

**Foreign Multinationals in Malaysian Manufacturing
After the Crisis**

*Eric D. Ramstetter, ICSEAD and
Graduate School of Economics, Kyushu University
and
Shahrazat Binti Haji Ahmad, University of Kitakyushu*

Working Paper Series Vol. 2009-13
March 2009

The views expressed in this publication are those of the author(s) and do not necessarily reflect those of the Institute.

No part of this book may be used reproduced in any manner whatsoever without written permission except in the case of brief quotations embodied in articles and reviews. For information, please write to the Centre.

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

Foreign Multinationals in Malaysian Manufacturing After the Crisis

Eric D. Ramstetter (corresponding author)
International Centre for the Study of East Asian Development
and Graduate School of Economics, Kyushu University
ramst@icsead.or.jp

and
Shahrazat Binti Haji Ahmad
Graduate School of Social System Studies, University of Kitakyushu
shahrazat_hajiahmad@yahoo.com
March 2009

Abstract

After reviewing the previous literature on MNCs in Malaysian manufacturing, aggregate trends of MNC involvement, and related economic policies, this paper first emphasizes how MNC involvement has always been relatively large in Malaysia. The paper emphasizes how MNCs have generally accounted for relatively small shares of employment, intermediate shares of production, and large shares of exports, both in the aggregate for most of the last three to four decades, and in 52 manufacturing industries following the 1997-1998 crisis. MNC activities were found to be heavily concentrated in a relatively few industries, notably three large electronics-related industries, but MNCs had relatively large shares of activity in a number of smaller industries as well. There was also a strong tendency for MNCs to pay higher wages and a weaker tendency for them to have relatively high labor productivity, but these differences are probably related to fact that MNCs tend to be relatively large and employ relatively large shares of educated workers, though MNCs did not show a strong tendency to be more capital and/or R&D intensive at the industry level. Finally, the paper showed that MNC-local differences in average labor productivity, wages, size, and educated worker shares may also be related to the degree of concentration in an industry. These findings highlight the important point that the simple MNC-local differentials calculated in this paper do not account for other possible influences (e.g., concentration) that might affect such differentials. Nonetheless, it is clear that MNCs remained very large in Malaysian manufacturing after the 1997-1998 crisis and continue to play very important roles in a wide range of Malaysia's manufacturing industries.

JEL Classification: F23, L22, O14, O53

Keywords: multinational corporation (MNC); Malaysia; manufacturing; productivity; wages; exports; producer concentration

1. Introduction

Activities of foreign-owned multinational corporations (MNCs) have always been relatively important to Malaysia and the country has attracted relatively large amounts of foreign direct investment (FDI) by MNCs.¹ There are a number of studies examining various aspects of MNC operations in Malaysia and many of them focus on manufacturing, which has attracted a large portion of MNC investments. However, many of these studies faced data constraints that limited their scope and we know of relatively few studies that have examined MNCs in Malaysia after the 1997-1998 economic crises. This paper fills an important gap in this literature by using detailed industry-level compilations from the manufacturing census for 2000 and the manufacturing surveys for 2001-2004 to examine shares of MNCs in Malaysia's manufacturing industries after the economic crisis and some of the characteristics that distinguish MNCs from local plants. The primary goal is to paint the "big picture" by summarizing what industry-level statistics can tell us about key aspects of foreign MNC activities. The paper also highlights how the plant- and industry-level information in these data might be used to carry out more rigorous analyses of related issues.

In order to clarify this paper's contribution to the literature, Section 2 first provides a brief review of previous evidence regarding MNCs in Malaysia and related economic policies. The paper then analyzes patterns of foreign ownership shares (Section 3) and how key indicators for MNCs compare to corresponding indicators for local plants (Section 4). Finally, the paper examines industry-level concentration and how patterns of MNC activity may relate to concentration (Section 5), before offering some concluding remarks (Section 6).

¹ For example, ratios of FDI stocks in Malaysia were 23% in 1990, 56% in 2000, and 41% in 2001, while averages for developing economies were 14%, 25%, and 30%, respectively (United Nations 2008). Ratios were also higher than the world average among many of the 18 East Asian economies classified as developing (including Hong Kong, Korea, Singapore, and Taiwan). Nonetheless, Malaysia ranked relatively highly in this group as well (e.g., 5th in 1990 and 2000, and 7th in 2007).

2. MNCs in Malaysia: Aggregate Trends, Previous Evidence, and Economic Policies

This section reviews major trends, previous evidence, and economic policies which are related to the roles played by MNCs in Malaysia.

2a. Trends in MNC Presence

MNC presence has been large in a variety of Malaysian industries for a long period of time. MNC presence was generally smaller in the late 1970s and early 1980s, but larger in the early 1970s and again after the FDI boom that began in the mid-to-late 1980s.² Manufacturing always accounted for a large share of MNC activity and the rapid expansion of manufacturing MNCs was a conspicuous element of the FDI boom. For example, the share of manufacturing MNCs in the sales of all majority-foreign limited companies rose from 38-45 percent in 1969-1985 to 53-59 percent in 1987-1990 and 63-74 percent in 1991-1995 (source in note 2).

Data on manufacturing plants from published compilations of industrial or manufacturing surveys or censuses are the primary source used in this and several other studies, and they tell a similar story through 1995.³ Most notably, shares of majority-foreign MNCs in gross output (value added plus intermediate costs) of all plants included in these surveys or censuses fell from 51 percent in 1968-1971 and 1972-1975 to 38 percent in 1983-1986, before rebounding to 48 percent in 1991-1994 (Figure 1). Correspondingly, employment in manufacturing MNCs grew more rapidly during the early 1970s and again during FDI boom from the mid-1980s to the mid-1990s than in other periods.⁴ Despite a sharp decline in employment growth after 1994, MNC shares of gross output fell only slightly in 1995-1997 and then rose to 53 percent in 1999 as the crisis resulted in a more severe slowdown among local plants. These shares

² For example, majority-foreign MNCs accounted half or more all of the sales by limited companies in mining in 1969-1977 and 1981-1983, manufacturing in 1969-1975, 1979-1980, and 1991-1995, and wholesale trade in 1969-1973 (Department of Statistics various years f).

³ The Department of Statistics ceased publishing compilations from the limited company surveys after the 1995 issue. Ali and Wong (1993) and Ramstetter (1995, 1999) provide more details from this sources.

⁴ For example, employment increased 153% in 1969-1974, 182% in 1984-1989, and 193% in 1989-1994, but 41% in 1974-1979 and only 7% or 8% in 1979-1984, 1994-1999, and 1999-2004 (Figure 1 sources).

then abated but remained relatively high during the period studied in this paper (50 percent in 2000, 51 percent in 2001-2002, and 48 percent in 2003-2004).

The data in Figure 1 also show how MNC shares of plant employment were smaller in most periods than corresponding shares of gross output or value added (=manufacturing GDP for survey plants, Figure 1). After the late 1970s, MNC shares of value added also tended to be smaller than corresponding shares of gross output. Similarly, limited company data also indicate that shares of net sales (a figure similar to value added that excludes intermediate purchases) tended to be smaller than shares of total sales (including intermediate good purchases) through 1995 (Department of Statistics various years f). The limited company data also suggest that MNC shares of international trade (both exports and imports) were even higher than shares of production, however measured. The general pattern of MNC presence in Malaysian manufacturing is thus similar to patterns in many other developing economies in Asia. In this region, MNC activity is often largest if measured as a share of host country trade (exports or imports), of intermediate size if compared to host economy production, but generally accounts for a smaller shares of host country employment (Ramstetter 1999).

Actual differences between MNC shares of value added and MNC shares of employment are also likely to be more pronounced than shown in Figure 1, because surveyed plants accounted for larger shares of total manufacturing GDP than of total manufacturing employment, and omitted plants are almost all local plants.⁵ For example, if all omitted plants are (plausibly) assumed to be local, MNC shares of total manufacturing employment are only 23-29 percent, in 1987-2004, compared to 38-43 percent in Figure 1, but differences in MNC shares of GDP are less pronounced (32-48 compared to 39-51 percent in Figure 1).

Several studies have also examined MNC shares of capital, measured alternatively as

⁵ Ratios of manufacturing census/survey estimates to estimates of total manufacturing employment (from labor force surveys) or GDP (from national accounts), respectively, were 1987-1990=60% & 83%, 1991-1994=67% & 94%, 1995-1997=75% & 100%, 1999=68% & 94%, 2000=72% & 95%, 2001=64% & 94%, 2002=72% & 99%, 2003=71% & 99%, and 2004=76% & 97% (Appendix Tables 2, 4; Department of Statistics 2007).

equity or paid-up capital on the liability side of the balance sheet, or the stock fixed assets on the asset side. Data from manufacturing surveys (see sources of Figure 1) suggest that MNC shares of fixed assets were also higher than MNC shares of employment in the 1970s, but declined rapidly and were generally lower than employment shares in 1980-1995. In addition, the Malaysia Industrial Development Authority (MIDA) also published series on the stocks of fixed assets (as well as paid-up capital and loans) that were useful because they contained 3-digit industrial detail on MNCs not available from published compilations of the limited company or manufacturing plant (survey) data (Athukorala and Menon 1996; Malaysia Industrial Development Authority, various years).⁶ These data highlight the importance of the electric and electronic machinery for both MNCs and Malaysia.⁷ MNC shares of fixed assets were large in this industry, about 77-84 percent in 1980-1988 and 1997-1998 and 86-91 percent in during the boom years of 1989-1995. Growth in this industry was a major element of the FDI boom as its share of total fixed assets in manufacturing MNCs rose from about one-fifth in 1986-1987 to over two-fifths in 1991, before falling back to one third or so in 1993-1998. The only other industries accounting for more than 10 percent of fixed assets in MNCs were food (1986-1988), textiles and apparel (1995-1998), petroleum products (1986-1990, 1993-1994, 1997-1998), and non-metallic mineral products (1986-1988).

2b. Previous Comparisons of MNCs and Local Firms or Plants

The data reviewed in the previous section suggest that MNCs tended to have relatively high trade propensities (exports or imports as percentage of gross output or total sales) and average labor productivity (either gross output per worker or value added per worker) compared to

⁶ A number of studies and government compilations also use data on FDI approvals and projected employment in FDI projects, which are published by MIDA. Although these may be useful indicators of investor sentiment before investments are made, there are often large differences between approvals and actual investments or operations. Thus, we do not discuss them here.

⁷ The rapid growth of this industry in 1983-1999 is also illustrated in manufacturing plant data on production, employment and exports compiled by Okamoto (1994).

local plants or firms in Malaysia. Direct comparisons of trade propensities for limited companies also suggest that MNCs did indeed have higher trade propensities (Ali and Wong 1993; Ramstetter 1995, 1999). Moreover, simple t-tests from Ramstetter (1999) suggest that mean differences in trade propensities between MNCs and local firms in manufacturing were highly significant (at the 1 percent level or better) statistically for alternative samples covering 1972-1995. Although these simple comparisons do not control for other influences on exporting behavior, Rasiah (2003, 2004) provides more sophisticated tests for samples of electronics firms that control for numerous other influences on export propensities such as effects of human resource capabilities, process technology capabilities, research and development (R&D) propensities (ratios of R&D to sales), wages, unionization, firm size, and firm age. These results also indicate that foreign-owned firms had higher export propensities than local firms even after accounting for such influences. Such evidence is also consistent with findings in much larger samples of manufacturing plants for Indonesia and Thailand (Ramstetter and Takii 2006, Sjöholm and Takii 2006, Ramstetter and Umemoto 2006).

Several studies have examined differences in alternative measures of productivity and are more sophisticated than the simple comparisons of trade propensities mentioned above or similar comparisons of productivity measures (Ramstetter 1999), because they account for numerous factors affecting productivity other than ownership (e.g. factor intensities and plant size). For example, Menon's (1998) results for 1988-1992 suggested that total factor productivity (TFP) growth was on average slightly higher in domestic plants than in MNCs but that TFP growth was small in both groups. For 1992-1996, Oguchi et al. (2002) found that differences in average TFP levels were also small, with levels in MNCs being 3.1 percent lower than local plants in 1992 and 0.2 percent higher in 1995 and 1996. However, this study also found that MNCs had higher TFP in 22 of 28 3-digit industries for which comparisons were possible. Using data for earlier years, Okamoto (1994) found that MNCs had higher TFP

in 1983-1990, but that the differential declined rapidly during the investment boom, from about 0.13-0.15 in 1983-1987 to 0.07 in 1989 and 0.03 in 1990. Taken together, these studies suggest that MNCs were generally more productive than non-MNCs between the mid-1980s and mid-1990s, but that productivity differentials declined over time (i.e., TFP growth was relatively low in MNCs). In a related, recent study Khalifah and Adam (2009) find mixed evidence regarding productivity spillovers from MNCs to local plants in 2000-2004, suggesting that the nature of the spillover observed depends on the measure of MNC presence used and the degree of foreign ownership in the MNCs.

The data in Figure 1 also suggest that MNC shares of value added were generally much larger than shares of employment in most years but that MNC shares of value added and employment were roughly equal in 1987-1990 and 1991-1994. In other words, these simple comparisons indicate that MNCs had relatively high average labor productivity in Malaysian manufacturing in most years, but these differentials became very small during the peak of the investment boom in 1987-1994. Athukorala and Menon (1996) use the same data at a more disaggregate level, finding relatively small changes in shares of production, but large increases in employment during 1983-1992, which suggests a similar trend. The simple t-tests in Ramstetter (1999) are also consistent, suggesting that MNC plants had significantly higher labor productivity than local plants through 1986 but not in 1987-1995. Like the comparisons of trade propensities mentioned above, these simple comparisons of labor productivity are not as reliable as the TFP comparisons, for example, primarily because they do not control for other factors that might account for observed differences between MNCs and local plants.

For example, Ramstetter's (1999) simple comparisons also reveal that MNCs tended to be larger than local plants and that these differences are highly significant statistically. Therefore, observed differences in labor productivity might not be significant if differences in plant size could be accounted for. On the other hand, findings from Ramstetter (1999) suggest that

capital intensity was generally lower in MNCs than in local plants and that average capital productivity was correspondingly higher. Thus, differences in capital intensity do not appear to have contributed to differences in labor productivity, at least in samples of all manufacturing plants combined. Evidence from a survey of 120 private firms in 1990 by the Central Bank's (Phang 1998) is broadly consistent in this respect.

