010) suggests spillovers are sensitive to how foreign presence is measured (e.g., employment, production, fixed assets) and the degree of industry disaggregation.

For Vietnam, cross section results tend to suggest some degree of positive spillovers, but evidence from panel analysis is relatively weak. Nguyen, T.T.A. et al. (2006) conclude that "there is little evidence of positive spillover effects at the firm level", though there are also "no signs of negative spillover effect either" (p. 56). In contrast, Pham's (2008) cross section, Cobb-Douglas estimates generally suggested positive spillovers that were largest in Hanoi and Ho Chi Minh City, and from MNCs that were not wholly-foreign. Combining firm-level data for 2000-2005 with the 2000 input-output table, Nguyen, P.L. (2008) estimates cross section Cobb Douglas functions finding that both horizontal and vertical spillovers were generally positive, and largest in more advanced regions and in more sophisticated local firms. Analysis of an unbalanced panel of the same data, Nguyen, N.A. et al. (2008) finds that backward, vertical spillovers were positive in manufacturing, while horizontal spillovers were positive in services. Using a similar approach, Le and Pomfret (2008) find positive backward spillovers in manufacturing but negative horizontal spillovers during 2000-2004,

which were relatively strong on private firms, domestic-oriented firms, firms without R&D, and firms in low technology industries.

Few studies analyze productivity spillovers from SOEs, probably because SOEs are not thought to possess the firm-specific assets and competitive advantages of MNCs.⁶ On the other hand, Vietnam's policy makers often emphasize how SOEs should play leading roles in industry and that private firms should seek to cooperate with SOEs (Vu 2005, pp. 304-306). Correspondingly, the government has regulated MNCs, and particularly private firms, rather strictly in industries where SOEs dominate. Because these regulations can encourage inefficiency, it is also interesting to see if large SOE presence is correlated with productivity in Vietnam's private firms

3. Ownership Patterns, Productivity Differentials, and Related Indicators

In 2000, Vietnam implemented a new Enterprise Law, which removed many of the legal and regulatory barriers previously faced by private businesses (Van Arkadie and Mallon 2003, pp. 164-169). This law and subsequent reforms removed many ownership-related biases in Vietnam's corporate sector.⁷ Implementation has been uneven, but these policy changes have contributed to rapid increases in the number of manufacturing firms with positive employment and sales, from 10,366 in 2000 to 25,968 in 2006 and 38,249 in 2008.⁸ Manufacturing employment and sales also

⁶ Gabriele (2001) discusses the possibility of positive productivity spillovers from SOEs in China.

⁷ Subsequent reforms included implementation of U.S.-Vietnam Bilateral Trade Agreement in 2001, gradual reductions of tariffs and non-tariff barriers in conjunction with the ASEAN (Association of Southeast Asian Nations) Free Trade Area, and further revisions of Investment and Enterprise Laws in 2006, which were related to Vietnam's accession to the World Trade Organization.

⁸ These are authors' compilations from General Statistics Office (various years b). They differ

grew very quickly, from 1.6 to 3.3 and 3.9 million and from 246 to 857 and 1,507 trillion dong, respectively (Table 1). Growth was concentrated in private firms, who benefited most from the changes. SOE shares of manufacturing firm sales fell from 38 to 19 and 13 percent, respectively, while MNC shares rose from 41 to 47 percent before falling to 45 percent, respectively.⁹

Table 1 about here

The enterprise data imply relatively rapid decreases in SOE shares of the corporate sector, which contrast sharply with corresponding trends in nation-wide estimates for GDP and employment (Table 1). SOE shares of non-household GDP (value added) and SOE shares of all firm sales, including non-manufacturers, were similar in 2000 (57 and 55 percent, respectively). The SOE share of firm sales fell rapidly to 25 percent in 2008, but the SOE share of non-household value added remained much higher (51 percent).¹⁰ On the other hand, trends in MNC shares are more consistent in nation-wide and enterprise survey estimates.

Because estimates of value added (or intermediate consumption) and fixed assets are crucial for productivity analysis, this study focuses on subsamples of enterprises reporting positive values for these variables as well as sales and employment. For 2000 (10,100 firms) to 2006 (24,217 firms),

slightly from published compilations (General Statistics Office, various years a), primarily because firms with duplicate records in a year and firms reporting non-positive employment and sales were excluded. The data supplied to us also appear to differ slightly from those underlying published compilations. Please contact the authors for details (see also Appendix B).

⁹ SOE shares of manufacturing employment also fell precipitously, but MNC shares rose rapidly (from 22 to 41 and 43 percent, respectively). In other words, private shares of employment were initially larger and increased less rapidly than private shares of sales.

¹⁰ The SOE share of employment (including households) rose slightly in 2000-2008 (9.3 to 10.9 percent), partially because the corporate sector, including SOEs, grew relatively rapidly. However, the nation-wide trend still contrasts inexplicably with trends in the enterprise data, which suggest that the SOE share of firm employment fell from 59 to 20 percent.

value added samples were similar to the overall samples, but value added samples were much smaller than overall samples in 2007 and 2008.¹¹ The ratio of sales by firms reporting positive sales, employment, value added, and fixed assets to sales of all firms were only 85 percent in 2007 and 44 percent in 2008, compared to 95 percent in 2003, and 98-100 percent in 2000-2002, 2004-2006 (Table 1). If calculated using employment instead of sales, corresponding ratios were similar, but slightly lower in most years. Because the coverage of the value added data is poor for 2007 and 2008, the following analyses focus on 2000-2006.

Small firms with 19 or fewer employees differ systematically from larger firms and are predominantly private firms. In the value added samples, small firms were 49-56 percent of private firms in 2000-2006, but only 1-2 percent of SOEs and 7-9 percent of MNCs (authors' calculations). Small firms accounted for 18 percent of private firm sales in 2000 and 9-12 percent in 2001-2006, and 6-8 percent of private firm employment in 2000-2006, but no more than 1 percent of SOE or MNC employment or sales in any of these years. In the following analyses, we focus on comparisons among medium-large firms with 20 or more employees because comparisons among ownership groups are likely to be distorted if smaller, predominately private firms are included.¹²

Ownership shares differed greatly depending on the industry. SOEs have always had a relatively

¹¹ The value added sample consisted of 17,294 firms in 2007 and 15,939 in 2008, primarily because value added estimates were not available for a large number of firms (11,107 and 19,730, respectively; authors' calculations [see also Appendix B]). Intermediate consumption data are not collected directly from firms but estimated for major products of each firm using industry-level estimates. We use value added as the measure of production because it yields more meaningful measures of average productivities than sales and because it reduces the number of parameters and the potential for multicollinearity in the econometric estimates.

¹² The elimination of small firms from the sample also removes most firms with extreme values for key variables (e.g., average labor productivity or average capital productivity).

large presence in heavy manufacturing industries such as the chemicals and metals groups in Table 2. On the other hand, SOE shares were generally relatively small in machinery and transport equipment, and fell from relatively high to relatively low levels in the food, textiles, and wood groups. SOE shares were also very high in the small, heterogeneous group of other manufacturing, primarily because of large SOE presence in tobacco and printing/publishing.

Table 2 about here

Table 2 indicates that shares of wholly-foreign MNCs tended to rise, while shares of MNC joint ventures tended to fall. Shares of wholly-foreign MNCs rose in all of the industries in Table 2 and were particularly large in textiles (much of which is footwear) and machinery, where shares rose conspicuously from 2002 to 2006. Wholly-foreign shares were smallest but tended to rise in the metals, food, and transportation equipment. They were close to the manufacturing average in chemicals for most years and relatively small in food. Shares of MNC joint ventures were by far the highest in transportation equipment but tended to decline in this industry and in metals, the other group with a relatively large initial share. Shares were close to the manufacturing average in chemicals and machinery. Joint ventures with SOEs were rather common in these four industry groups. On the other hand, shares of joint ventures were relatively small in the remaining industries.

Among medium-large firms in the value added samples, there was large variation of mean, real value added per worker across years, industries, and ownership groups (Table 3).¹³ In marked contrast to nationwide estimates, which suggest rather steady increases in manufacturing value added

¹³ The deflator of manufacturing output for 2-digit categories (General Statistics Office, various years c) is used to estimate real value added in all ownership groups.

per worker during 2000-2006, the enterprise data suggest unusual spikes in 2000 and 2003 in both nominal and real series. On the other hand, nationwide estimates and enterprise data suggest similar increases in average labor productivity in 2001-2004 and 2004-2006. Moreover, the unusual spikes are observed in most owner-industry combinations in 2000 and 2003, which suggests the estimates for these years differ systematically from those for other years.

Table 3 about here

According to the data in Table 3, both wholly-foreign MNCs and joint ventures generally had higher labor productivity than SOEs or private firms. Relative to private firms, average labor productivity differentials were often very large (2-fold or more) for joint ventures in all industries except textiles. Corresponding differentials were smaller for wholly-foreign MNCs, but average labor productivity was 1.5-fold or more than in private firms for at least five of the seven years in all industries except wood. Differentials between SOEs and private firms tended to be even smaller, exceeding 1.2-fold for all seven years in wood, five years in chemicals, and four years each in metals and transportation equipment, but only two years in the remaining industries. Average labor productivity was also lower in SOEs than in private firms for four years in machinery, three years in transportation equipment, and less frequently in four other industries.

In contrast, calculations of mean value added-fixed asset ratios in Table 4 indicate average capital productivity was generally lower in MNCs than in private firms, and often lower than in SOEs.¹⁴ Average capital productivity was only half or less of private firm levels in six or seven years for

¹⁴ Fixed assets are original book values net of accumulated depreciation as reported by firms.

wholly-foreign MNCs in all industries except wood. The same was true for MNC joint ventures in all industries except wood and machinery. Similarly large, negative differentials were also common for SOEs in textiles (all years), food, wood, and metals (five years each), and machinery (four years). The fact that MNCs and SOEs tended to have relatively high average labor productivity but relatively low average capital productivity reflects a tendency for MNCs and SOEs to use more fixed assets per worker than private firms.¹⁵ MNCs and SOEs also tend to be much larger than private firms, which may also contribute to relatively high labor productivity levels.¹⁶ The following section thus attempts to measure productivity differentials and spillovers after accounting for differences in size and factor intensity.

Table 4 about here

4. Productivity Differentials after Accounting for Firm and Industry Characteristics

In order account for differences in factor intensities and scale, and to allow for the most flexible assumptions about technology, translogarithmic (translog) production functions are estimated. The constant in these equations reflects productivity not explained by variation in labor and capital, and is commonly called total factor productivity (TFP). This interpretation can be problematic, however, because the constant not only reflects productivity after accounting for the use of capital and labor,

¹⁵ For example, mean ratios of fixed assets per employee in all manufacturing (excluding other manufacturing) were 2.9-7.3 times larger than private firms for wholly-foreign MNC in 2000-2006, 4.9-16.3 times larger for joint ventures, and 1.6-2.5 times larger for SOEs (authors' calculations).

¹⁶ For example, mean value added per firm in all manufacturing (excluding other manufacturing) was 3.7-7.8 times larger than private firms for wholly-foreign MNC in 2000-2006, 9.1-13.4 times larger for joint ventures, and 4.0-8.6 times larger for SOEs (authors' calculations).

but also errors in measurement and specification, which can be substantial. Nonetheless, this approach is standard in the literature and has been adopted by most of the studies reviewed above.¹⁷

The effects of producer concentration on productivity are investigated by adding either the 4-firm concentration ratio or the Herfindahl index for 37 industries, which were generally defined at the 3-digit level, to the production function.¹⁸ Concentration measures come from larger samples of all firms reporting positive sales and employment (c.f. Table 2), because they are designed to include the effect of competition from smaller firms and other firms excluded from the estimation sample (e.g., firms with missing variables or negative value added). Producer concentration tended to fall over this period in Vietnam with the mean 4-firm concentration ratio in these 37 industries declining from 45 percent in 2000 to 36 percent in 2006. Relatively large declines of 10 percentage points or more were relatively common, being observed in 15 of the 37 industries.¹⁹

Dummy variables for wholly-foreign MNCs, MNC joint ventures, and SOEs are also added, their coefficients revealing whether ownership-related TFP differentials between these groups and private firms remain after accounting for firm-level inputs and industry-level characteristics:

$$(1) LV_{ijt} = a0 + a1(LE_{ijt}) + a2(LK_{ijt}) + a3(LE_{ijt}^2) + a4(LK_{ijt}^2) + a5(LELK_{ijt}) + a6(DS_{ijt}) + a7(DM_{ijt}) + a8(DJ_{ijt}) + a9(C_{jt})$$

¹⁷ In addition to accounting for the influences of labor and capital, Ramstetter and Phan (2008) tried to account for the effects of skilled-labor intensity, which was proxied by including the share of science and technology workers in the production function. However, these data are not available for 2001, 2003, and 2005-2006.

¹⁸ 3-digit categories were used except when they contained too few firms. Printing and publishing, petroleum products, recycling, and miscellaneous manufacturing other than furniture were omitted from the regression analysis because they differ markedly from other industries and are quite small.

¹⁹ These calculations use 2005 instead of 2006 for one industry, electricity distribution machinery (VSIC 312) because no firms were classified in this industry in 2006. Similar trends are also observed in the Herfindahl index (details available from authors and Appendix B).

$$(2) LV_{ijt} = b0 + b1(LE_{ijt}) + b2(LK_{ijt}) + b3(LE_{ijt}^2) + b4(LK_{ijt}^2) + b5(LELK_{ijt}) + b6(DS_{ijt}) + b7(DM_{ijt}) + b8(DJ_{ijt}) + b9(H_{jt})$$

where

C_{jt} =4-firm concentration ratio of industry j in year t

DJ_{ijt} =dummy variable for MNC joint venture firm i of industry j in year t

DM_{ijt} =dummy variable for wholly-foreign MNC firm i of industry j in year t

DS_{ijt} =dummy variable for SOE firm i of industry j in year t

H_{jt} =Herfindahl index (ratio) of industry j in year t

LE_{ijt} =natural log of the number of employees in firm i of industry j in year t

$LELK_{ijt}$ =the product of LE_{ijt} and LK_{ijt}

LK_{ijt} =natural log of fixed assets in firm i of industry j in year t (million dong, 1994 prices)

LV_{ijt} =natural log of value added in firm i of industry j in year t (million dong, 1994 prices).²⁰

Estimates are performed in a highly unbalanced panel, reflecting high growth and substantial entry and exit during 2000-2006. Because ownership does not change for the vast majority of firms in the sample, ownership is itself a fixed effect for most firms. Thus, a fixed effects estimator would eliminate most ownership-related productivity differentials and a random effects estimator is used to analyze the question of whether TFP levels differ among ownership groups.²¹

Partially because labor and capital are measured at yearend and affected by the level of production during the year, estimates of the contemporaneous equations (1) and (2) are likely to be affected by simultaneity bias. Concentration is also clearly affected by the scope of firm production and another source of potential simultaneity. Results from estimating contemporaneous equations are thus compared to results where labor, capital, and concentration variables are lagged one period. Ownership dummies are not lagged because they are predetermined for most firms in each year. This

²⁰ Logged variables are defined as deviations from their respective means to reduce the potential for multicollinearity. Both value added and fixed assets are deflated with the same deflator (see footnote 13 above).

²¹ A pooled regression model is another alternative, but results of the Breusch and Pagan test for random effects suggests the random effects model is preferred in almost all cases examined.

approach is rather unsatisfactory because it does not account for the exact nature of potential simultaneity and because lagging these independent variables results in substantially smaller samples. However, it is the only practical alternative given the lack of appropriate instruments in this data set.

As is common practice, vectors of industry, time, and region dummies are added to account for industry-, year-, and region-specific differences in intercepts.²² In addition, separate production functions are estimated for the seven major industry groups discussed above and two subperiods (2001-2003, 2004-2006). These estimates suggest differences in many slopes across industries and over time. This finding makes sense in Vietnam where there are large differences among industries and the economy has been changing rapidly.

Although all details are not presented here to save space, production function estimates were generally in line with expectations.²³ Measures of fit were satisfactory (overall R-squared was a minimum of 0.60) and coefficients on labor and capital were always positive and statistically significant at standard levels (5 percent or better). Coefficients on the square of capital were also positive and significant in the vast majority of estimates, but signs on labor squared and the interaction terms were most often insignificant. Tests of Cobb-Douglas restrictions were rejected in most cases, indicating that the translog form is the most appropriate for this analysis.

Samples were relatively large, the smallest being the lagged samples in machinery and

²² Industry dummies are defined at the same level of aggregation as the concentration variables. Regional dummies distinguish provinces by 3 groups of population density in 2007 (less than 500 people per square meter, 574-1272, and above 3000) and 5 regional locations (Red River Delta, northeast and northwest, center, southeast, and Mekong Delta).

²³ Estimation details are available from the authors (see also Appendix Table A1).

transportation equipment in 2001-2003 (1,105 and 802 firms, respectively). As indicated above, samples were substantially smaller in the lagged specifications. For example, the entire sample was 55,306 firms for 2001-2006 in the contemporaneous specification but 38,059 in the lagged one.

Table 5 summarizes results for coefficients measuring ownership-related productivity differentials and the productivity effects of concentration. Estimates of SOE-private differentials were consistently positive and significant at standard levels (5 percent or better) in samples of all manufacturing firms combined. However, at the industry level, this was true in only two industries, wood and metals. If differentials that were weakly significant (10 percent level) are also included, consistently positive coefficients are observed in food and beverages and textiles, and in the contemporaneous estimates for chemicals. These estimates suggest that SOE-private differentials declined in food and beverages, textiles, and wood, rose in chemicals, changed very little in metals, and rose slightly when all industries were combined. In contrast, SOE-local differentials were not consistently significant in machinery and transportation equipment, but there was weak evidence that these differentials became positive and significant in 2004-2006.

Table 5 about here

Results in Table 5 are also consistent with previous descriptive analysis in suggesting that MNC joint ventures tended to have the highest productivity levels among ownership groups.²⁴ These differentials were always highly significant statistically (at the 1 percent level or better) in samples of

²⁴ To the extent that ownership is related to integration with the parent group, this result is somewhat at odds with Moran's (2001) expectations discussed above. However, similar results have also been found in several industries for Indonesia (Takii 2006) and Thailand (Ramstetter 2006).

all manufacturing industries combined and at standard levels in textiles, metals, machinery, and transportation equipment. In 2004-2006, these differentials were also consistently positive and significant in wood and chemicals, and weakly significant in food and beverages. Unlike SOE-private differentials, these differentials tended to increase over time, the decline in textiles and the small change in machinery being the only exceptions. The variation of these differentials among industries (e.g., from 0.28-0.46 in textiles to 0.85-0.91 in transportation equipment in 2004-2006) was also relatively large compared to SOE-local differentials, for example.

In contrast to SOE-private and joint venture-private differentials, differentials between wholly-foreign and private firms differed between the contemporaneous and lagged specifications (Table 5). In the contemporaneous specification they were generally insignificant. However, they were consistently negative and significant or weakly significant in metals and machinery, and in all industries combined, wood, and chemicals for 2001-2003. In 2004-2006, there was only one positive and weakly significant positive differential in the contemporaneous specification (wood).

In contrast, there was only one weakly significant, negative differential in the lagged specification (metals in the early period; Table 5). Differentials were always positive and significant when all industries were combined and in textiles. In 2004-2006, they were positive and significant at standard levels in food, wood, chemicals, metals, and machinery, and weakly significant in transportation equipment. Unfortunately, it is impossible to determine whether differences in contemporaneous and lagged results are related to simultaneity bias in the contemporaneous specification or the omission of many firms in the lagged samples, or both. However, the lagged results reflect patterns observed in

the descriptive data (c.f., Tables 3-4) more than the contemporaneous results.

The significance and signs of the productivity effects of concentration were never consistent across periods and estimation techniques in any of the industry groups or in manufacturing industries combined. On the other hand, when significant, signs on the two concentration measures ($C4$ and HF) were usually the same, which reflects the relatively high correlation of these measures.²⁵ There are important differences between the contemporaneous specification, which suggests concentration's effects were never consistently significant in any of the samples examined, and the lagged specification, which indicates concentration was negatively correlated with productivity in wood, and positively correlated in metals, and that these correlations were at least weakly significant. In the earlier period, there was a significantly negative correlation in food and a positive one in all industries combined. However, the most reasonable conclusion seems to be that concentration's relationship to productivity was haphazard during this period in Vietnam's manufacturing industries.

5. Productivity Spillovers to Private Firms

The extent of productivity spillovers to private firms is examined by estimating equations similar to (1) to (2) in samples of private firms, where SOE and MNC shares of industry employment are added as explanatory variables.

$$(3) \quad LV_{ijt} = c0 + c1(LE_{ijt}) + c2(LK_{ijt}) + c3(LE_{ijt}^2) + c4(LK_{ijt}^2) + c5(LELK_{ijt}) + c6(SS_{ijt}) + c7(SM_{ijt}) \\ + c8(SJ_{ijt}) + c9(C_{jt})$$

²⁵ Industry-level correlation coefficients between the two measures varied from 0.79-0.81 in 2000-2001 to 0.93-0.94 in 2003 and 2006.

$$(4) LV_{ijt} = d0 + d1(LE_{ijt}) + d2(LK_{ijt}) + d3(LE_{ijt}^2) + d4(LK_{ijt}^2) + d5(LELK_{ijt}) + d6(SS_{ijt}) + d7(SM_{ijt}) + d8(SJ_{ijt}) + d9(H_{jt})$$

where

SJ_{jt} =the MNC joint venture share in the employment of industry j in year t (ratio)

SM_{jt} =the wholly-foreign MNC share in the employment of industry j in year t (ratio)

SS_{jt} =the SOE share in the employment of industry j in year t (ratio)

all other variables as defined in equations (1) to (2) above

Like concentration, SOE and MNC shares are calculated from larger samples of all firms reporting positive sales and employment in order to reflect overall presence of these ownership groups.

Coefficients on ownership shares reflect how private firm production responds to SOE or MNC presence and are generally interpreted to indicate the degree of productivity spillovers from the ownership group in question to private firms.

Following the usual practice, results of estimating these equations are first analyzed for samples of all 37 narrowly defined manufacturing industries. In addition, spillovers were compared between samples of 14 industries that were highly concentrated in both 2001-2003 and 2004-2006 and another 14 industries that were lowly concentrated in both periods. In other words, these spillover analyses are similar to most of those in the literature in that they fail to account for inter-industry differences in slope coefficients to the extent that the previous analysis of productivity differentials did, for example. In addition, because we remain concerned about simultaneity, contemporaneous estimates (equations 3, 4) are compared with alternative lagged specifications. In this case, we lag all independent variables including ownership shares, because like concentration measures, ownership shares can be influenced by the scope of large firm production.

Fixed effects panel estimates are common in the spillover literature because they measure how

private firm productivity changes over time after controlling for unobserved firm-specific characteristics, in addition to the observable characteristics specified in equations (3) and (4). In many ways, fixed effects estimates are more appropriate for examining spillovers, because they focus more on the question of whether larger MNC or SOE presence leads to increases or decreases of productivity in private firms over time, rather than on the question of whether productivity in private firms at a given point in time is related to the size of MNC or SOE presence. By focusing on changes in productivity rather than productivity levels, fixed effects estimates are also less likely to be affected by simultaneity problems. Thus, we follow the literature and use a fixed effects estimator. Because industry affiliation and location are fixed effects for most firms, corresponding dummies are excluded from the spillover analysis, though year dummies are included.

In general, estimates for private firms performed somewhat more poorly than estimates for all firms presented in the previous section. Goodness of fit measures were lower, especially in the lagged specifications (overall R-squared as low as 0.31 for all industries in 2001-2003 and 0.08 for highly concentrated industries in 2004-2006). Coefficients on labor and capital variables continued to be significant in all cases but signs on squares or cross products were often insignificant. Correspondingly, tests of the null hypothesis that Cobb-Douglas restrictions were appropriate were not rejected for highly concentrated industries and in about half of the cases for lowly concentrated industries or all industries. Sample size remained large enough that translog specifications were judged preferable for comparisons across industries and samples, however.

Coefficients on MNC or SOE shares and concentration are the main concern here and summarized

in Table 6. The lack of consistent results between contemporaneous and lagged specifications and between equations (3) and (4) is conspicuous in estimates for all manufacturing combined. SOE shares were positively correlated with local firm productivity in 2004-2006 in both contemporaneous and lagged specifications, but this result is significant (at standard levels) only when the concentration ratio (equation 3) is used to measure concentration. In 2001-2003, there was a negative correlation to the SOE share, but it was only significant in the lagged specification. Correlations to shares of wholly-foreign firms were negative and significant in 2001-2003, but insignificant in 2004-2006. Coefficients on joint venture shares were negative and significant in the lagged specification in 2001-2003, but insignificant in the contemporaneous specification. These coefficients were also negative in 2004-2006, but only weakly significant or insignificant. Both contemporaneous and lagged specifications suggested a positive correlation to concentration in 2001-2003, but this correlation became negative and significant or weakly significant in 2004-2006.

Table 6 about here

Results for highly concentrated and lowly concentrated industries were similarly inconsistent depending on the specification used with one notable exception. Namely, the positive correlation of private firm productivity to concentration observed in all manufacturing in 2001-2003 was also observed in lowly concentrated industries (Table 6). This suggests that private firms in lowly concentrated industries tended to be more productive the higher the degree of concentration. Nonetheless, these results do not support any clear, general conclusion about the nature of concentration's effect on productivity in private firms or all firms (c.f., Table 5). Similarly, there are

no consistent indications of productivity spillovers from MNCs or SOEs to private firms.

6. Conclusion

This paper has examined relationships between producer concentration, firm ownership, and productivity in Vietnam's manufacturing enterprises in 2000-2006. Simple calculations indicate that wholly-foreign MNCs, MNC joint ventures and SOEs often had substantially higher labor productivity and lower capital productivity than local, private firms. After controlling for firm-level variation in factor intensities and scale, and industry-level variation in producer concentration, as well as generic effects related to industry, region, and year of operation, TFP differentials between MNC joint ventures or SOEs on the one hand, and private firms on the other, were generally positive and often significant statistically. On the other hand, differentials between wholly-foreign MNCs and private firms were generally insignificant or negative in 2001-2003 and in the contemporaneous specification for 2004-2006, but more often positive and significant, when a lagged specification is used to account for potential simultaneity in 2004-2006. There was large variation in the size of all differentials among industries and between periods (2001-2003 and 2004-2006), but estimates of differentials were not very sensitive to how concentration was measured and concentration was usually an insignificant determinant of firm-level productivity. Estimates of productivity spillovers from SOEs and MNCs to private firms also tended to be insignificant statistically and were particularly inconsistent among the samples (all, highly-concentrated, or lowly-concentrated industries), periods, and specifications examined.

As the literature review emphasizes, large variation of MNC-local productivity differentials

among MNC ownership groups, industries, and/or periods has also been observed in previous industry-level studies for Indonesia, Malaysia, and Thailand. Significant industry-level differentials between MNC joint ventures and local firms were somewhat more common in Vietnam than in other Southeast Asian economies, but wholly-foreign-local differentials have a similar tendency to be insignificant and all differentials varied substantially over this relatively short time period. In other words, allowing all production function coefficients to vary among industries and over time influences estimates of productivity differentials substantially. Correspondingly, combining manufacturing industries into a single sample or two samples may lead to unreliable estimates of productivity differentials or spillovers.

Rapid economic growth and important institutional changes (e.g., the implementation of the Corporate Law in 2000) encouraged entry and turnover, and explain much of the variation in data samples and results over time. There were also potentially problematic changes in data coverage, but samples have been carefully chosen to minimize related problems. In short, the results are probably realistic and largely consistent with the view that Vietnam's manufacturing firms, especially wholly-foreign MNCs and private firms, are often engaged in assembly operations using relatively simple technologies, and that private firms are often quick to imitate MNC and SOE competitors.

However, these rather standard estimates are only a first step toward understanding related issues, and there is a relatively long list of tasks for future research. First, although we have done a lot of work cleaning the data, further efforts to remove errors and resolve inconsistencies with nation-wide estimates are warranted. Second, variation among industries is apparently large, but industry

definitions are always rather arbitrary. Experimentation with alternative definitions and alternative industry groupings (for spillover analysis) should also be pursued. Third, alternative measures of foreign presence (i.e., shares of production or fixed assets) have also been shown to influence spillover estimates and should be investigated. Fourth, further efforts to deal with potential simultaneity problems are warranted, but complicated by the lack of good instruments in the data. Fifth, although this period of rapid change is interesting, large changes in samples over time make it difficult to interpret the results. Because the pace of change inevitably has to slow some, it will be very important to revisit these issues as time passes.

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Table 1: Estimates of Production (trillion dong, current), Employment (millions), and Shares of SOEs and MNCs (percent)

| Owner, industry | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Sales of firms with positive sales & employment | | | | | | | | | | |
| All industries | 809 | 933 | 1,152 | 1,405 | 1,617 | 2,020 | 2,395 | 3,157 | 5,083 | - |
| SOEs (% of total) | 55 | 51 | 50 | 46 | 38 | 35 | 29 | 26 | 25 | - |
| MNCs (% of total) | 20 | 19 | 19 | 20 | 23 | 23 | 25 | 23 | 19 | - |
| Manufacturing | 246 | 299 | 361 | 452 | 584 | 707 | 857 | 1,144 | 1,501 | - |
| SOEs (% of total) | 38 | 33 | 32 | 29 | 26 | 23 | 19 | 16 | 13 | - |
| MNCs (% of total) | 41 | 39 | 42 | 43 | 44 | 44 | 47 | 45 | 45 | - |
| Sales of firms with positive sales, employment, value added, & fixed assets | | | | | | | | | | |
| Manufacturing, 20+ workers | 235 | 288 | 346 | 416 | 564 | 671 | 825 | 953 | 626 | - |
| SOEs (% of total) | 40 | 34 | 33 | 31 | 27 | 23 | 20 | 17 | 19 | - |
| MNCs (% of total) | 43 | 40 | 43 | 44 | 45 | 46 | 48 | 50 | 43 | - |
| Manufacturing, 1-19 workers | 9 | 9 | 12 | 12 | 17 | 21 | 27 | 25 | 29 | - |
| Value added: national accounts estimates | | | | | | | | | | |
| Non-household value added | 299 | 328 | 367 | 425 | 499 | 588 | 685 | 804 | 1,041 | 1,160 |
| SOEs (% of total) | 57 | 56 | 56 | 56 | 56 | 55 | 53 | 51 | 51 | 50 |
| MNCs (% of total) | 20 | 20 | 20 | 21 | 22 | 23 | 24 | 26 | 26 | 26 |
| Manufacturing | 82 | 95 | 110 | 125 | 145 | 173 | 207 | 243 | 302 | 333 |
| Value added of firms with positive sales, employment, value added, & fixed assets | | | | | | | | | | |
| Manufacturing, 20+ workers | 97 | 69 | 81 | 179 | 128 | 152 | 183 | 355 | 182 | - |
| SOEs (% of total) | 39 | 35 | 35 | 27 | 30 | 26 | 22 | 16 | 18 | - |
| MNCs (% of total) | 25 | 20 | 23 | 27 | 28 | 30 | 33 | 33 | 29 | - |
| Manufacturing, 1-19 workers | 4 | 2 | 2 | 5 | 4 | 4 | 5 | 10 | 11 | - |
| Employment, nation-wide estimates | | | | | | | | | | |
| All industries | 37.61 | 38.56 | 39.51 | 40.57 | 41.59 | 42.77 | 43.98 | 45.21 | 46.46 | 47.74 |
| SOEs (% of total) | 9.3 | 9.3 | 9.5 | 9.9 | 9.9 | 11.6 | 11.2 | 11.0 | 10.9 | 10.5 |
| MNCs (% of total) | 1.0 | 1.2 | 1.5 | 1.9 | 2.3 | 2.6 | 3.0 | 3.5 | 3.6 | 3.4 |
| Manufacturing | 3.55 | 3.89 | 4.16 | 4.56 | 4.83 | 5.28 | 5.74 | 6.10 | 6.52 | 6.85 |
| Employment of firms with positive sales & employment | | | | | | | | | | |
| All industries | 3.53 | 3.91 | 4.54 | 5.02 | 5.46 | 6.01 | 6.14 | 6.94 | 8.10 | - |
| SOEs (% of total) | 59 | 54 | 48 | 43 | 36 | 31 | 23 | 21 | 20 | - |
| MNCs (% of total) | 12 | 12 | 15 | 17 | 19 | 20 | 23 | 23 | 23 | - |
| Manufacturing | 1.60 | 1.79 | 2.17 | 2.50 | 2.82 | 3.04 | 3.27 | 3.70 | 3.92 | - |
| SOEs (% of total) | 45 | 39 | 34 | 30 | 25 | 20 | 14 | 13 | 10 | - |
| MNCs (% of total) | 22 | 24 | 29 | 31 | 34 | 37 | 41 | 41 | 43 | - |
| Employment firms with positive sales, employment, value added, & fixed assets | | | | | | | | | | |
| Manufacturing, 20+ workers | 1.53 | 1.74 | 2.10 | 2.30 | 2.71 | 2.85 | 3.13 | 2.80 | 1.64 | - |
| SOEs (% of total) | 46 | 40 | 35 | 32 | 26 | 19 | 15 | 13 | 15 | - |
| MNCs (% of total) | 23 | 25 | 29 | 32 | 35 | 39 | 42 | 46 | 42 | - |
| Manufacturing, 1-19 workers | 0.04 | 0.04 | 0.05 | 0.05 | 0.07 | 0.08 | 0.10 | 0.06 | 0.08 | - |

Source: Authors' compilations from General Statistics Office (various years b, c).