Ali and Wong (1993) and Ramstetter (1999) also provide simple comparisons of profitability, finding that MNCs were generally more profitable than locally controlled limited companies, through the mid-1980s, but that local firms were more profitable during the investment boom of 1987-1995. Ramstetter's simple comparisons focus on manufacturing and suggest that both of these differentials were highly significant statistically. Partially because MNCs were more profitable and had relatively high investment income outflows, Ali and Wong also find that ratios of fixed investment to profits were relatively low in MNCs. They also find evidence that tax-profit ratios were generally lower in MNCs than in local companies.

Lee (2004, 2008) used data from the National Survey of Innovation to compare innovation propensities in MNCs, after controlling for other relevant determinants. The former study finds no significant differences for 2000-2001, but results from the latter study suggest that MNCs had significantly lower innovation propensities than local firms in 2002-2004. Results from samples of electronics firms in Southeast Asia, 49 in Malaysia and 25 in Thailand (Rasiah 2003), or these 71 firms combined with another 27 in Philippines (Rasiah 2004), also suggest that the R&D capabilities of foreign firms were not significantly larger than those of local firms after controlling for numerous other influences on R&D. These results may reflect the tendency of MNCs to concentrate their innovative activities in home economies and a relatively few centers in overseas locations.

Previously cited studies by Rasiah (2003, 2004) are only a few of those focusing on

electronics-related industries, which have grown relatively rapidly over the last two decades and come to account for a very large portion of manufacturing in Malaysia and several other Southeast Asian economies. For example, Ismail (1999, p. 36) emphasizes that “foreign TNCs [MNCs] have contributed significantly to the process of technological upgrading in the Malaysian electronics industry”, helping to create “a notable increase in backward linkages” and “undertaken significant upgrading of their Malaysian employees’ skills”, conclusions which are echoed in Hobday (1999) and Lai and Narayanan (1999). Findings for the automobile industry contrast markedly, however, with Leutert and Sudhoff (1999) emphasizing how progress was rather slow through the mid-1990s.

2c. The Policy Context

Malaysia has a long history of actively encouraging FDI by foreign MNCs and promoting international trade, especially exports. However, both FDI and trade promotion have been tempered by the perceived need to pursue other policy goals that were not thought to be consistent with totally free trade or investment (Sieh 2000, pp. 58-60). In short, as elsewhere in Southeast Asia and the developing world, the Malaysian government has often interfered in the market place offering incentives for MNC investments on the one hand and imposing performance requirements on the other (Moran 1998). Three interrelated aspects of Malaysian policy are particularly important in this context because they continued to affect foreign MNCs during the post-crises period studied here.

First, after the outbreak of serious racial conflict in 1971, Malaysia adopted the New Economic Policy (NEP), which continued through 1990 and actively sought to promote the business activities of indigenous Malay residents or *bumiputra*. The local Chinese minority bore the brunt of the discrimination created by these policies, but MNCs were also adversely affected. One NEP provision of particular relevance to MNCs was the goal of reducing the

foreign share of equity in the corporate sector to 30 percent or less. Both Ariff (1991, p. 133) and Sieh (2000, p. 58) point to this limit as an important constraint on some MNCs who were interested in investing beyond the allowed limits. On the other hand, MNCs were allowed to exceed the 30 percent threshold and even hold majority ownership shares. This occurred partially because, after a recession in the mid-1980s, exceptions to ownership restrictions were granted for projects that met criteria for export, use of high technology, or production of priority products. These exceptions in turn contributed to the FDI boom of the late 1980s and early 1990s (Sieh 2000, p. 90).

Exceptions to equity limits were apparently extensive. For example, 67 percent of 407 Japanese affiliates that Toyo Keizai (1990) reported to have positive Japanese ownership shares in 1989 had Japanese ownership shares in excess of 30 percent, and 39 percent of the total had shares in excess of one-half (Toyo Keizai 1990). These high ratios suggest that equity limits were not a severe constraint for many MNCs in the country. Perhaps more importantly, equity limits did not prevent foreign-controlled firms or plants from accounting for even larger shares of production in several major industries including manufacturing (see Figure 1 and Section 2a above). In other words, even when effective, equity limits apparently did not have a corresponding effect on the role of foreign-controlled firms or plants in Malaysian production.

A second set of constraints on MNCs emerged in the early 1980s, when the Malaysian government began to pursue a set of relatively aggressive industrial policies that aimed to promote the development of priority, mainly heavy industries such as automobiles, steel, construction materials, and Malaysian capitalists in these industries. Perhaps the best known case, which is closely associated with the former Prime Minister Mahathir, was the promotion of a national champion (Proton) in the automobile industry, to the detriment of foreign competitors, and perhaps other local firms, in this and related industries. Since the Asian

financial crisis in the late 1990s, it has become increasingly clear that Malaysia's policy of picking a national champion in this industry has failed to produce an internationally competitive company or industry (Jomo 2003, pp. 77-92). In this respect, the Malaysian experience in autos contrasts sharply with its own experience in electronics-related industries or with the Thai experience in both automobiles and electronics, where MNCs have been freer to contribute to international competitiveness.⁸

Alavi (1996) carefully documents the structure of protection in Malaysia through 1987, emphasizing that nominal rates of protection were highest in food and beverages, non-metallic mineral products (particularly cement), and transportation machinery, while the highest rates of effective protection were also found in non-metallic mineral products (particularly cement), and transportation machinery, as well as in plastics, wood products, and basic metals. Ali's (1992) analysis of industrialization and technology policies also highlights how the structure of protection in the 1980s reflected the emphasis former Prime Minister Mahathir placed on heavy industrialization in cement, steel, and petrochemicals, in addition to automobiles and other transportation equipment (ships, motorcycles; Jomo 2003, pp. 69-76).

Third, the Asian financial crisis produced a strong response from the Malaysian government which espoused strongly nationalistic rhetoric and was hesitant to surrender its policy independence to the International Monetary Fund. Correspondingly, Malaysia put together a package of policies that contrasted to Fund recommendations in important respects. Perhaps the most controversial measures involved the pegging of the Malaysian ringgit to the U.S. dollar from mid-1998 and the imposition of restrictions on short-term capital movements between Malaysia and foreign countries. Many international observers considered these

⁸ For example, reflecting its greater dependence on trade and higher income levels, the value of Malaysia's exports of all merchandise and electronics-related commodity groups (SITC sections 75, 76, 77), have always substantially exceeded Thailand's exports of the same commodity groups. However, Malaysia's exports of road vehicles (SITC section 78) were less than half of Thailand's by 1997 and less than one tenth of the Thai total in 2006, primarily as result of the relatively rapid growth of Thailand's road vehicle exports during this period (8.9- versus 1.9-fold if measured in U.S. dollars; United Nations 2009).

measures harsh and some studies cite them as a reason for a loss of confidence among foreign investors (Lau, 2005, p. 144). On the other hand, remittances of profit and dividends, as well as the repatriation of capital by long-term foreign investors, remained free of control and a number of ownership and sectoral restrictions on FDI were relaxed immediately following the crisis (Athukorala 2002, p. 1304-1306). Correspondingly, Malaysian authorities emphasized that the policy response was carefully designed to preserve the country's hospitable investment environment for long-term investors.

The October 1998 budget speech also revealed increased tariffs and other import restrictions focused on transportation equipment and other heavy and construction equipment that the government said were implemented in order to reduce the current account deficit. However, "cushioning local producers (including ... Proton) against domestic demand contraction was obviously a key motivating factor" (Athukorala 2002, p. 1306) behind these measures. This interpretation of the trade policy response is reinforced by the facts that (1) merchandise trade balances were generally in surplus even before the crisis and (2) the current account turned from large deficits in 1991-1997 to even larger surpluses in 1998-2007.⁹ Whatever the motivation, these increases in protection almost certainly amplified the negative sentiment among MNCs in Malaysia, many of which have always been highly dependent on both imports and exports.

Notwithstanding the negative reactions of many international investors to these policy changes, the data in Figure 1 suggest that the crisis and policy response had little effect on trends in the employment or production of manufacturing MNCs in Malaysia. On the other hand, the 2001 slowdown, which was concentrated in electronics-related industries that account for a large portion of MNC activity in Malaysia, apparently had a somewhat larger effect. Trends in aggregate FDI suggest a somewhat larger loss of investor confidence in 1998,

⁹ In 1991-1997 current account deficits averaged of -6% of GDP, but merchandise trade surpluses averaged 3% of GDP (International Monetary Fund 2009). In 1998 these balances both turned in strong surpluses (24% and 13%, respectively, of GDP), which continued in 1999-2007 (averages of 22% and 12%, respectively, of GDP).

but the aggregate FDI data also suggest that the 2001 recession had a relatively large impact.¹⁰ We now turn to these trends in more detail.

3. MNC shares of Employment, Production, and Exports

Post-crisis trends and patterns of MNC shares of Malaysian manufacturing and MNC-local plant comparisons are performed by using rather detailed industry-level compilations of the plant-level data underlying Malaysia's census of 20,455 manufacturing plants in 2000 and subsequent sample surveys of 12,451-13,934 plants in 2001-2004 (Appendix Table 1a). Although the 2000 census covers many more plants than sample surveys of subsequent years, differences in census and sample coverage were not that large in terms of employment or gross output. 2001 survey estimates for employment and gross domestic product (value added) were lower than 2000 census estimates, and ratios of employment or value added estimates from the census and surveys to corresponding estimates of the manufacturing total from labor force surveys or national accounts data also fell between the 2000 census and the 2001 survey (see note 3 above). However, these ratios rebounded quickly and were higher in some subsequent survey years than in the census year, which suggests that survey-based estimates are not systematically lower than census-based estimates. As noted above (footnote 5), both survey- and census-based estimates appear to cover production much better than employment, which in turn suggests these data might overestimate aggregate average labor productivity compared to the data that cover all manufacturing. Because the manufacturing census and surveys are likely to cover MNCs relatively comprehensively and excluded a number of smaller, local plants, it is also likely that data from the manufacturing census and surveys understates actual labor productivity differentials between MNCs and local plants.

Plants in the census and survey data are classified in one of 55 industries, which are

¹⁰ Inward FDI averaged US\$4.7 billion in 1991-1997 before falling to US\$2.2 billion in 1998, US\$3.8-3.9 billion in both 1999-2000, US\$0.6 billion in 2001, US\$3.2 billion in 2002, US\$2.5 billion in 2003, and then recovering to US\$4.6 billion in 2004 (International Monetary Fund 2009).

generally defined at the 3-digit level of Malaysia's Standard Industrial Classification (MSIC), which is very similar to version 3 of the International Standard Industrial Classification (ISIC).¹¹ Of these 55 industries, only eight industries accounted for more than 5 percent of total employment in reporting plants and only one, electronic components, had double digit shares (11-12 percent; Appendix Table 2a). A closely related industry, radio & tv receivers, recorders, and plastics had somewhat lower shares (6-8 percent), while the remaining five industries (apparel except furs, other wood, rubber, office & computing machinery, and furniture) had shares of 4-6 percent depending on the year. Taken together these eight industries accounted for half of manufacturing employment in 2000 and 49 percent in 2001-2004, while the three large, electronics-related industries in this group had combined shares of 25 percent in 2000 and 21-23 percent in 2001-2004.

The distribution of gross output was also heavily concentrated in the three electronics-related industries mentioned above, electronics components (14-17 percent shares of the total), office & computing machinery (9-11 percent), and radio & tv receivers, recorders (7-11 percent, Appendix Table 3a). Only three other industries (meat, fish, fruits, vegetables, oils, & fats, refined petroleum, and other chemicals) had shares of 5 percent or more in gross output. Thus, distribution of gross output was more concentrated than the distribution of employment with the three large electronics accounting for about one third (31-36 percent) and the largest six industries accounting for over half (55-58 percent) of the total. Ratios of intermediate inputs to gross output are relatively high electronics-related industries and relatively heavy dependence on intermediate inputs is one reason for relatively large shares of gross output for this industry.¹²

Tables 1-2 show shares of majority-foreign MNCs in four key indicators for 2000,

¹¹ 52 of the 55 categories are defined at the 3-digit level. The remaining three categories are combinations of related 3-digit categories that are relatively small (printing & recorded media, other chemicals, aircraft & other transportation machinery).

¹² Shares of the three, large electronics industries in value added (gross output less intermediate inputs, 23-27%, Appendix Table 4a) were much closer to corresponding shares of employment, for example.

2001-2002, and 2003-2004, employment, gross output, gross output of the 4 largest plants in each industry (CR4 plants), and exports.¹³ If average shares for all manufacturing combined are calculated, MNCs accounted 38-39 percent of manufacturing employment, 48-51 percent of gross output, 56-59 percent of gross output by CR4 plants, and 67-69 percent of exports.¹⁴ In other words, among these activities, the direct contributions of MNCs to Malaysia's manufacturing exports were the larger than contributions to gross output and smallest in terms of employment. MNC shares of gross output in CR4 plants were also tended to be larger than shares of total gross output for all plants, suggesting that MNCs might have a greater propensity to wield market power than local plants. MNC shares of gross output also tended to be larger than shares of value added (43-44 percent; Appendix Tables 4a, 4b), partially because of large MNC activity in intermediate-input-intensive, electronics-related industries.

Similar patterns are also observed if the frequencies with which MNCs account for the majority of industry activities are calculated. For example, MNCs accounted for the majority of employment in 19-21 of 52 industries in which there was at least one MNC for all years 2000-2004 (Table 1).¹⁵ MNCs also produced the majority of gross output in 23-27 industries, the majority of gross output by CR4 plants in 29-34 industries, and the majority of exports in 38-44 industries. These ranges reflect increases in the number of industries with MNC having majority shares of employment, gross output of all plants, and exports, but a decrease for shares of gross output of CR4 plants. In other words, the number of industries where MNCs accounted for the majority of overall activities increased, but the number of industries in which MNCs had large shares of the largest plants fell. However, because a relatively large portion of industries had relatively low MNC shares, the means of MNC shares for the 52

¹³ Majority-foreign MNCs are defined to include all plants in which foreign equity shares were 50% or greater, including 50-50 joint ventures which are often considered separately in official Malaysian publications.

¹⁴ Shares are calculated as the ratios of MNC subtotals to corresponding totals for all plants, for employment, gross output of all and CR4 plants, and exports in 2000, 2001-2002 combined, and 2003-2004 combined.

¹⁵ There were three small industries with no MNC plants in one or more years during 2000-2004, motor vehicles, motor vehicle bodies & trailers, and recycling. These industries are excluded from the text tables to simplify the analysis, but they are included in the Appendix Tables for reference. The excluded industries were small, with employment shares of 2% or less and production (value added or output) shares of 4% or less.

industries were smaller for all four indicators (employment, gross output, gross output of CR4 plants, and exports) than shares of total manufacturing aggregated.

4. Comparisons of MNCs and Local Plants

As reflected in Section 2b's review, the literature comparing MNCs and non-MNCs (local plants) in Malaysia and elsewhere has often focused on comparisons of productivity levels. This focus is of interest because theory suggests that MNCs are likely to have relatively large amounts of often intangible, firm-specific assets related to technology such as patents and other fruits of R&D efforts, and that these ownership advantages lead MNCs to have higher productivity levels than non-MNCs. Since the number of Malaysian MNCs (which would also be likely to have relatively high productivity) is still limited, this also leads to the expectation that foreign MNCs are more productive in some sense than local plants in Malaysia. It is often difficult to identify precisely which aspect of productivity differs because the economic values of important factors of production (notably capital and land) are often measured with large error. Another problem relates to common, unrealistic assumptions about the nature of technology, which can bias estimates of theoretically preferred measures such as TFP.¹⁶

Average labor productivity (value added per worker) is a commonly used, partial measure of productivity employed here, mainly because it is less sensitive to measurement problems than many, if not most of the simple alternatives. Calculations of MNC-local differentials in this measure of productivity (Table 3) provide some support for this conjecture that MNCs are more productive than local plants.¹⁷ For example, average labor productivity was higher in MNCs than in local plants in almost three-fourths of the 52 industries that had at least one MNC plant in 2000, 2001-2002, and 2003-2004. Moreover, these MNC-local differentials

¹⁶ For example, economists often assume labor and capital are homogenous despite obvious differences in the productivity of different types of labor, capital, and land. In addition, unrealistically restrictive assumptions regarding the elasticity of technical substitution and scale economies are common.

¹⁷ See Haji Ahmad (forthcoming, ch. 5) for more rigorous, plant-level comparisons of TFP which suggest that MNCs were generally more productive during this period.

exceeded 20 percent in over half (29-32) of the industries and were greater than 40 percent in at least one-third (18-21). On the other hand, local plants had markedly higher labor productivity (MNC-local differentials of less than -20 percent) in only five to seven industries during these periods. Nonetheless, if one calculates a t-statistic testing the null hypothesis that MNC-local plant differences in average labor productivity were zero in the 52-industry sample, one cannot reject the null hypothesis of no differences at the standard 5 percent level or even at the weaker 10 percent level for any of the three periods.¹⁸

The lack of significant differentials are closely related to sizeable negative differentials in refined petroleum, which an important outlier in this comparison because average labor productivity exceeded the 52-industry mean by 5 to 11 times for MNCs and 15 to 26 times for local plants (Appendix Tables 2a, 2b, 4a, 4b). If this outlier industry is omitted from the sample and similar calculations are made for the remaining 51 industries, the mean differential rises to from 28 to 60 percent in 2000 and from -3 to 61 percent 2001-2002, and from -2 to 52 percent in 2003-2004. Moreover, differentials in average labor productivity become significant at standard levels for the first two periods (at the 3 percent level for each period) and weakly significant for the latter period (at the 7 percent level).

Economic theory suggests that labor compensation is closely related to labor productivity and it is thus unsurprising that patterns of wage differentials between MNCs and local plants resemble the patterns of labor productivity differentials in important respects.¹⁹ In 2000, positive wage differentials were observed in 38 industries, but this number increased to 42-43 in 2002-2003 and 2003-2004 (Table 3. Thus, during the latter two periods, the number of industries with positive wage differentials exceeded the number of industries with positive

¹⁸ This t-statistic (Sachs 1984, p. 270) allows for differences in sample variances for MNCs and local plants:

$$t = \frac{MN(X1) - MN(X2)}{\sqrt{((VR(X1) + VR(X2)) / N)}} \\ df = N - 1 + ((2N - 2) / ((VR(X1) / VR(X2)) + (VR(X2) / VR(X1))))$$

where MN=mean operator, N=number of observations (equal for both MNCs and local plants), SQ=square root operator, VR=sample variance operator, X1=value of X in samples 1 and 2.

¹⁹ In this paper, wage differentials refer to the differences in the total (monetary and other) compensation of workers. Wage differentials and average labor productivity differentials had the same sign (i.e., both were positive or both were negative) in 40-43 of the 52 industries in Table 3.

labor productivity differentials. On the other hand, the number of industries with relatively large wage differentials was always lower than the number of industries with relatively large average labor productivity differentials.²⁰ Distributions of wages and wage differentials were relatively tight (i.e., they had small variances) and mean wages differentials between MNCs and local plants were relatively stable at 28-31 percent for the 52 industries in the three periods. These differences were also highly significant (at the 1 percent level or better) in the first two periods and significant at standard levels in the latter period.

There were a number of industries with relatively large wage differentials, notably refined petroleum, which remained an outlier with wages well above the average for all 52 manufacturing industries.²¹ Because MNC-local plant differentials were strongly positive for wages in this industry (in marked contrast to negative differentials for average labor productivity), dropping refined petroleum from the sample reduces the differentials in mean wages for the remaining 51 industries somewhat (to 23-27 percent). However, wage differentials become are highly significant in the 51-industry samples for all three periods, largely because distributions become even tighter.

The preceding comparisons of labor productivity and wages may be misleading in two important respects. First, there are many ways in which to measure productivity and wages. For example, we have chosen to focus labor productivity instead of capital productivity or TFP, primarily because this is a common, easily understood measure which is less susceptible to measurement errors than the alternatives, even though some of those alternatives (e.g., TFP) are superior theoretically. There are also several possible measures of wages, though it is easier to argue that the measure used here (total compensation per worker) is probably more appropriate than the alternatives for overall comparisons. Second, productivity and wages are

²⁰ For example, wage differentials exceeded 20 percent in only 25 industries in 2000, 27 in 2001-2002, and 21 in 2003-2004, compared to 32, 31, and 29, respectively for average labor productivity.

²¹ In refined petroleum, compensation per employee was 3.6 to 4.4 times the manufacturing average for MNCs and 1.8 to 2.7 times the corresponding average for local plants (Appendix Tables 2a, 2b, 5a, 5b).

all dependent on numerous other plant characteristics. For example, larger plants or plants with greater capital intensity and/or skilled labor intensity are likely to have relatively high productivity and wages. Correspondingly, many firm- or plant-level studies attempt to examine productivity and wage after controlling for the influences of firm or plant-level characteristics such as size and factor intensity.²²

The potential influences of these factors can also be seen from the industry-level data. For example, if plant size is measured as gross output per plant, MNCs were larger than local plants in at least 47 of the 52 industries and positive size differentials exceeding 100 percent or more were also quite common, being observed in 41 of these industries for 2000, 34 industries for 2001-2002, and 38 industries for 2003-2004 (Table 4).²³ MNC-local differentials in mean size for the 52 industry sample were also quite large, though they declined from 265 percent in 2000 to 172 percent in 2003-2004. These differentials were also highly significant in 2000 but were only weakly significant (at the 7 percent level) in the latter two periods. One important reason for observing larger and more consistent size differentials in between 2000 than in subsequent years is that the vast majority of the plants included in the 2000 census but excluded from surveys for subsequent years were relatively small local plants.²⁴ Refined petroleum is again an important outlier when measuring size. The average refined petroleum plant was 13-18 times larger than the manufacturing average for MNCs and 15-20 times larger for local plants. If mean differentials are recalculated for the remaining 51 industries, they become 284 percent in 2000, 258 percent in 2001-2002, and 205 percent in 2003-2004, and size differentials in the means for the 51-industry sample are highly significant at the one percent level or better in all periods examined.

²² Plant vintage is another potentially important factor that may affect productivity, wages, and profitability, but the effects of this “control” are more ambiguous *a priori*.

²³ Because there were no MNC plants motor vehicles in 2001-2002, motor vehicle bodies & parts in 2000 and 2004, and recycling for 2000-2003, these three industries are excluded in both 2000 and 2001-2002, comparisons

²⁴ Correspondingly, compared to 2000, the average local plant was 48 percent larger in 2001-2002 and 213 percent larger by 2003-2004, while the average MNC plant was only 12 percent larger in 2001-2002 and 44 percent larger in 2003-2004 (calculations from all manufacturing; Appendix Tables 1a-1b, 3a-3b).

MNCs also hired relatively large proportions of educated workers, defined as workers with 11 or more years of education, in 37 industries in 2000, 45 in 2001-2002, and 40 in 2003-2004 (Table 5). For the 52 industries, the mean differences in educated labor shares rose from 8 percentage points in 2000 to 11-12 percentage points in the latter two periods.²⁵ Differences in educated worker shares also exceeded 10 percentage points in about half of the industries (22 in 2000, 28 in 2001-2002, and 24 in 2003-2004). On the other hand, educated worker shares were more than 10 percentage points lower in MNCs in very few industries (5 in 2000 and 2 in the latter two periods). Correspondingly, the mean differences for the 52 industries were also highly significant at the one percent level or better. In short, the industry-level data examined here suggest that MNCs were larger and hired larger proportions of educated workers than local plants, and economic theory would in turn suggest that these differences contributed to the relatively high wage and labor productivity levels observed in MNCs.

On the other hand, these industry-level data do not indicate that MNCs had significantly higher capital intensity during this period (Table 4). Fixed assets per worker were higher in the majority of industries (28-29) and relatively large, positive MNC-local differentials exceeding 20 percent were observed in most of these industries (20-22). However, negative differentials were also observed in close to half of the industries and sizeable, negative differentials lower than -20 percent were observed in 12 (2000) to 18 (2003-2004) of the 52 industries. The mean differential was strongly positive in 2000 (58 percent) but fell to only 7 percent by 2003-2004 but mean differentials were never significant statistically. If two outliers, tobacco and refined petroleum are dropped from the samples, mean differentials fall to between 1 and 8 percent for the remaining 50 industries, and remain insignificant.

The data in Table 5 also show that MNCs had lower R&D propensities (ratios of R&D

²⁵ Using this definition, mean educated worker shares for the 52 industries were 47-50 percent in local plants and 56-61 percent in MNCs. Because skilled labor shares and other variables in Tables 5-6 are defined in percent, these tables present absolute differences in percentage points, not percentage differentials which can be difficult or impossible to interpret either the MNC share or local share is zero or close to zero, or when negatives are involved (e.g., profit rates).

expenditures to gross output) than local plants in a large number of industries in Malaysian manufacturing, two-fifths of the 52 industries in 2000, one half in 2001-2002, and almost three-fifths in 2003-2004. Moreover, both MNCs and local plants reported small mean R&D propensities (0.1-0.2 percent, Appendix Tables 3a, 3b, 9a, 9b) and mean MNC-local differences in R&D propensities were even smaller (+0.04 percentage points to -0.05 percentage points). Because differences were small and varied markedly across industries, mean differences are never significant statistically. In short, R&D propensities are very small in Malaysian manufacturing and not very different in MNCs or local plants.

Profitability is another important indicator of firm or plant performance, largely because firms and plants are generally thought to seek the maximization of profits as their most important objective.²⁶ However, the existing data indicate little consistent difference in the profitability of MNCs and local plants during this period (Table 6). In 2000, gross profit rates were higher in MNCs than in local plants in almost two-thirds (34) of the 52 industries but this number fell to only about one half (25) in 2001-2002, and just over one-third (20) in 2003-2004. Relatively large, positive MNC-local differences (greater than 3 percentage points) were also more common in the first two periods (17 or 19 industries) than in the latter one (13 industries) and the frequency of similar (in absolute value) negative differences increased steadily over these periods (from 10 to 13 and 16 industries). These data thus suggest a trend from relatively high profitability in MNCs in 2000 to little overall difference in 2001-2002 and then relatively low profitability in MNCs in 2003-2004. MNC-local differences in mean profitability for all 52 industries also reflect this trend in the latter two

²⁶ Estimating profitability from accounting data combines the returns capital and/or land with pure economic profits to some extent. Many measures, including the data on gross profits in Table 6, also combine profits and losses from production-related activities as well as other profits or losses, including those from financial investments or other activities not related to the main line of business, which can be very large relative to the total. Gross profits also include tax payments but may be a better measure to compare overall profitability than net profits when large tax breaks (as granted to many MNCs and local firms in promoted industries) are involved. Evaluating any measure of profits at the plant level, which these data do, is further complicated by the fact that many firm-level costs (such as those related to product and market development) are often shared among several plants but attributed only to the plant in which those activities are concentrated.

periods falling from -0.2 percentage points to -1.1 percentage points. However there was a relatively large mean difference in the 52 industry sample for 2000, -0.7 percent, primarily because of very large negative differences in footwear as well as in optical and photographic machinery. If these two industries are dropped from the sample, the mean difference for the remaining 50 industries was strongly positive at 1.6 percent in 2000 but still insignificant at standard levels, reflecting the large variation of profitability among industries.

In marked contrast, there are some quite large differences in another measure of plant performance, export propensities. MNCs had higher propensities in 44-48 of the 52 industries and MNC-local differences exceeded 20 percentage points in well over half (30-34) of the industries and exceeded 30 percentage points in about two-fifths (20-25) of the industries (Table 6). Mean differences for the 52 industries were thus very large, 30-31 percentage points in 2000 and 2001-2002 and 26 percentage points in 2003-2004. All of these differences were also highly significant at better than the one percent level. The decline in differences in the latter period resulted from a greater decline in mean export propensities for MNCs (54-56 percent to 43 percent) than for local plants (24-25 percent to 18 percent; Appendix Tables 3a, 3b, 10a, 10b). The three, large, MNC-dominated, export-oriented, electronics-related industries (office and computing machinery, electronic components, and radio & tv receivers, recorders) accounted for a very large share of exports by manufacturing plants and that these survey data apparently covered these and other electronics-related exports more poorly in 2004 than in previous years.²⁷ This fall off in coverage is thus a potentially important reason for the declined in mean export propensities and MNC-local differences in 2003-2004.