Table 2: Sales and Ownership Shares of Firms with Positive Sales and Employment by Manufacturing Industry Group

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|------|------|------|------|------|------|------|-------|-------|
| Sales of All Manufacturing Firms (trillion dong, current) | | | | | | | | | |
| Manufacturing | 246 | 299 | 361 | 452 | 584 | 707 | 857 | 1,144 | 1,501 |
| Food, beverages | 70 | 78 | 95 | 106 | 135 | 165 | 187 | 264 | 358 |
| Textiles, apparel, leather, footwear | 39 | 44 | 54 | 69 | 85 | 104 | 143 | 152 | 184 |
| Wood, furniture, paper | 14 | 16 | 24 | 28 | 40 | 55 | 66 | 90 | 115 |
| Chemicals, rubber, plastics | 28 | 33 | 40 | 55 | 73 | 87 | 105 | 135 | 183 |
| Metals, non-metallic mineral prod. | 34 | 54 | 57 | 75 | 96 | 115 | 144 | 203 | 301 |
| Machinery | 29 | 32 | 38 | 50 | 65 | 80 | 103 | 142 | 171 |
| Transportation equipment | 20 | 27 | 36 | 47 | 63 | 70 | 74 | 114 | 137 |
| Other manufacturing | 13 | 15 | 18 | 21 | 26 | 31 | 35 | 44 | 53 |
| SOE shares (percent of industry totals) | | | | | | | | | |
| Manufacturing | 38 | 33 | 32 | 29 | 26 | 23 | 19 | 16 | 13 |
| Food, beverages | 41 | 35 | 36 | 32 | 27 | 20 | 17 | 13 | 9 |
| Textiles, apparel, leather, footwear | 36 | 33 | 30 | 26 | 23 | 19 | 13 | 13 | 10 |
| Wood, furniture, paper | 43 | 30 | 22 | 20 | 15 | 17 | 11 | 10 | 8 |
| Chemicals, rubber, plastics | 42 | 34 | 29 | 27 | 27 | 25 | 22 | 21 | 19 |
| Metals, non-metallic mineral prod. | 44 | 33 | 37 | 37 | 34 | 29 | 26 | 20 | 16 |
| Machinery | 19 | 21 | 19 | 17 | 14 | 13 | 12 | 10 | 8 |
| Transportation equipment | 19 | 18 | 17 | 16 | 18 | 21 | 16 | 15 | 13 |
| Other manufacturing | 70 | 71 | 66 | 66 | 59 | 57 | 50 | 47 | 42 |
| Wholly-foreign MNCs (percent of industry totals) | | | | | | | | | |
| Manufacturing | 22 | 21 | 23 | 25 | 28 | 29 | 32 | 31 | 32 |
| Food, beverages | 14 | 15 | 13 | 16 | 19 | 20 | 19 | 21 | 25 |
| Textiles, apparel, leather, footwear | 41 | 39 | 41 | 46 | 48 | 52 | 60 | 53 | 56 |
| Wood, furniture, paper | 12 | 18 | 28 | 24 | 29 | 29 | 34 | 34 | 33 |
| Chemicals, rubber, plastics | 18 | 19 | 21 | 23 | 25 | 24 | 29 | 29 | 33 |
| Metals, non-metallic mineral prod. | 8 | 7 | 11 | 11 | 12 | 14 | 16 | 16 | 15 |
| Machinery | 51 | 43 | 43 | 47 | 51 | 54 | 54 | 56 | 60 |
| Transportation equipment | 13 | 19 | 24 | 20 | 25 | 21 | 20 | 22 | 22 |
| Other manufacturing | 13 | 12 | 17 | 12 | 18 | 19 | 22 | 23 | 23 |
| MNC joint ventures (percent of industry totals) | | | | | | | | | |
| Manufacturing | 20 | 18 | 19 | 18 | 16 | 15 | 15 | 14 | 13 |
| Food, beverages | 13 | 12 | 12 | 12 | 10 | 10 | 10 | 10 | 9 |
| Textiles, apparel, leather, footwear | 6 | 7 | 6 | 7 | 6 | 6 | 5 | 6 | 5 |
| Wood, furniture, paper | 6 | 5 | 4 | 5 | 5 | 4 | 4 | 3 | 3 |
| Chemicals, rubber, plastics | 21 | 20 | 22 | 20 | 18 | 18 | 17 | 14 | 11 |
| Metals, Non-metallic mineral prod. | 31 | 23 | 25 | 21 | 18 | 16 | 16 | 15 | 13 |
| Machinery | 23 | 25 | 24 | 21 | 19 | 17 | 15 | 13 | 12 |
| Transportation equipment | 59 | 49 | 51 | 56 | 47 | 46 | 50 | 47 | 47 |
| Other manufacturing | 8 | 7 | 6 | 6 | 5 | 7 | 9 | 10 | 11 |

Source: Authors' compilations from General Statistics Office (various years b).

Table 3: Mean Value Added per Worker in Firms with 20 or More Employees and Positive Sales, Value Added, and Fixed Assets by Owner and Manufacturing Industry Group (million 1994 dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|------|------|
| Private Firms | | | | | | | |
| Manufacturing less other manuf. | 30 | 33 | 16 | 35 | 17 | 18 | 20 |
| Food, beverages | 53 | 20 | 20 | 60 | 23 | 22 | 25 |
| Textiles, apparel, leather, footwear | 12 | 8 | 9 | 13 | 9 | 9 | 11 |
| Wood, furniture, paper | 18 | 10 | 11 | 20 | 11 | 13 | 13 |
| Chemicals, rubber, plastics | 44 | 25 | 25 | 55 | 28 | 30 | 29 |
| Metals, non-metallic mineral prod. | 27 | 95 | 18 | 35 | 20 | 22 | 23 |
| Machinery | 37 | 21 | 23 | 43 | 19 | 20 | 21 |
| Transportation equipment | 42 | 22 | 12 | 27 | 12 | 15 | 19 |
| SOEs | | | | | | | |
| Manufacturing less other manuf. | 27 | 20 | 21 | 35 | 25 | 33 | 36 |
| Food, beverages | 27 | 24 | 22 | 46 | 26 | 31 | 37 |
| Textiles, apparel, leather, footwear | 13 | 8 | 8 | 12 | 10 | 12 | 16 |
| Wood, furniture, paper | 26 | 15 | 15 | 26 | 18 | 24 | 20 |
| Chemicals, rubber, plastics | 51 | 32 | 35 | 53 | 38 | 52 | 50 |
| Metals, non-metallic mineral prod. | 29 | 26 | 27 | 40 | 35 | 42 | 51 |
| Machinery | 27 | 19 | 18 | 38 | 22 | 30 | 37 |
| Transportation equipment | 24 | 17 | 21 | 25 | 21 | 46 | 27 |
| Wholly-foreign MNCs | | | | | | | |
| Manufacturing less other manuf. | 68 | 32 | 32 | 59 | 30 | 30 | 32 |
| Food, beverages | 84 | 55 | 57 | 123 | 58 | 52 | 60 |
| Textiles, apparel, leather, footwear | 32 | 15 | 12 | 23 | 16 | 14 | 16 |
| Wood, furniture, paper | 48 | 15 | 31 | 30 | 16 | 17 | 18 |
| Chemicals, rubber, plastics | 122 | 59 | 50 | 123 | 49 | 49 | 49 |
| Metals, non-metallic mineral prod. | 66 | 33 | 34 | 48 | 34 | 39 | 41 |
| Machinery | 85 | 38 | 40 | 78 | 39 | 37 | 34 |
| Transportation equipment | 68 | 27 | 35 | 43 | 29 | 31 | 30 |
| MNC joint ventures | | | | | | | |
| Manufacturing less other manuf. | 142 | 90 | 84 | 177 | 79 | 82 | 88 |
| Food, beverages | 105 | 71 | 60 | 136 | 69 | 66 | 72 |
| Textiles, apparel, leather, footwear | 35 | 18 | 14 | 27 | 16 | 15 | 14 |
| Wood, furniture, paper | 45 | 29 | 26 | 35 | 25 | 26 | 31 |
| Chemicals, rubber, plastics | 158 | 95 | 92 | 244 | 117 | 119 | 123 |
| Metals, Non-metallic mineral prod. | 202 | 121 | 125 | 216 | 113 | 115 | 121 |
| Machinery | 188 | 122 | 132 | 325 | 102 | 114 | 148 |
| Transportation equipment | 221 | 146 | 138 | 263 | 128 | 121 | 106 |
| Addenda: current value added per worker (million dong), calculated from Table 1 | | | | | | | |
| Nation-wide estimates | 23 | 24 | 27 | 28 | 30 | 33 | 36 |
| Manufacturing firms, all sizes | 64 | 39 | 39 | 78 | 47 | 53 | 58 |
| Manufacturing firms, 20+ workers | 63 | 39 | 39 | 78 | 47 | 53 | 59 |

Note: The relatively heterogeneous, small group of other manufacturing (tobacco, printing & publishing, oil & coal products, and miscellaneous manufacturing) is excluded.

Source: Authors' compilations from General Statistics Office (various years b).

Table 4: Mean Value Added-Fixed Asset Ratios in Firms with 20 or More Employees and Positive Sales, Value Added, and Fixed Assets by Owner and Manufacturing Industry Group

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--------------------------------------|-------|-------|------|-------|-------|-------|------|
| Private Firms | | | | | | | |
| Manufacturing less other manuf. | 6.37 | 7.01 | 4.40 | 9.57 | 4.40 | 4.01 | 4.01 |
| Food, beverages | 10.96 | 3.19 | 5.74 | 26.27 | 4.53 | 4.05 | 3.81 |
| Textiles, apparel, leather, footwear | 5.32 | 3.77 | 5.41 | 6.22 | 6.67 | 5.60 | 4.14 |
| Wood, furniture, paper | 4.84 | 3.26 | 5.52 | 5.49 | 3.99 | 3.82 | 3.71 |
| Chemicals, rubber, plastics | 5.12 | 3.43 | 2.51 | 5.84 | 2.48 | 3.91 | 4.81 |
| Metals, non-metallic mineral prod. | 4.04 | 18.30 | 2.88 | 5.76 | 4.11 | 3.33 | 3.80 |
| Machinery | 10.68 | 8.03 | 3.41 | 8.21 | 3.92 | 3.55 | 4.45 |
| Transportation equipment | 7.10 | 5.33 | 3.35 | 6.08 | 2.96 | 2.79 | 4.63 |
| SOEs | | | | | | | |
| Manufacturing less other manuf. | 2.65 | 1.68 | 1.57 | 2.70 | 2.57 | 4.56 | 2.30 |
| Food, beverages | 2.16 | 1.61 | 1.29 | 3.09 | 1.18 | 2.34 | 1.25 |
| Textiles, apparel, leather, footwear | 1.29 | 0.89 | 1.50 | 1.22 | 1.10 | 1.21 | 1.98 |
| Wood, furniture, paper | 6.85 | 2.35 | 1.46 | 2.19 | 1.72 | 1.41 | 0.96 |
| Chemicals, rubber, plastics | 4.07 | 3.38 | 2.23 | 3.19 | 2.59 | 4.24 | 2.23 |
| Metals, non-metallic mineral prod. | 1.77 | 1.36 | 1.46 | 1.95 | 1.38 | 11.54 | 1.24 |
| Machinery | 2.42 | 1.54 | 1.51 | 2.72 | 2.13 | 1.80 | 2.34 |
| Transportation equipment | 3.52 | 1.87 | 2.18 | 6.74 | 13.43 | 3.93 | 9.36 |
| Wholly-foreign MNCs | | | | | | | |
| Manufacturing less other manuf. | 1.25 | 0.80 | 1.08 | 2.30 | 1.40 | 2.25 | 1.31 |
| Food, beverages | 0.79 | 0.50 | 0.99 | 3.45 | 1.14 | 1.78 | 2.20 |
| Textiles, apparel, leather, footwear | 1.50 | 0.96 | 1.36 | 2.74 | 1.66 | 4.21 | 1.62 |
| Wood, furniture, paper | 1.26 | 0.78 | 1.08 | 1.63 | 2.12 | 2.15 | 1.19 |
| Chemicals, rubber, plastics | 0.91 | 0.64 | 0.78 | 2.49 | 0.96 | 0.99 | 0.81 |
| Metals, non-metallic mineral prod. | 1.63 | 0.77 | 0.90 | 1.28 | 1.09 | 1.10 | 1.20 |
| Machinery | 1.26 | 1.05 | 1.12 | 2.38 | 1.38 | 1.51 | 1.37 |
| Transportation equipment | 1.11 | 0.62 | 0.86 | 1.09 | 0.83 | 0.63 | 0.59 |
| MNC joint ventures | | | | | | | |
| Manufacturing less other manuf. | 2.19 | 0.92 | 1.17 | 2.83 | 1.78 | 1.54 | 1.83 |
| Food, beverages | 1.27 | 0.62 | 0.68 | 1.57 | 0.93 | 1.13 | 1.20 |
| Textiles, apparel, leather, footwear | 1.85 | 1.18 | 1.41 | 2.18 | 3.84 | 1.84 | 1.70 |
| Wood, furniture, paper | 1.12 | 0.87 | 1.33 | 4.55 | 2.27 | 2.32 | 2.32 |
| Chemicals, rubber, plastics | 1.35 | 0.73 | 1.10 | 3.48 | 1.12 | 1.17 | 1.11 |
| Metals, Non-metallic mineral prod. | 4.49 | 1.04 | 1.31 | 1.65 | 1.02 | 1.11 | 1.40 |
| Machinery | 2.30 | 1.18 | 1.64 | 6.01 | 1.59 | 2.39 | 4.81 |
| Transportation equipment | 0.82 | 0.72 | 0.79 | 2.06 | 1.48 | 1.33 | 1.37 |

Note: The relatively heterogeneous, small group of other manufacturing (tobacco, printing & publishing, oil & coal products, and miscellaneous manufacturing) is excluded.

Source: Authors' compilations from General Statistics Office (various years b).

Table 5: Coefficients Measuring SOE-Private and MNC-Private Productivity Differentials and the Productivity Effects of Concentration from Random Effects Production Function Estimates

| Indicator, industry group | 2001-2003 | | 2004-2006 | | 2001-2006 | |
|--|-----------|----------|-----------|----------|-----------|----------|
| | Eq. (1) | Eq. (2) | Eq. (1) | Eq. (2) | Eq. (1) | Eq. (2) |
| SOE-private productivity differentials, contemporaneous specification | | | | | | |
| Manufacturing less other manuf. | 0.228 a | 0.228 a | 0.246 a | 0.246 a | 0.233 a | 0.233 a |
| Food, beverages | 0.300 a | 0.304 a | 0.185 a | 0.183 a | 0.225 a | 0.229 a |
| Textiles, apparel, leather, footwear | 0.274 a | 0.278 a | 0.162 a | 0.160 a | 0.214 a | 0.210 a |
| Wood, furniture, paper | 0.384 a | 0.384 a | 0.317 a | 0.318 a | 0.286 a | 0.287 a |
| Chemicals, rubber, plastics | 0.207 c | 0.203 c | 0.334 a | 0.332 a | 0.181 b | 0.186 b |
| Metals, non-metallic mineral prod. | 0.227 a | 0.225 a | 0.234 a | 0.234 a | 0.231 a | 0.229 a |
| Machinery | -0.160 | -0.158 | 0.126 | 0.129 | 0.071 | 0.075 |
| Transportation equipment | -0.059 | -0.059 | 0.252 b | 0.252 b | 0.091 | 0.091 |
| SOE-private productivity differentials, lagged specification | | | | | | |
| Manufacturing less other manuf. | 0.201 a | 0.201 a | 0.205 a | 0.205 a | 0.193 a | 0.192 a |
| Food, beverages | 0.182 b | 0.180 b | 0.099 c | 0.100 c | 0.173 a | 0.172 a |
| Textiles, apparel, leather, footwear | 0.164 b | 0.164 b | 0.134 b | 0.133 b | 0.114 c | 0.112 c |
| Wood, furniture, paper | 0.314 a | 0.312 a | 0.280 a | 0.280 a | 0.238 a | 0.238 a |
| Chemicals, rubber, plastics | 0.193 | 0.193 | 0.276 a | 0.275 a | 0.157 b | 0.155 b |
| Metals, non-metallic mineral prod. | 0.171 b | 0.171 b | 0.168 a | 0.169 a | 0.180 a | 0.179 a |
| Machinery | -0.094 | -0.093 | 0.220 b | 0.220 b | 0.139 | 0.139 |
| Transportation equipment | 0.114 | 0.114 | 0.275 c | 0.276 c | 0.171 | 0.170 |
| Wholly-foreign MNC-private productivity differentials, contemporaneous specification | | | | | | |
| Manufacturing less other manuf. | -0.171 a | -0.171 a | -0.045 | -0.045 | -0.050 c | -0.050 c |
| Food, beverages | 0.052 | 0.055 | 0.044 | 0.044 | 0.068 | 0.075 |
| Textiles, apparel, leather, footwear | 0.006 | 0.006 | 0.007 | 0.005 | 0.015 | 0.013 |
| Wood, furniture, paper | -0.334 a | -0.334 a | 0.126 c | 0.127 c | 0.015 | 0.016 |
| Chemicals, rubber, plastics | -0.202 c | -0.201 c | 0.003 | 0.003 | -0.044 | -0.044 |
| Metals, non-metallic mineral prod. | -0.342 a | -0.343 a | -0.144 b | -0.144 b | -0.153 b | -0.155 b |
| Machinery | -0.329 b | -0.324 b | -0.323 a | -0.323 a | -0.312 a | -0.313 a |
| Transportation equipment | -0.318 | -0.322 | -0.103 | -0.110 | -0.164 | -0.170 |
| Wholly-foreign MNC-private productivity differentials, lagged specification | | | | | | |
| Manufacturing less other manuf. | 0.136 a | 0.136 a | 0.257 a | 0.256 a | 0.301 a | 0.300 a |
| Food, beverages | 0.153 | 0.153 | 0.256 b | 0.256 b | 0.290 a | 0.288 a |
| Textiles, apparel, leather, footwear | 0.437 a | 0.437 a | 0.339 a | 0.340 a | 0.411 a | 0.412 a |
| Wood, furniture, paper | 0.017 | 0.017 | 0.219 a | 0.219 a | 0.207 a | 0.207 a |
| Chemicals, rubber, plastics | 0.035 | 0.035 | 0.308 a | 0.308 a | 0.358 a | 0.358 a |
| Metals, non-metallic mineral prod. | -0.224 c | -0.230 c | 0.221 a | 0.220 a | 0.154 c | 0.152 c |
| Machinery | -0.009 | -0.006 | 0.229 b | 0.228 b | 0.219 b | 0.218 b |
| Transportation equipment | 0.267 | 0.277 | 0.381 c | 0.377 c | 0.422 b | 0.427 b |

Table 5 (continued)

| Indicator, industry group | 2001-2003 | | 2004-2006 | | 2001-2006 | |
|---|-----------|----------|-----------|----------|-----------|----------|
| | Eq. (1) | Eq. (2) | Eq. (1) | Eq. (2) | Eq. (1) | Eq. (2) |
| MNC joint venture-private productivity differentials, contemporaneous specification | | | | | | |
| Manufacturing less other manuf. | 0.377 a | 0.377 a | 0.433 a | 0.432 a | 0.352 a | 0.352 a |
| Food, beverages | 0.150 | 0.138 | 0.212 c | 0.212 c | 0.242 b | 0.235 b |
| Textiles, apparel, leather, footwear | 0.341 b | 0.340 b | 0.284 a | 0.279 a | 0.242 b | 0.238 b |
| Wood, furniture, paper | 0.194 | 0.194 | 0.437 b | 0.437 b | 0.377 b | 0.377 b |
| Chemicals, rubber, plastics | 0.334 b | 0.330 b | 0.442 a | 0.442 a | 0.188 | 0.186 |
| Metals, non-metallic mineral prod. | 0.408 a | 0.410 a | 0.474 a | 0.474 a | 0.389 a | 0.389 a |
| Machinery | 0.564 a | 0.565 a | 0.568 a | 0.571 a | 0.391 b | 0.393 b |
| Transportation equipment | 0.561 b | 0.555 b | 0.852 a | 0.835 a | 0.702 a | 0.694 a |
| MNC joint venture-private productivity differentials, lagged specification | | | | | | |
| Manufacturing less other manuf. | 0.492 a | 0.492 a | 0.533 a | 0.533 a | 0.540 a | 0.539 a |
| Food, beverages | 0.121 | 0.121 | 0.280 c | 0.280 c | 0.305 b | 0.309 b |
| Textiles, apparel, leather, footwear | 0.751 a | 0.751 a | 0.462 a | 0.462 a | 0.598 a | 0.598 a |
| Wood, furniture, paper | 0.496 a | 0.496 a | 0.531 a | 0.530 a | 0.568 a | 0.567 a |
| Chemicals, rubber, plastics | 0.211 | 0.211 | 0.567 a | 0.567 a | 0.330 a | 0.328 a |
| Metals, non-metallic mineral prod. | 0.335 b | 0.335 b | 0.519 a | 0.518 a | 0.489 a | 0.488 a |
| Machinery | 0.694 a | 0.694 a | 0.801 a | 0.800 a | 0.734 a | 0.733 a |
| Transportation equipment | 1.161 a | 1.169 a | 0.912 a | 0.901 a | 1.023 a | 1.022 a |
| Productivity effects of concentration, contemporaneous specification | | | | | | |
| Manufacturing less other manuf. | 0.551 a | 1.149 a | -0.142 | -0.151 | -0.084 | 0.165 |
| Food, beverages | 5.755 a | 32.95 a | -0.227 | -2.636 | 1.936 a | 12.06 a |
| Textiles, apparel, leather, footwear | 1.721 c | 0.176 | -0.339 b | -0.452 | -0.513 a | -0.898 a |
| Wood, furniture, paper | 0.167 | 0.785 | -0.331 | -1.889 | -0.259 | -0.607 |
| Chemicals, rubber, plastics | -1.988 b | 4.192 | -0.152 | 0.736 | -2.245 a | -3.350 |
| Metals, non-metallic mineral prod. | 1.022 a | 2.510 a | 0.172 | -0.190 | 0.150 | 1.002 b |
| Machinery | 0.270 | 0.454 | 0.020 | 0.479 | -0.146 | 0.214 |
| Transportation equipment | 0.070 | -0.304 | -0.237 | -4.068 b | -0.124 | -2.284 c |
| Productivity effects of concentration, lagged specification | | | | | | |
| Manufacturing less other manuf. | 0.250 a | 0.711 a | -0.052 | 0.065 | -0.090 c | 0.067 |
| Food, beverages | -2.642 a | -8.75 b | 0.187 | 1.012 | -1.349 a | -8.166 a |
| Textiles, apparel, leather, footwear | 0.303 | 1.088 | -0.346 | -0.801 | -0.421 | -1.152 |
| Wood, furniture, paper | -0.345 c | -1.646 b | -0.933 a | -9.013 b | -0.558 a | -2.183 a |
| Chemicals, rubber, plastics | 0.084 | 0.473 | -0.186 | -0.597 | -0.366 c | -1.142 |
| Metals, non-metallic mineral prod. | 1.239 a | 3.338 a | 0.401 b | 1.372 c | 0.407 a | 1.656 a |
| Machinery | 0.230 | 0.310 | -0.065 | -0.057 | -0.034 | -0.044 |
| Transportation equipment | 0.253 | 1.411 | -1.610 a | -5.349 a | 0.089 | 1.111 |

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level.

Table 6: Coefficients Measuring Productivity Spillovers and the Productivity Effects of Concentration on Private Firms from Fixed Effects Production Function Estimates

| Indicator, industry group | 2001-2003 | | 2004-2006 | | 2001-2006 | |
|--|-----------|----------|-----------|----------|-----------|----------|
| | Eq. (3) | Eq. (4) | Eq. (3) | Eq. (4) | Eq. (3) | Eq. (4) |
| Manufacturing (less other manufacturing) combined, contemporaneous specification | | | | | | |
| SOE spillovers | -0.348 | -0.247 | 0.201 b | 0.179 c | 0.049 | 0.039 |
| Wholly-foreign MNC spillovers | -0.821 a | -0.732 a | 0.022 | 0.039 | -0.270 a | -0.290 a |
| MNC joint venture spillovers | -0.657 | -0.441 | -0.530 c | -0.518 c | -0.481 b | -0.528 b |
| Concentration effects | 0.603 a | 1.482 a | -0.179 c | -0.643 b | -0.033 | 0.098 |
| Manufacturing (less other manufacturing) combined, lagged specification | | | | | | |
| SOE spillovers | -0.435 b | -0.339 c | 0.228 b | 0.172 | 0.097 | 0.051 |
| Wholly-foreign MNC spillovers | -1.352 a | -1.249 a | 0.104 | 0.030 | -0.240 b | -0.324 a |
| MNC joint venture spillovers | -1.943 a | -1.787 a | -0.438 | -0.594 c | -0.529 b | -0.699 a |
| Concentration effects | 0.502 a | 1.297 a | -0.226 c | 0.002 | -0.131 | 0.266 |
| Highly concentrated industries, contemporaneous specification | | | | | | |
| SOE spillovers | 0.243 | -0.881 | -0.387 | -0.301 | 0.597 c | 0.263 a |
| Wholly-foreign MNC spillovers | 0.057 | -0.980 | -0.537 | -0.492 | -0.402 c | -0.540 a |
| MNC joint venture spillovers | 0.440 | -1.017 | -1.334 a | -1.265 a | -0.440 | -0.805 a |
| Concentration effects | -1.754 a | -0.052 | -0.122 | -0.789 | -0.825 a | -0.190 a |
| Highly concentrated industries, lagged specification | | | | | | |
| SOE spillovers | -1.010 | -1.184 c | 1.815 a | 1.883 a | 0.880 b | 0.685 c |
| Wholly-foreign MNC spillovers | -2.139 b | -2.221 b | 0.067 | 0.071 | -0.412 | -0.581 c |
| MNC joint venture spillovers | -2.013 c | -2.217 c | 0.205 | 0.186 | -0.404 | -0.705 |
| Concentration effects | -0.382 | 0.090 | -1.614 a | -2.705 c | -0.526 | 0.428 |
| Lowly concentrated industries, contemporaneous specification | | | | | | |
| SOE spillovers | 0.979 b | 0.993 a | 0.451 a | 0.450 a | 0.129 | 0.114 |
| Wholly-foreign MNC spillovers | -0.431 | -0.346 | -0.074 | -0.072 | -0.431 a | -0.456 a |
| MNC joint venture spillovers | 0.626 | 1.162 | 0.089 | 0.107 | -0.313 | -0.412 |
| Concentration effects | 1.112 a | 2.733 a | -0.130 | -0.778 | 0.030 | 0.718 c |
| Lowly concentrated industries, lagged specification | | | | | | |
| SOE spillovers | -0.362 | -0.277 | 0.224 | 0.247 | 0.002 | -0.022 |
| Wholly-foreign MNC spillovers | -1.428 a | -1.348 a | 0.290 | 0.297 | -0.221 | -0.285 c |
| MNC joint venture spillovers | -5.865 a | -5.622 a | -0.843 | -0.811 | -2.244 a | -2.455 a |
| Concentration effects | 0.738 a | 2.193 a | -0.644 b | -5.156 b | -0.231 b | 0.022 |

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level; in principle industries are defined at the three-digit level of Vietnam's Standard Industrial Classification Code, Revision 3; however 2-digit categories or combinations of 3-digit categories are used when samples in 3-digit categories are small.