²⁷ These three industries combined to account for 50-57 percent of all manufacturing plant exports in 2000-2003, but only 44 percent in 2004, while all 10 electronics-related industries (MSIC categories 300 to 323 in Appendix Tables 10a or 10b) had combined shares of 55-64 percent in 2000-2003 but only 49 percent in 2004. Ratios of exports by electronics-related manufacturing plants to estimates of total electronics-related exports from merchandise trade data (SITC revision 2 sections 75, 76, and 77; United Nations 2009) were 60-65 percent in 2000-2003, but only 41 percent in 2004.

5. Industry-Level Concentration and its Correlations with MNC Activity

The comparisons in the previous section generally highlight ways in which MNCs are thought to contribute to host economies, helping to increase productivity, wages, demand for skilled labor, and exports, for example. On the other hand, because MNCs tend to be relatively large, they also have the potential to wield market power and impose welfare losses on a host economy. Lall (1979) first examined this possibility for Malaysia, finding that greater FDI tended to be associated with higher concentration, even after accounting for several other relevant determinants of concentration. This section examines related issues first by analyzing patterns and trends in two alternative levels of industry concentration, the 4-plant concentration ratio or the share of the largest four plants in industry output (CR4) and Herfindahl indexes or the sum of the squares of all plants in an industry.²⁸ The former measure obviously emphasizes the importance of the largest plants in an industry while the latter gives greater weight to the distribution of output among both large and small plants. CR4 was thus much larger than the Herfindahl in most industries, two very small industries (printing & recorded media and aircraft & other transportation machinery) providing the only exceptions in 2000-2004. Because industries are defined rather narrowly, CR4 was often rather large, exceeding 40 percent in at least half (26-27) of the industries while the Herfindahl exceeded 10 percent in less than two-fifths (15-20) of the industries (Table 7). Correlation coefficients indicate a moderately high correlation among the two measures of concentration (0.65 for 2000, 0.58 for 2001-2002, and 0.63 for 2003-2004), but are also low enough to highlight the important differences between the two measures.

Sampling differences have important implications for changes in concentration between the

²⁸ In this context it is important to note that the using plant-level data will underestimate concentration compared to firm-level data when a single firm controls multiple plants in a single industry. On the other hand, firm-level data will be less precise than plant-level estimates when firms control multiple plants in multiple industries but is classified into a single industry. Moreover, most plant- and firm-level data fail to reflect the potential for conglomerates that control multiple firms to increase concentration (when those firms exist in a single industry) or distort measures of concentration (when controlling firms in multiple industries).

census year of 2000, when samples were relatively large, and subsequent years in Table 7. Not surprisingly, both measures of concentration were somewhat lower in 2000 than in the other periods. For example, the mean CR4 rose from 43 to 46 percent in subsequent years. Between 2000 and 2001-2002, increases in the mean Herfindahl (12 to 13 percent) were similar in relative to initial values, but were not sustained into 2003-2004. At the industry level patterns in the two measures reveal somewhat more similar trends, however, in that both measures increasing in three-fourths (38-39) of the industries between 2000 and 2001-2002 and in about one-half (26-27) between 2001-2002 and 2003-2004.

Table 8 suggests that the industry distribution of CR4 was also correlated relatively strongly with contemporaneous MNC shares of employment, production (measured as gross output or value added), and exports. Correlations of these MNC shares and the Herfindahl index were also positive, though weaker. In this context, we are more interested in correlations to CR4 because they reflect how MNC involvement might be related to the domination of an industry by a relatively few plants, and focus on these correlations in the subsequent analysis. However, the interpretation of these simple correlations is not straightforward because (1) the direction of causation is not clear and (2) these simple correlations, like the comparisons of MNC and local plant characteristics in the previous section, don't account for other influences that may affect the correlations examined.

Nonetheless, these correlations do suggest that MNC shares of employment, production and exports tend to be relatively large in more concentrated industries. In other words, MNCs may be attracted to industries in which CR4 is relatively high and/or MNC activity may contribute to higher CR4s in an industry, though the direction of causation cannot be clarified by even the most sophisticated statistical analysis.²⁹ It is also interesting to note that the correlations of CR4 to MNC shares in the gross output in CR4 plants were weaker than

²⁹ Caves (2007, ch. 4) emphasizes that the causality between concentration and MNC presence can easily run in both directions and we suspect both directions are important, though we cannot demonstrate this statistically.

correlations to MNC shares of gross output in all plants. In other words, relatively high correlations between MNC shares and CR4 appear to result as much from correlations to activities of large local plants as to those of large MNC plants. Correlations of concentration measures to MNC shares of R&D were also relatively low.

Table 8 also examines correlations of concentration measures to the MNC attributes and MNC-local differentials examined in the previous section. Most of the correlations were again positive and correlations involving CR4 were almost always quite a bit stronger than those with the Herfindahl index. Focusing again on the correlations to CR4, the strongest correlations (at least one correlation above 0.4) were to educated employee shares in MNCs and to MNC-local differentials in plant size. Somewhat weaker but relatively strong correlations (at least one correlation above 0.3) were also observed between CR4, on the one hand, and average labor productivity, wages, and plant size in MNCs, as well as MNC-local differentials involving average labor productivity, wages, and capital intensity, on the other. In other words, the tendency for MNCs to have significantly higher wages, larger size, and greater educated labor shares, as well as a weaker tendency for MNCs to have higher labor productivity, may be related to the extent of concentration in an industry, in addition to other industry-level and plant-level factors. On the other hand, it is notable that the correlations of CR4 to export propensities in MNCs and to MNC-local-plant differentials in these propensities were somewhat lower, despite strong differences between MNCs and local plants. Correlations of concentration to profit rates and R&D propensities in MNCs and to corresponding MNC-local plant differentials were generally weak and sometimes negative.

6. Conclusions

This paper began by reviewing the previous literature on MNCs in Malaysian manufacturing and aggregate trends of MNC involvement. In this review, a close examination

of the policy environment highlighted numerous high-profile policies that sought to (1) promote *bumiputra* capitalists, (2) foster heavy industrialization, and (3) deal with the fallout from the 1997-1998 crisis. These policies contained elements restricting MNC activities to some extent but MNC involvement has always been relatively large in Malaysia and there is little evidence that these policies had strong effects on trends in MNC activities.

The paper emphasizes how MNCs have generally accounted for relatively small shares of employment, intermediate shares of production, and large shares of exports, both in the aggregate for most of the last three to four decades, and in 52 industries following the 1997-1998 crisis. MNC activities were also found to be heavily concentrated in a relatively few industries, notably three large electronics-related industries, but MNCs had relatively large shares of activity in a number of smaller industries as well. In a sample of 52 manufacturing industries, there was also a strong tendency for MNCs to be relatively large, pay higher wages, employ relatively large shares of educated workers, and export relatively large proportions of their output, compared to their local counterparts. There was also a somewhat weaker tendency for average labor productivity to be higher in MNCs, but MNC-local differences in capital intensity, profitability, and R&D propensities were not statistically significant. Finally, the paper showed that MNC-local differences in average labor productivity, wages, size, and educated worker shares may also be related to the degree of concentration (measured as CR4) in an industry.

These findings highlight the important point that the MNC-local differentials calculated in this paper do not account for other possible influences (e.g., concentration) that might affect such differentials. Hence further research is required to evaluate whether the simple MNC-local differentials observed here remain significant after accounting for other relevant influences. It is also possible and desirable to utilize plant-level information in these data to control for such characteristics more fully than possible when using industry-level data. On

the other hand, such studies inevitably become rather narrow in scope and the primary purpose of this study has been to paint the “big picture”, showing that MNCs remained very large in Malaysian manufacturing after the 1997-1998 crisis and continue to play very important roles in a wide range of Malaysia’s manufacturing industries.

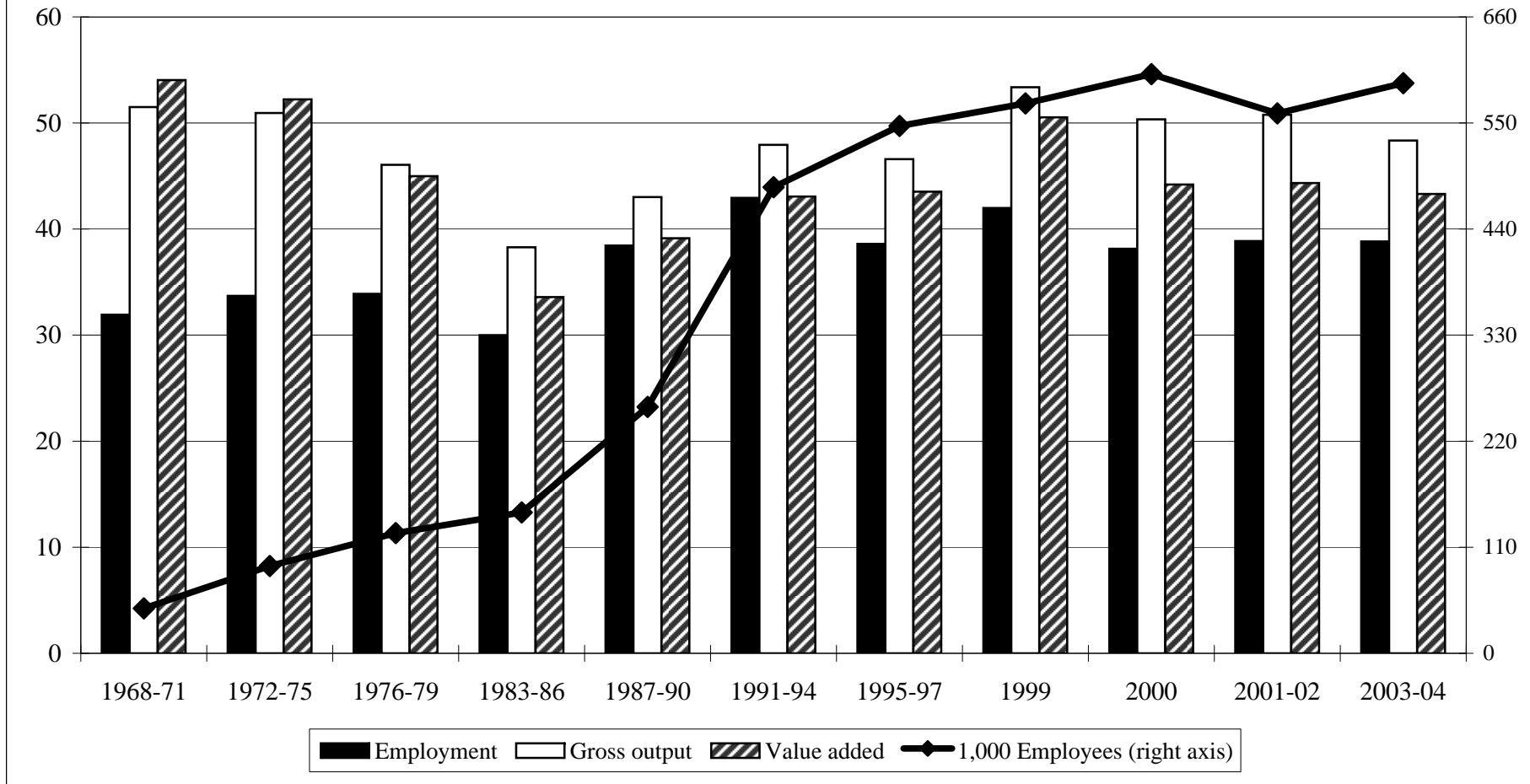
References

- Alavi, Rokiah (1996), *Industrialization in Malaysia: Import Substitution and Infant Industry Performance*, London: Routledge.
- Ali, Anuwar (1992), *Malaysia’s Industrialization: The Quest for Technology*, Singapore: Oxford University Press.
- Ali, Anuwar and Wong Poh Kam (1993), “Direct Foreign Investment in Malaysian Industrial Sector”, in K.S. Jomo (ed.), *Industrializing Malaysia: Policy, Performance, Prospects*, London: Routledge.
- Ariff, Mohamed (1991), *The Malaysian Economy: Pacific Connections*, Singapore: Oxford University Press.
- Athukorala, Premachandra and Jayant Menon (1996), "Foreign Investment and Industrialization in Malaysia: Exports, Employment and Spillovers", *Asian Economic Journal*, 10(1), 215-228.
- Athukorala, Premachandra (2002), “Malaysian Trade Policy and the 2001 WTO Trade Policy Review”, *The World Economy*, 25(9), 1297-1317.
- Caves, Richard E. (2007),
- Department of Statistics (1970), *Census of Manufacturing Industries West Malaysia 1968*, Kuala Lumpur: Department of Statistics.
- Department of Statistics (1975), *Census of Manufacturing Industries Peninsular Malaysia 1973*, Kuala Lumpur: Department of Statistics.
- Department of Statistics (2002), *Census of Manufacturing Industries 2001* [2000 data]. Kuala Lumpur: Department of Statistics.
- Department of Statistics (2007), *Malaysia Economic Statistics-Time Series*, Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years a), *Annual Survey of Manufacturing Industries*, 1992-1994, 1996-2005 issues [1992-1997, 1999, 2001-2004 data], Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years b), Plant-level data for 2000-2004, underlying corresponding issues of Department of Statistics (2002, various years a), received in 2007, Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years c), *Industrial Surveys Peninsular Malaysia*, 1975-1979, 1981-1991 issues, Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years d), *Survey of Manufacturing Industries Peninsular Malaysia*, 1971-1972, 1974 issues, Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years e), *Survey of Manufacturing Industries West Malaysia*, 1969-1970 issues, Kuala Lumpur: Department of Statistics.
- Department of Statistics (various years f), *Report of the Financial Survey of Limited Companies*, 1969-1995 issues, Kuala Lumpur: Department of Statistics.

- Department of Statistics (various years g), *Yearbook of Statistics Malaysia*, 2000-2007 issues, Kuala Lumpur: Department of Statistics.
- Hobday, Michael (1999), "Understanding Innovation in Electronics in Malaysia", in K.S. Jomo, Greg Felker, and Rajah Rasiah (eds.), *Industrial Technology Development in Malaysia*, London: Routledge, pp. 76-106.
- Haji Ahmad, Shahrazat Binti (forthcoming), "A Quantitative Study on the Productivity of the Manufacturing Industry in Malaysia", Ph.D. Dissertation, Graduate School of Social Systems Studies, University of Kitakyushu (March 2010).
- International Monetary Fund (2009). *International Financial Statistics*, June CD-ROM. Washington, D.C.: International Monetary Fund.
- Ismail, Mohd Nazari (1999), "Foreign Firms and National Technological Upgrading: The Electronics Industry in Malaysia", in K.S. Jomo, Greg Felker, and Rajah Rasiah (eds.), *Industrial Technology Development in Malaysia*, London: Routledge, pp. 21-37.
- Jomo, K.S. (2003), *M Way: Mahathir's Economic Legacy*, Kuala Lumpur: Forum.
- Khalifah, Noor Aini and Radziah Adam (2009), "Productivity Spillovers from FDI in Malaysian Manufacturing: Evidence from Micro-panel Data", *Asian Economic Journal*, 23(2), 143-167.
- Lai Yew Wah and Suresh Narayanan (1999), "Technology Utilization Level and Choice: The Electronics Sector in Penang, Malaysia", in K.S. Jomo, Greg Felker, and Rajah Rasiah (eds.), *Industrial Technology Development in Malaysia*, London: Routledge, pp. 107-124.
- Lall, Sanjaya (1979), Multinationals and market structure in an open developing economy: The case of Malaysia, *Weltwirtschaftliches Archiv*, 115(2), pp. 325-350.
- Lau, Ban Tin (2005), *Capital Control and the Malaysian Economy*, Kuala Lumpur: Pelanduk Publications.
- Lee, Cassey (2004), "The Determinants of Innovation in the Malaysian Manufacturing Sector", *ASEAN Economic Bulletin*, 21(3), 319-329.
- Lee, Cassey (2008), Innovation, Productivity and Exports: Firm-Level Evidence from Malaysia, Working Paper Series 2008-06, International Centre for the Study of East Asian Development, Kitakyushu.
- Leutert, Hans-Georg and Ralf Sudhoff (1999), "Technology Capacity Building in the Malaysian Automobile Industry", in K.S. Jomo, Greg Felker, and Rajah Rasiah (eds.), *Industrial Technology Development in Malaysia*, London: Routledge, pp. 247-273.
- Malaysia Industrial Development Authority (various years), *Statistics on the Manufacturing Sector*, 1988-1992 to 1995-1999 issues and related mimeos (1986 to 1998 data), Kuala Lumpur: Malaysia Industrial Development Authority.
- Menon, Jayant (1998), "Total factor productivity growth in foreign and domestic firms in Malaysian manufacturing", *Journal of Asian Economics*, 9(2), 251-280.
- Oguchi, Noriyoshi, Nor Aini Mohd Amdzah, Zainon Bakar, Rauzah Zainal Abidin, and Mazlina Shafii (2002). "Productivity of Foreign and Domestic Firms in Malaysian Manufacturing Industry", *Asian Economic Journal*, 16(3), 215-228.
- Okamoto, Yumiko (1994), "Impact of Trade & FDI Liberalization Policies on the Malaysian Economy", *The Developing Economies*, 32(4), 460-478.
- Phang, Hooi Eng (1998), *Foreign Direct Investment: A Study of Malaysia's Balance of Payments Position*. Kuala Lumpur: Pelanduk Publications.
- Rasiah, Rajah (2003), "Foreign ownership, technology and electronics exports from Malaysia and Thailand", *Journal of Asian Economics*, 14(5), 785-781.
- Rasiah, Rajah (2004), "Exports and Technological Capabilities: A Study of Foreign and Local Firms in the Electronics Industry in Malaysia, the Philippines and Thailand", *The European Journal of Development Research*, 16(3), 587-623.

- Ramstetter, Eric D. (1995), "Characteristics of Multinational Firms in Malaysia: A Time Series Perspective" in Mitsuru Toida and Daisuke Hiratsuka, eds., *Ajia Kogyoken no Keizai Bunseki to Yosoku (IV)* [Projections for Asian Industrializing Region (IV)], Tokyo: Institute of Developing Economies, pp. 95-171.
- Ramstetter, Eric D. (1999), "Comparisons of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time", *Asian Economic Journal*, 13(2), 163-203.
- Ramstetter, Eric D. and Sadayuki Takii (2006), "Exporting and Foreign Ownership in Indonesian Manufacturing 1990-2000", *Economics and Finance in Indonesia*, 54(3), 317-345.
- Ramstetter Eric D. and Masaru Umemoto (2006), "Exports and Foreign Ownership in Thai Manufacturing", in Eric D. Ramstetter and Fredrik Sjöholm, eds., *Multinationals in Indonesia and Thailand: Wages, Productivity and Exports*. Hampshire, UK: Palgrave-Macmillan, pp. 194-219.
- Sieh, Lee Mei Ling (2000), *Taking on the World: Globalization Strategies in Malaysia*, Malaysia: McGraw-Hill.
- Sjöholm, Fredrik and Sadayuki Takii (2006), "Multinational Companies and Exports in Indonesian Manufacturing", in Eric D. Ramstetter and Fredrik Sjöholm, eds., *Multinationals in Indonesia and Thailand: Wages, Productivity and Exports*. Hampshire, UK: Palgrave-Macmillan, pp. 173-193.
- Toyo Keizai (1990), *Kaigai Shinshutsu Kigyo Soran (A Comprehensive Survey of Firms Overseas)*, 1990 CD-ROM. Tokyo: Toyo Keizai (in Japanese).
- United Nations (2009). Comtrade Database (<http://comtrade.un.org/db/dqQuickQuery.aspx>).
- United Nations (2008), *World Investment Report 2008*, New York and Geneva: United Nations.

Figure 1: MNC employment (line, thousands) and shares of employment, gross output, and value added in Malaysia's manufacturing plants (bars, percent)



Sources: Department of Statistics (1970, 1975, 2002, various years a, various years b, various years c, various years d, various years e).

Table 1: MNC shares of employment and exports (percent)

| Industry | Employment | | | Exports | | |
|--|------------|---------|---------|---------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, total | 38 | 39 | 39 | 69 | 69 | 67 |
| Manufacturing, means of 52 industries | 35 | 36 | 37 | 59 | 59 | 62 |
| Meat, fish, fruits, vegetables, oils, fats | 10 | 10 | 8 | 49 | 33 | 44 |
| Dairy | 40 | 42 | 47 | 35 | 45 | 36 |
| Grain mill, starch, feeds | 7 | 7 | 7 | 12 | 2 | 3 |
| Other food | 11 | 11 | 12 | 28 | 27 | 42 |
| Bevarages | 30 | 27 | 21 | 82 | 88 | 54 |
| Tobacco | 5 | 5 | 7 | 92 | 71 | 89 |
| Textiles' spinning, weaving, finishing | 71 | 72 | 71 | 96 | 91 | 97 |
| Other textiles | 17 | 15 | 18 | 60 | 48 | 56 |
| Knitted & crocheted fabrics, etc. | 7 | 6 | 6 | 12 | 10 | 8 |
| Apparel except furs | 27 | 36 | 39 | 36 | 42 | 40 |
| Leather | 49 | 49 | 43 | 84 | 77 | 76 |
| Footwear | 25 | 22 | 18 | 53 | 50 | 43 |
| Wood sawmilling & planing | 2 | 1 | 0 | 0 | 1 | 0 |
| Other wood | 19 | 20 | 23 | 23 | 23 | 21 |
| Paper | 16 | 18 | 15 | 36 | 59 | 41 |
| Publishing | 4 | 3 | 3 | 53 | 40 | 57 |
| Printing & recorded media | 15 | 14 | 16 | 66 | 63 | 60 |
| Refined petroleum | 12 | 36 | 17 | 13 | 13 | 9 |
| Basic chemicals | 38 | 43 | 42 | 62 | 71 | 70 |
| Other chemicals (incl. man-made fibers) | 35 | 39 | 35 | 78 | 83 | 83 |
| Rubber | 35 | 38 | 40 | 41 | 41 | 41 |
| Plastics | 23 | 26 | 30 | 55 | 59 | 68 |
| Glass | 42 | 50 | 59 | 43 | 66 | 90 |
| Other non-metallic mineral products | 16 | 16 | 15 | 27 | 41 | 46 |
| Basic iron & steel | 14 | 14 | 11 | 39 | 33 | 30 |
| Basic nonferrous metals | 43 | 50 | 54 | 51 | 74 | 61 |
| Metals' casting | 16 | 17 | 17 | 28 | 38 | 51 |
| Structural metal products, etc. | 10 | 10 | 12 | 66 | 43 | 63 |
| Other fabricated metals, etc. | 31 | 28 | 28 | 64 | 68 | 58 |
| General purpose machinery | 52 | 53 | 51 | 94 | 90 | 82 |
| Special purpose machinery | 36 | 27 | 30 | 79 | 67 | 82 |
| Other domestic appliances | 59 | 32 | 18 | 98 | 46 | 44 |
| Office & computing machinery | 82 | 88 | 93 | 91 | 96 | 98 |
| Electrical motors, generators, etc. | 62 | 59 | 78 | 68 | 65 | 92 |
| Electricity distribution machinery | 61 | 46 | 57 | 97 | 83 | 91 |
| Insulated wire & cable | 46 | 53 | 46 | 51 | 75 | 66 |
| Accumulators, primary cells & batteries | 37 | 33 | 45 | 61 | 57 | 76 |
| Electric lamps & lighting machinery | 62 | 71 | 72 | 96 | 96 | 99 |
| Other electrical equipment | 44 | 66 | 56 | 81 | 87 | 88 |
| Electronic components | 65 | 71 | 68 | 76 | 75 | 74 |
| Radio & tv transmitters, telephony | 62 | 50 | 74 | 89 | 76 | 64 |
| Radio & tv receivers, recorders | 78 | 87 | 81 | 87 | 95 | 94 |
| Medical machinery, etc. | 65 | 84 | 90 | 82 | 91 | 94 |
| Optical & photographic machinery | 93 | 96 | 98 | 94 | 100 | 100 |
| Watches & clocks | 93 | 89 | 85 | 99 | 100 | 100 |
| Motor vehicle parts | 28 | 21 | 22 | 71 | 56 | 72 |
| Ships & boats | 6 | 5 | 6 | 97 | 84 | 64 |
| Motorcycles | 0 | 1 | 4 | 0 | 0 | 40 |
| Bicycles & wheelchairs | 56 | 75 | 80 | 92 | 100 | 98 |
| Aircraft, other transport machinery | 3 | 8 | 18 | 0 | 32 | 81 |
| Furniture | 18 | 16 | 14 | 41 | 35 | 31 |
| Miscellaneous manufacturing | 36 | 40 | 36 | 45 | 48 | 49 |

Source: Authors' calculations from Department of Statistics (various years b)

Table 2: MNC shares of gross output (percent)

| Industry | All plants | | | CR4 plants | | |
|--|------------|---------|---------|------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, total | 50 | 51 | 48 | 59 | 58 | 56 |
| Manufacturing, means of 52 industries | 41 | 42 | 43 | 52 | 49 | 50 |
| Meat, fish, fruits, vegetables, oils, fats | 19 | 17 | 15 | 56 | 25 | 24 |
| Dairy | 38 | 43 | 55 | 45 | 37 | 50 |
| Grain mill, starch, feeds | 14 | 13 | 13 | 0 | 29 | 30 |
| Other food | 19 | 20 | 23 | 13 | 15 | 8 |
| Bevarages | 60 | 59 | 50 | 69 | 69 | 62 |
| Tobacco | 27 | 26 | 30 | 26 | 26 | 29 |
| Textiles' spinning, weaving, finishing | 82 | 80 | 82 | 95 | 94 | 95 |
| Other textiles | 19 | 15 | 22 | 45 | 13 | 26 |
| Knitted & crocheted fabrics, etc. | 7 | 7 | 5 | 0 | 0 | 0 |
| Apparel except furs | 31 | 38 | 41 | 52 | 70 | 73 |
| Leather | 56 | 55 | 53 | 91 | 86 | 73 |
| Footwear | 28 | 34 | 27 | 62 | 74 | 62 |
| Wood sawmilling & planing | 1 | 0 | 0 | 0 | 0 | 0 |
| Other wood | 21 | 22 | 22 | 29 | 27 | 24 |
| Paper | 16 | 21 | 18 | 16 | 31 | 21 |
| Publishing | 4 | 4 | 4 | 0 | 0 | 0 |
| Printing & recorded media | 18 | 17 | 20 | 46 | 31 | 28 |
| Refined petroleum | 27 | 42 | 22 | 20 | 37 | 12 |
| Basic chemicals | 55 | 57 | 58 | 67 | 62 | 69 |
| Other chemicals (incl. man-made fibers) | 49 | 52 | 56 | 100 | 86 | 100 |
| Rubber | 34 | 35 | 37 | 29 | 29 | 34 |
| Plastics | 26 | 37 | 41 | 52 | 79 | 90 |
| Glass | 55 | 59 | 80 | 58 | 63 | 89 |
| Other non-metallic mineral products | 17 | 16 | 15 | 0 | 0 | 0 |
| Basic iron & steel | 18 | 15 | 10 | 23 | 11 | 0 |
| Basic nonferrous metals | 44 | 49 | 43 | 47 | 41 | 26 |
| Metals' casting | 14 | 14 | 18 | 0 | 0 | 8 |
| Structural metal products, etc. | 20 | 20 | 26 | 31 | 29 | 51 |
| Other fabricated metals, etc. | 38 | 34 | 34 | 77 | 100 | 58 |
| General purpose machinery | 70 | 66 | 67 | 100 | 80 | 84 |
| Special purpose machinery | 47 | 38 | 43 | 100 | 74 | 82 |
| Other domestic appliances | 80 | 36 | 36 | 100 | 38 | 40 |
| Office & computing machinery | 88 | 94 | 87 | 100 | 100 | 84 |
| Electrical motors, generators, etc. | 65 | 63 | 72 | 75 | 70 | 88 |
| Electricity distribution machinery | 59 | 58 | 67 | 75 | 81 | 87 |
| Insulated wire & cable | 43 | 48 | 42 | 47 | 32 | 32 |
| Accumulators, primary cells & batteries | 40 | 36 | 42 | 61 | 52 | 63 |
| Electric lamps & lighting machinery | 67 | 85 | 88 | 70 | 95 | 96 |
| Other electrical equipment | 49 | 71 | 59 | 100 | 79 | 72 |
| Electronic components | 73 | 76 | 76 | 77 | 71 | 77 |
| Radio & tv transmitters, telephony | 84 | 73 | 78 | 90 | 74 | 81 |
| Radio & tv receivers, recorders | 83 | 89 | 89 | 100 | 100 | 100 |
| Medical machinery, etc. | 74 | 85 | 88 | 78 | 92 | 100 |
| Optical & photographic machinery | 96 | 98 | 99 | 100 | 100 | 100 |
| Watches & clocks | 83 | 74 | 63 | 79 | 72 | 60 |
| Motor vehicle parts | 34 | 21 | 29 | 46 | 0 | 47 |
| Ships & boats | 7 | 4 | 5 | 8 | 0 | 0 |
| Motorcycles | 0 | 0 | 7 | 0 | 0 | 0 |
| Bicycles & wheelchairs | 75 | 91 | 94 | 100 | 100 | 100 |
| Aircraft, other transport machinery | 2 | 4 | 14 | 2 | 5 | 8 |
| Furniture | 23 | 21 | 17 | 45 | 29 | 24 |
| Miscellaneous manufacturing | 33 | 41 | 40 | 0 | 35 | 29 |