Appendix Table A1: Details for Random Effects Estimates of Productivity Differentials and Productivity Effects of Concentration (excluding year, region and industry dummies, robust standard errors)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Manufacturing less other manufacturing, contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.7346 | 0.00 | 0.7345 | 0.00 | 0.7216 | 0.00 | 0.7215 | 0.00 | 0.7504 | 0.00 | 0.7505 | 0.00 |
| LK_{ijt} | 0.3317 | 0.00 | 0.3318 | 0.00 | 0.3071 | 0.00 | 0.3072 | 0.00 | 0.2882 | 0.00 | 0.2883 | 0.00 |
| LE_{ijt}^2 | -0.0310 | 0.00 | -0.0307 | 0.00 | -0.0137 | 0.08 | -0.0136 | 0.08 | -0.0213 | 0.00 | -0.0212 | 0.00 |
| LK_{ijt}^2 | 0.0244 | 0.00 | 0.0244 | 0.00 | 0.0155 | 0.00 | 0.0155 | 0.00 | 0.0132 | 0.00 | 0.0133 | 0.00 |
| $LELK_{ijt}$ | 0.0083 | 0.37 | 0.0083 | 0.36 | 0.0113 | 0.10 | 0.0113 | 0.10 | 0.0163 | 0.00 | 0.0163 | 0.00 |
| DS_{ijt} | 0.2281 | 0.00 | 0.2278 | 0.00 | 0.2464 | 0.00 | 0.2465 | 0.00 | 0.2334 | 0.00 | 0.2332 | 0.00 |
| DM_{ijt} | -0.1710 | 0.00 | -0.1708 | 0.00 | -0.0450 | 0.16 | -0.0453 | 0.16 | -0.0499 | 0.09 | -0.0503 | 0.09 |
| DJ_{ijt} | 0.3775 | 0.00 | 0.3767 | 0.00 | 0.4328 | 0.00 | 0.4325 | 0.00 | 0.3525 | 0.00 | 0.3518 | 0.00 |
| C_{jt}, H_{jt} | 0.5506 | 0.00 | 1.1486 | 0.00 | -0.1418 | 0.15 | -0.1510 | 0.55 | -0.0841 | 0.23 | 0.1649 | 0.31 |
| Constant | -0.0142 | 0.82 | 0.0860 | 0.14 | -0.0783 | 0.12 | -0.1007 | 0.03 | -0.0616 | 0.19 | -0.0881 | 0.05 |
| Obs., Eq. | 22,152 | 1 | 22,152 | 2 | 33,154 | 1 | 33,154 | 2 | 55,306 | 1 | 55,306 | 2 |
| Groups | 10,888 | - | 10,888 | - | 16,598 | - | 16,598 | - | 19,833 | - | 19,833 | - |
| R ² -within | 0.373 | - | 0.373 | - | 0.185 | - | 0.184 | - | 0.257 | - | 0.257 | - |
| R ² -between | 0.641 | - | 0.641 | - | 0.629 | - | 0.629 | - | 0.615 | - | 0.615 | - |
| R ² -overall | 0.658 | - | 0.658 | - | 0.661 | - | 0.661 | - | 0.655 | - | 0.655 | - |
| T,CD | 157.53 | 0.00 | 157.07 | 0.00 | 126.89 | 0.00 | 126.92 | 0.00 | 156.91 | 0.00 | 157.11 | 0.00 |
| T,DS=DM | 70.05 | 0.00 | 69.91 | 0.00 | 60.57 | 0.00 | 60.70 | 0.00 | 67.10 | 0.00 | 67.23 | 0.00 |
| T,DS=DJ | 5.30 | 0.02 | 5.27 | 0.00 | 10.25 | 0.00 | 10.20 | 0.00 | 4.98 | 0.03 | 4.93 | 0.03 |
| T,DM=DJ | 67.33 | 0.00 | 67.08 | 0.00 | 68.27 | 0.00 | 68.18 | 0.00 | 57.18 | 0.00 | 57.06 | 0.00 |
| Manufacturing less other manufacturing, estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.5770 | 0.00 | 0.5770 | 0.00 | 0.5174 | 0.00 | 0.5173 | 0.00 | 0.5374 | 0.00 | 0.5375 | 0.00 |
| LK_{ijt-1} | 0.3173 | 0.00 | 0.3174 | 0.00 | 0.3043 | 0.00 | 0.3042 | 0.00 | 0.2702 | 0.00 | 0.2701 | 0.00 |
| LE_{ijt-1}^2 | -0.0050 | 0.61 | -0.0052 | 0.59 | 0.0293 | 0.00 | 0.0293 | 0.00 | 0.0132 | 0.03 | 0.0132 | 0.03 |
| LK_{ijt-1}^2 | 0.0297 | 0.00 | 0.0297 | 0.00 | 0.0273 | 0.00 | 0.0273 | 0.00 | 0.0217 | 0.00 | 0.0217 | 0.00 |
| $LELK_{ijt-1}$ | 0.0022 | 0.81 | 0.0025 | 0.79 | -0.0116 | 0.10 | -0.0115 | 0.10 | 0.0002 | 0.97 | 0.0002 | 0.98 |
| DS_{ijt} | 0.2006 | 0.00 | 0.2009 | 0.00 | 0.2050 | 0.00 | 0.2048 | 0.00 | 0.1928 | 0.00 | 0.1921 | 0.00 |
| DM_{ijt} | 0.1356 | 0.00 | 0.1358 | 0.00 | 0.2568 | 0.00 | 0.2561 | 0.00 | 0.3008 | 0.00 | 0.2996 | 0.00 |
| DJ_{ijt} | 0.4922 | 0.00 | 0.4916 | 0.00 | 0.5332 | 0.00 | 0.5325 | 0.00 | 0.5404 | 0.00 | 0.5389 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.2497 | 0.00 | 0.7106 | 0.00 | -0.0520 | 0.49 | 0.0654 | 0.75 | -0.0899 | 0.09 | 0.0669 | 0.57 |
| Constant | 0.3237 | 0.00 | 0.3642 | 0.00 | 0.0390 | 0.48 | 0.0258 | 0.62 | 0.1967 | 0.00 | 0.1695 | 0.00 |
| Obs., Eq. | 14,957 | 1 | 14,957 | 2 | 23,102 | 1 | 23,102 | 2 | 38,059 | 1 | 38,059 | 2 |
| Groups | 7,226 | - | 7,226 | - | 10,054 | - | 10,054 | - | 11,766 | - | 11,766 | - |
| R ² -within | 0.270 | - | 0.271 | - | 0.057 | - | 0.057 | - | 0.173 | - | 0.173 | - |
| R ² -between | 0.676 | - | 0.676 | - | 0.688 | - | 0.688 | - | 0.675 | - | 0.675 | - |
| R ² -overall | 0.676 | - | 0.676 | - | 0.686 | - | 0.686 | - | 0.676 | - | 0.676 | - |
| T,CD | 169.98 | 0.00 | 169.80 | 0.00 | 228.33 | 0.00 | 228.32 | 0.00 | 229.83 | 0.00 | 229.07 | 0.00 |
| T,DS=DM | 1.76 | 0.18 | 1.76 | 0.18 | 1.77 | 0.18 | 1.74 | 0.19 | 8.78 | 0.00 | 8.71 | 0.00 |
| T,DS=DJ | 20.04 | 0.00 | 19.89 | 0.00 | 27.74 | 0.00 | 27.68 | 0.00 | 42.00 | 0.00 | 41.80 | 0.00 |
| T,DM=DJ | 34.15 | 0.00 | 33.93 | 0.00 | 21.14 | 0.00 | 21.16 | 0.00 | 21.85 | 0.00 | 21.77 | 0.00 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|--|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Food & beverages (VSIC 15), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.7208 | 0.00 | 0.7167 | 0.00 | 0.7600 | 0.00 | 0.7598 | 0.00 | 0.7550 | 0.00 | 0.7529 | 0.00 |
| LK_{ijt} | 0.3602 | 0.00 | 0.3610 | 0.00 | 0.3458 | 0.00 | 0.3460 | 0.00 | 0.3327 | 0.00 | 0.3322 | 0.00 |
| LE_{ijt}^2 | -0.0330 | 0.19 | -0.0314 | 0.21 | -0.0105 | 0.55 | -0.0104 | 0.55 | -0.0398 | 0.01 | -0.0391 | 0.01 |
| LK_{ijt}^2 | 0.0175 | 0.05 | 0.0175 | 0.06 | 0.0106 | 0.14 | 0.0106 | 0.13 | 0.0096 | 0.11 | 0.0095 | 0.12 |
| $LE LK_{ijt}$ | 0.0080 | 0.73 | 0.0067 | 0.77 | -0.0192 | 0.28 | -0.0193 | 0.27 | 0.0073 | 0.63 | 0.0069 | 0.65 |
| DS_{ijt} | 0.2997 | 0.00 | 0.3036 | 0.00 | 0.1849 | 0.00 | 0.1833 | 0.00 | 0.2252 | 0.00 | 0.2294 | 0.00 |
| DM_{ijt} | 0.0525 | 0.69 | 0.0551 | 0.68 | 0.0443 | 0.68 | 0.0438 | 0.69 | 0.0682 | 0.49 | 0.0748 | 0.45 |
| DJ_{ijt} | 0.1505 | 0.24 | 0.1380 | 0.29 | 0.2118 | 0.10 | 0.2117 | 0.10 | 0.2416 | 0.02 | 0.2348 | 0.02 |
| C_{jt}, H_{jt} | 5.7546 | 0.00 | 32.9454 | 0.00 | -0.2266 | 0.60 | -2.6364 | 0.44 | 1.9360 | 0.00 | 12.0571 | 0.00 |
| Constant | -1.7724 | 0.00 | -1.2884 | 0.00 | -0.2565 | 0.06 | -0.2561 | 0.04 | -0.8357 | 0.00 | -0.7071 | 0.00 |
| Obs., Eq. | 3,865 | 1 | 3,865 | 2 | 5,469 | 1 | 5,469 | 2 | 9,334 | 1 | 9,334 | 2 |
| Groups | 1,958 | - | 1,958 | - | 2,752 | - | 2,752 | - | 3,388 | - | 3,388 | - |
| R ² -within | 0.388 | - | 0.396 | - | 0.125 | - | 0.125 | - | 0.242 | - | 0.243 | - |
| R ² -between | 0.591 | - | 0.591 | - | 0.599 | - | 0.599 | - | 0.580 | - | 0.579 | - |
| R ² -overall | 0.619 | - | 0.619 | - | 0.631 | - | 0.631 | - | 0.620 | - | 0.620 | - |
| T,CD | 9.45 | 0.02 | 9.04 | 0.03 | 4.35 | 0.23 | 4.36 | 0.22 | 13.01 | 0.00 | 12.62 | 0.01 |
| T, $DS=DM$ | 3.17 | 0.07 | 3.18 | 0.07 | 1.51 | 0.22 | 1.49 | 0.22 | 2.25 | 0.13 | 2.18 | 0.78 |
| T, $DS=DJ$ | 1.20 | 0.27 | 1.47 | 0.23 | 0.04 | 0.84 | 0.04 | 0.83 | 0.02 | 0.88 | 0.00 | 0.96 |
| T, $DM=DJ$ | 0.45 | 0.50 | 0.32 | 0.57 | 1.30 | 0.25 | 1.31 | 0.25 | 2.52 | 0.11 | 2.12 | 0.14 |
| Food, & beverages (VSIC 15), estimates with lagged labor, capital, and concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.6116 | 0.00 | 0.6146 | 0.00 | 0.5862 | 0.00 | 0.5861 | 0.00 | 0.5719 | 0.00 | 0.5728 | 0.00 |
| LK_{ijt-1} | 0.3441 | 0.00 | 0.3432 | 0.00 | 0.2983 | 0.00 | 0.2982 | 0.00 | 0.2864 | 0.00 | 0.2865 | 0.00 |
| LE_{ijt-1}^2 | -0.0116 | 0.63 | -0.0112 | 0.64 | 0.0442 | 0.03 | 0.0441 | 0.03 | 0.0093 | 0.56 | 0.0091 | 0.56 |
| LK_{ijt-1}^2 | 0.0304 | 0.00 | 0.0307 | 0.00 | 0.0297 | 0.00 | 0.0296 | 0.00 | 0.0214 | 0.00 | 0.0216 | 0.00 |
| $LE LK_{ijt-1}$ | 0.0030 | 0.89 | 0.0020 | 0.93 | -0.0348 | 0.09 | -0.0348 | 0.09 | -0.0124 | 0.43 | -0.0120 | 0.45 |
| DS_{ijt} | 0.1822 | 0.02 | 0.1799 | 0.03 | 0.0994 | 0.09 | 0.0997 | 0.08 | 0.1733 | 0.00 | 0.1724 | 0.00 |
| DM_{ijt} | 0.1527 | 0.23 | 0.1528 | 0.23 | 0.2561 | 0.02 | 0.2561 | 0.02 | 0.2900 | 0.01 | 0.2884 | 0.01 |
| DJ_{ijt} | 0.1213 | 0.40 | 0.1210 | 0.40 | 0.2804 | 0.08 | 0.2802 | 0.08 | 0.3054 | 0.02 | 0.3089 | 0.01 |
| C_{jt-1}, H_{jt-1} | -2.6422 | 0.00 | -8.7525 | 0.01 | 0.1873 | 0.67 | 1.0121 | 0.72 | -1.3494 | 0.00 | -8.1656 | 0.00 |
| Constant | 0.5997 | 0.01 | 0.1953 | 0.27 | -0.2977 | 0.07 | -0.2802 | 0.06 | 0.2395 | 0.12 | 0.1415 | 0.31 |
| Obs., Eq. | 2,550 | 1 | 2,550 | 2 | 3,819 | 1 | 3,819 | 2 | 6,369 | 1 | 6,369 | 2 |
| Groups | 1,275 | - | 1,275 | - | 1,666 | - | 1,666 | - | 2,016 | - | 2,016 | - |
| R ² -within | 0.295 | - | 0.290 | - | 0.030 | - | 0.030 | - | 0.197 | - | 0.197 | - |
| R ² -between | 0.649 | - | 0.650 | - | 0.630 | - | 0.630 | - | 0.624 | - | 0.625 | - |
| R ² -overall | 0.641 | - | 0.641 | - | 0.636 | - | 0.636 | - | 0.630 | - | 0.631 | - |
| T,CD | 27.97 | 0.00 | 28.11 | 0.00 | 28.32 | 0.00 | 28.27 | 0.00 | 23.10 | 0.00 | 23.84 | 0.00 |
| T, $DS=DM$ | 0.05 | 0.82 | 0.04 | 0.84 | 1.79 | 0.18 | 1.79 | 0.18 | 1.14 | 0.29 | 1.13 | 0.29 |
| T, $DS=DJ$ | 0.17 | 0.68 | 0.16 | 0.69 | 1.22 | 0.27 | 1.22 | 0.27 | 1.05 | 0.30 | 1.13 | 0.29 |
| T, $DM=DJ$ | 0.04 | 0.83 | 0.05 | 0.83 | 0.02 | 0.88 | 0.02 | 0.88 | 0.01 | 0.91 | 0.02 | 0.88 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Textiles, apparel, leather, footwear (VSIC 17, 18, 19), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.7013 | 0.00 | 0.7018 | 0.00 | 0.6777 | 0.00 | 0.6775 | 0.00 | 0.7092 | 0.00 | 0.7092 | 0.00 |
| LK_{ijt} | 0.2855 | 0.00 | 0.2849 | 0.00 | 0.2905 | 0.00 | 0.2913 | 0.00 | 0.2677 | 0.00 | 0.2682 | 0.00 |
| LE_{ijt}^2 | 0.0302 | 0.12 | 0.0312 | 0.10 | 0.0398 | 0.01 | 0.0401 | 0.01 | 0.0502 | 0.00 | 0.0507 | 0.00 |
| LK_{ijt}^2 | 0.0223 | 0.00 | 0.0223 | 0.00 | 0.0149 | 0.00 | 0.0151 | 0.00 | 0.0139 | 0.00 | 0.0140 | 0.00 |
| $LE LK_{ijt}$ | -0.0102 | 0.59 | -0.0106 | 0.57 | -0.0075 | 0.60 | -0.0078 | 0.59 | -0.0095 | 0.39 | -0.0099 | 0.37 |
| DS_{ijt} | 0.2742 | 0.00 | 0.2776 | 0.00 | 0.1624 | 0.01 | 0.1595 | 0.01 | 0.2138 | 0.00 | 0.2100 | 0.00 |
| DM_{ijt} | 0.0057 | 0.94 | 0.0055 | 0.94 | 0.0070 | 0.91 | 0.0054 | 0.93 | 0.0146 | 0.80 | 0.0133 | 0.81 |
| DJ_{ijt} | 0.3407 | 0.02 | 0.3399 | 0.02 | 0.2835 | 0.01 | 0.2786 | 0.01 | 0.2423 | 0.03 | 0.2380 | 0.04 |
| C_{jt}, H_{jt} | 1.7207 | 0.06 | 0.1764 | 0.97 | -0.3390 | 0.03 | -0.4523 | 0.19 | -0.5126 | 0.00 | -0.8980 | 0.01 |
| Constant | -0.2449 | 0.37 | 0.2099 | 0.31 | 0.1610 | 0.15 | 0.0740 | 0.45 | 0.1406 | 0.16 | 0.0209 | 0.81 |
| Obs., Eq. | 4,294 | 1 | 4,294 | 2 | 6,521 | 1 | 6,521 | 2 | 10,815 | 1 | 10,815 | 1 |
| Groups | 2,149 | - | 2,149 | - | 3,269 | - | 3,269 | - | 3,936 | - | 3,936 | - |
| R ² -within | 0.320 | - | 0.319 | - | 0.196 | - | 0.195 | - | 0.238 | - | 0.237 | - |
| R ² -between | 0.628 | - | 0.627 | - | 0.650 | - | 0.650 | - | 0.630 | - | 0.630 | - |
| R ² -overall | 0.653 | - | 0.652 | - | 0.683 | - | 0.683 | - | 0.667 | - | 0.667 | - |
| T,CD | 30.93 | 0.00 | 31.24 | 0.00 | 35.58 | 0.00 | 35.84 | 0.00 | 51.51 | 0.00 | 52.01 | 0.00 |
| T, $DS=DM$ | 8.31 | 0.00 | 8.53 | 0.00 | 4.43 | 0.04 | 4.34 | 0.04 | 8.55 | 0.00 | 8.32 | 0.00 |
| T, $DS=DJ$ | 0.20 | 0.66 | 0.17 | 0.68 | 1.12 | 0.29 | 1.08 | 0.30 | 0.06 | 0.81 | 0.06 | 0.81 |
| T, $DM=DJ$ | 4.99 | 0.03 | 4.97 | 0.03 | 6.49 | 0.01 | 6.31 | 0.01 | 3.85 | 0.05 | 3.75 | 0.05 |
| Textiles, apparel, leather, footwear (VSIC 17, 18, 19), estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.4909 | 0.00 | 0.4909 | 0.00 | 0.5237 | 0.00 | 0.5248 | 0.00 | 0.5039 | 0.00 | 0.5048 | 0.00 |
| LK_{ijt-1} | 0.3166 | 0.00 | 0.3167 | 0.00 | 0.2822 | 0.00 | 0.2815 | 0.00 | 0.2647 | 0.00 | 0.2641 | 0.00 |
| LE_{ijt-1}^2 | 0.0554 | 0.00 | 0.0554 | 0.00 | 0.0461 | 0.00 | 0.0463 | 0.00 | 0.0629 | 0.00 | 0.0630 | 0.00 |
| LK_{ijt-1}^2 | 0.0361 | 0.00 | 0.0361 | 0.00 | 0.0245 | 0.00 | 0.0243 | 0.00 | 0.0273 | 0.00 | 0.0271 | 0.00 |
| $LE LK_{ijt-1}$ | -0.0156 | 0.38 | -0.0156 | 0.38 | -0.0092 | 0.51 | -0.0090 | 0.51 | -0.0215 | 0.06 | -0.0214 | 0.06 |
| DS_{ijt} | 0.1641 | 0.04 | 0.1639 | 0.04 | 0.1345 | 0.03 | 0.1329 | 0.03 | 0.1142 | 0.05 | 0.1123 | 0.06 |
| DM_{ijt} | 0.4374 | 0.00 | 0.4374 | 0.00 | 0.3389 | 0.00 | 0.3397 | 0.00 | 0.4112 | 0.00 | 0.4117 | 0.00 |
| DJ_{ijt} | 0.7505 | 0.00 | 0.7507 | 0.00 | 0.4621 | 0.00 | 0.4624 | 0.00 | 0.5982 | 0.00 | 0.5983 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.3027 | 0.67 | 1.0875 | 0.78 | -0.3463 | 0.23 | -0.8011 | 0.67 | -0.4208 | 0.13 | -1.1517 | 0.50 |
| Constant | -0.0374 | 0.88 | 0.0093 | 0.96 | -0.1024 | 0.38 | -0.1553 | 0.15 | -0.0595 | 0.63 | -0.1319 | 0.23 |
| Obs., Eq. | 2,887 | 1 | 2,887 | 2 | 4,525 | 1 | 4,525 | 2 | 7,412 | 1 | 7,412 | 2 |
| Groups | 1,382 | - | 1,382 | - | 1,975 | - | 1,975 | - | 2,314 | - | 2,314 | - |
| R ² -within | 0.225 | - | 0.225 | - | 0.057 | - | 0.057 | - | 0.141 | - | 0.141 | - |
| R ² -between | 0.698 | - | 0.698 | - | 0.710 | - | 0.710 | - | 0.695 | - | 0.695 | - |
| R ² -overall | 0.697 | - | 0.697 | - | 0.706 | - | 0.706 | - | 0.699 | - | 0.699 | - |
| T,CD | 83.00 | 0.00 | 83.05 | 0.00 | 58.18 | 0.00 | 57.96 | 0.00 | 100.92 | 0.00 | 101.16 | 0.00 |
| T, $DS=DM$ | 8.77 | 0.00 | 8.78 | 0.00 | 7.49 | 0.01 | 7.67 | 0.01 | 17.77 | 0.00 | 18.07 | 0.00 |
| T, $DS=DJ$ | 19.63 | 0.00 | 19.67 | 0.00 | 8.50 | 0.00 | 8.61 | 0.00 | 21.74 | 0.00 | 21.93 | 0.00 |
| T, $DM=DJ$ | 6.30 | 0.01 | 6.31 | 0.01 | 1.37 | 0.24 | 1.36 | 0.24 | 3.85 | 0.05 | 3.84 | 0.05 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2000 | | | | 2002 | | | | 2004 | | | |
|--|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Wood, paper, furniture (VSIC 20, 21, 361), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.7039 | 0.00 | 0.7038 | 0.00 | 0.6959 | 0.00 | 0.6960 | 0.00 | 0.7370 | 0.00 | 0.7372 | 0.00 |
| LK_{ijt} | 0.2951 | 0.00 | 0.2951 | 0.00 | 0.2547 | 0.00 | 0.2546 | 0.00 | 0.2375 | 0.00 | 0.2372 | 0.00 |
| LE_{ijt}^2 | -0.0325 | 0.13 | -0.0326 | 0.13 | 0.0112 | 0.47 | 0.0113 | 0.47 | -0.0196 | 0.17 | -0.0192 | 0.18 |
| LK_{ijt}^2 | 0.0081 | 0.35 | 0.0081 | 0.35 | 0.0111 | 0.01 | 0.0111 | 0.01 | 0.0018 | 0.68 | 0.0016 | 0.70 |
| $LE LK_{ijt}$ | 0.0488 | 0.01 | 0.0489 | 0.01 | 0.0107 | 0.38 | 0.0108 | 0.38 | 0.0438 | 0.00 | 0.0441 | 0.00 |
| DS_{ijt} | 0.3837 | 0.00 | 0.3839 | 0.00 | 0.3171 | 0.00 | 0.3176 | 0.00 | 0.2860 | 0.00 | 0.2870 | 0.00 |
| DM_{ijt} | -0.3338 | 0.00 | -0.3338 | 0.00 | 0.1265 | 0.08 | 0.1266 | 0.08 | 0.0150 | 0.82 | 0.0155 | 0.81 |
| DJ_{ijt} | 0.1936 | 0.33 | 0.1937 | 0.33 | 0.4372 | 0.02 | 0.4368 | 0.02 | 0.3766 | 0.02 | 0.3772 | 0.02 |
| C_{jt}, H_{jt} | 0.1667 | 0.46 | 0.7853 | 0.37 | -0.3310 | 0.42 | -1.8890 | 0.63 | -0.2589 | 0.21 | -0.6075 | 0.51 |
| Constant | -0.2246 | 0.02 | -0.2060 | 0.02 | 0.0528 | 0.54 | 0.0315 | 0.69 | -0.0901 | 0.25 | -0.1301 | 0.06 |
| Obs., Eq. | 3,948 | 1 | 3,948 | 2 | 6,215 | 1 | 0 | 2 | 10,163 | 1 | 10,163 | 2 |
| Groups | 2,015 | - | 2,015 | - | 3,278 | - | 0 | - | 3,935 | - | 3,935 | - |
| R ² -within | 0.435 | - | 0.435 | - | 0.212 | - | 0.212 | - | 0.306 | - | 0.305 | - |
| R ² -between | 0.583 | - | 0.583 | - | 0.605 | - | 0.605 | - | 0.581 | - | 0.581 | - |
| R ² -overall | 0.610 | - | 0.610 | - | 0.641 | - | 0.641 | - | 0.626 | - | 0.626 | - |
| T,CD | 22.84 | 0.00 | 22.86 | 0.00 | 24.37 | 0.00 | 24.42 | 0.00 | 35.87 | 0.00 | 36.08 | 0.00 |
| T, $DS=DM$ | 33.48 | 0.00 | 33.48 | 0.00 | 4.21 | 0.04 | 4.24 | 0.04 | 9.63 | 0.00 | 9.67 | 0.00 |
| T, $DS=DJ$ | 0.84 | 0.36 | 0.84 | 0.36 | 0.35 | 0.55 | 0.35 | 0.56 | 0.28 | 0.60 | 0.28 | 0.60 |
| T, $DM=DJ$ | 6.56 | 0.01 | 6.57 | 0.01 | 2.19 | 0.14 | 2.17 | 0.14 | 4.53 | 0.03 | 4.53 | 0.03 |
| Wood, paper, furniture (VSIC 20, 21, 361), estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.5315 | 0.00 | 0.5313 | 0.00 | 0.4586 | 0.00 | 0.4587 | 0.00 | 0.4979 | 0.00 | 0.4981 | 0.00 |
| LK_{ijt-1} | 0.2542 | 0.00 | 0.2542 | 0.00 | 0.2760 | 0.00 | 0.2758 | 0.00 | 0.2293 | 0.00 | 0.2290 | 0.00 |
| LE_{ijt-1}^2 | 0.0088 | 0.72 | 0.0094 | 0.70 | 0.0487 | 0.00 | 0.0488 | 0.00 | 0.0050 | 0.75 | 0.0055 | 0.73 |
| LK_{ijt-1}^2 | 0.0102 | 0.20 | 0.0102 | 0.20 | 0.0237 | 0.00 | 0.0236 | 0.00 | 0.0090 | 0.07 | 0.0088 | 0.07 |
| $LE LK_{ijt-1}$ | 0.0413 | 0.07 | 0.0412 | 0.07 | -0.0056 | 0.70 | -0.0055 | 0.71 | 0.0382 | 0.00 | 0.0384 | 0.00 |
| DS_{ijt} | 0.3136 | 0.00 | 0.3124 | 0.00 | 0.2795 | 0.01 | 0.2798 | 0.01 | 0.2378 | 0.00 | 0.2376 | 0.00 |
| DM_{ijt} | 0.0172 | 0.85 | 0.0172 | 0.85 | 0.2187 | 0.00 | 0.2191 | 0.00 | 0.2071 | 0.00 | 0.2072 | 0.00 |
| DJ_{ijt} | 0.4962 | 0.01 | 0.4963 | 0.01 | 0.5309 | 0.01 | 0.5300 | 0.01 | 0.5675 | 0.00 | 0.5665 | 0.00 |
| C_{jt-1}, H_{jt-1} | -0.3452 | 0.06 | -1.6460 | 0.02 | -0.9333 | 0.01 | -9.0131 | 0.02 | -0.5583 | 0.00 | -2.1831 | 0.00 |
| Constant | 0.0383 | 0.72 | 0.0030 | 0.98 | 0.0946 | 0.32 | 0.0641 | 0.48 | 0.0996 | 0.26 | 0.0296 | 0.71 |
| Obs., Eq. | 2,513 | 1 | 2,513 | 2 | 4,092 | 1 | 4,092 | 2 | 6,605 | 1 | 6,605 | 2 |
| Groups | 1,256 | - | 1,256 | - | 1,829 | - | 1,829 | - | 2,150 | - | 2,150 | - |
| R ² -within | 0.341 | - | 0.342 | - | 0.067 | - | 0.067 | - | 0.204 | - | 0.203 | - |
| R ² -between | 0.638 | - | 0.638 | - | 0.685 | - | 0.685 | - | 0.667 | - | 0.667 | - |
| R ² -overall | 0.632 | - | 0.632 | - | 0.682 | - | 0.682 | - | 0.658 | - | 0.658 | - |
| T,CD | 27.12 | 0.00 | 27.42 | 0.00 | 44.87 | 0.00 | 44.87 | 0.00 | 46.82 | 0.00 | 47.07 | 0.00 |
| T, $DS=DM$ | 5.36 | 0.02 | 5.33 | 0.02 | 0.29 | 0.59 | 0.29 | 0.59 | 0.10 | 0.75 | 0.10 | 0.76 |
| T, $DS=DJ$ | 0.87 | 0.35 | 0.88 | 0.35 | 1.47 | 0.23 | 1.45 | 0.23 | 3.25 | 0.07 | 3.23 | 0.07 |
| T, $DM=DJ$ | 7.24 | 0.01 | 7.28 | 0.01 | 2.45 | 0.12 | 2.43 | 0.12 | 4.38 | 0.04 | 4.34 | 0.04 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|--|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Chemicals, rubber, plastics (VSIC 24, 25), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.6828 | 0.00 | 0.6842 | 0.00 | 0.7241 | 0.00 | 0.7239 | 0.00 | 0.7424 | 0.00 | 0.7429 | 0.00 |
| LK_{ijt} | 0.3637 | 0.00 | 0.3645 | 0.00 | 0.2838 | 0.00 | 0.2839 | 0.00 | 0.2847 | 0.00 | 0.2874 | 0.00 |
| LE_{ijt}^2 | -0.0302 | 0.48 | -0.0340 | 0.43 | -0.0042 | 0.90 | -0.0040 | 0.91 | -0.0273 | 0.28 | -0.0247 | 0.33 |
| LK_{ijt}^2 | 0.0268 | 0.00 | 0.0268 | 0.00 | 0.0152 | 0.06 | 0.0151 | 0.06 | 0.0080 | 0.17 | 0.0085 | 0.15 |
| $LE LK_{ijt}$ | -0.0099 | 0.80 | -0.0063 | 0.87 | -0.0234 | 0.39 | -0.0232 | 0.39 | 0.0053 | 0.81 | 0.0034 | 0.88 |
| DS_{ijt} | 0.2066 | 0.07 | 0.2030 | 0.08 | 0.3340 | 0.00 | 0.3322 | 0.00 | 0.1806 | 0.03 | 0.1865 | 0.02 |
| DM_{ijt} | -0.2024 | 0.07 | -0.2010 | 0.07 | 0.0031 | 0.97 | 0.0033 | 0.97 | -0.0443 | 0.60 | -0.0443 | 0.60 |
| DJ_{ijt} | 0.3344 | 0.02 | 0.3297 | 0.02 | 0.4417 | 0.00 | 0.4423 | 0.00 | 0.1882 | 0.14 | 0.1865 | 0.14 |
| C_{jt}, H_{jt} | -1.9877 | 0.03 | 4.1915 | 0.42 | -0.1523 | 0.73 | 0.7362 | 0.73 | -2.2452 | 0.00 | -3.3504 | 0.17 |
| Constant | 0.5134 | 0.24 | -0.7179 | 0.08 | -0.1073 | 0.62 | -0.2109 | 0.20 | 0.7803 | 0.00 | -0.0004 | 1.00 |
| Obs., Eq. | 2,519 | 1 | 2,519 | 2 | 3,854 | 1 | 3,854 | 2 | 6,373 | 1 | 6,373 | 2 |
| Groups | 1,214 | - | 1,214 | - | 1,963 | - | 1,963 | - | 2,315 | - | 2,315 | - |
| R ² -within | 0.448 | - | 0.446 | - | 0.202 | - | 0.202 | - | 0.324 | - | 0.317 | - |
| R ² -between | 0.623 | - | 0.623 | - | 0.569 | - | 0.569 | - | 0.567 | - | 0.566 | - |
| R ² -overall | 0.636 | - | 0.636 | - | 0.604 | - | 0.604 | - | 0.611 | - | 0.610 | - |
| T,CD | 21.56 | 0.00 | 18.34 | 0.00 | 4.43 | 0.22 | 4.36 | 0.23 | 4.99 | 0.17 | 4.74 | 0.19 |
| T, $DS=DM$ | 2.85 | 0.09 | 7.79 | 0.01 | 7.18 | 0.01 | 7.08 | 0.01 | 4.44 | 0.04 | 4.66 | 0.03 |
| T, $DS=DJ$ | 3.58 | 0.06 | 0.59 | 0.44 | 0.52 | 0.47 | 0.54 | 0.46 | 0.00 | 0.96 | 0.00 | 1.00 |
| T, $DM=DJ$ | 12.57 | 0.00 | 12.21 | 0.00 | 14.06 | 0.00 | 14.04 | 0.00 | 4.55 | 0.03 | 4.48 | 0.03 |
| Chemicals, rubber, plastics (VSIC 24, 25), estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.5857 | 0.00 | 0.5858 | 0.00 | 0.4988 | 0.00 | 0.4982 | 0.00 | 0.5438 | 0.00 | 0.5434 | 0.00 |
| LK_{ijt-1} | 0.3104 | 0.00 | 0.3104 | 0.00 | 0.2831 | 0.00 | 0.2834 | 0.00 | 0.2374 | 0.00 | 0.2381 | 0.00 |
| LE_{ijt-1}^2 | -0.0101 | 0.82 | -0.0102 | 0.82 | 0.0193 | 0.54 | 0.0195 | 0.54 | 0.0005 | 0.98 | 0.0010 | 0.97 |
| LK_{ijt-1}^2 | 0.0318 | 0.00 | 0.0318 | 0.00 | 0.0169 | 0.03 | 0.0170 | 0.03 | 0.0156 | 0.00 | 0.0158 | 0.00 |
| $LE LK_{ijt-1}$ | -0.0086 | 0.80 | -0.0085 | 0.80 | 0.0081 | 0.73 | 0.0078 | 0.74 | 0.0094 | 0.61 | 0.0091 | 0.63 |
| DS_{ijt} | 0.1929 | 0.12 | 0.1928 | 0.12 | 0.2760 | 0.00 | 0.2748 | 0.00 | 0.1566 | 0.04 | 0.1553 | 0.04 |
| DM_{ijt} | 0.0347 | 0.75 | 0.0347 | 0.75 | 0.3075 | 0.00 | 0.3076 | 0.00 | 0.3577 | 0.00 | 0.3579 | 0.00 |
| DJ_{ijt} | 0.2106 | 0.12 | 0.2106 | 0.12 | 0.5670 | 0.00 | 0.5672 | 0.00 | 0.3301 | 0.00 | 0.3284 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.0844 | 0.77 | 0.4725 | 0.75 | -0.1860 | 0.51 | -0.5966 | 0.72 | -0.3661 | 0.07 | -1.1416 | 0.28 |
| Constant | -0.4768 | 0.02 | -0.4768 | 0.02 | -0.0120 | 0.93 | -0.0453 | 0.72 | 0.0183 | 0.88 | -0.0481 | 0.69 |
| Obs., Eq. | 1,730 | 1 | 1,730 | 2 | 2,614 | 1 | 2,614 | 2 | 4,344 | 1 | 4,344 | 2 |
| Groups | 835 | - | 835 | - | 1,151 | - | 1,151 | - | 1,347 | - | 1,347 | - |
| R ² -within | 0.450 | - | 0.450 | - | 0.096 | - | 0.095 | - | 0.306 | - | 0.305 | - |
| R ² -between | 0.634 | - | 0.634 | - | 0.652 | - | 0.652 | - | 0.633 | - | 0.632 | - |
| R ² -overall | 0.654 | - | 0.654 | - | 0.648 | - | 0.648 | - | 0.637 | - | 0.637 | - |
| T,CD | 15.53 | 0.00 | 15.51 | 0.00 | 15.06 | 0.00 | 15.01 | 0.00 | 21.14 | 0.00 | 21.14 | 0.00 |
| T, $DS=DM$ | 1.06 | 0.30 | 1.06 | 0.30 | 0.08 | 0.78 | 0.08 | 0.77 | 3.79 | 0.05 | 3.86 | 0.05 |
| T, $DS=DJ$ | 0.01 | 0.92 | 0.01 | 0.92 | 3.79 | 0.05 | 3.85 | 0.05 | 2.04 | 0.15 | 2.03 | 0.15 |
| T, $DM=DJ$ | 1.54 | 0.22 | 1.54 | 0.22 | 4.37 | 0.04 | 4.42 | 0.04 | 0.09 | 0.76 | 0.11 | 0.74 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Metals & products, non-metallic mineral products (VSIC 26, 27, 28), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.8256 | 0.00 | 0.8252 | 0.00 | 0.7326 | 0.00 | 0.7332 | 0.00 | 0.8045 | 0.00 | 0.8039 | 0.00 |
| LK_{ijt} | 0.3270 | 0.00 | 0.3274 | 0.00 | 0.3058 | 0.00 | 0.3056 | 0.00 | 0.2828 | 0.00 | 0.2832 | 0.00 |
| LE_{ijt}^2 | -0.0551 | 0.04 | -0.0548 | 0.04 | -0.0086 | 0.67 | -0.0092 | 0.65 | -0.0346 | 0.04 | -0.0344 | 0.04 |
| LK_{ijt}^2 | 0.0265 | 0.00 | 0.0265 | 0.00 | 0.0164 | 0.00 | 0.0162 | 0.00 | 0.0165 | 0.00 | 0.0166 | 0.00 |
| $LE LK_{ijt}$ | 0.0113 | 0.62 | 0.0114 | 0.61 | 0.0187 | 0.29 | 0.0191 | 0.28 | 0.0175 | 0.22 | 0.0173 | 0.23 |
| DS_{ijt} | 0.2272 | 0.00 | 0.2254 | 0.00 | 0.2336 | 0.00 | 0.2338 | 0.00 | 0.2306 | 0.00 | 0.2293 | 0.00 |
| DM_{ijt} | -0.3418 | 0.00 | -0.3427 | 0.00 | -0.1444 | 0.05 | -0.1444 | 0.05 | -0.1533 | 0.03 | -0.1547 | 0.03 |
| DJ_{ijt} | 0.4083 | 0.01 | 0.4099 | 0.01 | 0.4743 | 0.00 | 0.4744 | 0.00 | 0.3890 | 0.00 | 0.3892 | 0.00 |
| C_{jt}, H_{jt} | 1.0222 | 0.00 | 2.5096 | 0.00 | 0.1718 | 0.43 | -0.1896 | 0.86 | 0.1502 | 0.32 | 1.0021 | 0.02 |
| Constant | -0.7662 | 0.00 | -0.4801 | 0.01 | 0.1555 | 0.36 | 0.2772 | 0.10 | -0.0052 | 0.97 | -0.0820 | 0.53 |
| Obs., Eq. | 4,696 | 1 | 4,696 | 2 | 7,316 | 1 | 7,316 | 2 | 12,012 | 1 | 12,012 | 2 |
| Groups | 2,324 | - | 2,324 | - | 3,794 | - | 3,794 | - | 4,520 | - | 4,520 | - |
| R ² -within | 0.353 | - | 0.354 | - | 0.181 | - | 0.181 | - | 0.260 | - | 0.260 | - |
| R ² -between | 0.693 | - | 0.693 | - | 0.641 | - | 0.641 | - | 0.640 | - | 0.640 | - |
| R ² -overall | 0.708 | - | 0.708 | - | 0.680 | - | 0.680 | - | 0.687 | - | 0.687 | - |
| T,CD | 59.77 | 0.00 | 59.91 | 0.00 | 53.47 | 0.00 | 52.95 | 0.00 | 62.38 | 0.00 | 62.82 | 0.00 |
| T, $DS=DM$ | 23.03 | 0.00 | 22.96 | 0.00 | 19.28 | 0.00 | 19.26 | 0.00 | 23.81 | 0.00 | 23.81 | 0.00 |
| T, $DS=DJ$ | 1.43 | 0.23 | 1.49 | 0.22 | 3.56 | 0.06 | 3.56 | 0.06 | 1.74 | 0.19 | 1.77 | 0.18 |
| T, $DM=DJ$ | 17.58 | 0.00 | 19.18 | 0.00 | 21.78 | 0.00 | 21.76 | 0.00 | 17.96 | 0.00 | 18.06 | 0.00 |
| Metals & products, non-metallic mineral products (VSIC 26, 27, 28), estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.6739 | 0.00 | 0.6741 | 0.00 | 0.5381 | 0.00 | 0.5377 | 0.00 | 0.5871 | 0.00 | 0.5864 | 0.00 |
| LK_{ijt-1} | 0.3536 | 0.00 | 0.3545 | 0.00 | 0.3112 | 0.00 | 0.3117 | 0.00 | 0.2937 | 0.00 | 0.2943 | 0.00 |
| LE_{ijt-1}^2 | -0.0024 | 0.92 | -0.0036 | 0.88 | 0.0484 | 0.03 | 0.0485 | 0.03 | 0.0326 | 0.06 | 0.0328 | 0.06 |
| LK_{ijt-1}^2 | 0.0351 | 0.00 | 0.0351 | 0.00 | 0.0298 | 0.00 | 0.0299 | 0.00 | 0.0299 | 0.00 | 0.0300 | 0.00 |
| $LE LK_{ijt-1}$ | -0.0270 | 0.25 | -0.0263 | 0.27 | -0.0166 | 0.38 | -0.0168 | 0.37 | -0.0280 | 0.07 | -0.0282 | 0.07 |
| DS_{ijt} | 0.1709 | 0.02 | 0.1705 | 0.02 | 0.1685 | 0.00 | 0.1695 | 0.00 | 0.1798 | 0.00 | 0.1787 | 0.00 |
| DM_{ijt} | -0.2235 | 0.07 | -0.2298 | 0.06 | 0.2214 | 0.01 | 0.2200 | 0.01 | 0.1540 | 0.06 | 0.1516 | 0.06 |
| DJ_{ijt} | 0.3352 | 0.03 | 0.3350 | 0.03 | 0.5194 | 0.00 | 0.5175 | 0.00 | 0.4888 | 0.00 | 0.4875 | 0.00 |
| C_{jt-1}, H_{jt-1} | 1.2387 | 0.00 | 3.3384 | 0.00 | 0.4011 | 0.03 | 1.3717 | 0.08 | 0.4069 | 0.00 | 1.6557 | 0.00 |
| Constant | -0.3535 | 0.10 | -0.0758 | 0.68 | 0.1095 | 0.51 | 0.1742 | 0.27 | 0.1605 | 0.29 | 0.1879 | 0.18 |
| Obs., Eq. | 3,100 | 1 | 3,100 | 2 | 4,888 | 1 | 4,888 | 2 | 7,988 | 1 | 7,988 | 2 |
| Groups | 1,511 | - | 1,511 | - | 2,188 | - | 2,188 | - | 2,559 | - | 2,559 | - |
| R ² -within | 0.209 | - | 0.215 | - | 0.055 | - | 0.055 | - | 0.142 | - | 0.144 | - |
| R ² -between | 0.718 | - | 0.718 | - | 0.725 | - | 0.725 | - | 0.715 | - | 0.715 | - |
| R ² -overall | 0.716 | - | 0.717 | - | 0.720 | - | 0.720 | - | 0.715 | - | 0.715 | - |
| T,CD | 49.13 | 0.00 | 49.34 | 0.00 | 93.65 | 0.00 | 93.68 | 0.00 | 74.64 | 0.00 | 75.08 | 0.00 |
| T, $DS=DM$ | 8.98 | 0.00 | 9.19 | 0.00 | 0.34 | 0.56 | 0.31 | 0.56 | 0.09 | 0.77 | 0.09 | 0.76 |
| T, $DS=DJ$ | 1.09 | 0.30 | 1.09 | 0.30 | 7.43 | 0.01 | 7.30 | 0.01 | 6.60 | 0.01 | 6.59 | 0.01 |
| T, $DM=DJ$ | 10.56 | 0.00 | 12.54 | 0.00 | 5.41 | 0.02 | 5.38 | 0.02 | 7.42 | 0.01 | 6.55 | 0.01 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|--|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Machinery (general [VSIC 29], office and computing [30], electrical [31], radio, television & communication [32], precision [33]), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.8882 | 0.00 | 0.8903 | 0.00 | 0.8656 | 0.00 | 0.8654 | 0.00 | 0.8949 | 0.00 | 0.8950 | 0.00 |
| LK_{ijt} | 0.3181 | 0.00 | 0.3160 | 0.00 | 0.3060 | 0.00 | 0.3067 | 0.00 | 0.2755 | 0.00 | 0.2756 | 0.00 |
| LE_{ijt}^2 | -0.0719 | 0.08 | -0.0706 | 0.09 | -0.1368 | 0.00 | -0.1379 | 0.00 | -0.1196 | 0.00 | -0.1180 | 0.00 |
| LK_{ijt}^2 | 0.0367 | 0.00 | 0.0367 | 0.00 | 0.0043 | 0.71 | 0.0044 | 0.70 | 0.0084 | 0.29 | 0.0086 | 0.28 |
| $LE LK_{ijt}$ | -0.0242 | 0.55 | -0.0252 | 0.53 | 0.0890 | 0.01 | 0.0895 | 0.01 | 0.0659 | 0.01 | 0.0647 | 0.01 |
| DS_{ijt} | -0.1599 | 0.12 | -0.1575 | 0.12 | 0.1263 | 0.15 | 0.1286 | 0.14 | 0.0709 | 0.36 | 0.0749 | 0.34 |
| DM_{ijt} | -0.3290 | 0.03 | -0.3244 | 0.03 | -0.3229 | 0.01 | -0.3232 | 0.01 | -0.3117 | 0.01 | -0.3130 | 0.01 |
| DJ_{ijt} | 0.5639 | 0.01 | 0.5647 | 0.01 | 0.5684 | 0.00 | 0.5706 | 0.00 | 0.3912 | 0.03 | 0.3934 | 0.03 |
| C_{jt}, H_{jt} | 0.2702 | 0.40 | 0.4541 | 0.16 | 0.0201 | 0.95 | 0.4788 | 0.41 | -0.1457 | 0.45 | 0.2138 | 0.42 |
| Constant | -0.2109 | 0.26 | -0.1554 | 0.29 | 0.0372 | 0.84 | -0.0377 | 0.79 | -0.0132 | 0.92 | -0.1098 | 0.31 |
| Obs., Eq. | 1,624 | 1 | 1,624 | 2 | 2,248 | 1 | 2,248 | 2 | 3,872 | 1 | 3,872 | 2 |
| Groups | 799 | - | 799 | - | 1,172 | - | 1,172 | - | 1,434 | - | 1,434 | - |
| R ² -within | 0.419 | - | 0.420 | - | 0.252 | - | 0.252 | - | 0.294 | - | 0.294 | - |
| R ² -between | 0.679 | - | 0.679 | - | 0.670 | - | 0.670 | - | 0.651 | - | 0.651 | - |
| R ² -overall | 0.678 | - | 0.678 | - | 0.684 | - | 0.684 | - | 0.674 | - | 0.674 | - |
| T,CD | 23.99 | 0.00 | 23.63 | 0.00 | 18.82 | 0.00 | 18.99 | 0.00 | 34.38 | 0.00 | 33.90 | 0.00 |
| T, $DS=DM$ | 1.18 | 0.28 | 1.15 | 0.28 | 12.45 | 0.00 | 12.68 | 0.00 | 10.52 | 0.00 | 10.85 | 0.00 |
| T, $DS=DJ$ | 11.81 | 0.00 | 11.76 | 0.00 | 5.87 | 0.02 | 5.88 | 0.02 | 2.83 | 0.09 | 2.80 | 0.09 |
| T, $DM=DJ$ | 15.80 | 0.00 | 15.63 | 0.00 | 26.25 | 0.00 | 26.48 | 0.00 | 12.33 | 0.00 | 12.50 | 0.00 |
| Machinery (general [VSIC 29], office and computing [30], electrical [31], radio, television & communication [32], precision [33]), estimates with lagged labor, capital, and concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.6402 | 0.00 | 0.6417 | 0.00 | 0.5681 | 0.00 | 0.5679 | 0.00 | 0.6024 | 0.00 | 0.6022 | 0.00 |
| LK_{ijt-1} | 0.3031 | 0.00 | 0.3023 | 0.00 | 0.2871 | 0.00 | 0.2872 | 0.00 | 0.2481 | 0.00 | 0.2482 | 0.00 |
| LE_{ijt-1}^2 | 0.0012 | 0.98 | -0.0005 | 0.99 | 0.0412 | 0.23 | 0.0412 | 0.23 | 0.0301 | 0.24 | 0.0301 | 0.24 |
| LK_{ijt-1}^2 | 0.0110 | 0.33 | 0.0106 | 0.35 | 0.0385 | 0.01 | 0.0384 | 0.01 | 0.0191 | 0.03 | 0.0191 | 0.03 |
| $LE LK_{ijt-1}$ | 0.0036 | 0.92 | 0.0049 | 0.89 | -0.0488 | 0.22 | -0.0486 | 0.22 | -0.0146 | 0.60 | -0.0147 | 0.60 |
| DS_{ijt} | -0.0943 | 0.40 | -0.0926 | 0.41 | 0.2198 | 0.04 | 0.2200 | 0.04 | 0.1391 | 0.14 | 0.1386 | 0.14 |
| DM_{ijt} | -0.0089 | 0.95 | -0.0057 | 0.97 | 0.2288 | 0.04 | 0.2277 | 0.04 | 0.2190 | 0.03 | 0.2182 | 0.04 |
| DJ_{ijt} | 0.6935 | 0.00 | 0.6937 | 0.00 | 0.8014 | 0.00 | 0.7996 | 0.00 | 0.7338 | 0.00 | 0.7332 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.2305 | 0.20 | 0.3099 | 0.19 | -0.0647 | 0.66 | -0.0575 | 0.84 | -0.0343 | 0.77 | -0.0442 | 0.78 |
| Constant | -0.0182 | 0.91 | 0.0515 | 0.73 | -0.0700 | 0.54 | -0.0895 | 0.38 | 0.0325 | 0.77 | 0.0226 | 0.82 |
| Obs., Eq. | 1,105 | 1 | 1,105 | 2 | 1,543 | 1 | 1,543 | 2 | 2,648 | 1 | 2,648 | 2 |
| Groups | 529 | - | 529 | - | 702 | - | 702 | - | 843 | - | 843 | - |
| R ² -within | 0.426 | - | 0.426 | - | 0.164 | - | 0.164 | - | 0.299 | - | 0.299 | - |
| R ² -between | 0.689 | - | 0.689 | - | 0.716 | - | 0.716 | - | 0.695 | - | 0.695 | - |
| R ² -overall | 0.691 | - | 0.691 | - | 0.716 | - | 0.716 | - | 0.698 | - | 0.698 | - |
| T,CD | 4.67 | 0.20 | 4.15 | 0.21 | 13.42 | 0.00 | 13.42 | 0.00 | 16.77 | 0.00 | 16.78 | 0.00 |
| T, $DS=DM$ | 0.27 | 0.60 | 0.28 | 0.59 | 0.00 | 0.95 | 0.00 | 0.95 | 0.43 | 0.51 | 0.42 | 0.51 |
| T, $DS=DJ$ | 16.16 | 0.00 | 16.11 | 0.00 | 7.79 | 0.01 | 7.70 | 0.01 | 10.93 | 0.00 | 10.92 | 0.00 |
| T, $DM=DJ$ | 11.66 | 0.00 | 11.54 | 0.00 | 9.80 | 0.00 | 9.76 | 0.00 | 9.06 | 0.00 | 9.06 | 0.00 |