Source: Authors' calculations from Department of Statistics (various years b)

Table 3: Labor productivity and wages in MNCs relative to local plants (percentage differences)

| Industry | Value added per worker | | | Compensation per worker | | |
|--|------------------------|---------|---------|-------------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, differences of means | 28 | -3 | -2 | 30 | 31 | 28 |
| Significance of MNC-local difference | 0.44 | 0.96 | 0.97 | 0.00 | 0.00 | 0.03 |
| Meat, fish, fruits, vegetables, oils, fats | 81 | 89 | 76 | 33 | 49 | 52 |
| Dairy | 52 | 113 | 99 | 16 | 8 | 6 |
| Grain mill, starch, feeds | 40 | 79 | 23 | 87 | 61 | 36 |
| Other food | 151 | 179 | 149 | 83 | 99 | 86 |
| Bevarages | 1,060 | 1,031 | 1,016 | 149 | 195 | 129 |
| Tobacco | 513 | 379 | 254 | 150 | 299 | 512 |
| Textiles' spinning, weaving, finishing | 101 | 27 | 23 | 16 | -2 | 18 |
| Other textiles | -11 | -9 | 39 | 0 | 8 | 2 |
| Knitted & crocheted fabrics, etc. | -26 | -16 | -38 | -12 | 6 | -6 |
| Apparel except furs | 10 | -2 | 5 | 32 | 24 | 31 |
| Leather | -8 | -1 | 4 | -18 | -13 | 3 |
| Footwear | 7 | 61 | 104 | 141 | 21 | 66 |
| Wood sawmilling & planing | -18 | -45 | -77 | -13 | -31 | -31 |
| Other wood | 8 | 6 | -5 | 6 | 2 | -4 |
| Paper | -17 | -8 | 7 | -5 | 6 | 13 |
| Publishing | -14 | 58 | 44 | -15 | 10 | 7 |
| Printing & recorded media | 13 | 10 | 8 | -3 | 2 | 3 |
| Refined petroleum | -46 | -81 | -58 | 173 | 126 | 109 |
| Basic chemicals | -1 | -11 | -1 | 18 | 22 | 19 |
| Other chemicals (incl. man-made fibers) | 80 | 70 | 130 | 62 | 45 | 61 |
| Rubber | 29 | 23 | 32 | 24 | 24 | 27 |
| Plastics | 25 | 90 | 74 | 21 | 24 | 18 |
| Glass | 59 | 26 | 175 | -16 | -6 | 17 |
| Other non-metallic mineral products | 23 | 6 | 3 | 22 | 23 | 26 |
| Basic iron & steel | 23 | -10 | -31 | 1 | -5 | -15 |
| Basic nonferrous metals | 46 | 41 | 5 | 30 | 21 | 21 |
| Metals' casting | -25 | -3 | 26 | -3 | 9 | 16 |
| Structural metal products, etc. | 117 | 100 | 128 | 47 | 56 | 34 |
| Other fabricated metals, etc. | 47 | 44 | 48 | 16 | 14 | 8 |
| General purpose machinery | 154 | 99 | 113 | 52 | 65 | 57 |
| Special purpose machinery | 42 | 22 | 36 | 37 | 30 | 22 |
| Other domestic appliances | 145 | 32 | 99 | 180 | -5 | -12 |
| Office & computing machinery | 30 | 107 | -24 | 18 | 18 | 15 |
| Electrical motors, generators, etc. | 31 | 26 | -15 | 16 | 20 | -20 |
| Electricity distribution machinery | -14 | 62 | 32 | -12 | 20 | 6 |
| Insulated wire & cable | 4 | 39 | 32 | -2 | 29 | 33 |
| Accumulators, primary cells & batteries | 44 | 85 | 6 | 41 | 61 | 19 |
| Electric lamps & lighting machinery | 94 | 177 | 177 | 81 | 105 | 74 |
| Other electrical equipment | 64 | 63 | 44 | 62 | 24 | 21 |
| Electronic components | 32 | 37 | 32 | -3 | 6 | -2 |
| Radio & tv transmitters, telephony | 383 | 316 | -18 | 43 | 66 | -21 |
| Radio & tv receivers, recorders | 11 | 26 | 68 | 22 | 27 | 36 |
| Medical machinery, etc. | 26 | 12 | -26 | 6 | 16 | 11 |
| Optical & photographic machinery | -56 | 14 | -8 | 53 | 71 | 16 |
| Watches & clocks | 33 | -40 | -6 | 80 | 49 | 29 |
| Motor vehicle parts | 38 | -6 | 29 | 15 | -1 | 9 |
| Ships & boats | 21 | -6 | 24 | -30 | -20 | -15 |
| Motorcycles | -46 | -73 | 8 | -24 | -58 | 14 |
| Bicycles & wheelchairs | 172 | 292 | 263 | 42 | 66 | 73 |
| Aircraft, other transport machinery | -25 | -46 | -25 | -14 | 12 | -24 |
| Furniture | 37 | 24 | 14 | 20 | 18 | 17 |
| Miscellaneous manufacturing | -3 | 18 | 12 | 16 | 19 | 15 |

Source: Authors' calculations from Department of Statistics (various years b)

Table 4: Plant size and capital intensity in MNCs relative to local plants (percentage differences)

| Industry | Gross output per plant | | | Fixed assets per worker | | |
|--|------------------------|---------|---------|-------------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, differences of means | 265 | 233 | 172 | 58 | 28 | 7 |
| Significance of MNC-local difference | 0.01 | 0.07 | 0.07 | 0.40 | 0.56 | 0.91 |
| Meat, fish, fruits, vegetables, oils, fats | 302 | 211 | 214 | 20 | 89 | 44 |
| Dairy | 211 | 217 | 343 | -17 | -13 | -2 |
| Grain mill, starch, feeds | 497 | 419 | 475 | 7 | -6 | -22 |
| Other food | 1,157 | 651 | 645 | 106 | 167 | 192 |
| Bevarages | 1,292 | 1,210 | 1,002 | 144 | 164 | 180 |
| Tobacco | 2,814 | 2,394 | 1,989 | 1,131 | 781 | 557 |
| Textiles' spinning, weaving, finishing | 2,510 | 1,733 | 2,423 | 208 | 148 | 195 |
| Other textiles | 344 | 171 | 236 | -34 | -29 | -32 |
| Knitted & crocheted fabrics, etc. | 19 | 17 | -11 | -41 | -38 | -65 |
| Apparel except furs | 2,262 | 2,289 | 2,075 | 6 | -19 | -22 |
| Leather | 979 | 1,062 | 872 | -20 | -45 | -46 |
| Footwear | 1,442 | 1,546 | 1,142 | 29 | 57 | 157 |
| Wood sawmilling & planing | 7 | -65 | -85 | -11 | -65 | -76 |
| Other wood | 310 | 270 | 258 | 20 | 18 | 2 |
| Paper | 47 | 72 | 48 | -44 | -54 | -55 |
| Publishing | 27 | 45 | 30 | -77 | -90 | -73 |
| Printing & recorded media | 711 | 378 | 461 | -18 | 8 | 16 |
| Refined petroleum | 214 | 193 | 113 | 293 | 71 | -1 |
| Basic chemicals | 112 | 93 | 116 | -27 | -23 | -6 |
| Other chemicals (incl. man-made fibers) | 304 | 236 | 352 | 187 | 218 | 266 |
| Rubber | 90 | 53 | 89 | 2 | 10 | 20 |
| Plastics | 162 | 207 | 253 | 7 | 113 | 60 |
| Glass | 963 | 824 | 1,954 | 25 | 29 | 136 |
| Other non-metallic mineral products | 195 | 140 | 133 | 31 | -6 | -13 |
| Basic iron & steel | 88 | 31 | 21 | -53 | -52 | -55 |
| Basic nonferrous metals | 83 | 55 | 18 | -21 | -9 | -30 |
| Metals' casting | 175 | 57 | 126 | -28 | -34 | -20 |
| Structural metal products, etc. | 1,332 | 746 | 928 | 110 | 110 | 95 |
| Other fabricated metals, etc. | 458 | 312 | 303 | 84 | 58 | 40 |
| General purpose machinery | 2,306 | 1,116 | 1,368 | 69 | 90 | 50 |
| Special purpose machinery | 921 | 441 | 542 | 21 | 37 | 28 |
| Other domestic appliances | 1,236 | 89 | 264 | 72 | 12 | 27 |
| Office & computing machinery | 251 | 775 | 215 | 7 | 6 | -26 |
| Electrical motors, generators, etc. | 339 | 230 | 306 | -18 | -35 | -38 |
| Electricity distribution machinery | 634 | 540 | 800 | -23 | 42 | -3 |
| Insulated wire & cable | 27 | 42 | 32 | -4 | 28 | 26 |
| Accumulators, primary cells & batteries | 111 | 32 | 73 | -33 | -32 | -48 |
| Electric lamps & lighting machinery | 277 | 970 | 1,026 | -5 | 40 | 85 |
| Other electrical equipment | 181 | 282 | 158 | 2 | 59 | 12 |
| Electronic components | 159 | 88 | 93 | 42 | 1 | -45 |
| Radio & tv transmitters, telephony | 607 | 171 | 165 | 35 | 20 | 3 |
| Radio & tv receivers, recorders | 330 | 366 | 326 | -39 | 0 | 29 |
| Medical machinery, etc. | 185 | 531 | 689 | -18 | -35 | 1 |
| Optical & photographic machinery | 1,735 | 2,225 | 5,938 | -29 | -37 | -54 |
| Watches & clocks | 33 | -17 | -43 | 32 | -38 | 21 |
| Motor vehicle parts | 245 | 54 | 148 | 2 | -10 | 10 |
| Ships & boats | 120 | 99 | 16 | -6 | -18 | -31 |
| Motorcycles | -96 | -97 | -7 | -9 | -39 | -27 |
| Bicycles & wheelchairs | 1,810 | 2,870 | 3,927 | 8 | 30 | -17 |
| Aircraft, other transport machinery | -85 | -80 | -73 | -18 | 359 | 199 |
| Furniture | 528 | 318 | 228 | 27 | 79 | 71 |
| Miscellaneous manufacturing | 429 | 496 | 485 | -10 | -4 | 3 |

Source: Authors' calculations from Department of Statistics (various years b)

Table 5: Educated worker shares and R&D propensities in MNCs relative to local plants
(percentage point differences)

| Industry | Educated worker shares | | | R&D propensities | | |
|--|------------------------|---------|---------|------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, differences of means | 11.31 | 11.8 | 11.0 | 0.04 | 0.01 | -0.05 |
| Significance of MNC-local difference | 0.01 | 0.00 | 0.00 | 0.25 | 0.85 | 0.26 |
| Meat, fish, fruits, vegetables, oils, fats | 9.0 | 14.5 | 15.7 | -0.04 | -0.08 | -0.04 |
| Dairy | 15.3 | 9.4 | 1.3 | 0.07 | 0.01 | 0.10 |
| Grain mill, starch, feeds | 22.6 | 22.7 | 16.8 | 0.00 | 0.00 | 0.01 |
| Other food | 29.9 | 27.3 | 25.3 | 0.08 | 0.18 | 0.24 |
| Bevarages | 24.6 | 0.3 | 9.4 | 0.00 | -0.05 | -0.01 |
| Tobacco | 71.4 | 69.6 | 61.6 | -0.35 | -0.90 | -0.69 |
| Textiles' spinning, weaving, finishing | -6.0 | -4.2 | -9.0 | -1.02 | -0.17 | -0.03 |
| Other textiles | -3.8 | 15.6 | 9.7 | 0.02 | -0.05 | -0.02 |
| Knitted & crocheted fabrics, etc. | -5.6 | 3.5 | 17.5 | -0.02 | -0.04 | 0.03 |
| Apparel except furs | -11.6 | 3.4 | -6.9 | 0.01 | 0.08 | 0.04 |
| Leather | 28.1 | -1.9 | 8.8 | -0.05 | -0.01 | -0.04 |
| Footwear | 12.8 | 8.1 | -3.8 | 0.00 | -0.11 | -0.09 |
| Wood sawmilling & planing | -3.6 | -2.8 | -0.3 | 0.01 | -0.01 | -0.05 |
| Other wood | 0.9 | 3.0 | 4.8 | 0.16 | -0.01 | 0.03 |
| Paper | 0.0 | 22.2 | 16.6 | 0.16 | 0.06 | 0.07 |
| Publishing | 4.4 | 7.8 | 5.5 | -0.01 | -0.02 | -0.02 |
| Printing & recorded media | 8.4 | 1.3 | 7.4 | 0.00 | -0.13 | 0.15 |
| Refined petroleum | 4.5 | 18.3 | 13.8 | 0.00 | 0.01 | 0.01 |
| Basic chemicals | 12.9 | 10.1 | 5.8 | 0.01 | 0.01 | -0.08 |
| Other chemicals (incl. man-made fibers) | 15.2 | 11.0 | 13.1 | -0.14 | -0.10 | -0.05 |
| Rubber | 4.1 | 12.5 | 19.2 | 0.30 | 0.27 | 0.26 |
| Plastics | 6.5 | 16.2 | 9.4 | 0.22 | 0.02 | 0.12 |
| Glass | -25.0 | -2.2 | 9.3 | 0.04 | 0.52 | 0.27 |
| Other non-metallic mineral products | 4.9 | 11.4 | 13.5 | 0.42 | 0.03 | -0.01 |
| Basic iron & steel | 4.9 | 8.0 | -6.1 | -0.02 | 0.03 | -0.03 |
| Basic nonferrous metals | 6.9 | 12.4 | 4.0 | 0.06 | -0.06 | 0.01 |
| Metals' casting | -1.2 | 5.7 | 7.6 | 0.01 | 0.01 | -0.04 |
| Structural metal products, etc. | 16.3 | 22.4 | 11.8 | 0.00 | 0.00 | 0.07 |
| Other fabricated metals, etc. | 7.2 | 11.4 | 11.6 | 0.08 | 0.08 | 0.08 |
| General purpose machinery | 11.8 | 20.3 | 32.9 | 0.94 | -0.14 | 0.21 |
| Special purpose machinery | 10.9 | 16.6 | 18.0 | -0.01 | 0.15 | -0.20 |
| Other domestic appliances | 14.6 | 19.6 | 16.0 | 0.38 | -0.45 | -0.69 |
| Office & computing machinery | 5.4 | -16.0 | 8.4 | 0.21 | 0.13 | 0.48 |
| Electrical motors, generators, etc. | -30.3 | -6.8 | 15.3 | -0.27 | -0.71 | -0.21 |
| Electricity distribution machinery | -0.5 | 10.7 | 8.4 | 0.08 | -0.15 | -0.37 |
| Insulated wire & cable | -5.3 | 15.8 | 13.1 | 0.01 | 0.43 | 0.42 |
| Accumulators, primary cells & batteries | 15.1 | 21.0 | 43.5 | 0.01 | -0.21 | -0.04 |
| Electric lamps & lighting machinery | -3.9 | 28.6 | 19.3 | 0.74 | 0.62 | 0.25 |
| Other electrical equipment | -7.8 | 9.3 | 3.9 | 0.50 | 0.46 | 0.38 |
| Electronic components | 8.6 | 3.9 | -3.3 | 0.06 | 0.20 | -0.17 |
| Radio & tv transmitters, telephony | 22.7 | 8.3 | -1.5 | 0.50 | 0.73 | -1.00 |
| Radio & tv receivers, recorders | 13.1 | 5.6 | 15.6 | -0.52 | 0.16 | 0.16 |
| Medical machinery, etc. | 14.7 | -13.7 | -21.7 | -0.34 | -0.45 | -0.95 |
| Optical & photographic machinery | -16.3 | 0.9 | -4.7 | 0.21 | -0.12 | -0.39 |
| Watches & clocks | 31.7 | 21.1 | 31.4 | 0.06 | -0.39 | -0.18 |
| Motor vehicle parts | 13.9 | 12.0 | 5.7 | -0.01 | 0.21 | -0.24 |
| Ships & boats | 36.0 | 28.9 | 29.5 | 0.00 | -0.10 | -0.05 |
| Motorcycles | -29.8 | 0.1 | -14.5 | -0.06 | -0.15 | -0.14 |
| Bicycles & wheelchairs | 42.2 | 53.7 | 54.8 | 0.02 | 0.02 | 0.02 |
| Aircraft, other transport machinery | 31.9 | 14.3 | -1.5 | -0.15 | 0.72 | -0.10 |
| Furniture | -1.2 | 6.0 | -1.0 | -0.02 | -0.04 | -0.06 |
| Miscellaneous manufacturing | 9.5 | 16.7 | 12.0 | 0.01 | -0.13 | -0.14 |

Note: Educated workers are defined as those with 12 or more years of education.

Source: Authors' calculations from Department of Statistics (various years b)

Table 6: Profit rates and export propensities in in MNCs relative to local plants
(percentage point differences)

| Industry | Profits/gross output | | | Export propensities | | |
|--|----------------------|---------|---------|---------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, differences of means | -0.7 | -0.2 | -1.1 | 30 | 31 | 26 |
| Significance of MNC-local difference | 0.73 | 0.90 | 0.29 | 0.00 | 0.00 | 0.00 |
| Meat, fish, fruits, vegetables, oils, fats | -0.7 | 0.8 | -2.3 | 52 | 35 | 50 |
| Dairy | -1.3 | 3.7 | -0.1 | -1 | 1 | -7 |
| Grain mill, starch, feeds | -4.2 | -2.8 | -3.7 | 0 | -3 | -2 |
| Other food | 3.6 | 5.8 | -2.3 | 11 | 10 | 24 |
| Bevarages | 19.1 | 11.9 | 8.0 | 4 | 6 | 0 |
| Tobacco | 3.2 | 17.1 | -12.6 | 69 | 64 | 64 |
| Textiles' spinning, weaving, finishing | 1.3 | -18.9 | -14.7 | 70 | 49 | 49 |
| Other textiles | 0.5 | -6.7 | -1.1 | 56 | 55 | 35 |
| Knitted & crocheted fabrics, etc. | -4.0 | -4.3 | -4.1 | 31 | 23 | 33 |
| Apparel except furs | -3.6 | -4.7 | -2.1 | 12 | 10 | 0 |
| Leather | 1.3 | 5.3 | -3.5 | 73 | 54 | 40 |
| Footwear | -75.4 | 6.1 | 3.4 | 19 | 13 | 12 |
| Wood sawmilling & planing | -10.1 | -11.3 | -29.9 | -25 | 23 | -30 |
| Other wood | -0.1 | -0.1 | -0.8 | 7 | 4 | -3 |
| Paper | 0.5 | -0.3 | 0.5 | 28 | 47 | 20 |
| Publishing | -4.7 | 9.1 | 9.2 | 25 | 14 | 22 |
| Printing & recorded media | 3.9 | 3.2 | 3.0 | 62 | 61 | 28 |
| Refined petroleum | -15.0 | -19.9 | -15.1 | -19 | -53 | -30 |
| Basic chemicals | -12.4 | -12.4 | -11.9 | 11 | 21 | 17 |
| Other chemicals (incl. man-made fibers) | 0.4 | -2.7 | -2.6 | 23 | 31 | 28 |
| Rubber | 8.0 | 3.4 | 4.5 | 17 | 16 | 7 |
| Plastics | 2.0 | 5.5 | 5.2 | 38 | 36 | 38 |
| Glass | 7.2 | -3.2 | 6.1 | -18 | 14 | 26 |
| Other non-metallic mineral products | 3.0 | -1.6 | -0.1 | 11 | 21 | 21 |
| Basic iron & steel | 4.4 | -0.3 | -4.2 | 25 | 16 | 23 |
| Basic nonferrous metals | 2.8 | 1.2 | -0.5 | 13 | 41 | 17 |
| Metals' casting | -1.2 | 1.6 | 2.7 | 13 | 27 | 29 |
| Structural metal products, etc. | 1.3 | 2.5 | 6.7 | 53 | 38 | 34 |
| Other fabricated metals, etc. | 1.2 | -0.7 | 0.9 | 36 | 42 | 23 |
| General purpose machinery | 6.0 | -0.9 | 0.5 | 53 | 36 | 28 |
| Special purpose machinery | -1.0 | -5.1 | -1.3 | 49 | 44 | 53 |
| Other domestic appliances | -1.6 | 0.1 | -0.8 | 61 | 12 | 7 |
| Office & computing machinery | 1.2 | 6.3 | -1.4 | 24 | 25 | 66 |
| Electrical motors, generators, etc. | 0.0 | 10.5 | -3.7 | 8 | 3 | 35 |
| Electricity distribution machinery | 3.2 | 4.3 | 5.0 | 75 | 40 | 23 |
| Insulated wire & cable | -0.1 | -0.7 | -3.0 | 18 | 46 | 27 |
| Accumulators, primary cells & batteries | 4.9 | 9.2 | 0.7 | 32 | 35 | 40 |
| Electric lamps & lighting machinery | 16.1 | 8.1 | 0.0 | 76 | 68 | 74 |
| Other electrical equipment | 11.4 | 15.6 | 6.4 | 49 | 30 | 39 |
| Electronic components | 2.0 | 2.5 | 8.2 | 9 | -6 | -6 |
| Radio & tv transmitters, telephony | 8.3 | 6.4 | -0.5 | 34 | 16 | -37 |
| Radio & tv receivers, recorders | 0.4 | 1.2 | 2.0 | 18 | 50 | 27 |
| Medical machinery, etc. | -9.0 | -2.9 | -10.1 | 27 | 25 | 29 |
| Optical & photographic machinery | -41.6 | -9.4 | -3.1 | -21 | 80 | 14 |
| Watches & clocks | 3.4 | -7.7 | -2.4 | 86 | 82 | 72 |
| Motor vehicle parts | 2.2 | -3.5 | -0.6 | 33 | 27 | 33 |
| Ships & boats | 5.4 | 6.0 | 14.6 | 89 | 93 | 82 |
| Motorcycles | 2.4 | -2.4 | -6.5 | -9 | -10 | 53 |
| Bicycles & wheelchairs | 10.1 | 10.7 | 8.3 | 63 | 90 | 4 |
| Aircraft, other transport machinery | 2.4 | -46.4 | -4.8 | -3 | 72 | 46 |
| Furniture | 6.2 | -0.1 | -3.4 | 50 | 39 | 41 |
| Miscellaneous manufacturing | 1.4 | 0.6 | -1.6 | 23 | 11 | 13 |

Note: -100 indicates zero values MNCs, 100 indicates zero values for local plants.

Source: Authors' calculations from Department of Statistics (various years b)

Table 7: 4-plant concentration ratios (CR4) and Herfindahl indexes

| Industry | CR4 | | | Herfindahl indexes | | |
|--|-------|---------|---------|--------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| Manufacturing, means of 52 industries | 43.21 | 46.19 | 46.28 | 12.12 | 13.26 | 12.46 |
| Meat, fish, fruits, vegetables, oils, fats | 12.64 | 16.41 | 16.66 | 0.98 | 1.41 | 1.49 |
| Dairy | 61.93 | 60.12 | 67.31 | 12.23 | 11.42 | 13.04 |
| Grain mill, starch, feeds | 14.48 | 17.80 | 22.02 | 1.48 | 1.80 | 2.34 |
| Other food | 19.46 | 22.02 | 20.28 | 1.82 | 2.07 | 1.91 |
| Bevarages | 67.70 | 65.16 | 64.71 | 14.42 | 13.28 | 12.71 |
| Tobacco | 93.14 | 93.39 | 90.94 | 32.29 | 32.36 | 26.74 |
| Textiles' spinning, weaving, finishing | 65.42 | 64.04 | 73.24 | 19.20 | 19.11 | 24.42 |
| Other textiles | 22.80 | 28.37 | 25.77 | 2.58 | 3.50 | 3.13 |
| Knitted & crocheted fabrics, etc. | 44.32 | 45.33 | 48.35 | 10.25 | 9.09 | 10.37 |
| Apparel except furs | 16.96 | 21.34 | 27.61 | 1.64 | 2.25 | 3.60 |
| Leather | 48.83 | 56.73 | 68.44 | 9.29 | 10.69 | 15.33 |
| Footwear | 42.22 | 45.01 | 43.11 | 5.71 | 7.31 | 6.34 |
| Wood sawmilling & planing | 7.18 | 8.29 | 10.24 | 0.54 | 0.64 | 0.80 |
| Other wood | 9.91 | 11.02 | 12.18 | 0.93 | 1.08 | 1.24 |
| Paper | 19.88 | 22.63 | 19.27 | 1.82 | 2.19 | 1.68 |
| Publishing | 51.53 | 51.80 | 50.37 | 7.82 | 8.14 | 7.80 |
| Printing & recorded media | 20.80 | 19.31 | 19.03 | 30.43 | 61.54 | 57.88 |
| Refined petroleum | 71.50 | 65.92 | 57.48 | 15.47 | 14.69 | 12.18 |
| Basic chemicals | 27.89 | 28.26 | 26.29 | 3.48 | 3.59 | 3.21 |
| Other chemicals (incl. man-made fibers) | 16.67 | 19.51 | 25.19 | 1.55 | 1.99 | 2.97 |
| Rubber | 15.21 | 15.18 | 12.12 | 1.13 | 1.36 | 1.14 |
| Plastics | 7.21 | 16.36 | 17.04 | 0.43 | 1.34 | 1.47 |
| Glass | 78.70 | 75.97 | 78.77 | 25.12 | 24.40 | 27.00 |
| Other non-metallic mineral products | 16.47 | 15.42 | 18.73 | 1.50 | 1.43 | 1.81 |
| Basic iron & steel | 33.09 | 31.90 | 36.27 | 4.17 | 4.36 | 5.07 |
| Basic nonferrous metals | 30.35 | 32.89 | 40.82 | 4.36 | 5.11 | 6.56 |
| Metals' casting | 30.39 | 31.18 | 34.69 | 3.79 | 4.12 | 4.77 |
| Structural metal products, etc. | 31.46 | 32.11 | 23.01 | 3.43 | 4.88 | 2.22 |
| Other fabricated metals, etc. | 15.51 | 12.35 | 18.43 | 1.23 | 1.05 | 1.53 |
| General purpose machinery | 47.02 | 55.01 | 50.07 | 6.84 | 9.18 | 8.86 |
| Special purpose machinery | 17.52 | 20.74 | 22.40 | 1.60 | 1.91 | 2.27 |
| Other domestic appliances | 73.62 | 79.44 | 76.08 | 20.84 | 21.75 | 17.08 |
| Office & computing machinery | 41.04 | 63.01 | 66.36 | 6.60 | 15.92 | 18.38 |
| Electrical motors, generators, etc. | 48.14 | 55.77 | 49.00 | 7.89 | 10.66 | 9.50 |
| Electricity distribution machinery | 40.96 | 50.49 | 54.31 | 5.83 | 11.20 | 14.01 |
| Insulated wire & cable | 40.61 | 25.88 | 25.80 | 6.72 | 3.22 | 3.14 |
| Accumulators, primary cells & batteries | 50.40 | 56.32 | 62.89 | 9.74 | 10.90 | 13.10 |
| Electric lamps & lighting machinery | 72.91 | 76.31 | 78.54 | 19.04 | 27.27 | 32.20 |
| Other electrical equipment | 33.41 | 42.73 | 39.50 | 4.99 | 6.53 | 5.92 |
| Electronic components | 30.09 | 32.90 | 33.79 | 3.44 | 4.06 | 4.27 |
| Radio & tv transmitters, telephony | 79.65 | 84.91 | 84.14 | 23.57 | 29.70 | 21.35 |
| Radio & tv receivers, recorders | 33.95 | 40.54 | 41.04 | 5.08 | 6.20 | 6.43 |
| Medical machinery, etc. | 49.88 | 66.40 | 59.04 | 8.53 | 15.55 | 11.64 |
| Optical & photographic machinery | 87.43 | 89.85 | 91.45 | 28.66 | 34.03 | 35.82 |
| Watches & clocks | 74.73 | 74.20 | 86.80 | 20.67 | 18.80 | 27.05 |
| Motor vehicle parts | 17.76 | 29.08 | 23.27 | 2.42 | 5.40 | 3.03 |
| Ships & boats | 77.99 | 75.46 | 68.45 | 21.09 | 17.56 | 13.25 |
| Motorcycles | 66.56 | 69.76 | 64.86 | 6.18 | 7.64 | 5.29 |
| Bicycles & wheelchairs | 67.42 | 74.75 | 71.25 | 6.80 | 6.79 | 8.66 |
| Aircraft, other transport machinery | 70.77 | 81.30 | 79.70 | 83.31 | 80.15 | 55.86 |
| Furniture | 14.48 | 14.37 | 11.16 | 1.00 | 1.10 | 0.88 |
| Miscellaneous manufacturing | 19.51 | 21.97 | 19.49 | 1.89 | 2.34 | 2.11 |