Appendix Table A1 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Transportation equipment (VSIC 34, 35), contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.9969 | 0.00 | 0.9956 | 0.00 | 0.9838 | 0.00 | 0.9765 | 0.00 | 0.9821 | 0.00 | 0.9797 | 0.00 |
| LK_{ijt} | 0.3027 | 0.00 | 0.3045 | 0.00 | 0.2854 | 0.00 | 0.2882 | 0.00 | 0.2785 | 0.00 | 0.2809 | 0.00 |
| LE_{ijt}^2 | -0.0944 | 0.09 | -0.0943 | 0.09 | -0.1411 | 0.01 | -0.1413 | 0.01 | -0.1164 | 0.00 | -0.1165 | 0.00 |
| LK_{ijt}^2 | 0.0253 | 0.04 | 0.0256 | 0.04 | 0.0055 | 0.58 | 0.0066 | 0.52 | 0.0085 | 0.28 | 0.0093 | 0.25 |
| $LE LK_{ijt}$ | 0.0142 | 0.75 | 0.0141 | 0.75 | 0.0773 | 0.08 | 0.0761 | 0.09 | 0.0476 | 0.13 | 0.0466 | 0.14 |
| DS_{ijt} | -0.0591 | 0.67 | -0.0591 | 0.67 | 0.2525 | 0.05 | 0.2520 | 0.05 | 0.0909 | 0.37 | 0.0914 | 0.36 |
| DM_{ijt} | -0.3179 | 0.15 | -0.3220 | 0.14 | -0.1034 | 0.46 | -0.1100 | 0.43 | -0.1639 | 0.22 | -0.1696 | 0.21 |
| DJ_{ijt} | 0.5608 | 0.01 | 0.5549 | 0.02 | 0.8520 | 0.00 | 0.8350 | 0.00 | 0.7017 | 0.00 | 0.6935 | 0.00 |
| C_{jt}, H_{jt} | 0.0701 | 0.86 | -0.3038 | 0.84 | -0.2373 | 0.75 | -4.0678 | 0.04 | -0.1239 | 0.75 | -2.2839 | 0.08 |
| Constant | 0.4758 | 0.12 | 0.5543 | 0.04 | 0.3287 | 0.44 | 0.6640 | 0.02 | 0.3802 | 0.16 | 0.6080 | 0.01 |
| Obs., Eq. | 1,206 | 1 | 1,206 | 2 | 1,531 | 1 | 1,531 | 2 | 2,737 | 1 | 2,737 | 2 |
| Groups | 588 | - | 588 | - | 781 | - | 781 | - | 977 | - | 977 | - |
| R ² -within | 0.383 | - | 0.382 | - | 0.252 | - | 0.255 | - | 0.300 | - | 0.300 | - |
| R ² -between | 0.720 | - | 0.720 | - | 0.745 | - | 0.746 | - | 0.723 | - | 0.724 | - |
| R ² -overall | 0.723 | - | 0.723 | - | 0.757 | - | 0.758 | - | 0.737 | - | 0.737 | - |
| T,CD | 17.82 | 0.00 | 17.98 | 0.00 | 12.97 | 0.00 | 14.12 | 0.00 | 16.78 | 0.00 | 17.77 | 0.00 |
| T, $DS=DM$ | 1.26 | 0.26 | 1.29 | 0.26 | 4.86 | 0.03 | 5.00 | 0.03 | 2.92 | 0.09 | 3.10 | 0.08 |
| T, $DS=DJ$ | 7.28 | 0.01 | 7.18 | 0.01 | 10.11 | 0.00 | 9.31 | 0.00 | 11.44 | 0.00 | 11.08 | 0.00 |
| T, $DM=DJ$ | 11.79 | 0.00 | 11.77 | 0.00 | 25.58 | 0.00 | 23.85 | 0.00 | 20.73 | 0.00 | 20.39 | 0.00 |
| Transportation equipment (VSIC 34, 35), estimates with lagged labor, capital, and concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.7679 | 0.00 | 0.7690 | 0.00 | 0.6783 | 0.00 | 0.6740 | 0.00 | 0.7016 | 0.00 | 0.7022 | 0.00 |
| LK_{ijt-1} | 0.2447 | 0.00 | 0.2408 | 0.00 | 0.3806 | 0.00 | 0.3837 | 0.00 | 0.2809 | 0.00 | 0.2779 | 0.00 |
| LE_{ijt-1}^2 | 0.0639 | 0.21 | 0.0628 | 0.22 | 0.0636 | 0.11 | 0.0620 | 0.12 | 0.0379 | 0.24 | 0.0384 | 0.23 |
| LK_{ijt-1}^2 | 0.0342 | 0.01 | 0.0328 | 0.02 | 0.0440 | 0.00 | 0.0447 | 0.00 | 0.0372 | 0.00 | 0.0366 | 0.00 |
| $LE LK_{ijt-1}$ | -0.0579 | 0.21 | -0.0553 | 0.23 | -0.0956 | 0.00 | -0.0953 | 0.00 | -0.0607 | 0.02 | -0.0600 | 0.02 |
| DS_{ijt} | 0.1136 | 0.51 | 0.1141 | 0.51 | 0.2749 | 0.07 | 0.2759 | 0.07 | 0.1705 | 0.18 | 0.1700 | 0.18 |
| DM_{ijt} | 0.2671 | 0.25 | 0.2775 | 0.23 | 0.3813 | 0.05 | 0.3773 | 0.06 | 0.4221 | 0.01 | 0.4268 | 0.01 |
| DJ_{ijt} | 1.1610 | 0.00 | 1.1691 | 0.00 | 0.9117 | 0.00 | 0.9014 | 0.00 | 1.0229 | 0.00 | 1.0215 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.2534 | 0.49 | 1.4113 | 0.19 | -1.6105 | 0.00 | -5.3490 | 0.01 | 0.0892 | 0.77 | 1.1106 | 0.26 |
| Constant | 0.4076 | 0.18 | 0.3616 | 0.18 | 1.2367 | 0.00 | 0.9436 | 0.00 | 0.4034 | 0.09 | 0.3067 | 0.14 |
| Obs., Eq. | 802 | 1 | 802 | 2 | 1,091 | 1 | 1,091 | 2 | 1,893 | 1 | 1,893 | 2 |
| Groups | 389 | - | 389 | - | 485 | - | 485 | - | 586 | - | 586 | - |
| R ² -within | 0.241 | - | 0.245 | - | 0.083 | - | 0.082 | - | 0.138 | - | 0.139 | - |
| R ² -between | 0.717 | - | 0.716 | - | 0.785 | - | 0.785 | - | 0.752 | - | 0.752 | - |
| R ² -overall | 0.715 | - | 0.715 | - | 0.774 | - | 0.774 | - | 0.745 | - | 0.745 | - |
| T,CD | 7.41 | 0.06 | 6.94 | 0.07 | 19.06 | 0.00 | 19.51 | 0.00 | 24.33 | 0.00 | 23.53 | 0.00 |
| T, $DS=DM$ | 0.43 | 0.51 | 0.48 | 0.49 | 0.32 | 0.57 | 0.28 | 0.00 | 2.01 | 0.16 | 2.10 | 0.15 |
| T, $DS=DJ$ | 12.37 | 0.00 | 12.60 | 0.00 | 6.74 | 0.01 | 6.41 | 0.01 | 15.82 | 0.00 | 15.82 | 0.00 |
| T, $DM=DJ$ | 9.65 | 0.00 | 9.61 | 0.00 | 4.18 | 0.04 | 3.98 | 0.05 | 7.14 | 0.01 | 0.01 | 7.05 |

Note: T,CD is a Wald test for Cobb-Douglas technology (i.e., a test that coefficients on LE , LK , and $LELK$ are all 0); T, $D_{-}=D_{-}$ are Wald tests that coefficients on the ownership dummies specified are equal. Full results including coefficients on year and industry dummies are available from the authors.

Appendix Table A2: Details for Fixed Effects Estimates of the Effects of SOE Presence, MNC Presence, and Concentration on Local Firm Productivity (excluding year dummies, robust standard errors)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Manufacturing less other manufacturing, contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.4971 | 0.00 | 0.4970 | 0.00 | 0.4530 | 0.00 | 0.4526 | 0.00 | 0.5690 | 0.00 | 0.5689 | 0.00 |
| LK_{ijt} | 0.1899 | 0.00 | 0.1916 | 0.00 | 0.1456 | 0.00 | 0.1453 | 0.00 | 0.1670 | 0.00 | 0.1670 | 0.00 |
| LE_{ijt}^2 | -0.0522 | 0.01 | -0.0529 | 0.01 | -0.0145 | 0.25 | -0.0143 | 0.25 | -0.0268 | 0.01 | -0.0268 | 0.01 |
| LK_{ijt}^2 | 0.0187 | 0.01 | 0.0187 | 0.01 | 0.0057 | 0.15 | 0.0056 | 0.15 | 0.0073 | 0.02 | 0.0073 | 0.02 |
| $LELK_{ijt}$ | -0.0118 | 0.50 | -0.0116 | 0.51 | -0.0112 | 0.30 | -0.0112 | 0.30 | -0.0003 | 0.97 | -0.0003 | 0.97 |
| SS_{ijt} | -0.3481 | 0.11 | -0.2467 | 0.25 | 0.2012 | 0.04 | 0.1794 | 0.05 | 0.0491 | 0.56 | 0.0389 | 0.63 |
| SM_{ijt} | -0.8211 | 0.00 | -0.7317 | 0.00 | 0.0223 | 0.83 | 0.0391 | 0.71 | -0.2697 | 0.00 | -0.2895 | 0.00 |
| SJ_{ijt} | -0.6566 | 0.13 | -0.4410 | 0.29 | -0.5298 | 0.07 | -0.5184 | 0.07 | -0.4809 | 0.04 | -0.5276 | 0.02 |
| C_{jt}, H_{jt} | 0.6031 | 0.00 | 1.4821 | 0.00 | -0.1790 | 0.07 | -0.6429 | 0.02 | -0.0325 | 0.67 | 0.0982 | 0.61 |
| Constant | -0.2348 | 0.03 | -0.1873 | 0.09 | -0.1239 | 0.01 | -0.1440 | 0.00 | -0.2835 | 0.00 | -0.2890 | 0.00 |
| Obs., Eq. | 14,695 | 3 | 14,695 | 4 | 24,178 | 3 | 24,178 | 4 | 38,873 | 3 | 38,873 | 4 |
| Groups | 7,716 | - | 7,716 | - | 12,715 | - | 12,715 | - | 15,279 | - | 15,279 | - |
| R ² -within | 0.411 | - | 0.411 | - | 0.163 | - | 0.163 | - | 0.257 | - | 0.257 | - |
| R ² -between | 0.426 | - | 0.424 | - | 0.486 | - | 0.485 | - | 0.455 | - | 0.455 | - |
| R ² -overall | 0.464 | - | 0.463 | - | 0.508 | - | 0.508 | - | 0.490 | - | 0.491 | - |
| T,CD | 5.66 | 0.00 | 5.75 | 0.00 | 1.76 | 0.15 | 1.73 | 0.16 | 4.72 | 0.00 | 4.71 | 0.00 |
| T,DS=DM | 4.80 | 0.03 | 5.05 | 0.02 | 2.81 | 0.09 | 1.76 | 0.19 | 12.72 | 0.00 | 13.35 | 0.00 |
| T,DS=DJ | 0.49 | 0.48 | 0.20 | 0.65 | 6.58 | 0.01 | 5.96 | 0.01 | 5.11 | 0.02 | 5.92 | 0.02 |
| T,DM=DJ | 0.14 | 0.70 | 0.46 | 0.50 | 4.04 | 0.04 | 4.18 | 0.04 | 0.88 | 0.35 | 1.14 | 0.28 |
| Manufacturing less other manufacturing, estimates with lagged labor, capital, & concentration | | | | | | | | | | | | |
| LE_{ijt-1} | 0.1454 | 0.00 | 0.1465 | 0.00 | 0.1243 | 0.00 | 0.1237 | 0.00 | 0.2500 | 0.00 | 0.2494 | 0.00 |
| LK_{ijt-1} | 0.0736 | 0.00 | 0.0748 | 0.00 | 0.0911 | 0.00 | 0.0911 | 0.00 | 0.1075 | 0.00 | 0.1074 | 0.00 |
| LE_{ijt-1}^2 | 0.0177 | 0.36 | 0.0171 | 0.38 | 0.0402 | 0.00 | 0.0404 | 0.00 | 0.0238 | 0.01 | 0.0241 | 0.01 |
| LK_{ijt-1}^2 | 0.0119 | 0.05 | 0.0120 | 0.05 | 0.0141 | 0.00 | 0.0140 | 0.00 | 0.0142 | 0.00 | 0.0142 | 0.00 |
| $LELK_{ijt-1}$ | 0.0058 | 0.71 | 0.0066 | 0.68 | -0.0245 | 0.01 | -0.0246 | 0.01 | -0.0022 | 0.77 | -0.0022 | 0.77 |
| SS_{ijt-1} | -0.4347 | 0.02 | -0.3386 | 0.07 | 0.2278 | 0.04 | 0.1715 | 0.10 | 0.0967 | 0.29 | 0.0506 | 0.56 |
| SM_{ijt-1} | -1.3518 | 0.00 | -1.2488 | 0.00 | 0.1038 | 0.46 | 0.0302 | 0.83 | -0.2397 | 0.03 | -0.3239 | 0.00 |
| SJ_{ijt-1} | -1.9430 | 0.00 | -1.7875 | 0.00 | -0.4377 | 0.18 | -0.5944 | 0.06 | -0.5293 | 0.04 | -0.6990 | 0.01 |
| C_{jt-1}, H_{jt-1} | 0.5023 | 0.00 | 1.2975 | 0.00 | -0.2259 | 0.07 | 0.0024 | 0.99 | -0.1305 | 0.13 | 0.2659 | 0.17 |
| Constant | 0.3454 | 0.00 | 0.3743 | 0.00 | 0.0708 | 0.21 | 0.0572 | 0.31 | 0.1016 | 0.07 | 0.0898 | 0.11 |
| Obs., Eq. | 8,956 | 3 | 8,956 | 4 | 15,654 | 3 | 15,654 | 4 | 24,610 | 3 | 24,610 | 4 |
| Groups | 4,671 | - | 4,671 | - | 7,240 | - | 7,240 | - | 8,457 | - | 8,457 | - |
| R ² -within | 0.334 | - | 0.335 | - | 0.051 | - | 0.051 | - | 0.189 | - | 0.189 | - |
| R ² -between | 0.316 | - | 0.319 | - | 0.521 | - | 0.530 | - | 0.495 | - | 0.500 | - |
| R ² -overall | 0.308 | - | 0.311 | - | 0.506 | - | 0.514 | - | 0.475 | - | 0.479 | - |
| T,CD | 2.37 | 0.07 | 2.44 | 0.06 | 8.50 | 0.00 | 8.50 | 0.00 | 11.82 | 0.00 | 11.83 | 0.00 |
| T,DS=DM | 19.52 | 0.00 | 19.19 | 0.00 | 0.87 | 0.35 | 1.10 | 0.29 | 10.56 | 0.00 | 13.21 | 0.00 |
| T,DS=DJ | 9.58 | 0.00 | 9.15 | 0.00 | 4.47 | 0.03 | 5.99 | 0.01 | 6.31 | 0.01 | 9.25 | 0.00 |
| T,DM=DJ | 1.66 | 0.20 | 1.42 | 0.23 | 3.52 | 0.06 | 4.82 | 0.03 | 1.46 | 0.23 | 2.52 | 0.11 |

Appendix Table A2 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|---|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Highly concentrated industries, contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.7295 | 0.00 | 0.7108 | 0.00 | 0.4762 | 0.00 | 0.4720 | 0.00 | 0.6320 | 0.00 | 0.6325 | 0.00 |
| LK_{ijt} | 0.1238 | 0.04 | 0.1253 | 0.05 | 0.1040 | 0.01 | 0.1038 | 0.01 | 0.0853 | 0.01 | 0.0858 | 0.00 |
| LE_{ijt}^2 | -0.0530 | 0.55 | -0.0647 | 0.50 | -0.0956 | 0.07 | -0.0959 | 0.07 | -0.0598 | 0.16 | -0.0581 | 0.00 |
| LK_{ijt}^2 | 0.0072 | 0.61 | 0.0082 | 0.57 | 0.0073 | 0.51 | 0.0075 | 0.50 | -0.0093 | 0.26 | -0.0087 | 0.00 |
| $LE LK_{ijt}$ | -0.0267 | 0.67 | -0.0263 | 0.69 | 0.0513 | 0.15 | 0.0518 | 0.14 | 0.0330 | 0.25 | 0.0290 | 0.00 |
| SS_{ijt} | 0.2427 | 0.74 | -0.8813 | 0.14 | -0.3868 | 0.43 | -0.3015 | 0.55 | 0.5968 | 0.08 | 0.2628 | 0.00 |
| SM_{ijt} | 0.0568 | 0.94 | -0.9795 | 0.17 | -0.5365 | 0.10 | -0.4925 | 0.12 | -0.4015 | 0.10 | -0.5399 | 0.00 |
| SJ_{ijt} | 0.4396 | 0.71 | -1.0167 | 0.36 | -1.3343 | 0.00 | -1.2647 | 0.01 | -0.4404 | 0.32 | -0.8048 | 0.00 |
| C_{jt}, H_{jt} | -1.7538 | 0.00 | -0.0518 | 0.91 | -0.1220 | 0.75 | -0.7893 | 0.49 | -0.8248 | 0.01 | -0.1898 | 0.00 |
| Constant | 0.3724 | 0.41 | 0.3278 | 0.47 | 0.2460 | 0.39 | 0.2123 | 0.39 | -0.0622 | 0.78 | -0.2537 | 0.00 |
| Obs., Eq. | 1,208 | 3 | 1,208 | 4 | 1,995 | 3 | 1,995 | 4 | 3,203 | 3 | 3,203 | 4 |
| Groups | 684 | - | 684 | - | 1,136 | - | 1,136 | - | 1,404 | - | 1,404 | - |
| R ² -within | 0.507 | - | 0.494 | - | 0.192 | - | 0.193 | - | 0.297 | - | 0.293 | - |
| R ² -between | 0.384 | - | 0.425 | - | 0.491 | - | 0.483 | - | 0.352 | - | 0.396 | - |
| R ² -overall | 0.422 | - | 0.460 | - | 0.498 | - | 0.490 | - | 0.379 | - | 0.418 | - |
| T,CD | 0.43 | 0.73 | 0.54 | 0.66 | 2.40 | 0.07 | 2.46 | 0.06 | 0.97 | 0.40 | 0.92 | 0.43 |
| T,DS=DM | 0.09 | 0.77 | 0.03 | 0.87 | 0.09 | 0.76 | 0.16 | 0.69 | 6.29 | 0.00 | 6.29 | 0.01 |
| T,DS=DJ | 0.03 | 0.86 | 0.01 | 0.91 | 3.78 | 0.05 | 3.80 | 0.05 | 5.79 | 0.02 | 5.79 | 0.02 |
| T,DM=DJ | 0.12 | 0.73 | 0.00 | 0.97 | 3.37 | 0.07 | 3.46 | 0.06 | 0.39 | 0.93 | 0.39 | 0.53 |
| Highly concentrated industries, lagged estimates | | | | | | | | | | | | |
| LE_{ijt-1} | 0.3167 | 0.01 | 0.3074 | 0.01 | 0.0942 | 0.17 | 0.0886 | 0.20 | 0.2231 | 0.00 | 0.2119 | 0.00 |
| LK_{ijt-1} | -0.0473 | 0.48 | -0.0483 | 0.47 | 0.0814 | 0.05 | 0.0792 | 0.05 | 0.0248 | 0.46 | 0.0249 | 0.47 |
| LE_{ijt-1}^2 | -0.0146 | 0.87 | -0.0164 | 0.86 | 0.0510 | 0.28 | 0.0508 | 0.29 | 0.0866 | 0.05 | 0.0845 | 0.04 |
| LK_{ijt-1}^2 | 0.0215 | 0.17 | 0.0213 | 0.17 | 0.0124 | 0.27 | 0.0122 | 0.27 | 0.0148 | 0.10 | 0.0144 | 0.11 |
| $LE LK_{ijt-1}$ | 0.0106 | 0.85 | 0.0116 | 0.84 | -0.0012 | 0.98 | -0.0040 | 0.93 | -0.0469 | 0.17 | -0.0454 | 0.16 |
| SS_{ijt-1} | -1.0102 | 0.16 | -1.1845 | 0.08 | 1.8153 | 0.00 | 1.8834 | 0.00 | 0.8800 | 0.02 | 0.6847 | 0.06 |
| SM_{ijt-1} | -2.1393 | 0.04 | -2.2205 | 0.04 | 0.0671 | 0.87 | 0.0706 | 0.87 | -0.4118 | 0.21 | -0.5811 | 0.06 |
| SJ_{ijt-1} | -2.0126 | 0.09 | -2.2167 | 0.07 | 0.2046 | 0.73 | 0.1859 | 0.76 | -0.4042 | 0.47 | -0.7051 | 0.16 |
| C_{jt-1}, H_{jt-1} | -0.3816 | 0.48 | 0.0900 | 0.83 | -1.6141 | 0.00 | -2.7051 | 0.08 | -0.5261 | 0.17 | 0.4276 | 0.30 |
| Constant | 1.2471 | 0.03 | 1.1396 | 0.05 | 0.0608 | 0.83 | -0.5399 | 0.04 | -0.0844 | 0.78 | -0.2976 | 0.31 |
| Obs., Eq. | 649 | 3 | 649 | 4 | 1,194 | 3 | 1,194 | 4 | 1,843 | 3 | 1,843 | 4 |
| Groups | 359 | - | 359 | - | 588 | - | 588 | - | 702 | - | 702 | - |
| R ² -within | 0.446 | - | 0.445 | - | 0.135 | - | 0.124 | - | 0.250 | - | 0.249 | - |
| R ² -between | 0.093 | - | 0.105 | - | 0.074 | - | 0.068 | - | 0.140 | - | 0.172 | - |
| R ² -overall | 0.108 | - | 0.122 | - | 0.084 | - | 0.077 | - | 0.137 | - | 0.163 | - |
| T,CD | 1.07 | 0.36 | 1.08 | 0.36 | 1.56 | 0.20 | 1.40 | 0.24 | 1.87 | 0.13 | 1.96 | 0.12 |
| T,DS=DM | 1.24 | 0.27 | 1.05 | 0.31 | 9.65 | 0.00 | 9.49 | 0.00 | 13.04 | 0.00 | 12.50 | 0.00 |
| T,DS=DJ | 0.74 | 0.39 | 0.75 | 0.39 | 7.25 | 0.01 | 7.73 | 0.01 | 6.53 | 0.01 | 7.59 | 0.01 |
| T,DM=DJ | 0.05 | 0.82 | 0.00 | 0.99 | 0.09 | 0.77 | 0.06 | 0.80 | 0.00 | 0.99 | 0.09 | 0.76 |

Appendix Table A2 (continued)

| Independent variable, statistic | 2001-2003 | | | | 2004-2006 | | | | 2001-2006 | | | |
|--|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | C Equation | | H Equation | | C Equation | | H Equation | | C Equation | | H Equation | |
| | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. | Value | P-val. |
| Lowly concentrated industries, contemporaneous estimates | | | | | | | | | | | | |
| LE_{ijt} | 0.4860 | 0.00 | 0.4861 | 0.00 | 0.4458 | 0.00 | 0.4457 | 0.00 | 0.5587 | 0.00 | 0.5586 | 0.00 |
| LK_{ijt} | 0.1958 | 0.00 | 0.1977 | 0.00 | 0.1420 | 0.00 | 0.1420 | 0.00 | 0.1713 | 0.00 | 0.1712 | 0.00 |
| LE_{ijt}^2 | -0.0667 | 0.00 | -0.0676 | 0.00 | -0.0104 | 0.44 | -0.0103 | 0.45 | -0.0236 | 0.03 | -0.0235 | 0.03 |
| LK_{ijt}^2 | 0.0175 | 0.06 | 0.0177 | 0.06 | 0.0036 | 0.41 | 0.0036 | 0.41 | 0.0072 | 0.04 | 0.0071 | 0.04 |
| $LE LK_{ijt}$ | 0.0033 | 0.87 | 0.0039 | 0.84 | -0.0110 | 0.33 | -0.0110 | 0.33 | 0.0018 | 0.84 | 0.0019 | 0.83 |
| SS_{ijt} | 0.9788 | 0.01 | 0.9934 | 0.01 | 0.4508 | 0.00 | 0.4500 | 0.00 | 0.1285 | 0.29 | 0.1138 | 0.35 |
| SM_{ijt} | -0.4310 | 0.22 | -0.3465 | 0.33 | -0.0743 | 0.60 | -0.0722 | 0.62 | -0.4308 | 0.00 | -0.4564 | 0.00 |
| SJ_{ijt} | 0.6263 | 0.45 | 1.1620 | 0.15 | 0.0895 | 0.92 | 0.1074 | 0.90 | -0.3132 | 0.53 | -0.4123 | 0.41 |
| C_{jt}, H_{jt} | 1.1115 | 0.00 | 2.7328 | 0.00 | -0.1302 | 0.47 | -0.7776 | 0.61 | 0.0304 | 0.81 | 0.7179 | 0.09 |
| Constant | -0.9235 | 0.00 | -0.7775 | 0.00 | -0.1961 | 0.01 | -0.2074 | 0.00 | -0.3307 | 0.00 | -0.3375 | 0.00 |
| Obs., Eq. | 11,608 | 3 | 11,608 | 4 | 19,526 | 3 | 19,526 | 4 | 31,134 | 3 | 31,134 | 4 |
| Groups | 6,177 | - | 6,177 | - | 10,461 | - | 10,461 | - | 12,549 | - | 12,549 | - |
| R ² -within | 0.408 | - | 0.408 | - | 0.162 | - | 0.162 | - | 0.258 | - | 0.259 | - |
| R ² -between | 0.406 | - | 0.402 | - | 0.487 | - | 0.487 | - | 0.456 | - | 0.456 | - |
| R ² -overall | 0.444 | - | 0.441 | - | 0.511 | - | 0.511 | - | 0.493 | - | 0.493 | - |
| T,CD | 5.08 | 0.00 | 5.19 | 0.00 | 0.92 | 0.43 | 0.91 | 0.44 | 3.11 | 0.03 | 3.07 | 0.03 |
| T, $DS=DM$ | 17.41 | 0.00 | 15.65 | 0.00 | 8.67 | 0.43 | 8.53 | 0.00 | 15.76 | 0.00 | 16.34 | 0.00 |
| T, $DS=DJ$ | 0.19 | 0.66 | 0.05 | 0.83 | 0.02 | 0.68 | 0.16 | 0.69 | 0.79 | 0.37 | 1.13 | 0.29 |
| T, $DM=DJ$ | 1.65 | 0.20 | 3.45 | 0.06 | 0.04 | 0.84 | 0.05 | 0.83 | 0.06 | 0.81 | 0.01 | 0.93 |
| Lowly concentrated industries, lagged estimates | | | | | | | | | | | | |
| LE_{ijt-1} | 0.1423 | 0.00 | 0.1428 | 0.00 | 0.1247 | 0.00 | 0.1244 | 0.00 | 0.2457 | 0.00 | 0.2455 | 0.00 |
| LK_{ijt-1} | 0.0944 | 0.00 | 0.0959 | 0.00 | 0.0984 | 0.00 | 0.0987 | 0.00 | 0.1166 | 0.00 | 0.1164 | 0.00 |
| LE_{ijt-1}^2 | 0.0076 | 0.73 | 0.0072 | 0.74 | 0.0404 | 0.00 | 0.0406 | 0.00 | 0.0218 | 0.04 | 0.0222 | 0.03 |
| LK_{ijt-1}^2 | 0.0090 | 0.22 | 0.0093 | 0.20 | 0.0145 | 0.00 | 0.0145 | 0.00 | 0.0157 | 0.00 | 0.0156 | 0.00 |
| $LE LK_{ijt-1}$ | 0.0125 | 0.49 | 0.0129 | 0.48 | -0.0274 | 0.01 | -0.0274 | 0.01 | -0.0010 | 0.91 | -0.0010 | 0.91 |
| SS_{ijt-1} | -0.3624 | 0.23 | -0.2772 | 0.36 | 0.2240 | 0.12 | 0.2472 | 0.11 | 0.0019 | 0.99 | -0.0220 | 0.87 |
| SM_{ijt-1} | -1.4284 | 0.00 | -1.3483 | 0.00 | 0.2902 | 0.17 | 0.2972 | 0.16 | -0.2211 | 0.16 | -0.2847 | 0.07 |
| SJ_{ijt-1} | -5.8651 | 0.00 | -5.6223 | 0.00 | -0.8434 | 0.34 | -0.8114 | 0.36 | -2.2444 | 0.00 | -2.4550 | 0.00 |
| C_{jt-1}, H_{jt-1} | 0.7383 | 0.00 | 2.1934 | 0.00 | -0.6440 | 0.01 | -5.1562 | 0.05 | -0.2314 | 0.04 | 0.0218 | 0.94 |
| Constant | 0.4444 | 0.01 | 0.5100 | 0.00 | 0.1389 | 0.11 | 0.0983 | 0.24 | 0.2282 | 0.00 | 0.1954 | 0.01 |
| Obs., Eq. | 6,956 | 3 | 6,956 | 4 | 12,342 | 3 | 0 | 4 | 19,298 | 3 | 19,298 | 4 |
| Groups | 3,666 | - | 3,666 | - | 5,775 | - | 0 | - | 6,757 | - | 6,757 | - |
| R ² -within | 0.334 | - | 0.335 | - | 0.051 | - | 0.051 | - | 0.190 | - | 0.189 | - |
| R ² -between | 0.302 | - | 0.306 | - | 0.521 | - | 0.518 | - | 0.502 | - | 0.504 | - |
| R ² -overall | 0.298 | - | 0.303 | - | 0.505 | - | 0.502 | - | 0.481 | - | 0.483 | - |
| T,CD | 1.14 | 0.33 | 1.20 | 0.31 | 6.43 | 0.00 | 6.44 | 0.00 | 11.79 | 0.00 | 11.72 | 0.00 |
| T, $DS=DM$ | 11.89 | 0.00 | 11.86 | 0.00 | 0.09 | 0.76 | 0.05 | 0.82 | 1.86 | 0.17 | 2.57 | 0.11 |
| T, $DS=DJ$ | 40.37 | 0.00 | 38.48 | 0.00 | 1.55 | 0.21 | 1.52 | 0.22 | 19.79 | 0.00 | 23.60 | 0.00 |
| T, $DM=DJ$ | 25.98 | 0.00 | 24.25 | 0.00 | 1.91 | 0.17 | 1.83 | 0.18 | 15.73 | 0.00 | 18.36 | 0.00 |

Note: T,CD is a Wald test for Cobb-Douglas technology (i.e., a test that coefficients on LE , LK , and $LE LK$ are all 0); T, $D_{-}=D_{-}$ are Wald tests that coefficients on the ownership dummies specified are equal. Full results including coefficients on year and industry dummies are available from the authors.

Appendix Table B1a: Sales of All Firms, SOEs, and MNCs with 20 or More Employees and Positive Sales, Value Added and Fixed Assets by Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|-------|---------|---------|---------|---------|---------|---------|
| All firms, all industries | 702.0 | 792.9 | 996.3 | 1,056.3 | 1,368.5 | 1,569.0 | 1,894.8 | 2,167.7 | 1,877.5 |
| Manufacturing | 235.3 | 288.3 | 346.3 | 415.9 | 563.5 | 671.4 | 824.7 | 952.7 | 625.8 |
| Food, beverages | 63.1 | 71.5 | 86.9 | 93.8 | 127.0 | 152.8 | 177.0 | 213.0 | 120.6 |
| Textiles, apparel, leather, footwear | 38.4 | 43.2 | 52.6 | 62.9 | 83.9 | 100.8 | 140.5 | 132.2 | 76.9 |
| Wood, furniture, paper | 13.2 | 15.2 | 22.6 | 25.4 | 38.1 | 51.9 | 61.9 | 67.3 | 34.4 |
| Chemicals, rubber, plastics | 26.7 | 31.9 | 39.0 | 49.1 | 70.4 | 81.9 | 100.5 | 116.7 | 88.3 |
| Metals, non-metallic mineral prod. | 33.6 | 52.9 | 55.8 | 69.6 | 92.7 | 109.8 | 137.1 | 166.6 | 129.6 |
| Machinery | 28.4 | 32.2 | 36.7 | 48.7 | 64.0 | 77.4 | 101.3 | 124.2 | 97.1 |
| Transportation equipment | 19.3 | 26.5 | 35.2 | 46.4 | 62.4 | 67.3 | 73.4 | 97.3 | 50.4 |
| Other manufacturing | 12.5 | 15.0 | 17.6 | 19.9 | 25.2 | 29.4 | 32.9 | 35.4 | 28.5 |
| Non-manufacturing | 466.7 | 504.5 | 649.9 | 640.4 | 805.0 | 897.7 | 1,070.1 | 1,214.9 | 1,251.7 |
| SOEs, all industries | 439.5 | 456.9 | 563.1 | 541.6 | 603.9 | 592.9 | 644.9 | 711.6 | 643.8 |
| Manufacturing | 93.7 | 98.1 | 113.1 | 127.8 | 150.3 | 153.7 | 161.5 | 162.2 | 116.2 |
| Food, beverages | 28.9 | 27.5 | 33.6 | 33.6 | 36.1 | 33.0 | 32.6 | 32.5 | 21.2 |
| Textiles, apparel, leather, footwear | 14.0 | 14.3 | 16.2 | 17.5 | 19.7 | 18.5 | 18.8 | 16.9 | 13.6 |
| Wood, furniture, paper | 6.0 | 4.8 | 5.2 | 5.5 | 6.0 | 9.1 | 7.4 | 7.2 | 2.7 |
| Chemicals, rubber, plastics | 11.5 | 11.3 | 11.7 | 14.5 | 19.5 | 20.8 | 23.2 | 26.3 | 21.7 |
| Metals, non-metallic mineral prod. | 15.2 | 17.7 | 21.1 | 27.6 | 32.9 | 32.6 | 37.4 | 35.4 | 18.5 |
| Machinery | 5.5 | 6.7 | 7.2 | 8.1 | 9.2 | 9.5 | 12.7 | 12.6 | 10.9 |
| Transportation equipment | 3.8 | 4.9 | 6.0 | 7.5 | 11.3 | 12.8 | 12.0 | 14.5 | 10.3 |
| Other manufacturing | 8.8 | 10.8 | 11.9 | 13.5 | 15.6 | 17.4 | 17.5 | 16.9 | 17.3 |
| Non-manufacturing | 345.7 | 358.8 | 450.0 | 413.8 | 453.6 | 439.2 | 483.4 | 549.4 | 527.6 |
| Wholly-foreign MNCs | 58.7 | 72.0 | 93.4 | 115.0 | 178.3 | 228.2 | 317.6 | 373.7 | 228.9 |
| Manufacturing | 53.2 | 62.2 | 82.3 | 106.2 | 159.7 | 200.3 | 273.6 | 320.3 | 173.1 |
| Food, beverages | 9.6 | 11.7 | 11.8 | 14.5 | 25.1 | 30.8 | 36.4 | 51.9 | 25.2 |
| Textiles, apparel, leather, footwear | 15.9 | 17.0 | 22.3 | 31.0 | 41.1 | 54.2 | 85.2 | 75.1 | 31.5 |
| Wood, furniture, paper | 1.6 | 2.8 | 6.5 | 6.6 | 11.6 | 16.1 | 21.8 | 27.4 | 9.7 |
| Chemicals, rubber, plastics | 4.7 | 6.2 | 8.3 | 11.6 | 17.7 | 20.1 | 30.0 | 34.7 | 18.8 |
| Metals, non-metallic mineral prod. | 2.7 | 3.6 | 6.0 | 7.5 | 11.3 | 16.2 | 21.7 | 29.8 | 19.5 |
| Machinery | 14.5 | 14.0 | 16.0 | 23.4 | 32.8 | 42.9 | 55.6 | 71.5 | 52.1 |
| Transportation equipment | 2.5 | 5.1 | 8.4 | 9.2 | 15.3 | 14.3 | 15.1 | 21.1 | 12.0 |
| Other manufacturing | 1.6 | 1.8 | 3.0 | 2.5 | 4.7 | 5.7 | 7.8 | 8.9 | 4.4 |
| Non-manufacturing | 5.5 | 9.8 | 11.0 | 8.8 | 18.7 | 27.9 | 43.9 | 53.3 | 55.8 |
| MNC Joint Ventures | 100.0 | 105.7 | 124.1 | 133.4 | 187.3 | 208.6 | 243.3 | 273.6 | 143.5 |
| Manufacturing | 47.7 | 54.4 | 67.3 | 77.9 | 95.0 | 107.2 | 125.7 | 154.9 | 92.9 |
| Food, beverages | 9.3 | 9.3 | 11.7 | 11.1 | 13.6 | 16.6 | 19.3 | 25.9 | 15.4 |
| Textiles, apparel, leather, footwear | 2.4 | 3.1 | 3.5 | 2.7 | 5.3 | 6.1 | 7.0 | 7.9 | 4.6 |
| Wood, furniture, paper | 0.9 | 0.8 | 1.0 | 1.2 | 2.1 | 2.4 | 2.7 | 2.5 | 1.4 |
| Chemicals, rubber, plastics | 5.6 | 6.6 | 8.7 | 10.9 | 13.5 | 15.6 | 17.5 | 18.4 | 11.6 |
| Metals, Non-metallic mineral prod. | 10.5 | 12.3 | 14.2 | 14.2 | 17.4 | 18.7 | 23.1 | 28.2 | 24.8 |
| Machinery | 6.7 | 8.2 | 8.9 | 10.2 | 12.4 | 13.5 | 15.9 | 18.1 | 14.5 |
| Transportation equipment | 11.2 | 13.0 | 18.3 | 26.3 | 29.6 | 32.3 | 37.1 | 49.8 | 17.9 |
| Other manufacturing | 1.0 | 1.0 | 1.1 | 1.3 | 1.2 | 2.1 | 3.1 | 4.1 | 2.6 |
| Non-manufacturing | 52.3 | 51.4 | 56.8 | 55.5 | 92.3 | 101.4 | 117.6 | 118.7 | 50.6 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B1b: Sales of All Firms, SOEs, and MNCs with Positive Sales, Employment, Value Added, and Fixed Assets by Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|---------|---------|---------|---------|---------|---------|---------|
| All firms, all industries | 781.7 | 889.6 | 1,111.3 | 1,186.3 | 1,549.4 | 1,794.0 | 2,263.1 | 2,448.1 | 2,297.2 |
| Manufacturing | 244.4 | 297.8 | 358.4 | 427.5 | 581.0 | 692.3 | 851.6 | 977.3 | 655.0 |
| Food, beverages | 69.8 | 77.9 | 93.9 | 99.4 | 134.6 | 161.7 | 186.8 | 224.4 | 128.3 |
| Textiles, apparel, leather, footwear | 38.7 | 43.4 | 53.4 | 63.6 | 84.8 | 101.9 | 142.3 | 133.5 | 78.7 |
| Wood, furniture, paper | 13.7 | 15.9 | 23.6 | 27.0 | 40.1 | 54.3 | 65.1 | 69.7 | 38.3 |
| Chemicals, rubber, plastics | 27.2 | 32.6 | 40.1 | 50.3 | 72.3 | 84.7 | 104.2 | 119.8 | 92.9 |
| Metals, non-metallic mineral prod. | 34.2 | 53.6 | 56.9 | 71.2 | 95.5 | 113.2 | 142.1 | 170.6 | 136.8 |
| Machinery | 28.5 | 32.4 | 37.1 | 49.1 | 64.8 | 78.3 | 102.6 | 125.0 | 98.5 |
| Transportation equipment | 19.5 | 26.6 | 35.5 | 46.7 | 62.8 | 67.9 | 73.8 | 97.7 | 50.8 |
| Other manufacturing | 12.6 | 15.3 | 18.0 | 20.4 | 26.0 | 30.4 | 34.7 | 36.6 | 30.6 |
| Non-manufacturing | 537.4 | 591.8 | 752.9 | 758.8 | 968.4 | 1,101.6 | 1,411.5 | 1,470.7 | 1,642.2 |
| SOEs, all industries | 440.3 | 458.4 | 564.5 | 542.5 | 604.5 | 593.5 | 646.0 | 712.5 | 644.4 |
| Manufacturing | 93.8 | 98.1 | 113.2 | 128.0 | 150.3 | 153.8 | 161.5 | 162.2 | 116.2 |
| Food, beverages | 28.9 | 27.5 | 33.6 | 33.6 | 36.1 | 33.0 | 32.6 | 32.5 | 21.2 |
| Textiles, apparel, leather, footwear | 14.0 | 14.3 | 16.3 | 17.6 | 19.7 | 18.5 | 18.8 | 16.9 | 13.6 |
| Wood, furniture, paper | 6.0 | 4.8 | 5.2 | 5.5 | 6.0 | 9.1 | 7.4 | 7.2 | 2.7 |
| Chemicals, rubber, plastics | 11.5 | 11.3 | 11.7 | 14.5 | 19.5 | 20.8 | 23.2 | 26.3 | 21.7 |
| Metals, non-metallic mineral prod. | 15.2 | 17.7 | 21.1 | 27.6 | 32.9 | 32.6 | 37.5 | 35.4 | 18.5 |
| Machinery | 5.5 | 6.7 | 7.2 | 8.1 | 9.2 | 9.5 | 12.7 | 12.6 | 10.9 |
| Transportation equipment | 3.8 | 4.9 | 6.0 | 7.5 | 11.3 | 12.8 | 12.0 | 14.5 | 10.3 |
| Other manufacturing | 8.8 | 10.8 | 11.9 | 13.5 | 15.6 | 17.4 | 17.5 | 16.9 | 17.3 |
| Non-manufacturing | 346.6 | 360.3 | 451.3 | 414.6 | 454.2 | 439.7 | 484.4 | 550.2 | 528.1 |
| Wholly-foreign MNCs | 59.1 | 72.5 | 94.2 | 116.3 | 180.0 | 229.9 | 320.4 | 375.6 | 232.0 |
| Manufacturing | 53.4 | 62.5 | 82.8 | 107.2 | 160.7 | 201.1 | 274.9 | 321.5 | 175.1 |
| Food, beverages | 9.6 | 11.7 | 11.9 | 14.7 | 25.4 | 30.8 | 36.5 | 52.0 | 26.2 |
| Textiles, apparel, leather, footwear | 15.9 | 17.0 | 22.3 | 31.1 | 41.1 | 54.2 | 85.4 | 75.2 | 31.7 |
| Wood, furniture, paper | 1.6 | 2.8 | 6.5 | 6.8 | 11.6 | 16.2 | 22.0 | 27.4 | 9.8 |
| Chemicals, rubber, plastics | 4.8 | 6.3 | 8.4 | 11.8 | 17.9 | 20.5 | 30.4 | 35.2 | 19.1 |
| Metals, non-metallic mineral prod. | 2.7 | 3.6 | 6.1 | 7.6 | 11.4 | 16.4 | 22.0 | 30.1 | 19.6 |
| Machinery | 14.5 | 14.1 | 16.0 | 23.4 | 33.0 | 42.9 | 55.7 | 71.6 | 52.2 |
| Transportation equipment | 2.5 | 5.1 | 8.5 | 9.3 | 15.5 | 14.3 | 15.1 | 21.1 | 12.0 |
| Other manufacturing | 1.6 | 1.8 | 3.0 | 2.5 | 4.7 | 5.8 | 7.8 | 8.9 | 4.5 |
| Non-manufacturing | 5.7 | 10.0 | 11.4 | 9.1 | 19.3 | 28.7 | 45.5 | 54.2 | 56.9 |
| MNC Joint Ventures | 100.4 | 106.0 | 124.5 | 133.7 | 187.9 | 209.1 | 244.7 | 274.4 | 144.5 |
| Manufacturing | 47.7 | 54.5 | 67.4 | 78.0 | 95.3 | 107.4 | 125.8 | 155.0 | 93.0 |
| Food, beverages | 9.3 | 9.4 | 11.7 | 11.1 | 13.7 | 16.6 | 19.3 | 25.9 | 15.4 |
| Textiles, apparel, leather, footwear | 2.4 | 3.1 | 3.5 | 2.7 | 5.3 | 6.1 | 7.0 | 7.9 | 4.6 |
| Wood, furniture, paper | 0.9 | 0.8 | 1.1 | 1.2 | 2.1 | 2.4 | 2.7 | 2.5 | 1.4 |
| Chemicals, rubber, plastics | 5.7 | 6.7 | 8.7 | 10.9 | 13.5 | 15.7 | 17.5 | 18.4 | 11.6 |
| Metals, Non-metallic mineral prod. | 10.5 | 12.3 | 14.2 | 14.3 | 17.6 | 18.8 | 23.1 | 28.3 | 24.8 |
| Machinery | 6.7 | 8.3 | 8.9 | 10.3 | 12.4 | 13.5 | 15.9 | 18.1 | 14.5 |
| Transportation equipment | 11.2 | 13.0 | 18.3 | 26.3 | 29.6 | 32.3 | 37.1 | 49.8 | 18.0 |
| Other manufacturing | 1.0 | 1.0 | 1.1 | 1.3 | 1.2 | 2.1 | 3.1 | 4.1 | 2.6 |
| Non-manufacturing | 52.6 | 51.6 | 57.0 | 55.7 | 92.7 | 101.8 | 118.8 | 119.4 | 51.5 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B1c: Sales of All Firms, SOEs and MNCs with Positive Sales and Employment by Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|---------|---------|---------|---------|---------|---------|---------|
| All owners, all industries | 808.7 | 933.5 | 1,152.0 | 1,405.3 | 1,617.0 | 2,019.9 | 2,394.9 | 3,157.2 | 5,083.1 |
| -published estimates | 810 | 936 | 1,212 | 1,457 | 1,751 | 2,221 | 2,743 | 3,567 | 5,315 |
| Manufacturing | 246.3 | 298.6 | 360.5 | 452.0 | 583.9 | 707.0 | 856.7 | 1,144.3 | 1,501.3 |
| -published estimates | - | - | - | - | 608 | 736 | 906 | 1,185 | 1,553 |
| Food, beverages | 70.2 | 78.4 | 94.5 | 106.5 | 135.1 | 164.7 | 187.3 | 264.3 | 357.7 |
| Textiles, apparel, leather, footwear | 39.0 | 43.5 | 53.9 | 68.9 | 85.4 | 104.2 | 142.9 | 152.2 | 183.7 |
| Wood, furniture, paper | 13.9 | 16.0 | 23.7 | 28.4 | 40.4 | 55.4 | 65.5 | 90.2 | 115.3 |
| Chemicals, rubber, plastics | 27.8 | 32.7 | 40.2 | 54.5 | 72.9 | 87.3 | 104.7 | 135.3 | 183.3 |
| Metals, non-metallic mineral prod. | 34.3 | 53.6 | 57.1 | 75.0 | 95.9 | 115.1 | 143.9 | 202.7 | 300.7 |
| Machinery | 28.6 | 32.5 | 37.5 | 50.3 | 65.0 | 79.6 | 103.1 | 142.1 | 170.7 |
| Transportation equipment | 19.9 | 26.6 | 35.6 | 47.3 | 62.8 | 69.6 | 74.4 | 113.8 | 136.9 |
| Other manufacturing | 12.7 | 15.3 | 18.0 | 21.1 | 26.2 | 31.1 | 35.0 | 43.7 | 53.1 |
| Non-manufacturing | 562.3 | 634.8 | 791.4 | 953.3 | 1,033.1 | 1,312.9 | 1,538.2 | 2,012.9 | 3,581.7 |
| SOEs, all industries | 445.0 | 478.5 | 572.6 | 645.3 | 618.5 | 716.5 | 699.2 | 823.6 | 1,265.5 |
| -published estimates | 445 | 482 | 621 | 679 | 726 | 859 | 993 | 1,128 | 1,349 |
| Manufacturing | 94.0 | 98.5 | 113.6 | 129.7 | 150.4 | 160.8 | 161.6 | 183.8 | 193.7 |
| -published estimates | - | - | - | - | 165 | 176 | 186 | 197 | 210 |
| Food, beverages | 28.9 | 27.8 | 34.0 | 33.8 | 36.2 | 33.3 | 32.6 | 34.9 | 30.4 |
| Textiles, apparel, leather, footwear | 14.1 | 14.3 | 16.3 | 17.8 | 19.7 | 20.0 | 18.8 | 19.1 | 17.5 |
| Wood, furniture, paper | 6.0 | 4.8 | 5.2 | 5.6 | 6.0 | 9.6 | 7.4 | 9.4 | 9.5 |
| Chemicals, rubber, plastics | 11.6 | 11.3 | 11.7 | 14.7 | 19.5 | 21.6 | 23.2 | 28.1 | 34.9 |
| Metals, non-metallic mineral prod. | 15.2 | 17.7 | 21.2 | 27.6 | 32.9 | 33.6 | 37.5 | 40.4 | 47.3 |
| Machinery | 5.5 | 6.7 | 7.2 | 8.6 | 9.2 | 10.6 | 12.7 | 14.1 | 13.6 |
| Transportation equipment | 3.8 | 4.9 | 6.0 | 7.5 | 11.3 | 14.4 | 12.1 | 17.2 | 18.3 |
| Other manufacturing | 8.8 | 10.9 | 11.9 | 13.9 | 15.6 | 17.8 | 17.5 | 20.5 | 22.2 |
| Non-manufacturing | 350.9 | 380.0 | 459.0 | 515.6 | 468.1 | 555.7 | 537.6 | 639.8 | 1,071.8 |
| Wholly-foreign MNCs | 59.4 | 72.6 | 94.3 | 126.2 | 180.4 | 232.3 | 323.3 | 415.0 | 580.7 |
| -published estimates | 59 | 73 | 98 | 131 | 189 | 241 | 338 | 444 | 603 |
| Manufacturing | 53.5 | 62.5 | 82.9 | 112.3 | 160.9 | 203.5 | 276.4 | 352.9 | 478.2 |
| -published estimates | - | - | - | - | 166 | 210 | 283 | 359 | 480 |
| Food, beverages | 9.7 | 11.7 | 11.9 | 17.1 | 25.4 | 32.6 | 36.5 | 55.0 | 88.4 |
| Textiles, apparel, leather, footwear | 15.9 | 17.0 | 22.3 | 31.8 | 41.2 | 54.4 | 85.4 | 81.2 | 103.1 |
| Wood, furniture, paper | 1.6 | 2.8 | 6.5 | 6.9 | 11.6 | 16.2 | 22.0 | 30.3 | 38.2 |
| Chemicals, rubber, plastics | 4.9 | 6.3 | 8.5 | 12.8 | 18.0 | 20.8 | 30.4 | 39.1 | 59.6 |
| Metals, non-metallic mineral prod. | 2.7 | 3.6 | 6.1 | 8.1 | 11.4 | 16.5 | 23.2 | 33.0 | 44.3 |
| Machinery | 14.5 | 14.1 | 16.0 | 23.7 | 33.0 | 42.9 | 55.9 | 79.4 | 102.0 |
| Transportation equipment | 2.5 | 5.1 | 8.5 | 9.4 | 15.5 | 14.3 | 15.1 | 24.6 | 30.2 |
| Other manufacturing | 1.6 | 1.8 | 3.0 | 2.5 | 4.8 | 5.8 | 7.9 | 10.3 | 12.3 |
| Non-manufacturing | 5.9 | 10.1 | 11.4 | 13.9 | 19.5 | 28.8 | 46.9 | 62.1 | 102.5 |
| MNC Joint Ventures | 101.2 | 106.4 | 124.9 | 158.1 | 188.0 | 229.5 | 265.0 | 303.5 | 376.0 |
| -published estimates | 103 | 107 | 128 | 162 | 193 | 261 | 269 | 315 | 390 |
| Manufacturing | 48.3 | 54.5 | 67.5 | 83.5 | 95.3 | 107.5 | 125.9 | 164.9 | 193.5 |
| -published estimates | - | - | - | - | 97 | 109 | 127 | 165 | 193 |
| Food, beverages | 9.3 | 9.4 | 11.7 | 12.6 | 13.7 | 16.7 | 19.4 | 27.3 | 30.7 |
| Textiles, apparel, leather, footwear | 2.4 | 3.1 | 3.5 | 4.6 | 5.3 | 6.1 | 7.0 | 9.0 | 9.5 |
| Wood, furniture, paper | 0.9 | 0.8 | 1.1 | 1.5 | 2.1 | 2.4 | 2.7 | 3.0 | 3.1 |
| Chemicals, rubber, plastics | 5.8 | 6.7 | 8.7 | 11.1 | 13.5 | 15.7 | 17.5 | 19.2 | 20.4 |
| Metals, Non-metallic mineral prod. | 10.5 | 12.3 | 14.2 | 15.8 | 17.6 | 18.8 | 23.1 | 30.2 | 39.4 |
| Machinery | 6.7 | 8.3 | 8.9 | 10.3 | 12.4 | 13.5 | 15.9 | 18.6 | 20.8 |
| Transportation equipment | 11.6 | 13.0 | 18.3 | 26.3 | 29.6 | 32.3 | 37.1 | 53.4 | 64.0 |
| Other manufacturing | 1.0 | 1.0 | 1.1 | 1.3 | 1.2 | 2.1 | 3.1 | 4.2 | 5.7 |
| Non-manufacturing | 52.9 | 51.9 | 57.4 | 74.6 | 92.7 | 122.0 | 139.1 | 138.6 | 182.6 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B2a: Yearend Employment of All Firms, SOEs, and MNCs with 20 or More Employees and Positive Sales, Value Added and Fixed Assets by Industry Group (thousands)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| All firms, all industries | 3,292 | 3,650 | 4,173 | 4,112 | 4,906 | 4,969 | 5,324 | 4,618 | 3,304 |
| Manufacturing | 1,535 | 1,737 | 2,096 | 2,300 | 2,713 | 2,852 | 3,131 | 2,798 | 1,643 |
| Food, beverages | 247 | 273 | 315 | 326 | 376 | 383 | 402 | 337 | 167 |
| Textiles, apparel, leather, footwear | 637 | 716 | 891 | 976 | 1,141 | 1,192 | 1,307 | 1,193 | 708 |
| Wood, furniture, paper | 134 | 160 | 204 | 243 | 301 | 353 | 398 | 314 | 135 |
| Chemicals, rubber, plastics | 112 | 121 | 140 | 147 | 178 | 181 | 202 | 191 | 136 |
| Metals, non-metallic mineral prod. | 198 | 224 | 262 | 291 | 339 | 349 | 367 | 324 | 203 |
| Machinery | 95 | 110 | 125 | 143 | 161 | 175 | 208 | 209 | 151 |
| Transportation equipment | 54 | 66 | 87 | 94 | 112 | 113 | 127 | 119 | 72 |
| Other manufacturing | 58 | 65 | 73 | 79 | 103 | 106 | 119 | 110 | 70 |
| Non-manufacturing | 1,757 | 1,913 | 2,077 | 1,812 | 2,194 | 2,117 | 2,193 | 1,820 | 1,661 |
| SOEs, all industries | 2,065 | 2,095 | 2,152 | 1,841 | 1,978 | 1,540 | 1,398 | 1,122 | 919 |
| Manufacturing | 713 | 691 | 729 | 732 | 704 | 555 | 474 | 362 | 251 |
| Food, beverages | 131 | 120 | 132 | 127 | 120 | 94 | 74 | 47 | 28 |
| Textiles, apparel, leather, footwear | 252 | 245 | 259 | 260 | 241 | 178 | 145 | 101 | 70 |
| Wood, furniture, paper | 38 | 34 | 36 | 33 | 31 | 38 | 30 | 24 | 10 |
| Chemicals, rubber, plastics | 61 | 55 | 54 | 55 | 61 | 42 | 41 | 38 | 29 |
| Metals, non-metallic mineral prod. | 124 | 120 | 128 | 136 | 130 | 103 | 81 | 67 | 41 |
| Machinery | 44 | 48 | 45 | 46 | 41 | 29 | 30 | 18 | 21 |
| Transportation equipment | 32 | 33 | 39 | 39 | 42 | 34 | 38 | 39 | 27 |
| Other manufacturing | 33 | 35 | 36 | 36 | 39 | 36 | 34 | 28 | 26 |
| Non-manufacturing | 1,352 | 1,404 | 1,423 | 1,109 | 1,274 | 985 | 924 | 760 | 668 |
| Wholly-foreign MNCs | 281 | 358 | 527 | 646 | 851 | 999 | 1,216 | 1,201 | 653 |
| Manufacturing | 271 | 344 | 507 | 631 | 822 | 964 | 1,171 | 1,159 | 609 |
| Food, beverages | 18 | 23 | 23 | 28 | 42 | 43 | 50 | 48 | 23 |
| Textiles, apparel, leather, footwear | 157 | 191 | 304 | 383 | 479 | 560 | 654 | 650 | 358 |
| Wood, furniture, paper | 19 | 28 | 41 | 55 | 77 | 96 | 124 | 118 | 31 |
| Chemicals, rubber, plastics | 15 | 19 | 25 | 29 | 40 | 47 | 67 | 64 | 36 |
| Metals, non-metallic mineral prod. | 12 | 16 | 25 | 28 | 39 | 46 | 56 | 53 | 32 |
| Machinery | 31 | 37 | 49 | 61 | 74 | 97 | 123 | 137 | 88 |
| Transportation equipment | 7 | 12 | 17 | 21 | 29 | 30 | 39 | 35 | 16 |
| Other manufacturing | 12 | 18 | 22 | 26 | 40 | 44 | 59 | 55 | 25 |
| Non-manufacturing | 10 | 14 | 20 | 16 | 30 | 35 | 45 | 41 | 43 |
| MNC Joint Ventures | 119 | 121 | 150 | 137 | 175 | 185 | 205 | 185 | 124 |
| Manufacturing | 80 | 86 | 111 | 105 | 131 | 137 | 151 | 136 | 81 |
| Food, beverages | 16 | 16 | 19 | 16 | 18 | 20 | 19 | 20 | 10 |
| Textiles, apparel, leather, footwear | 22 | 26 | 38 | 32 | 49 | 49 | 58 | 53 | 28 |
| Wood, furniture, paper | 5 | 4 | 7 | 8 | 10 | 10 | 11 | 8 | 4 |
| Chemicals, rubber, plastics | 8 | 9 | 11 | 9 | 10 | 10 | 10 | 8 | 6 |
| Metals, Non-metallic mineral prod. | 12 | 12 | 13 | 13 | 15 | 16 | 17 | 17 | 13 |
| Machinery | 8 | 7 | 7 | 8 | 10 | 11 | 11 | 11 | 8 |
| Transportation equipment | 8 | 9 | 13 | 16 | 17 | 20 | 23 | 17 | 12 |
| Other manufacturing | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| Non-manufacturing | 39 | 35 | 38 | 32 | 43 | 48 | 54 | 49 | 42 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B2b: Yearend Employment of All Firms, SOEs, and MNCs with Positive Sales, Employment, Value Added, and Fixed Assets by Owner and Industry Group (thousands)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| All firms, all industries | 3,457 | 3,850 | 4,423 | 4,372 | 5,262 | 5,388 | 5,933 | 4,971 | 3,776 |
| Manufacturing | 1,575 | 1,780 | 2,151 | 2,352 | 2,786 | 2,935 | 3,233 | 2,862 | 1,719 |
| Food, beverages | 265 | 291 | 334 | 344 | 397 | 406 | 427 | 354 | 181 |
| Textiles, apparel, leather, footwear | 640 | 719 | 894 | 979 | 1,147 | 1,198 | 1,316 | 1,198 | 715 |
| Wood, furniture, paper | 139 | 167 | 213 | 252 | 313 | 367 | 415 | 324 | 150 |
| Chemicals, rubber, plastics | 115 | 124 | 144 | 152 | 185 | 190 | 213 | 198 | 144 |
| Metals, non-metallic mineral prod. | 205 | 232 | 272 | 301 | 354 | 366 | 388 | 338 | 221 |
| Machinery | 96 | 112 | 128 | 146 | 165 | 180 | 214 | 213 | 156 |
| Transportation equipment | 55 | 68 | 89 | 96 | 115 | 116 | 130 | 121 | 74 |
| Other manufacturing | 60 | 67 | 77 | 83 | 109 | 113 | 130 | 116 | 78 |
| Non-manufacturing | 1,882 | 2,070 | 2,273 | 2,020 | 2,477 | 2,453 | 2,700 | 2,109 | 2,057 |
| SOEs, all industries | 2,071 | 2,099 | 2,155 | 1,842 | 1,980 | 1,543 | 1,403 | 1,123 | 920 |
| Manufacturing | 714 | 692 | 730 | 731 | 704 | 556 | 474 | 362 | 251 |
| Food, beverages | 131 | 121 | 132 | 127 | 120 | 94 | 74 | 47 | 28 |
| Textiles, apparel, leather, footwear | 252 | 245 | 259 | 260 | 241 | 178 | 145 | 101 | 70 |
| Wood, furniture, paper | 38 | 34 | 36 | 33 | 31 | 38 | 30 | 24 | 10 |
| Chemicals, rubber, plastics | 61 | 55 | 54 | 55 | 61 | 42 | 41 | 38 | 29 |
| Metals, non-metallic mineral prod. | 124 | 120 | 128 | 135 | 130 | 103 | 81 | 67 | 41 |
| Machinery | 44 | 48 | 45 | 46 | 41 | 29 | 30 | 18 | 21 |
| Transportation equipment | 32 | 33 | 39 | 39 | 42 | 34 | 39 | 39 | 27 |
| Other manufacturing | 33 | 35 | 36 | 36 | 39 | 36 | 34 | 28 | 26 |
| Non-manufacturing | 1,357 | 1,407 | 1,425 | 1,111 | 1,276 | 988 | 928 | 761 | 669 |
| Wholly-foreign MNCs, all industries | 282 | 360 | 529 | 648 | 854 | 1,003 | 1,221 | 1,203 | 656 |
| Manufacturing | 272 | 345 | 508 | 631 | 823 | 966 | 1,174 | 1,160 | 610 |
| Food, beverages | 18 | 23 | 23 | 28 | 42 | 43 | 50 | 48 | 23 |
| Textiles, apparel, leather, footwear | 157 | 191 | 304 | 383 | 480 | 560 | 655 | 649 | 358 |
| Wood, furniture, paper | 19 | 28 | 41 | 55 | 78 | 97 | 124 | 118 | 30 |
| Chemicals, rubber, plastics | 15 | 19 | 25 | 29 | 41 | 48 | 68 | 64 | 37 |
| Metals, non-metallic mineral prod. | 12 | 16 | 25 | 28 | 39 | 46 | 56 | 53 | 33 |
| Machinery | 31 | 37 | 50 | 61 | 74 | 97 | 124 | 138 | 88 |
| Transportation equipment | 7 | 12 | 17 | 21 | 29 | 30 | 39 | 35 | 16 |
| Other manufacturing | 12 | 18 | 22 | 26 | 41 | 45 | 59 | 55 | 25 |
| Non-manufacturing | 10 | 15 | 21 | 16 | 31 | 36 | 47 | 42 | 45 |
| MNC Joint Ventures | 120 | 122 | 151 | 137 | 176 | 186 | 206 | 186 | 125 |
| Manufacturing | 80 | 86 | 112 | 106 | 132 | 137 | 152 | 136 | 82 |
| Food, beverages | 16 | 16 | 19 | 16 | 18 | 20 | 19 | 20 | 10 |
| Textiles, apparel, leather, footwear | 22 | 26 | 38 | 32 | 50 | 49 | 58 | 53 | 28 |
| Wood, furniture, paper | 5 | 4 | 7 | 8 | 10 | 10 | 11 | 8 | 4 |
| Chemicals, rubber, plastics | 8 | 9 | 11 | 9 | 10 | 10 | 11 | 8 | 6 |
| Metals, Non-metallic mineral prod. | 12 | 12 | 13 | 13 | 15 | 16 | 17 | 17 | 13 |
| Machinery | 8 | 7 | 7 | 8 | 10 | 11 | 11 | 11 | 8 |
| Transportation equipment | 8 | 9 | 13 | 16 | 17 | 20 | 23 | 17 | 12 |
| Other manufacturing | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| Non-manufacturing | 40 | 36 | 39 | 32 | 44 | 49 | 55 | 50 | 43 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B2c: Yearend Employment of All Firms, SOEs, and MNCs with Positive Sales and Employment by Industry Group (thousands)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| All firms, all industries | 3,531 | 3,914 | 4,537 | 5,020 | 5,463 | 6,006 | 6,137 | 6,944 | 8,095 |
| -published estimates | 3,537 | 3,933 | 4,658 | 5,175 | 5,771 | 6,237 | 6,715 | 7,382 | 8,155 |
| Manufacturing | 1,596 | 1,791 | 2,171 | 2,500 | 2,824 | 3,041 | 3,274 | 3,696 | 3,922 |
| -published estimates | - | - | - | - | 2,893 | 3,099 | 3,402 | 3,774 | 3,943 |
| Food, beverages | 268 | 294 | 338 | 368 | 402 | 417 | 430 | 457 | 499 |
| Textiles, apparel, leather, footwear | 651 | 723 | 902 | 1,049 | 1,158 | 1,230 | 1,329 | 1,474 | 1,560 |
| Wood, furniture, paper | 141 | 168 | 214 | 263 | 320 | 377 | 421 | 476 | 481 |
| Chemicals, rubber, plastics | 116 | 125 | 146 | 165 | 189 | 199 | 216 | 250 | 271 |
| Metals, non-metallic mineral prod. | 206 | 233 | 275 | 316 | 360 | 383 | 396 | 459 | 499 |
| Machinery | 97 | 112 | 129 | 152 | 167 | 190 | 217 | 268 | 284 |
| Transportation equipment | 56 | 68 | 90 | 99 | 116 | 126 | 131 | 168 | 172 |
| Other manufacturing | 60 | 68 | 77 | 90 | 112 | 118 | 133 | 145 | 156 |
| Non-manufacturing | 1,935 | 2,123 | 2,367 | 2,520 | 2,639 | 2,966 | 2,863 | 3,248 | 4,173 |
| SOEs, all industries | 2,087 | 2,105 | 2,174 | 2,156 | 1,987 | 1,879 | 1,410 | 1,439 | 1,606 |
| -published estimates | 2,089 | 2,114 | 2,260 | 2,265 | 2,250 | 2,038 | 1,900 | 1,763 | 1,635 |
| Manufacturing | 717 | 693 | 732 | 742 | 705 | 607 | 475 | 470 | 409 |
| -published estimates | - | - | - | - | 757 | 636 | 552 | 482 | 414 |
| Food, beverages | 131 | 122 | 134 | 129 | 122 | 96 | 74 | 56 | 48 |
| Textiles, apparel, leather, footwear | 254 | 245 | 259 | 263 | 241 | 196 | 145 | 133 | 105 |
| Wood, furniture, paper | 38 | 34 | 36 | 34 | 31 | 40 | 30 | 32 | 25 |
| Chemicals, rubber, plastics | 61 | 55 | 54 | 56 | 61 | 47 | 41 | 44 | 39 |
| Metals, non-metallic mineral prod. | 124 | 120 | 128 | 137 | 130 | 111 | 81 | 88 | 81 |
| Machinery | 44 | 48 | 45 | 48 | 41 | 37 | 30 | 29 | 26 |
| Transportation equipment | 32 | 33 | 39 | 39 | 42 | 43 | 39 | 53 | 50 |
| Other manufacturing | 33 | 35 | 36 | 37 | 39 | 38 | 34 | 35 | 34 |
| Non-manufacturing | 1,370 | 1,412 | 1,443 | 1,413 | 1,282 | 1,272 | 935 | 969 | 1,197 |
| Wholly-foreign MNCs | 285 | 360 | 531 | 679 | 858 | 1,010 | 1,226 | 1,405 | 1,599 |
| -published estimates | 286 | 364 | 536 | 688 | 865 | 1,028 | 1,237 | 1,459 | 1,604 |
| Manufacturing | 275 | 345 | 509 | 655 | 826 | 973 | 1,178 | 1,353 | 1,524 |
| -published estimates | - | - | - | - | 988 | 1,187 | 1,396 | 1,528 | |
| Food, beverages | 19 | 23 | 23 | 31 | 42 | 47 | 50 | 55 | 61 |
| Textiles, apparel, leather, footwear | 159 | 191 | 306 | 396 | 482 | 562 | 655 | 749 | 861 |
| Wood, furniture, paper | 19 | 28 | 41 | 56 | 78 | 97 | 124 | 142 | 143 |
| Chemicals, rubber, plastics | 16 | 19 | 25 | 33 | 41 | 48 | 68 | 76 | 91 |
| Metals, non-metallic mineral prod. | 12 | 16 | 25 | 30 | 39 | 46 | 58 | 64 | 74 |
| Machinery | 31 | 37 | 50 | 62 | 75 | 97 | 124 | 163 | 179 |
| Transportation equipment | 7 | 12 | 17 | 21 | 29 | 30 | 39 | 43 | 46 |
| Other manufacturing | 12 | 18 | 22 | 27 | 41 | 45 | 59 | 62 | 69 |
| Non-manufacturing | 11 | 15 | 21 | 23 | 32 | 37 | 48 | 53 | 75 |
| MNC Joint Ventures | 121 | 122 | 152 | 170 | 177 | 187 | 207 | 221 | 224 |
| -published estimates | 122 | 125 | 155 | 173 | 180 | 192 | 208 | 227 | 225 |
| Manufacturing | 81 | 86 | 112 | 127 | 132 | 137 | 152 | 165 | 158 |
| -published estimates | - | - | - | - | 133 | 138 | 153 | 166 | 158 |
| Food, beverages | 16 | 16 | 20 | 19 | 18 | 20 | 19 | 23 | 20 |
| Textiles, apparel, leather, footwear | 22 | 26 | 38 | 46 | 50 | 49 | 58 | 64 | 58 |
| Wood, furniture, paper | 5 | 4 | 7 | 9 | 10 | 10 | 11 | 10 | 9 |
| Chemicals, rubber, plastics | 9 | 9 | 11 | 11 | 10 | 10 | 11 | 10 | 10 |
| Metals, Non-metallic mineral prod. | 12 | 12 | 13 | 14 | 15 | 16 | 17 | 19 | 20 |
| Machinery | 8 | 7 | 7 | 8 | 10 | 11 | 11 | 12 | 11 |
| Transportation equipment | 8 | 9 | 14 | 16 | 17 | 20 | 23 | 25 | 28 |
| Other manufacturing | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Non-manufacturing | 40 | 36 | 39 | 43 | 44 | 50 | 55 | 56 | 66 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B3a: Number of All Firms, SOEs, MNCs with 20 or More Employees and Positive Sales, Value Added, and Fixed Assets by Industry Group

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| All firms, all industries | 14,357 | 16,796 | 20,366 | 21,742 | 26,896 | 29,705 | 31,507 | 25,082 | 21,230 |
| Manufacturing | 5,764 | 6,719 | 8,037 | 8,674 | 10,787 | 11,767 | 12,556 | 10,202 | 7,357 |
| Food, beverages | 1,045 | 1,147 | 1,321 | 1,397 | 1,679 | 1,839 | 1,951 | 1,532 | 953 |
| Textiles, apparel, leather, footwear | 1,037 | 1,207 | 1,501 | 1,586 | 2,065 | 2,160 | 2,296 | 1,769 | 1,489 |
| Wood, furniture, paper | 904 | 1,113 | 1,319 | 1,516 | 1,867 | 2,105 | 2,243 | 1,759 | 1,144 |
| Chemicals, rubber, plastics | 611 | 717 | 880 | 922 | 1,148 | 1,282 | 1,424 | 1,252 | 911 |
| Metals, non-metallic mineral prod. | 1,129 | 1,343 | 1,607 | 1,746 | 2,208 | 2,478 | 2,630 | 2,179 | 1,502 |
| Machinery | 404 | 473 | 548 | 603 | 713 | 733 | 802 | 680 | 565 |
| Transportation equipment | 304 | 356 | 416 | 434 | 496 | 527 | 508 | 425 | 319 |
| Other manufacturing | 330 | 363 | 445 | 470 | 611 | 643 | 702 | 606 | 474 |
| Non-manufacturing | 8,593 | 10,077 | 12,329 | 13,068 | 16,109 | 17,938 | 18,951 | 14,880 | 13,873 |
| SOEs, all industries | 5,368 | 5,020 | 4,951 | 4,334 | 4,199 | 3,550 | 3,166 | 2,380 | 1,597 |
| Manufacturing | 1,531 | 1,379 | 1,343 | 1,222 | 1,164 | 933 | 804 | 625 | 477 |
| Food, beverages | 288 | 252 | 252 | 226 | 214 | 180 | 152 | 107 | 68 |
| Textiles, apparel, leather, footwear | 230 | 215 | 208 | 193 | 173 | 131 | 101 | 73 | 59 |
| Wood, furniture, paper | 116 | 105 | 100 | 81 | 77 | 66 | 62 | 40 | 21 |
| Chemicals, rubber, plastics | 136 | 120 | 111 | 106 | 100 | 74 | 68 | 56 | 44 |
| Metals, non-metallic mineral prod. | 328 | 272 | 263 | 250 | 240 | 188 | 155 | 119 | 78 |
| Machinery | 134 | 131 | 120 | 114 | 104 | 74 | 58 | 48 | 51 |
| Transportation equipment | 114 | 104 | 105 | 91 | 87 | 67 | 62 | 53 | 49 |
| Other manufacturing | 185 | 180 | 184 | 161 | 169 | 153 | 146 | 129 | 107 |
| Non-manufacturing | 3,837 | 3,641 | 3,608 | 3,112 | 3,035 | 2,617 | 2,362 | 1,755 | 1,120 |
| Wholly-foreign MNCs | 728 | 971 | 1,291 | 1,480 | 1,926 | 2,167 | 2,649 | 2,264 | 1,593 |
| Manufacturing | 630 | 830 | 1,121 | 1,323 | 1,679 | 1,882 | 2,283 | 1,998 | 1,280 |
| Food, beverages | 78 | 86 | 106 | 126 | 145 | 164 | 181 | 151 | 72 |
| Textiles, apparel, leather, footwear | 174 | 229 | 332 | 399 | 514 | 537 | 617 | 525 | 377 |
| Wood, furniture, paper | 60 | 94 | 130 | 162 | 200 | 238 | 281 | 256 | 115 |
| Chemicals, rubber, plastics | 96 | 125 | 149 | 174 | 239 | 276 | 383 | 333 | 196 |
| Metals, non-metallic mineral prod. | 73 | 95 | 131 | 146 | 196 | 224 | 281 | 251 | 187 |
| Machinery | 69 | 88 | 119 | 139 | 156 | 178 | 222 | 203 | 152 |
| Transportation equipment | 37 | 58 | 73 | 86 | 115 | 134 | 150 | 132 | 86 |
| Other manufacturing | 43 | 55 | 81 | 91 | 114 | 131 | 168 | 147 | 95 |
| Non-manufacturing | 98 | 141 | 170 | 157 | 247 | 285 | 366 | 266 | 313 |
| MNC Joint Ventures | 581 | 562 | 589 | 552 | 653 | 660 | 681 | 554 | 464 |
| Manufacturing | 324 | 317 | 352 | 360 | 386 | 380 | 387 | 322 | 222 |
| Food, beverages | 59 | 52 | 64 | 60 | 62 | 58 | 63 | 52 | 32 |
| Textiles, apparel, leather, footwear | 39 | 37 | 52 | 54 | 69 | 60 | 59 | 52 | 41 |
| Wood, furniture, paper | 27 | 24 | 27 | 31 | 38 | 41 | 39 | 31 | 17 |
| Chemicals, rubber, plastics | 51 | 53 | 59 | 59 | 54 | 57 | 60 | 47 | 27 |
| Metals, Non-metallic mineral prod. | 72 | 75 | 74 | 74 | 75 | 80 | 81 | 74 | 51 |
| Machinery | 44 | 43 | 39 | 40 | 47 | 42 | 40 | 30 | 27 |
| Transportation equipment | 22 | 22 | 24 | 28 | 28 | 29 | 30 | 23 | 18 |
| Other manufacturing | 10 | 11 | 13 | 14 | 13 | 13 | 15 | 13 | 9 |
| Non-manufacturing | 257 | 245 | 237 | 192 | 267 | 280 | 294 | 232 | 242 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B3b: Number of All Firms, SOEs, and MNCs with Positive Sales, Employment, Value Added, and Fixed Assets by Industry Group

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| All firms, all industries | 37,281 | 43,408 | 52,118 | 53,800 | 70,140 | 80,015 | 114,384 | 72,187 | 82,826 |
| Manufacturing | 10,101 | 11,320 | 13,816 | 14,188 | 18,239 | 20,199 | 24,217 | 17,294 | 15,939 |
| Food, beverages | 3,426 | 3,398 | 3,794 | 3,570 | 4,156 | 4,526 | 5,084 | 3,637 | 2,630 |
| Textiles, apparel, leather, footwear | 1,187 | 1,394 | 1,817 | 1,899 | 2,561 | 2,740 | 3,339 | 2,340 | 2,348 |
| Wood, furniture, paper | 1,444 | 1,755 | 2,182 | 2,395 | 3,031 | 3,449 | 4,065 | 2,879 | 2,802 |
| Chemicals, rubber, plastics | 847 | 1,023 | 1,306 | 1,341 | 1,806 | 2,110 | 2,628 | 2,003 | 1,808 |
| Metals, non-metallic mineral prod. | 1,800 | 2,077 | 2,563 | 2,724 | 3,619 | 4,071 | 4,902 | 3,560 | 3,358 |
| Machinery | 519 | 619 | 772 | 844 | 1,084 | 1,148 | 1,401 | 1,020 | 1,057 |
| Transportation equipment | 427 | 497 | 603 | 592 | 708 | 794 | 760 | 582 | 489 |
| Other manufacturing | 451 | 557 | 779 | 823 | 1,274 | 1,361 | 2,038 | 1,273 | 1,447 |
| Non-manufacturing | 27,180 | 32,088 | 38,302 | 39,612 | 51,901 | 59,816 | 90,167 | 54,893 | 66,887 |
| SOEs, all industries | 5,656 | 5,263 | 5,174 | 4,483 | 4,347 | 3,710 | 3,311 | 2,483 | 1,676 |
| Manufacturing | 1,558 | 1,402 | 1,366 | 1,237 | 1,179 | 947 | 817 | 637 | 484 |
| Food, beverages | 296 | 258 | 261 | 230 | 217 | 183 | 155 | 109 | 70 |
| Textiles, apparel, leather, footwear | 234 | 216 | 210 | 194 | 173 | 133 | 101 | 74 | 60 |
| Wood, furniture, paper | 117 | 106 | 100 | 83 | 78 | 66 | 64 | 41 | 21 |
| Chemicals, rubber, plastics | 139 | 121 | 112 | 106 | 100 | 75 | 68 | 57 | 44 |
| Metals, non-metallic mineral prod. | 331 | 275 | 265 | 251 | 243 | 189 | 159 | 122 | 79 |
| Machinery | 135 | 132 | 121 | 115 | 104 | 74 | 58 | 48 | 51 |
| Transportation equipment | 118 | 107 | 107 | 93 | 88 | 70 | 63 | 53 | 49 |
| Other manufacturing | 188 | 187 | 190 | 165 | 176 | 157 | 149 | 133 | 110 |
| Non-manufacturing | 4,098 | 3,861 | 3,808 | 3,246 | 3,168 | 2,763 | 2,494 | 1,846 | 1,192 |
| Wholly-foreign MNCs | 820 | 1,100 | 1,471 | 1,660 | 2,206 | 2,475 | 3,114 | 2,521 | 1,989 |
| Manufacturing | 683 | 902 | 1,222 | 1,436 | 1,837 | 2,058 | 2,508 | 2,159 | 1,486 |
| Food, beverages | 86 | 102 | 124 | 145 | 169 | 184 | 199 | 166 | 93 |
| Textiles, apparel, leather, footwear | 178 | 235 | 345 | 408 | 529 | 548 | 641 | 537 | 403 |
| Wood, furniture, paper | 61 | 99 | 132 | 168 | 210 | 252 | 300 | 267 | 131 |
| Chemicals, rubber, plastics | 111 | 140 | 171 | 199 | 272 | 331 | 444 | 381 | 234 |
| Metals, non-metallic mineral prod. | 81 | 108 | 147 | 170 | 224 | 255 | 316 | 284 | 232 |
| Machinery | 77 | 94 | 136 | 154 | 181 | 200 | 257 | 224 | 188 |
| Transportation equipment | 40 | 61 | 77 | 93 | 124 | 142 | 166 | 139 | 90 |
| Other manufacturing | 49 | 63 | 90 | 99 | 128 | 146 | 185 | 161 | 115 |
| Non-manufacturing | 137 | 198 | 249 | 224 | 369 | 417 | 606 | 362 | 503 |
| MNC Joint Ventures | 639 | 635 | 680 | 609 | 741 | 741 | 800 | 624 | 551 |
| Manufacturing | 340 | 343 | 385 | 386 | 416 | 411 | 422 | 346 | 251 |
| Food, beverages | 60 | 56 | 69 | 65 | 67 | 66 | 69 | 57 | 38 |
| Textiles, apparel, leather, footwear | 39 | 39 | 52 | 55 | 72 | 61 | 62 | 53 | 43 |
| Wood, furniture, paper | 28 | 25 | 30 | 32 | 40 | 43 | 41 | 31 | 17 |
| Chemicals, rubber, plastics | 57 | 59 | 67 | 64 | 61 | 62 | 68 | 51 | 30 |
| Metals, Non-metallic mineral prod. | 76 | 81 | 81 | 81 | 79 | 85 | 86 | 79 | 55 |
| Machinery | 45 | 44 | 45 | 46 | 52 | 47 | 46 | 35 | 34 |
| Transportation equipment | 23 | 24 | 25 | 29 | 30 | 32 | 33 | 24 | 22 |
| Other manufacturing | 12 | 15 | 16 | 14 | 15 | 15 | 17 | 16 | 12 |
| Non-manufacturing | 299 | 292 | 295 | 223 | 325 | 330 | 378 | 278 | 300 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B3c: Number of All Firms, SOEs, and MNCs with Positive Sales and Employment by Owner and Industry Group

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| All firms, all industries | 42,051 | 48,926 | 60,539 | 69,368 | 87,877 | 107,294 | 128,000 | 152,354 | 204,513 |
| -published estimates | 42,288 | 51,680 | 62,908 | 72,012 | 91,756 | 112,950 | 131,318 | 155,771 | 205,689 |
| Manufacturing | 10,366 | 11,608 | 14,408 | 16,439 | 19,955 | 23,156 | 25,968 | 30,436 | 38,249 |
| -published estimates | - | - | - | - | 20,531 | 24,017 | 26,863 | 31,057 | 38,384 |
| Food, beverages | 3,482 | 3,452 | 3,892 | 4,018 | 4,376 | 4,943 | 5,303 | 5,892 | 6,957 |
| Textiles, apparel, leather, footwear | 1,239 | 1,445 | 1,917 | 2,242 | 2,822 | 3,204 | 3,640 | 4,230 | 5,551 |
| Wood, furniture, paper | 1,484 | 1,803 | 2,263 | 2,695 | 3,289 | 3,934 | 4,345 | 5,341 | 6,994 |
| Chemicals, rubber, plastics | 873 | 1,053 | 1,377 | 1,608 | 1,992 | 2,398 | 2,798 | 3,294 | 3,971 |
| Metals, non-metallic mineral prod. | 1,837 | 2,124 | 2,686 | 3,138 | 3,990 | 4,659 | 5,255 | 6,355 | 8,130 |
| Machinery | 539 | 635 | 803 | 974 | 1,213 | 1,375 | 1,532 | 1,789 | 2,265 |
| Transportation equipment | 440 | 512 | 630 | 671 | 772 | 911 | 815 | 988 | 1,160 |
| Other manufacturing | 472 | 584 | 840 | 1,093 | 1,501 | 1,732 | 2,280 | 2,547 | 3,221 |
| Non-manufacturing | 31,685 | 37,318 | 46,131 | 52,929 | 67,922 | 84,138 | 102,032 | 121,918 | 166,264 |
| SOEs, all industries | 5,733 | 5,310 | 5,222 | 4,681 | 4,383 | 3,907 | 3,369 | 3,309 | 3,209 |
| -published estimates | 5,759 | 5,355 | 5,363 | 4,845 | 4,597 | 4,086 | 3,706 | 3,494 | 3,287 |
| Manufacturing | 1,570 | 1,409 | 1,374 | 1,272 | 1,185 | 1,025 | 827 | 838 | 778 |
| -published estimates | - | - | - | - | 1,247 | 1,082 | 946 | 872 | 792 |
| Food, beverages | 300 | 261 | 266 | 239 | 221 | 187 | 156 | 137 | 127 |
| Textiles, apparel, leather, footwear | 237 | 217 | 210 | 196 | 173 | 143 | 101 | 96 | 89 |
| Wood, furniture, paper | 117 | 106 | 100 | 87 | 78 | 68 | 65 | 61 | 56 |
| Chemicals, rubber, plastics | 140 | 121 | 112 | 107 | 100 | 83 | 68 | 71 | 62 |
| Metals, non-metallic mineral prod. | 332 | 275 | 267 | 254 | 243 | 203 | 159 | 169 | 154 |
| Machinery | 135 | 132 | 121 | 117 | 104 | 88 | 59 | 67 | 64 |
| Transportation equipment | 118 | 108 | 107 | 94 | 88 | 87 | 64 | 81 | 77 |
| Other manufacturing | 191 | 189 | 191 | 178 | 178 | 166 | 155 | 156 | 149 |
| Non-manufacturing | 4,163 | 3,901 | 3,848 | 3,409 | 3,198 | 2,882 | 2,542 | 2,471 | 2,431 |
| Wholly-foreign MNCs | 837 | 1,113 | 1,490 | 1,799 | 2,263 | 2,559 | 3,202 | 3,451 | 4,469 |
| -published estimates | 854 | 1,294 | 1,561 | 1,869 | 2,335 | 2,852 | 3,342 | 4,018 | 4,612 |
| Manufacturing | 691 | 910 | 1,231 | 1,517 | 1,866 | 2,100 | 2,543 | 2,842 | 3,469 |
| -published estimates | - | - | - | - | 1,891 | 2,217 | 2,587 | 3,064 | 3,500 |
| Food, beverages | 87 | 102 | 124 | 154 | 169 | 190 | 203 | 224 | 251 |
| Textiles, apparel, leather, footwear | 183 | 238 | 349 | 434 | 537 | 563 | 650 | 714 | 867 |
| Wood, furniture, paper | 61 | 100 | 134 | 173 | 212 | 256 | 303 | 346 | 383 |
| Chemicals, rubber, plastics | 112 | 140 | 172 | 217 | 277 | 336 | 447 | 487 | 606 |
| Metals, non-metallic mineral prod. | 81 | 110 | 148 | 178 | 226 | 260 | 322 | 384 | 511 |
| Machinery | 78 | 95 | 136 | 159 | 187 | 204 | 264 | 310 | 396 |
| Transportation equipment | 40 | 62 | 77 | 98 | 125 | 143 | 168 | 179 | 213 |
| Other manufacturing | 49 | 63 | 91 | 104 | 133 | 148 | 186 | 198 | 242 |
| Non-manufacturing | 146 | 203 | 259 | 282 | 397 | 459 | 659 | 609 | 1,000 |
| MNC Joint Ventures | 652 | 651 | 691 | 717 | 759 | 765 | 820 | 803 | 964 |
| -published estimates | 671 | 717 | 747 | 772 | 821 | 845 | 878 | 943 | 1,014 |
| Manufacturing | 344 | 343 | 388 | 413 | 421 | 416 | 429 | 431 | 453 |
| -published estimates | - | - | - | - | 435 | 437 | 445 | 452 | 458 |
| Food, beverages | 60 | 56 | 70 | 70 | 67 | 67 | 71 | 67 | 69 |
| Textiles, apparel, leather, footwear | 39 | 39 | 53 | 63 | 73 | 61 | 63 | 67 | 70 |
| Wood, furniture, paper | 28 | 25 | 30 | 34 | 41 | 43 | 41 | 40 | 37 |
| Chemicals, rubber, plastics | 59 | 59 | 67 | 70 | 62 | 62 | 69 | 67 | 66 |
| Metals, Non-metallic mineral prod. | 76 | 81 | 81 | 84 | 80 | 86 | 86 | 95 | 99 |
| Machinery | 46 | 44 | 45 | 48 | 52 | 47 | 47 | 44 | 53 |
| Transportation equipment | 24 | 24 | 26 | 29 | 31 | 34 | 33 | 32 | 39 |
| Other manufacturing | 12 | 15 | 16 | 15 | 15 | 16 | 19 | 19 | 20 |
| Non-manufacturing | 308 | 308 | 303 | 304 | 338 | 349 | 391 | 372 | 511 |

Source: Authors' compilations from General Statistics Office (various years b) and published estimates from General Statistics Office (various years a)

Appendix Table B4a: Value Added of All Firms, SOEs, and MNCs with 20 or More Employees and Positive Sales, Value Added and Fixed Assets by Owner and Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| All firms, all industries | 327.60 | 348.40 | 429.21 | 460.80 | 568.36 | 644.27 | 803.34 | 983.46 | 872.62 |
| Manufacturing | 96.93 | 68.59 | 81.39 | 179.19 | 128.36 | 152.01 | 183.44 | 355.17 | 182.44 |
| Food, beverages | 21.85 | 13.25 | 15.84 | 40.38 | 23.42 | 28.21 | 32.39 | 85.98 | 34.22 |
| Textiles, apparel, leather, footwear | 18.32 | 11.91 | 14.99 | 29.69 | 23.79 | 28.22 | 38.38 | 49.38 | 26.21 |
| Wood, furniture, paper | 6.48 | 3.43 | 5.24 | 10.93 | 9.08 | 12.45 | 14.39 | 30.79 | 12.17 |
| Chemicals, rubber, plastics | 11.79 | 6.54 | 8.10 | 21.80 | 14.35 | 16.71 | 20.33 | 39.19 | 24.31 |
| Metals, non-metallic mineral prod. | 14.87 | 15.19 | 14.56 | 28.48 | 23.18 | 26.94 | 33.12 | 63.01 | 39.96 |
| Machinery | 10.69 | 6.14 | 7.38 | 20.82 | 12.47 | 14.68 | 17.60 | 36.38 | 22.51 |
| Transportation equipment | 7.13 | 7.08 | 9.26 | 18.98 | 13.60 | 14.66 | 16.07 | 36.48 | 13.14 |
| Other manufacturing | 5.80 | 5.04 | 6.02 | 8.11 | 8.48 | 10.13 | 11.17 | 13.97 | 9.91 |
| Non-manufacturing | 230.67 | 279.80 | 347.82 | 281.61 | 440.00 | 492.26 | 619.90 | 628.30 | 690.18 |
| SOEs, all industries | 215.44 | 215.96 | 259.42 | 223.54 | 269.42 | 265.45 | 308.42 | 340.29 | 314.29 |
| Manufacturing | 37.52 | 24.33 | 28.61 | 48.67 | 38.02 | 39.87 | 40.59 | 57.50 | 33.48 |
| Food, beverages | 8.90 | 4.94 | 6.02 | 12.24 | 6.88 | 7.08 | 6.98 | 11.64 | 5.44 |
| Textiles, apparel, leather, footwear | 5.98 | 3.95 | 4.85 | 6.82 | 5.63 | 5.24 | 5.61 | 5.65 | 4.37 |
| Wood, furniture, paper | 3.25 | 1.10 | 1.26 | 2.24 | 1.51 | 2.30 | 1.75 | 3.65 | 0.79 |
| Chemicals, rubber, plastics | 4.87 | 2.38 | 2.63 | 5.22 | 4.07 | 4.33 | 4.68 | 6.62 | 4.57 |
| Metals, non-metallic mineral prod. | 7.26 | 5.16 | 6.08 | 11.20 | 9.06 | 8.80 | 9.32 | 14.21 | 6.61 |
| Machinery | 1.79 | 1.54 | 1.60 | 3.21 | 2.11 | 2.11 | 2.67 | 2.95 | 2.70 |
| Transportation equipment | 1.40 | 1.20 | 1.50 | 2.78 | 2.84 | 3.18 | 2.86 | 5.96 | 2.67 |
| Other manufacturing | 4.06 | 4.05 | 4.68 | 4.95 | 5.92 | 6.82 | 6.71 | 6.83 | 6.33 |
| Non-manufacturing | 177.93 | 191.62 | 230.81 | 174.86 | 231.40 | 225.58 | 267.84 | 282.79 | 280.81 |
| Wholly-foreign MNCs | 27.33 | 19.68 | 25.35 | 52.44 | 47.04 | 61.02 | 85.04 | 147.08 | 86.28 |
| Manufacturing | 23.78 | 13.97 | 19.04 | 47.53 | 36.27 | 45.09 | 60.35 | 117.67 | 52.33 |
| Food, beverages | 3.85 | 2.48 | 2.55 | 7.08 | 5.02 | 5.86 | 7.00 | 19.55 | 6.97 |
| Textiles, apparel, leather, footwear | 8.10 | 4.72 | 6.20 | 16.40 | 11.59 | 15.07 | 22.38 | 27.65 | 10.94 |
| Wood, furniture, paper | 0.91 | 0.61 | 1.49 | 2.64 | 2.68 | 3.76 | 5.01 | 13.20 | 4.16 |
| Chemicals, rubber, plastics | 1.85 | 1.19 | 1.54 | 5.00 | 3.33 | 3.84 | 5.77 | 14.37 | 6.69 |
| Metals, non-metallic mineral prod. | 1.20 | 0.88 | 1.41 | 2.53 | 2.55 | 3.83 | 5.00 | 10.92 | 6.32 |
| Machinery | 5.85 | 2.35 | 3.08 | 9.36 | 6.13 | 7.57 | 8.87 | 20.97 | 12.04 |
| Transportation equipment | 1.17 | 1.31 | 2.07 | 3.48 | 3.63 | 3.53 | 4.09 | 7.14 | 3.73 |
| Other manufacturing | 0.86 | 0.43 | 0.70 | 1.03 | 1.34 | 1.62 | 2.23 | 3.86 | 1.47 |
| Non-manufacturing | 3.54 | 5.71 | 6.30 | 4.91 | 10.77 | 15.93 | 24.70 | 29.42 | 33.95 |
| MNC Joint Ventures | 35.02 | 50.60 | 58.87 | 59.66 | 90.61 | 98.54 | 115.08 | 109.30 | 52.77 |
| Manufacturing | 18.77 | 13.11 | 16.25 | 35.13 | 20.50 | 23.25 | 27.46 | 55.28 | 22.63 |
| Food, beverages | 3.85 | 2.50 | 2.92 | 5.86 | 3.36 | 4.03 | 4.61 | 10.22 | 4.53 |
| Textiles, apparel, leather, footwear | 1.19 | 0.79 | 0.95 | 1.17 | 1.44 | 1.67 | 1.95 | 3.58 | 1.57 |
| Wood, furniture, paper | 0.35 | 0.20 | 0.27 | 0.46 | 0.52 | 0.55 | 0.61 | 0.82 | 0.38 |
| Chemicals, rubber, plastics | 2.88 | 1.33 | 1.72 | 5.55 | 2.60 | 3.02 | 3.59 | 6.46 | 2.85 |
| Metals, Non-metallic mineral prod. | 4.22 | 3.01 | 3.53 | 5.74 | 4.26 | 4.59 | 6.03 | 8.39 | 7.03 |
| Machinery | 2.23 | 1.56 | 1.65 | 4.64 | 2.14 | 2.48 | 2.58 | 4.89 | 2.34 |
| Transportation equipment | 3.65 | 3.50 | 4.97 | 10.99 | 5.90 | 6.31 | 7.06 | 19.59 | 3.34 |
| Other manufacturing | 0.41 | 0.22 | 0.24 | 0.72 | 0.28 | 0.61 | 1.04 | 1.34 | 0.59 |
| Non-manufacturing | 16.25 | 37.49 | 42.62 | 24.52 | 70.11 | 75.29 | 87.61 | 54.02 | 30.14 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B4b: Value Added of All Firms, SOEs, and MNCs with Positive Sales, Employment, Value Added, and Fixed Assets by Owner and Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| All firms, all industries | 370.02 | 402.82 | 491.50 | 524.42 | 666.30 | 767.14 | 1,017.4 | 1,131.0 | 1,080.2 |
| Manufacturing | 100.98 | 70.10 | 83.49 | 184.53 | 131.95 | 156.13 | 188.78 | 365.61 | 193.68 |
| Food, beverages | 24.88 | 14.05 | 16.74 | 42.97 | 24.78 | 29.54 | 33.78 | 91.33 | 36.75 |
| Textiles, apparel, leather, footwear | 18.42 | 11.98 | 15.20 | 30.01 | 24.05 | 28.54 | 38.89 | 49.86 | 26.99 |
| Wood, furniture, paper | 6.69 | 3.58 | 5.48 | 11.62 | 9.50 | 12.97 | 15.08 | 31.76 | 13.82 |
| Chemicals, rubber, plastics | 12.03 | 6.69 | 8.33 | 22.31 | 14.74 | 17.28 | 21.07 | 40.25 | 25.89 |
| Metals, non-metallic mineral prod. | 15.13 | 15.37 | 14.82 | 29.13 | 23.80 | 27.72 | 34.24 | 64.69 | 43.06 |
| Machinery | 10.75 | 6.20 | 7.46 | 21.02 | 12.67 | 14.89 | 17.88 | 36.65 | 23.08 |
| Transportation equipment | 7.22 | 7.11 | 9.34 | 19.14 | 13.69 | 14.78 | 16.18 | 36.64 | 13.31 |
| Other manufacturing | 5.86 | 5.12 | 6.12 | 8.32 | 8.72 | 10.41 | 11.68 | 14.43 | 10.79 |
| Non-manufacturing | 269.04 | 332.72 | 408.02 | 339.89 | 534.35 | 611.02 | 828.65 | 765.40 | 886.56 |
| SOEs, all industries | 215.92 | 216.78 | 260.15 | 223.96 | 269.79 | 265.79 | 309.05 | 340.67 | 314.63 |
| Manufacturing | 37.54 | 24.34 | 28.65 | 48.72 | 38.02 | 39.88 | 40.59 | 57.51 | 33.49 |
| Food, beverages | 8.91 | 4.95 | 6.02 | 12.24 | 6.88 | 7.09 | 6.98 | 11.64 | 5.44 |
| Textiles, apparel, leather, footwear | 5.98 | 3.95 | 4.87 | 6.86 | 5.63 | 5.25 | 5.61 | 5.65 | 4.37 |
| Wood, furniture, paper | 3.25 | 1.10 | 1.26 | 2.25 | 1.51 | 2.30 | 1.75 | 3.65 | 0.79 |
| Chemicals, rubber, plastics | 4.87 | 2.38 | 2.63 | 5.22 | 4.07 | 4.33 | 4.68 | 6.62 | 4.57 |
| Metals, non-metallic mineral prod. | 7.27 | 5.16 | 6.08 | 11.20 | 9.06 | 8.80 | 9.33 | 14.21 | 6.61 |
| Machinery | 1.79 | 1.54 | 1.60 | 3.21 | 2.11 | 2.11 | 2.67 | 2.95 | 2.70 |
| Transportation equipment | 1.40 | 1.20 | 1.50 | 2.78 | 2.84 | 3.19 | 2.86 | 5.96 | 2.67 |
| Other manufacturing | 4.06 | 4.06 | 4.68 | 4.95 | 5.92 | 6.82 | 6.71 | 6.83 | 6.33 |
| Non-manufacturing | 178.39 | 192.44 | 231.50 | 175.24 | 231.76 | 225.91 | 268.46 | 283.15 | 281.14 |
| Wholly-foreign MNCs | 27.54 | 19.87 | 25.66 | 53.08 | 47.63 | 61.68 | 86.33 | 148.10 | 87.77 |
| Manufacturing | 23.84 | 14.03 | 19.13 | 48.02 | 36.48 | 45.26 | 60.62 | 118.13 | 53.16 |
| Food, beverages | 3.86 | 2.49 | 2.57 | 7.17 | 5.06 | 5.87 | 7.01 | 19.56 | 7.36 |
| Textiles, apparel, leather, footwear | 8.11 | 4.73 | 6.21 | 16.45 | 11.60 | 15.08 | 22.42 | 27.67 | 11.01 |
| Wood, furniture, paper | 0.91 | 0.62 | 1.49 | 2.71 | 2.69 | 3.77 | 5.03 | 13.21 | 4.23 |
| Chemicals, rubber, plastics | 1.87 | 1.22 | 1.57 | 5.11 | 3.37 | 3.93 | 5.86 | 14.61 | 6.84 |
| Metals, non-metallic mineral prod. | 1.21 | 0.89 | 1.43 | 2.57 | 2.58 | 3.86 | 5.05 | 11.05 | 6.41 |
| Machinery | 5.85 | 2.36 | 3.09 | 9.39 | 6.17 | 7.58 | 8.90 | 21.00 | 12.09 |
| Transportation equipment | 1.17 | 1.31 | 2.07 | 3.59 | 3.66 | 3.54 | 4.10 | 7.15 | 3.73 |
| Other manufacturing | 0.87 | 0.43 | 0.70 | 1.04 | 1.35 | 1.63 | 2.24 | 3.87 | 1.48 |
| Non-manufacturing | 3.70 | 5.84 | 6.53 | 5.06 | 11.16 | 16.42 | 25.71 | 29.97 | 34.61 |
| MNC Joint Ventures | 35.22 | 50.74 | 59.04 | 59.82 | 90.88 | 98.81 | 115.86 | 109.78 | 53.37 |
| Manufacturing | 18.81 | 13.14 | 16.28 | 35.20 | 20.55 | 23.30 | 27.49 | 55.33 | 22.68 |
| Food, beverages | 3.85 | 2.50 | 2.92 | 5.87 | 3.36 | 4.04 | 4.61 | 10.22 | 4.53 |
| Textiles, apparel, leather, footwear | 1.19 | 0.79 | 0.95 | 1.17 | 1.44 | 1.67 | 1.95 | 3.59 | 1.58 |
| Wood, furniture, paper | 0.35 | 0.20 | 0.27 | 0.46 | 0.52 | 0.55 | 0.61 | 0.82 | 0.38 |
| Chemicals, rubber, plastics | 2.88 | 1.34 | 1.73 | 5.55 | 2.60 | 3.02 | 3.59 | 6.46 | 2.85 |
| Metals, Non-metallic mineral prod. | 4.24 | 3.02 | 3.53 | 5.78 | 4.30 | 4.60 | 6.04 | 8.42 | 7.05 |
| Machinery | 2.23 | 1.56 | 1.66 | 4.65 | 2.14 | 2.48 | 2.58 | 4.89 | 2.35 |
| Transportation equipment | 3.65 | 3.50 | 4.97 | 10.99 | 5.90 | 6.31 | 7.06 | 19.59 | 3.35 |
| Other manufacturing | 0.41 | 0.22 | 0.24 | 0.72 | 0.28 | 0.62 | 1.04 | 1.34 | 0.59 |
| Non-manufacturing | 16.42 | 37.60 | 42.77 | 24.62 | 70.33 | 75.51 | 88.37 | 54.45 | 30.69 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table 5a: Yearend Fixed Assets of All Firms, SOEs, and MNCs with 20 or More Employees and Positive Sales, Value Added and Fixed Assets by Owner and Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| All firms, all industries | 280.81 | 313.68 | 351.10 | 296.63 | 477.87 | 422.49 | 578.66 | 578.77 | 630.77 |
| Manufacturing | 111.57 | 122.10 | 142.99 | 152.69 | 202.29 | 224.08 | 298.74 | 301.22 | 218.11 |
| Food, beverages | 22.35 | 22.67 | 24.97 | 26.64 | 31.94 | 34.66 | 42.01 | 46.27 | 27.34 |
| Textiles, apparel, leather, footwear | 20.72 | 24.58 | 29.34 | 33.91 | 42.98 | 48.28 | 61.09 | 60.08 | 32.26 |
| Wood, furniture, paper | 4.62 | 5.79 | 8.53 | 9.53 | 12.84 | 19.50 | 24.36 | 24.72 | 14.49 |
| Chemicals, rubber, plastics | 9.99 | 10.68 | 12.23 | 14.84 | 30.06 | 25.99 | 33.35 | 31.49 | 26.08 |
| Metals, non-metallic mineral prod. | 31.97 | 32.34 | 37.66 | 35.34 | 44.22 | 50.56 | 80.40 | 75.58 | 65.01 |
| Machinery | 10.81 | 12.02 | 13.57 | 14.33 | 17.19 | 19.65 | 23.55 | 28.41 | 28.80 |
| Transportation equipment | 7.70 | 10.00 | 11.75 | 12.54 | 16.48 | 18.17 | 24.84 | 25.13 | 16.51 |
| Other manufacturing | 3.42 | 4.02 | 4.95 | 5.55 | 6.59 | 7.27 | 9.14 | 9.54 | 7.62 |
| Non-manufacturing | 169.24 | 191.58 | 208.11 | 143.94 | 275.58 | 198.41 | 279.92 | 277.55 | 412.66 |
| SOEs, all industries | 128.20 | 144.70 | 165.33 | 107.51 | 212.12 | 136.01 | 188.52 | 177.92 | 290.86 |
| Manufacturing | 28.79 | 29.58 | 35.92 | 40.45 | 53.29 | 45.91 | 62.07 | 59.93 | 35.22 |
| Food, beverages | 6.49 | 6.16 | 6.92 | 7.74 | 8.12 | 7.44 | 7.26 | 9.39 | 2.92 |
| Textiles, apparel, leather, footwear | 5.83 | 6.65 | 7.19 | 7.78 | 7.78 | 6.11 | 5.48 | 4.36 | 3.71 |
| Wood, furniture, paper | 1.57 | 1.32 | 1.99 | 2.03 | 1.90 | 3.93 | 3.16 | 2.57 | 0.62 |
| Chemicals, rubber, plastics | 2.10 | 2.12 | 2.17 | 2.87 | 14.24 | 7.19 | 6.79 | 6.48 | 3.18 |
| Metals, non-metallic mineral prod. | 8.47 | 7.96 | 11.21 | 12.97 | 12.45 | 12.94 | 26.86 | 22.76 | 13.87 |
| Machinery | 1.44 | 1.67 | 2.00 | 2.11 | 2.19 | 1.64 | 1.76 | 1.44 | 1.81 |
| Transportation equipment | 1.19 | 1.54 | 1.99 | 2.07 | 3.43 | 3.48 | 6.90 | 9.27 | 4.96 |
| Other manufacturing | 1.69 | 2.16 | 2.44 | 2.88 | 3.20 | 3.17 | 3.85 | 3.67 | 4.14 |
| Non-manufacturing | 99.42 | 115.12 | 129.41 | 67.06 | 158.83 | 90.11 | 126.45 | 117.99 | 255.63 |
| Wholly-foreign MNCs | 39.30 | 46.44 | 56.56 | 61.49 | 81.39 | 99.81 | 142.16 | 151.53 | 91.00 |
| Manufacturing | 33.71 | 39.11 | 48.23 | 54.35 | 72.26 | 89.76 | 119.38 | 123.06 | 79.78 |
| Food, beverages | 7.45 | 7.41 | 7.69 | 8.20 | 11.35 | 11.65 | 12.98 | 13.61 | 6.89 |
| Textiles, apparel, leather, footwear | 10.89 | 12.34 | 15.90 | 19.63 | 26.35 | 31.76 | 41.34 | 40.70 | 16.04 |
| Wood, furniture, paper | 1.45 | 2.26 | 3.55 | 3.73 | 5.24 | 7.88 | 9.99 | 11.66 | 4.79 |
| Chemicals, rubber, plastics | 3.28 | 3.48 | 4.05 | 4.81 | 7.17 | 8.78 | 14.67 | 12.58 | 11.57 |
| Metals, non-metallic mineral prod. | 3.03 | 3.80 | 4.94 | 5.16 | 6.86 | 8.92 | 14.53 | 14.63 | 12.86 |
| Machinery | 5.48 | 6.47 | 7.88 | 8.20 | 9.39 | 12.78 | 15.11 | 19.59 | 20.86 |
| Transportation equipment | 1.20 | 2.32 | 2.65 | 3.28 | 4.40 | 5.96 | 7.64 | 6.76 | 5.06 |
| Other manufacturing | 0.92 | 1.03 | 1.57 | 1.34 | 1.51 | 2.02 | 3.12 | 3.54 | 1.72 |
| Non-manufacturing | 5.59 | 7.33 | 8.33 | 7.14 | 9.12 | 10.06 | 22.78 | 28.47 | 11.22 |
| MNC joint ventures | 91.74 | 92.35 | 87.51 | 75.14 | 110.10 | 88.87 | 102.92 | 91.48 | 63.87 |
| Manufacturing | 38.08 | 36.95 | 36.31 | 29.82 | 36.77 | 37.36 | 43.95 | 40.28 | 33.27 |
| Food, beverages | 6.22 | 5.61 | 5.57 | 4.88 | 4.38 | 4.19 | 5.16 | 4.96 | 3.37 |
| Textiles, apparel, leather, footwear | 0.89 | 1.51 | 1.32 | 0.98 | 1.73 | 1.80 | 2.23 | 2.63 | 1.29 |
| Wood, furniture, paper | 0.38 | 0.33 | 0.40 | 0.36 | 0.44 | 0.49 | 0.64 | 0.46 | 0.24 |
| Chemicals, rubber, plastics | 2.91 | 2.79 | 2.97 | 3.57 | 3.34 | 3.57 | 3.65 | 3.02 | 1.24 |
| Metals, Non-metallic mineral prod. | 18.48 | 17.31 | 16.88 | 11.16 | 15.83 | 16.87 | 20.77 | 19.53 | 20.75 |
| Machinery | 3.47 | 3.19 | 2.56 | 2.21 | 3.10 | 2.79 | 2.74 | 2.87 | 2.06 |
| Transportation equipment | 5.18 | 5.79 | 6.13 | 6.16 | 6.97 | 6.76 | 7.87 | 6.00 | 3.87 |
| Other manufacturing | 0.55 | 0.42 | 0.47 | 0.52 | 0.98 | 0.89 | 0.88 | 0.82 | 0.45 |
| Non-manufacturing | 53.66 | 55.40 | 51.20 | 45.31 | 73.33 | 51.52 | 58.97 | 51.20 | 30.60 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table 5b: Yearend Fixed Assets of All Firms, SOEs, and MNCs with Positive Sales, Employment, Value Added and Fixed Assets by Owner and Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| All firms, all industries | 280.81 | 313.68 | 351.10 | 296.63 | 477.87 | 422.49 | 578.66 | 578.77 | 630.77 |
| Manufacturing | 111.57 | 122.10 | 142.99 | 152.69 | 202.29 | 224.08 | 298.74 | 301.22 | 218.11 |
| Food, beverages | 22.35 | 22.67 | 24.97 | 26.64 | 31.94 | 34.66 | 42.01 | 46.27 | 27.34 |
| Textiles, apparel, leather, footwear | 20.72 | 24.58 | 29.34 | 33.91 | 42.98 | 48.28 | 61.09 | 60.08 | 32.26 |
| Wood, furniture, paper | 4.62 | 5.79 | 8.53 | 9.53 | 12.84 | 19.50 | 24.36 | 24.72 | 14.49 |
| Chemicals, rubber, plastics | 9.99 | 10.68 | 12.23 | 14.84 | 30.06 | 25.99 | 33.35 | 31.49 | 26.08 |
| Metals, non-metallic mineral prod. | 31.97 | 32.34 | 37.66 | 35.34 | 44.22 | 50.56 | 80.40 | 75.58 | 65.01 |
| Machinery | 10.81 | 12.02 | 13.57 | 14.33 | 17.19 | 19.65 | 23.55 | 28.41 | 28.80 |
| Transportation equipment | 7.70 | 10.00 | 11.75 | 12.54 | 16.48 | 18.17 | 24.84 | 25.13 | 16.51 |
| Other manufacturing | 3.42 | 4.02 | 4.95 | 5.55 | 6.59 | 7.27 | 9.14 | 9.54 | 7.62 |
| Non-manufacturing | 169.24 | 191.58 | 208.11 | 143.94 | 275.58 | 198.41 | 279.92 | 277.55 | 412.66 |
| SOEs, all industries | 128.20 | 144.70 | 165.33 | 107.51 | 212.12 | 136.01 | 188.52 | 177.92 | 290.86 |
| Manufacturing | 28.79 | 29.58 | 35.92 | 40.45 | 53.29 | 45.91 | 62.07 | 59.93 | 35.22 |
| Food, beverages | 6.49 | 6.16 | 6.92 | 7.74 | 8.12 | 7.44 | 7.26 | 9.39 | 2.92 |
| Textiles, apparel, leather, footwear | 5.83 | 6.65 | 7.19 | 7.78 | 7.78 | 6.11 | 5.48 | 4.36 | 3.71 |
| Wood, furniture, paper | 1.57 | 1.32 | 1.99 | 2.03 | 1.90 | 3.93 | 3.16 | 2.57 | 0.62 |
| Chemicals, rubber, plastics | 2.10 | 2.12 | 2.17 | 2.87 | 14.24 | 7.19 | 6.79 | 6.48 | 3.18 |
| Metals, non-metallic mineral prod. | 8.47 | 7.96 | 11.21 | 12.97 | 12.45 | 12.94 | 26.86 | 22.76 | 13.87 |
| Machinery | 1.44 | 1.67 | 2.00 | 2.11 | 2.19 | 1.64 | 1.76 | 1.44 | 1.81 |
| Transportation equipment | 1.19 | 1.54 | 1.99 | 2.07 | 3.43 | 3.48 | 6.90 | 9.27 | 4.96 |
| Other manufacturing | 1.69 | 2.16 | 2.44 | 2.88 | 3.20 | 3.17 | 3.85 | 3.67 | 4.14 |
| Non-manufacturing | 99.42 | 115.12 | 129.41 | 67.06 | 158.83 | 90.11 | 126.45 | 117.99 | 255.63 |
| 100% MNCs | 39.30 | 46.44 | 56.56 | 61.49 | 81.39 | 99.81 | 142.16 | 151.53 | 91.00 |
| Manufacturing | 33.71 | 39.11 | 48.23 | 54.35 | 72.26 | 89.76 | 119.38 | 123.06 | 79.78 |
| Food, beverages | 7.45 | 7.41 | 7.69 | 8.20 | 11.35 | 11.65 | 12.98 | 13.61 | 6.89 |
| Textiles, apparel, leather, footwear | 10.89 | 12.34 | 15.90 | 19.63 | 26.35 | 31.76 | 41.34 | 40.70 | 16.04 |
| Wood, furniture, paper | 1.45 | 2.26 | 3.55 | 3.73 | 5.24 | 7.88 | 9.99 | 11.66 | 4.79 |
| Chemicals, rubber, plastics | 3.28 | 3.48 | 4.05 | 4.81 | 7.17 | 8.78 | 14.67 | 12.58 | 11.57 |
| Metals, non-metallic mineral prod. | 3.03 | 3.80 | 4.94 | 5.16 | 6.86 | 8.92 | 14.53 | 14.63 | 12.86 |
| Machinery | 5.48 | 6.47 | 7.88 | 8.20 | 9.39 | 12.78 | 15.11 | 19.59 | 20.86 |
| Transportation equipment | 1.20 | 2.32 | 2.65 | 3.28 | 4.40 | 5.96 | 7.64 | 6.76 | 5.06 |
| Other manufacturing | 0.92 | 1.03 | 1.57 | 1.34 | 1.51 | 2.02 | 3.12 | 3.54 | 1.72 |
| Non-manufacturing | 5.59 | 7.33 | 8.33 | 7.14 | 9.12 | 10.06 | 22.78 | 28.47 | 11.22 |
| MNC Joint Ventures | 91.74 | 92.35 | 87.51 | 75.14 | 110.10 | 88.87 | 102.92 | 91.48 | 63.87 |
| Manufacturing | 38.08 | 36.95 | 36.31 | 29.82 | 36.77 | 37.36 | 43.95 | 40.28 | 33.27 |
| Food, beverages | 6.22 | 5.61 | 5.57 | 4.88 | 4.38 | 4.19 | 5.16 | 4.96 | 3.37 |
| Textiles, apparel, leather, footwear | 0.89 | 1.51 | 1.32 | 0.98 | 1.73 | 1.80 | 2.23 | 2.63 | 1.29 |
| Wood, furniture, paper | 0.38 | 0.33 | 0.40 | 0.36 | 0.44 | 0.49 | 0.64 | 0.46 | 0.24 |
| Chemicals, rubber, plastics | 2.91 | 2.79 | 2.97 | 3.57 | 3.34 | 3.57 | 3.65 | 3.02 | 1.24 |
| Metals, Non-metallic mineral prod. | 18.48 | 17.31 | 16.88 | 11.16 | 15.83 | 16.87 | 20.77 | 19.53 | 20.75 |
| Machinery | 3.47 | 3.19 | 2.56 | 2.21 | 3.10 | 2.79 | 2.74 | 2.87 | 2.06 |
| Transportation equipment | 5.18 | 5.79 | 6.13 | 6.16 | 6.97 | 6.76 | 7.87 | 6.00 | 3.87 |
| Other manufacturing | 0.55 | 0.42 | 0.47 | 0.52 | 0.98 | 0.89 | 0.88 | 0.82 | 0.45 |
| Non-manufacturing | 53.66 | 55.40 | 51.20 | 45.31 | 73.33 | 51.52 | 58.97 | 51.20 | 30.60 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table 5c: Yearend Fixed Assets of All Firms, SOEs, and MNCs with Positive Sales and Employment by Owner and Industry Group (trillion dong)

| Owner, industry group | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| All firms, all industries | 291.88 | 324.80 | 366.55 | 413.33 | 503.24 | 550.88 | 631.24 | 808.88 | 1,346.5 |
| Manufacturing | 115.24 | 124.47 | 146.41 | 167.78 | 206.96 | 233.87 | 306.30 | 389.76 | 511.22 |
| Food, beverages | 23.40 | 23.65 | 26.20 | 29.48 | 33.44 | 36.44 | 44.12 | 60.31 | 71.77 |
| Textiles, apparel, leather, footwear | 21.46 | 24.78 | 29.69 | 36.34 | 43.46 | 49.66 | 62.16 | 70.80 | 102.58 |
| Wood, furniture, paper | 4.79 | 6.08 | 8.85 | 10.39 | 13.44 | 20.43 | 25.45 | 34.02 | 42.76 |
| Chemicals, rubber, plastics | 10.50 | 10.99 | 12.68 | 16.34 | 30.58 | 27.19 | 34.44 | 40.04 | 53.18 |
| Metals, non-metallic mineral prod. | 32.27 | 32.66 | 38.37 | 41.50 | 45.13 | 52.31 | 82.08 | 100.92 | 132.10 |
| Machinery | 10.90 | 12.13 | 13.71 | 15.03 | 17.44 | 20.50 | 23.11 | 36.76 | 47.15 |
| Transportation equipment | 8.44 | 10.05 | 11.82 | 12.77 | 16.60 | 19.54 | 25.28 | 35.32 | 47.15 |
| Other manufacturing | 3.48 | 4.13 | 5.10 | 5.94 | 6.87 | 7.81 | 9.65 | 11.57 | 14.53 |
| Non-manufacturing | 176.64 | 200.32 | 220.14 | 245.55 | 296.27 | 317.01 | 324.95 | 419.12 | 835.27 |
| SOEs, all industries | 129.39 | 144.95 | 165.61 | 182.74 | 212.23 | 232.40 | 190.34 | 226.49 | 507.83 |
| Manufacturing | 28.95 | 29.52 | 35.91 | 40.90 | 53.31 | 49.47 | 62.11 | 75.63 | 91.97 |
| Food, beverages | 6.61 | 6.09 | 6.82 | 7.80 | 8.12 | 7.56 | 7.29 | 9.97 | 5.77 |
| Textiles, apparel, leather, footwear | 5.85 | 6.66 | 7.20 | 7.98 | 7.78 | 6.71 | 5.48 | 5.25 | 18.06 |
| Wood, furniture, paper | 1.57 | 1.32 | 1.99 | 2.06 | 1.90 | 3.98 | 3.17 | 3.35 | 3.61 |
| Chemicals, rubber, plastics | 2.11 | 2.12 | 2.17 | 2.88 | 14.24 | 7.50 | 6.79 | 6.88 | 5.85 |
| Metals, non-metallic mineral prod. | 8.48 | 7.96 | 11.30 | 12.99 | 12.45 | 13.64 | 26.87 | 31.38 | 37.53 |
| Machinery | 1.44 | 1.67 | 2.00 | 2.13 | 2.19 | 2.23 | 1.76 | 2.35 | 2.31 |
| Transportation equipment | 1.19 | 1.54 | 1.99 | 2.07 | 3.43 | 4.51 | 6.90 | 12.14 | 13.78 |
| Other manufacturing | 1.69 | 2.18 | 2.44 | 2.98 | 3.20 | 3.35 | 3.85 | 4.29 | 5.05 |
| Non-manufacturing | 100.44 | 115.42 | 129.70 | 141.84 | 158.92 | 182.92 | 128.23 | 150.86 | 415.86 |
| 100% MNCs | 40.38 | 46.99 | 57.38 | 66.56 | 82.10 | 100.86 | 143.65 | 179.36 | 236.47 |
| Manufacturing | 34.76 | 39.54 | 48.82 | 57.70 | 72.61 | 90.53 | 119.74 | 148.36 | 199.96 |
| Food, beverages | 7.48 | 7.48 | 7.76 | 9.25 | 11.44 | 11.63 | 13.03 | 14.84 | 20.05 |
| Textiles, apparel, leather, footwear | 11.50 | 12.39 | 15.97 | 20.22 | 26.40 | 31.95 | 41.50 | 46.21 | 60.82 |
| Wood, furniture, paper | 1.45 | 2.35 | 3.57 | 3.83 | 5.29 | 7.97 | 10.12 | 13.98 | 15.84 |
| Chemicals, rubber, plastics | 3.58 | 3.59 | 4.22 | 5.45 | 7.08 | 9.03 | 14.97 | 16.58 | 25.58 |
| Metals, non-metallic mineral prod. | 3.08 | 3.86 | 5.13 | 5.62 | 6.96 | 9.05 | 14.78 | 17.82 | 25.25 |
| Machinery | 5.51 | 6.50 | 7.92 | 8.60 | 9.47 | 12.83 | 14.40 | 25.34 | 33.56 |
| Transportation equipment | 1.22 | 2.32 | 2.65 | 3.35 | 4.42 | 5.98 | 7.78 | 9.63 | 13.71 |
| Other manufacturing | 0.94 | 1.05 | 1.60 | 1.39 | 1.54 | 2.09 | 3.17 | 3.96 | 5.16 |
| Non-manufacturing | 5.62 | 7.45 | 8.56 | 8.86 | 9.50 | 10.33 | 23.91 | 30.99 | 36.51 |
| MNC Joint Ventures | 93.53 | 93.30 | 88.29 | 90.35 | 110.64 | 89.09 | 103.54 | 101.55 | 115.84 |
| Manufacturing | 38.88 | 37.04 | 36.46 | 35.83 | 36.89 | 37.36 | 43.92 | 47.38 | 55.51 |
| Food, beverages | 6.22 | 5.63 | 5.65 | 4.97 | 4.39 | 4.19 | 5.06 | 5.90 | 6.39 |
| Textiles, apparel, leather, footwear | 0.89 | 1.52 | 1.32 | 1.60 | 1.74 | 1.80 | 2.24 | 2.84 | 2.58 |
| Wood, furniture, paper | 0.38 | 0.33 | 0.41 | 0.46 | 0.44 | 0.49 | 0.64 | 0.61 | 0.56 |
| Chemicals, rubber, plastics | 2.96 | 2.81 | 2.99 | 3.65 | 3.38 | 3.60 | 3.67 | 3.36 | 3.88 |
| Metals, Non-metallic mineral prod. | 18.52 | 17.35 | 16.92 | 16.17 | 15.87 | 16.82 | 20.82 | 21.93 | 25.27 |
| Machinery | 3.48 | 3.19 | 2.57 | 2.30 | 3.10 | 2.79 | 2.76 | 3.01 | 3.61 |
| Transportation equipment | 5.87 | 5.80 | 6.13 | 6.16 | 6.97 | 6.77 | 7.88 | 8.87 | 12.12 |
| Other manufacturing | 0.56 | 0.43 | 0.47 | 0.52 | 1.00 | 0.89 | 0.87 | 0.87 | 1.10 |
| Non-manufacturing | 54.66 | 56.26 | 51.83 | 54.52 | 73.75 | 51.72 | 59.61 | 54.17 | 60.33 |

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6a: Four-Firm Concentration Ratios by 2- and 3-digit Vietnam Standard Industrial Classification (VSIC), Revision 3 (percent)

| VSIC | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 151+152 | 21.14 | 21.43 | 21.90 | 21.30 | 16.84 | 17.94 | 16.98 | 17.06 | 18.17 |
| 153 | 23.43 | 25.37 | 18.97 | 20.46 | 23.41 | 24.68 | 17.12 | 17.03 | 21.50 |
| 154 | 30.73 | 26.40 | 26.78 | 19.63 | 20.54 | 20.40 | 24.55 | 22.50 | 20.96 |
| 155 | 41.31 | 36.17 | 37.12 | 34.62 | 35.92 | 38.57 | 40.62 | 50.36 | 37.53 |
| 171 | 29.61 | 26.86 | 25.62 | 25.53 | 25.36 | 27.95 | 62.29 | 34.41 | 32.44 |
| 172+173 | 23.21 | 21.97 | 22.43 | 18.61 | 15.92 | 24.54 | 28.83 | 24.50 | 24.43 |
| 18 | 20.61 | 18.07 | 17.84 | 14.87 | 15.19 | 13.50 | 13.01 | 11.58 | 8.95 |
| 191 | 38.94 | 40.07 | 36.10 | 42.11 | 43.79 | 30.70 | 45.95 | 35.26 | 25.35 |
| 192 | 36.18 | 36.14 | 34.61 | 37.65 | 36.17 | 35.52 | 34.38 | 31.74 | 32.29 |
| 20 | 20.55 | 19.74 | 11.06 | 11.86 | 11.20 | 11.73 | 9.88 | 7.97 | 6.90 |
| 21 | 45.03 | 27.59 | 21.21 | 19.17 | 15.98 | 23.78 | 17.09 | 15.54 | 13.99 |
| 241 | 52.34 | 48.49 | 42.26 | 43.03 | 41.75 | 42.92 | 34.06 | 35.73 | 40.23 |
| 242+243 | 24.21 | 23.81 | 25.19 | 23.77 | 24.27 | 23.87 | 25.19 | 21.85 | 23.08 |
| 251 | 47.13 | 49.55 | 40.84 | 40.83 | 34.95 | 33.96 | 41.16 | 36.15 | 33.31 |
| 252 | 17.98 | 21.42 | 20.97 | 17.64 | 14.69 | 11.23 | 9.34 | 11.61 | 8.92 |
| 261 | 78.07 | 68.15 | 67.09 | 64.19 | 55.09 | 52.46 | 65.63 | 62.70 | 45.43 |
| 269 | 27.86 | 45.37 | 22.31 | 19.61 | 18.78 | 17.93 | 17.46 | 15.24 | 14.35 |
| 271 | 54.19 | 52.96 | 43.33 | 40.09 | 44.42 | 41.71 | 40.73 | 30.44 | 28.80 |
| 272 | 55.76 | 55.29 | 48.12 | 59.99 | 48.25 | 49.77 | 27.83 | 40.82 | 50.64 |
| 281 | 32.24 | 28.10 | 24.43 | 17.54 | 13.60 | 13.57 | 24.74 | 17.10 | 15.84 |
| 289 | 15.22 | 17.59 | 14.27 | 14.45 | 15.57 | 18.38 | 17.14 | 11.57 | 8.88 |
| 291 | 35.55 | 29.40 | 39.68 | 29.72 | 59.24 | 54.49 | 30.12 | 39.81 | 35.91 |
| 292 | 57.76 | 31.78 | 21.45 | 15.95 | 18.86 | 23.41 | 25.48 | 21.86 | 20.68 |
| 293 | 66.35 | 70.92 | 65.45 | 68.54 | 64.20 | 58.54 | 49.98 | 52.57 | 50.82 |
| 311 | 68.76 | 57.40 | 65.28 | 66.99 | 63.12 | 60.00 | 46.44 | 48.16 | 42.09 |
| 312 | 75.26 | 37.70 | 50.85 | 69.85 | 63.39 | 61.45 | - | 41.92 | 46.57 |
| 313 | 55.81 | 55.31 | 49.70 | 47.28 | 52.09 | 45.35 | 35.20 | 27.50 | 32.24 |
| 314+315+319 | 43.90 | 54.66 | 57.83 | 50.26 | 39.93 | 43.52 | 38.03 | 47.93 | 43.95 |
| 321 | 62.39 | 72.99 | 66.68 | 60.51 | 46.91 | 58.08 | 60.07 | 48.55 | 36.02 |
| 322 | 39.93 | 57.80 | 53.23 | 70.27 | 64.91 | 64.48 | 56.07 | 59.89 | 59.20 |
| 323 | 66.19 | 50.02 | 53.46 | 57.63 | 66.05 | 58.91 | 54.71 | 58.01 | 65.57 |
| 33+30 | 94.53 | 90.47 | 81.06 | 83.91 | 83.47 | 88.35 | 87.80 | 89.92 | 84.16 |
| 341+342 | 69.38 | 68.74 | 59.99 | 56.58 | 51.07 | 60.45 | 59.43 | 51.46 | 50.45 |
| 343 | 62.09 | 51.03 | 36.86 | 42.13 | 33.50 | 38.65 | 37.45 | 40.10 | 40.25 |
| 351 | 35.61 | 42.72 | 42.89 | 51.46 | 44.03 | 41.98 | 50.21 | 38.11 | 36.36 |
| 352+359 | 61.58 | 45.80 | 62.16 | 56.22 | 52.97 | 52.14 | 57.68 | 59.43 | 62.49 |
| 361 | 21.49 | 21.43 | 35.12 | 14.46 | 13.44 | 10.82 | 8.59 | 9.34 | 8.39 |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6b: Herfindahl Indexes by 2- and 3-digit Vietnam Standard Industrial Classification (VSIC), Revision 3 (percent)

| VSIC | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 151+152 | 2.26 | 2.27 | 2.16 | 2.05 | 1.51 | 1.57 | 1.47 | 1.34 | 1.35 |
| 153 | 2.02 | 2.24 | 1.45 | 1.70 | 2.04 | 2.14 | 1.40 | 1.36 | 1.86 |
| 154 | 3.91 | 4.07 | 3.84 | 2.08 | 2.20 | 2.11 | 2.65 | 2.10 | 1.84 |
| 155 | 6.27 | 4.98 | 5.03 | 4.59 | 4.68 | 5.34 | 5.73 | 9.38 | 5.12 |
| 171 | 3.78 | 3.39 | 3.06 | 2.85 | 2.78 | 3.06 | 20.98 | 4.59 | 4.07 |
| 172+173 | 2.73 | 2.38 | 2.34 | 1.92 | 1.62 | 2.48 | 2.90 | 2.40 | 2.19 |
| 18 | 1.79 | 1.54 | 1.41 | 1.12 | 1.05 | 0.96 | 0.90 | 0.75 | 0.56 |
| 191 | 5.73 | 5.45 | 5.43 | 6.01 | 6.63 | 4.03 | 7.23 | 4.62 | 3.07 |
| 192 | 4.68 | 4.52 | 4.34 | 5.28 | 5.00 | 5.06 | 4.84 | 4.37 | 4.60 |
| 20 | 1.84 | 1.76 | 0.98 | 0.86 | 0.86 | 0.85 | 0.64 | 0.55 | 0.41 |
| 21 | 7.53 | 2.92 | 2.05 | 1.56 | 1.24 | 1.99 | 1.23 | 1.10 | 0.92 |
| 241 | 9.83 | 8.75 | 6.80 | 6.14 | 6.07 | 6.76 | 5.10 | 4.69 | 5.84 |
| 242+243 | 3.58 | 3.40 | 3.43 | 3.18 | 2.86 | 2.83 | 3.04 | 2.42 | 2.42 |
| 251 | 7.15 | 7.42 | 5.97 | 5.64 | 4.47 | 4.70 | 6.60 | 4.71 | 4.02 |
| 252 | 1.69 | 1.90 | 1.67 | 1.42 | 1.14 | 0.76 | 0.62 | 0.73 | 0.54 |
| 261 | 21.80 | 18.39 | 15.88 | 14.08 | 11.02 | 9.96 | 14.84 | 15.08 | 7.75 |
| 269 | 3.03 | 11.97 | 2.14 | 1.84 | 1.64 | 1.49 | 1.51 | 1.21 | 1.07 |
| 271 | 9.27 | 9.14 | 6.75 | 6.19 | 6.80 | 5.95 | 5.68 | 3.84 | 3.47 |
| 272 | 10.80 | 10.03 | 8.84 | 13.38 | 8.83 | 8.57 | 3.86 | 6.93 | 9.10 |
| 281 | 4.23 | 3.03 | 2.43 | 1.61 | 1.28 | 1.16 | 2.82 | 1.37 | 1.13 |
| 289 | 1.47 | 1.63 | 1.27 | 1.23 | 1.33 | 1.56 | 1.36 | 0.88 | 0.64 |
| 291 | 5.66 | 4.07 | 7.87 | 4.46 | 26.63 | 20.30 | 4.42 | 8.13 | 6.93 |
| 292 | 12.82 | 3.83 | 2.36 | 1.84 | 2.04 | 2.35 | 2.66 | 2.34 | 1.98 |
| 293 | 20.20 | 19.81 | 16.91 | 13.70 | 13.25 | 11.32 | 10.57 | 10.40 | 9.53 |
| 311 | 17.89 | 12.54 | 15.19 | 17.64 | 14.10 | 12.82 | 7.54 | 7.96 | 6.51 |
| 312 | 20.93 | 6.15 | 9.97 | 18.19 | 17.45 | 11.83 | - | 7.36 | 7.65 |
| 313 | 10.98 | 10.12 | 8.89 | 8.17 | 8.85 | 7.30 | 5.34 | 3.89 | 4.25 |
| 314+315+319 | 7.37 | 12.71 | 12.25 | 8.89 | 6.09 | 6.77 | 5.68 | 7.70 | 6.67 |
| 321 | 12.23 | 31.38 | 24.24 | 12.70 | 8.73 | 10.98 | 11.75 | 7.74 | 4.96 |
| 322 | 7.09 | 12.10 | 9.65 | 22.74 | 17.65 | 15.06 | 11.32 | 10.61 | 11.34 |
| 323 | 16.74 | 9.51 | 10.22 | 11.08 | 12.58 | 11.60 | 9.63 | 12.56 | 16.37 |
| 33+30 | 78.65 | 68.04 | 42.94 | 33.28 | 33.16 | 35.39 | 32.58 | 30.45 | 25.60 |
| 341+342 | 19.48 | 16.70 | 13.45 | 11.66 | 9.86 | 12.92 | 15.44 | 11.73 | 11.42 |
| 343 | 11.49 | 8.21 | 4.88 | 7.17 | 5.09 | 5.73 | 4.98 | 5.21 | 5.44 |
| 351 | 5.23 | 8.27 | 7.80 | 8.83 | 6.47 | 6.07 | 8.27 | 4.54 | 4.27 |
| 352+359 | 15.48 | 9.07 | 13.87 | 11.66 | 9.22 | 10.15 | 14.55 | 14.63 | 18.20 |
| 361 | 2.06 | 1.85 | 6.50 | 1.19 | 1.10 | 0.87 | 0.67 | 0.75 | 0.65 |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6c: SOE shares of Yearend Employment by 2- and 3-digit Vietnam Standard Industrial Classification (VSIC), Revision 3 (percent)

| VSIC | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 151+152 | 52.97 | 44.32 | 43.60 | 40.54 | 32.51 | 22.43 | 16.97 | 11.51 | 8.22 |
| 153 | 11.26 | 14.48 | 14.95 | 9.06 | 9.03 | 6.21 | 5.23 | 4.24 | 3.91 |
| 154 | 56.17 | 49.95 | 46.98 | 37.50 | 33.04 | 28.15 | 21.41 | 14.26 | 13.30 |
| 155 | 49.58 | 42.07 | 39.12 | 42.20 | 35.02 | 30.21 | 23.59 | 23.09 | 17.07 |
| 171 | 67.37 | 68.62 | 65.22 | 62.50 | 57.01 | 47.35 | 33.03 | 33.13 | 26.40 |
| 172+173 | 41.69 | 31.73 | 28.07 | 22.50 | 17.63 | 15.05 | 16.99 | 9.71 | 8.85 |
| 18 | 47.80 | 40.24 | 32.66 | 27.05 | 22.82 | 17.94 | 12.42 | 9.21 | 6.53 |
| 191 | 15.90 | 8.66 | 12.02 | 9.73 | 7.57 | 3.57 | 3.06 | 0.20 | 0.17 |
| 192 | 24.84 | 21.47 | 17.31 | 16.30 | 13.05 | 8.54 | 5.46 | 4.94 | 4.14 |
| 20 | 29.23 | 26.78 | 20.77 | 16.89 | 14.44 | 13.09 | 11.50 | 8.40 | 5.82 |
| 21 | 40.49 | 31.03 | 28.37 | 22.71 | 14.56 | 20.11 | 11.13 | 12.04 | 10.36 |
| 241 | 80.93 | 80.34 | 72.42 | 68.34 | 71.59 | 65.78 | 61.86 | 50.46 | 43.66 |
| 242+243 | 60.41 | 47.09 | 42.19 | 38.76 | 33.50 | 28.95 | 21.75 | 23.77 | 17.29 |
| 251 | 58.13 | 52.90 | 46.85 | 42.97 | 50.58 | 29.60 | 32.31 | 25.98 | 23.09 |
| 252 | 17.66 | 15.77 | 13.03 | 11.63 | 7.92 | 4.73 | 2.21 | 3.11 | 2.68 |
| 261 | 42.12 | 31.84 | 27.82 | 19.23 | 13.21 | 13.53 | 10.10 | 20.81 | 5.75 |
| 269 | 61.45 | 53.97 | 51.06 | 48.93 | 42.64 | 31.00 | 22.18 | 21.27 | 17.38 |
| 271 | 80.69 | 70.64 | 63.70 | 59.33 | 57.33 | 53.63 | 47.35 | 30.80 | 29.45 |
| 272 | 80.81 | 77.29 | 68.03 | 65.67 | 48.08 | 42.66 | 31.42 | 30.68 | 30.47 |
| 281 | 42.70 | 32.02 | 26.55 | 25.26 | 21.85 | 29.00 | 19.88 | 20.61 | 16.53 |
| 289 | 49.29 | 39.18 | 31.55 | 26.00 | 18.25 | 12.62 | 8.14 | 8.31 | 8.57 |
| 291 | 79.58 | 62.32 | 44.90 | 35.58 | 24.81 | 21.68 | 41.29 | 16.39 | 16.42 |
| 292 | 64.72 | 77.37 | 69.99 | 66.83 | 56.76 | 49.62 | 31.28 | 32.53 | 29.29 |
| 293 | 47.44 | 39.66 | 33.18 | 23.33 | 14.33 | 8.06 | 11.22 | 8.48 | 7.51 |
| 311 | 33.95 | 43.48 | 34.83 | 24.09 | 21.62 | 20.81 | 17.93 | 10.29 | 6.56 |
| 312 | 64.80 | 21.40 | 40.80 | 46.91 | 41.81 | 33.55 | - | 31.37 | 29.56 |
| 313 | 15.29 | 7.96 | 7.39 | 16.14 | 14.40 | 10.47 | 3.72 | 6.56 | 3.61 |
| 314+315+319 | 51.96 | 33.46 | 26.20 | 22.04 | 18.79 | 18.01 | 12.60 | 6.80 | 9.42 |
| 321 | 31.84 | 20.90 | 16.08 | 14.33 | 14.41 | 13.29 | 8.28 | 4.03 | 3.05 |
| 322 | 83.83 | 57.45 | 47.07 | 46.39 | 41.13 | 19.31 | 27.46 | 15.07 | 13.99 |
| 323 | 27.58 | 32.65 | 29.16 | 18.11 | 8.65 | 11.72 | 7.25 | 8.41 | 7.30 |
| 33+30 | 18.39 | 11.60 | 11.22 | 9.97 | 7.45 | 2.10 | 0.93 | 3.66 | 2.64 |
| 341+342 | 52.18 | 36.60 | 42.56 | 38.97 | 44.31 | 42.23 | 36.44 | 28.60 | 27.39 |
| 343 | 45.79 | 44.45 | 35.12 | 33.07 | 23.80 | 16.33 | 13.08 | 3.40 | 0.51 |
| 351 | 75.45 | 69.79 | 66.89 | 62.86 | 66.32 | 66.13 | 59.36 | 63.31 | 57.61 |
| 352+359 | 40.17 | 31.72 | 26.79 | 22.52 | 16.68 | 13.16 | 10.23 | 7.16 | 6.58 |
| 361 | 10.65 | 6.64 | 6.58 | 5.68 | 4.65 | 5.85 | 4.34 | 4.62 | 3.52 |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6d: SOE shares of Sales by 2- and 3-digit Vietnam Standard Industrial Classification (VSIC), Revision 3 (percent)

| VSIC | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 151+152 | 60.34 | 51.68 | 49.85 | 46.17 | 39.17 | 28.52 | 22.72 | 12.82 | 9.51 |
| 153 | 8.50 | 12.68 | 17.17 | 12.29 | 9.11 | 5.10 | 8.61 | 7.54 | 6.48 |
| 154 | 41.42 | 26.82 | 26.32 | 24.54 | 22.51 | 20.85 | 15.47 | 9.19 | 8.19 |
| 155 | 39.62 | 27.20 | 22.16 | 23.91 | 24.11 | 25.43 | 23.11 | 43.12 | 14.22 |
| 171 | 47.52 | 47.93 | 45.27 | 42.49 | 41.69 | 33.73 | 11.72 | 20.00 | 15.90 |
| 172+173 | 40.74 | 32.62 | 29.08 | 21.48 | 18.65 | 14.60 | 24.24 | 6.66 | 5.19 |
| 18 | 47.43 | 43.28 | 39.28 | 31.88 | 30.14 | 25.34 | 21.15 | 17.95 | 12.74 |
| 191 | 11.06 | 3.65 | 9.96 | 5.00 | 3.28 | 2.04 | 1.45 | 0.10 | 0.10 |
| 192 | 18.25 | 14.54 | 11.60 | 10.76 | 7.75 | 5.39 | 3.38 | 3.47 | 3.06 |
| 20 | 36.21 | 36.03 | 24.72 | 21.09 | 18.54 | 18.83 | 14.23 | 9.66 | 6.24 |
| 21 | 56.03 | 35.22 | 30.41 | 27.44 | 17.70 | 24.92 | 16.47 | 17.07 | 14.08 |
| 241 | 73.09 | 69.59 | 54.30 | 58.88 | 68.12 | 67.41 | 56.00 | 54.19 | 54.85 |
| 242+243 | 38.97 | 30.41 | 29.59 | 22.38 | 20.17 | 20.00 | 16.88 | 17.67 | 12.99 |
| 251 | 53.45 | 50.32 | 38.50 | 38.04 | 39.30 | 27.71 | 34.46 | 33.82 | 23.99 |
| 252 | 17.91 | 18.04 | 15.87 | 15.65 | 11.80 | 5.32 | 2.77 | 3.12 | 2.30 |
| 261 | 16.12 | 13.85 | 11.08 | 11.69 | 12.50 | 10.74 | 9.75 | 38.02 | 7.40 |
| 269 | 60.25 | 36.62 | 52.56 | 54.17 | 51.41 | 42.71 | 35.10 | 34.39 | 28.92 |
| 271 | 32.45 | 32.23 | 27.80 | 28.45 | 35.29 | 30.44 | 29.45 | 17.92 | 16.52 |
| 272 | 71.22 | 65.06 | 53.33 | 33.76 | 18.78 | 14.95 | 13.70 | 10.09 | 6.45 |
| 281 | 17.67 | 21.50 | 17.49 | 18.79 | 15.09 | 22.90 | 14.90 | 15.51 | 10.88 |
| 289 | 27.24 | 20.64 | 15.09 | 13.21 | 10.31 | 6.98 | 16.14 | 4.47 | 4.10 |
| 291 | 58.36 | 36.64 | 20.89 | 19.15 | 12.27 | 10.71 | 34.15 | 9.73 | 13.17 |
| 292 | 46.69 | 69.05 | 54.46 | 50.42 | 44.69 | 43.09 | 35.12 | 25.11 | 19.94 |
| 293 | 8.00 | 9.58 | 8.13 | 6.48 | 3.70 | 3.30 | 5.40 | 3.35 | 3.52 |
| 311 | 31.21 | 47.82 | 44.54 | 35.55 | 29.58 | 26.68 | 25.17 | 17.46 | 16.95 |
| 312 | 48.87 | 8.17 | 31.36 | 27.51 | 44.13 | 29.84 | - | 27.04 | 27.62 |
| 313 | 13.69 | 8.71 | 9.38 | 19.94 | 23.05 | 18.02 | 13.10 | 12.03 | 8.54 |
| 314+315+319 | 49.85 | 25.40 | 20.68 | 14.84 | 14.94 | 14.53 | 17.76 | 12.31 | 13.28 |
| 321 | 13.08 | 4.35 | 4.20 | 4.43 | 4.02 | 3.20 | 1.31 | 0.98 | 0.70 |
| 322 | 55.05 | 21.75 | 19.05 | 13.27 | 22.84 | 15.76 | 33.17 | 30.30 | 29.01 |
| 323 | 10.59 | 20.17 | 20.15 | 18.51 | 4.59 | 12.63 | 8.73 | 10.03 | 4.43 |
| 33+30 | 1.09 | 1.42 | 2.23 | 1.54 | 1.12 | 0.39 | 0.30 | 0.52 | 0.25 |
| 341+342 | 6.04 | 3.54 | 6.41 | 9.79 | 10.91 | 10.32 | 18.04 | 13.63 | 9.49 |
| 343 | 29.54 | 29.60 | 25.22 | 31.51 | 25.20 | 21.61 | 5.43 | 1.37 | 0.15 |
| 351 | 65.99 | 59.53 | 63.76 | 52.47 | 71.02 | 71.82 | 61.51 | 65.84 | 53.99 |
| 352+359 | 13.31 | 14.73 | 10.01 | 8.04 | 8.58 | 9.20 | 3.69 | 2.24 | 1.74 |
| 361 | 14.90 | 13.29 | 11.37 | 11.45 | 10.40 | 10.53 | 6.90 | 6.66 | 5.00 |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6i: Definitions of 3-digit Categories in the Vietnam Standard Industrial Classification (VSIC), Revision 3 (percent)

| VSIC | Definition |
|-------------|--|
| 151+152 | Meat, seafood, vegetables, vegetable, oil and fats; butter & milk |
| 153 | Grain mill products, starches, feeds |
| 154 | Other food products |
| 155 | Beverages |
| 171 | Textiles spinning & weaving |
| 172+173 | Other textiles; knitted fabrics |
| 18 | Garments |
| 191 | Leather products |
| 192 | Footwear |
| 20 | Wood products |
| 21 | Paper products |
| 241 | Basic chemicals |
| 242+243 | Other chemical products; artificial fibers |
| 251 | Rubber products |
| 252 | Plastic products |
| 261 | Glass products |
| 269 | Other non-metallic mineral products |
| 271 | Ferrous metals |
| 272 | Non-ferrous metals; metals' casting |
| 281 | Structural metal products |
| 289 | Other metal products |
| 291 | General purpose machinery |
| 292 | Special purpose machinery |
| 293 | Domestic appliances |
| 311 | Electric motors, etc. |
| 312 | Electricity distribution machinery |
| 313 | Insulated wire & cable |
| 314+315+319 | Batteries, etc.; electric lamps; other electrical machinery |
| 321 | Electronic components |
| 322 | Radio & TV transmitters, etc. |
| 323 | Radio & TV receivers, etc. |
| 33+30 | Office & computing machinery; precision machinery |
| 341+342 | Motor vehicle assembly, etc.; motor vehicle bodies, trailers, etc. |
| 343 | Motor vehicle parts |
| 351 | Ships & boats |
| 352+359 | Other transportation machinery |
| 361 | Furniture |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years b).

Appendix Table B6j: Deflators for Manufacturing Output by 2-digit VSIC (1994 prices)

| VSIC | Definition | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 15 | Food & beverages | 1.856 | 1.824 | 1.796 | 1.924 | 2.090 | 2.359 | 2.385 | 2.434 | 2.868 |
| 16 | Tobacco | 1.324 | 1.317 | 1.364 | 1.352 | 1.344 | 1.444 | 1.425 | 1.444 | 1.565 |
| 17 | Textiles | 1.534 | 1.708 | 1.626 | 1.741 | 1.787 | 2.086 | 2.435 | 2.564 | 2.770 |
| 18 | Apparel | 1.900 | 1.789 | 2.259 | 2.412 | 2.546 | 2.567 | 2.565 | 2.733 | 3.044 |
| 19 | Leather & footwear | 1.634 | 1.656 | 1.740 | 1.895 | 2.090 | 2.242 | 2.144 | 2.220 | 2.468 |
| 20 | Wood products | 1.684 | 1.713 | 1.913 | 2.051 | 2.251 | 2.406 | 2.433 | 2.424 | 2.660 |
| 21 | Paper products | 1.549 | 1.716 | 1.879 | 2.023 | 2.129 | 2.235 | 2.381 | 2.486 | 2.655 |
| 22 | Printing & publishing | 1.837 | 1.894 | 1.928 | 2.285 | 2.623 | 2.708 | 2.793 | 2.599 | 2.961 |
| 23 | Petroleum & coal products | 4.040 | 3.006 | 3.114 | 3.348 | 3.556 | 3.594 | 6.253 | 5.530 | 8.573 |
| 24 | Chemicals | 1.541 | 1.474 | 1.679 | 1.887 | 2.305 | 2.319 | 2.484 | 2.475 | 3.138 |
| 25 | Rubber & plastics | 1.630 | 1.687 | 1.786 | 2.039 | 2.138 | 2.136 | 2.301 | 2.283 | 2.652 |
| 26 | Non-metallic mineral products | 1.176 | 1.237 | 1.268 | 1.377 | 1.380 | 1.463 | 1.593 | 1.623 | 1.875 |
| 27 | Basic metals | 1.545 | 1.682 | 1.789 | 2.097 | 2.762 | 2.674 | 2.889 | 3.439 | 3.932 |
| 28 | Fabricated metals | 1.745 | 1.859 | 2.271 | 2.441 | 2.703 | 2.615 | 2.609 | 2.736 | 3.023 |
| 29 | General machinery | 1.511 | 1.615 | 1.696 | 1.907 | 2.387 | 2.512 | 2.870 | 3.032 | 3.314 |
| 30 | Office & computing machinery | 1.341 | 3.060 | 3.995 | 4.369 | 4.304 | 4.512 | 3.385 | 3.761 | 3.690 |
| 31 | Electrical machinery | 2.126 | 2.182 | 2.113 | 2.306 | 2.669 | 2.769 | 2.810 | 2.914 | 3.117 |
| 32 | Radio, TV & communication | 1.677 | 1.556 | 1.794 | 1.967 | 2.219 | 2.231 | 2.551 | 2.584 | 2.597 |
| 33 | Precision machinery | 2.518 | 2.736 | 2.696 | 3.172 | 3.770 | 3.249 | 4.157 | 4.411 | 4.359 |
| 34 | Motor vehicles | 1.819 | 2.247 | 2.724 | 2.721 | 3.096 | 2.922 | 3.240 | 3.150 | 3.092 |
| 35 | Other transport equipment | 2.086 | 2.976 | 2.341 | 2.594 | 3.171 | 2.799 | 2.528 | 2.580 | 2.587 |
| 36 | Furniture, other misc. manuf. | 1.892 | 1.994 | 2.141 | 2.641 | 2.982 | 3.021 | 3.093 | 3.148 | 3.490 |
| 37 | Recycling | 1.173 | 1.339 | 1.828 | 1.955 | 2.334 | 2.710 | 3.073 | 3.020 | 3.110 |

Note: See Appendix Table B6f for VSIC code definitions.

Source: Authors' compilations from General Statistics Office (various years c).