Source: Authors' calculations from Department of Statistics (various years b)

Table 8: Industry-level correlations among concentration measures and MNC indicators

| Indicator (all plants, except as noted) | CR4 | | | Herfindahl indexes | | |
|---|-------|---------|---------|--------------------|---------|---------|
| | 2000 | 2001-02 | 2003-04 | 2000 | 2001-02 | 2003-04 |
| CORRELATIONS WITH MEASURES OF MNC PRESENCE | | | | | | |
| MNC shares of employment | 0.34 | 0.38 | 0.45 | 0.04 | 0.07 | 0.26 |
| MNC shares of exports | 0.38 | 0.41 | 0.50 | 0.05 | 0.18 | 0.41 |
| MNC shares of output | 0.40 | 0.42 | 0.48 | 0.06 | 0.08 | 0.25 |
| MNC shares of output in CR4 plants | 0.21 | 0.26 | 0.31 | -0.03 | 0.02 | 0.14 |
| MNC shares of value added | 0.40 | 0.40 | 0.46 | 0.06 | 0.06 | 0.23 |
| MNC shares of R&D expenditures | 0.20 | 0.12 | 0.07 | -0.06 | 0.00 | 0.14 |
| CORRELATIONS WITH MNC ATTRIBUTES | | | | | | |
| Value added per employee | 0.33 | 0.22 | 0.14 | 0.12 | 0.02 | 0.01 |
| Compensation per employee | 0.29 | 0.31 | 0.23 | 0.14 | 0.21 | 0.09 |
| Gross output per plant | 0.27 | 0.22 | 0.19 | 0.08 | 0.06 | 0.07 |
| Fixed assets per employee | 0.21 | 0.14 | 0.07 | 0.08 | 0.08 | 0.02 |
| Educated employee shares | 0.44 | 0.40 | 0.39 | 0.23 | 0.31 | 0.27 |
| R&D propensities | 0.06 | 0.19 | 0.00 | 0.12 | 0.17 | 0.25 |
| Profit rates | 0.10 | -0.08 | 0.04 | 0.14 | -0.47 | -0.03 |
| Export propensities | 0.07 | 0.21 | 0.12 | -0.15 | -0.11 | -0.22 |
| CORRELATIONS WITH MNC-LOCAL DIFFERENTIALS | | | | | | |
| Value added per employee | 0.32 | 0.26 | 0.19 | 0.14 | 0.06 | 0.03 |
| Compensation per employee | 0.30 | 0.32 | 0.24 | 0.08 | 0.16 | 0.10 |
| Gross output per plant | 0.30 | 0.36 | 0.41 | 0.13 | 0.13 | 0.30 |
| Fixed assets per employee | 0.32 | 0.25 | 0.22 | 0.22 | 0.37 | 0.26 |
| Educated employee shares | 0.21 | 0.16 | 0.16 | 0.27 | 0.03 | 0.02 |
| R&D propensities | -0.04 | -0.11 | -0.35 | -0.10 | 0.13 | -0.15 |
| Profit rates | -0.02 | -0.01 | 0.02 | 0.02 | -0.37 | -0.03 |
| Export propensities | 0.13 | 0.24 | 0.22 | 0.02 | 0.36 | 0.24 |

Source: Authors' calculations from Tables 1-7 and underlying data.

Appendix Table 1a: Number of all plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 20,455 | 13,934 | 13,482 | 13,672 | 12,451 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 679 | 518 | 537 | 496 | 559 |
| 152 | Dairy | 54 | 47 | 46 | 41 | 41 |
| 153 | Grain mill, starch, feeds | 420 | 335 | 301 | 307 | 300 |
| 154 | Other food | 1,865 | 1,157 | 1,134 | 1,156 | 1,152 |
| 155 | Beverages | 123 | 108 | 105 | 109 | 105 |
| 160 | Tobacco | 242 | 149 | 142 | 142 | 156 |
| 171 | Textiles' spinning, weaving, finishing | 162 | 137 | 113 | 108 | 102 |
| 172 | Other textiles | 272 | 215 | 197 | 203 | 194 |
| 173 | Knitted & crocheted fabrics, etc. | 96 | 73 | 72 | 72 | 64 |
| 181 | Apparel except furs | 2,681 | 1,700 | 1,587 | 1,617 | 879 |
| 191 | Leather | 67 | 59 | 46 | 43 | 43 |
| 192 | Footwear | 208 | 136 | 130 | 126 | 112 |
| 201 | Wood sawmilling & planing | 509 | 357 | 349 | 336 | 312 |
| 202 | Other wood | 818 | 677 | 611 | 619 | 545 |
| 210 | Paper | 382 | 278 | 295 | 310 | 326 |
| 221 | Publishing | 188 | 117 | 108 | 117 | 123 |
| 222+223 | Printing & recorded media | 718 | 417 | 410 | 436 | 434 |
| 232 | Refined petroleum | 57 | 33 | 28 | 36 | 34 |
| 241 | Basic chemicals | 191 | 164 | 182 | 182 | 183 |
| 242+243 | Other chemicals (incl. man-made fibers) | 464 | 329 | 322 | 347 | 364 |
| 251 | Rubber | 482 | 343 | 344 | 340 | 337 |
| 252 | Plastics | 1,121 | 713 | 757 | 770 | 748 |
| 261 | Glass | 106 | 88 | 83 | 83 | 79 |
| 269 | Other non-metallic mineral products | 787 | 633 | 605 | 601 | 593 |
| 271 | Basic iron & steel | 184 | 138 | 138 | 153 | 144 |
| 272 | Basic nonferrous metals | 90 | 63 | 66 | 68 | 64 |
| 273 | Metals' casting | 291 | 181 | 175 | 178 | 173 |
| 281 | Structural metal products, etc. | 1,244 | 671 | 650 | 688 | 526 |
| 289 | Other fabricated metals, etc. | 1,109 | 802 | 774 | 811 | 780 |
| 291 | General purpose machinery | 413 | 255 | 259 | 255 | 262 |
| 292 | Special purpose machinery | 721 | 464 | 409 | 436 | 374 |
| 293 | Other domestic appliances | 48 | 42 | 41 | 41 | 41 |
| 300 | Office & computing machinery | 67 | 52 | 55 | 55 | 46 |
| 311 | Electrical motors, generators, etc. | 81 | 51 | 54 | 50 | 54 |
| 312 | Electricity distribution machinery | 115 | 90 | 84 | 84 | 87 |
| 313 | Insulated wire & cable | 128 | 106 | 110 | 107 | 92 |
| 314 | Accumulators, primary cells & batteries | 21 | 16 | 18 | 17 | 17 |
| 315 | Electric lamps & lighting machinery | 43 | 31 | 34 | 32 | 33 |
| 319 | Other electrical equipment | 63 | 41 | 43 | 44 | 53 |
| 321 | Electronic components | 262 | 194 | 195 | 199 | 159 |
| 322 | Radio & tv transmitters, telephony | 35 | 24 | 26 | 27 | 26 |
| 323 | Radio & tv receivers, recorders | 159 | 89 | 119 | 106 | 71 |
| 331 | Medical machinery, etc. | 32 | 27 | 25 | 26 | 25 |
| 332 | Optical & photographic machinery | 16 | 14 | 15 | 15 | 14 |
| 333 | Watches & clocks | 14 | 12 | 10 | 10 | 10 |
| 341 | Motor vehicles | 32 | 29 | 24 | 15 | 18 |
| 342 | Motor vehicle bodies, trailers | 119 | 79 | 78 | 77 | 76 |
| 343 | Motor vehicle parts | 148 | 107 | 115 | 132 | 118 |
| 351 | Ships & boats | 130 | 107 | 115 | 111 | 109 |
| 3591 | Motorcycles | 39 | 31 | 32 | 31 | 33 |
| 3592 | Bicycles & wheelchairs | 29 | 24 | 25 | 22 | 19 |
| 353+3599 | Aircraft, other transport machinery | 10 | 7 | 10 | 11 | 10 |
| 361 | Furniture | 1,449 | 909 | 821 | 810 | 764 |
| 369 | Miscellaneous manufacturing | 661 | 484 | 445 | 451 | 447 |
| 370 | Recycling | 10 | 11 | 13 | 13 | 21 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 1b: Number of majority-foreign plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|-------|-------|-------|-------|-------|
| D | Manufacturing total | 1,696 | 1,463 | 1,480 | 1,460 | 1,403 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 38 | 32 | 32 | 25 | 30 |
| 152 | Dairy | 9 | 8 | 10 | 9 | 9 |
| 153 | Grain mill, starch, feeds | 11 | 9 | 9 | 8 | 7 |
| 154 | Other food | 34 | 36 | 39 | 45 | 44 |
| 155 | Bevarages | 12 | 11 | 10 | 9 | 9 |
| 160 | Tobacco | 3 | 2 | 2 | 3 | 3 |
| 171 | Textiles' spinning, weaving, finishing | 24 | 23 | 21 | 18 | 14 |
| 172 | Other textiles | 14 | 13 | 13 | 13 | 17 |
| 173 | Knitted & crocheted fabrics, etc. | 6 | 4 | 5 | 4 | 3 |
| 181 | Apparel except furs | 49 | 43 | 39 | 40 | 36 |
| 191 | Leather | 7 | 5 | 5 | 4 | 5 |
| 192 | Footwear | 5 | 4 | 4 | 4 | 3 |
| 201 | Wood sawmilling & planing | 7 | 3 | 3 | 1 | 2 |
| 202 | Other wood | 49 | 45 | 45 | 43 | 43 |
| 210 | Paper | 44 | 37 | 40 | 39 | 43 |
| 221 | Publishing | 6 | 3 | 3 | 4 | 4 |
| 222+223 | Printing & recorded media | 19 | 17 | 17 | 18 | 18 |
| 232 | Refined petroleum | 6 | 7 | 5 | 4 | 4 |
| 241 | Basic chemicals | 70 | 63 | 77 | 71 | 70 |
| 242+243 | Other chemicals (incl. man-made fibers) | 90 | 81 | 76 | 79 | 75 |
| 251 | Rubber | 103 | 92 | 86 | 83 | 78 |
| 252 | Plastics | 135 | 117 | 121 | 124 | 122 |
| 261 | Glass | 11 | 12 | 11 | 13 | 13 |
| 269 | Other non-metallic mineral products | 51 | 47 | 45 | 41 | 46 |
| 271 | Basic iron & steel | 19 | 18 | 14 | 14 | 12 |
| 272 | Basic nonferrous metals | 27 | 21 | 28 | 28 | 23 |
| 273 | Metals' casting | 16 | 17 | 16 | 15 | 17 |
| 281 | Structural metal products, etc. | 21 | 19 | 18 | 22 | 18 |
| 289 | Other fabricated metals, etc. | 111 | 91 | 86 | 95 | 88 |
| 291 | General purpose machinery | 36 | 36 | 34 | 31 | 33 |
| 292 | Special purpose machinery | 58 | 43 | 46 | 40 | 45 |
| 293 | Other domestic appliances | 11 | 11 | 8 | 5 | 6 |
| 300 | Office & computing machinery | 45 | 35 | 35 | 35 | 34 |
| 311 | Electrical motors, generators, etc. | 24 | 18 | 18 | 20 | 20 |
| 312 | Electricity distribution machinery | 19 | 15 | 16 | 17 | 14 |
| 313 | Insulated wire & cable | 48 | 40 | 44 | 39 | 31 |
| 314 | Accumulators, primary cells & batteries | 5 | 5 | 5 | 5 | 5 |
| 315 | Electric lamps & lighting machinery | 15 | 11 | 12 | 13 | 13 |
| 319 | Other electrical equipment | 16 | 15 | 18 | 18 | 17 |
| 321 | Electronic components | 135 | 124 | 122 | 120 | 102 |
| 322 | Radio & tv transmitters, telephony | 15 | 13 | 12 | 16 | 14 |
| 323 | Radio & tv receivers, recorders | 85 | 58 | 72 | 67 | 50 |
| 331 | Medical machinery, etc. | 16 | 11 | 14 | 13 | 11 |
| 332 | Optical & photographic machinery | 9 | 9 | 10 | 10 | 9 |
| 333 | Watches & clocks | 11 | 9 | 8 | 8 | 7 |
| 341 | Motor vehicles | 1 | 0 | 0 | 2 | 3 |
| 342 | Motor vehicle bodies, trailers | 0 | 1 | 1 | 0 | 1 |
| 343 | Motor vehicle parts | 19 | 16 | 17 | 19 | 17 |
| 351 | Ships & boats | 4 | 2 | 3 | 5 | 5 |
| 3591 | Motorcycles | 1 | 1 | 1 | 1 | 4 |
| 3592 | Bicycles & wheelchairs | 4 | 6 | 6 | 5 | 6 |
| 353+3599 | Aircraft, other transport machinery | 1 | 1 | 2 | 4 | 4 |
| 361 | Furniture | 65 | 52 | 49 | 46 | 48 |
| 369 | Miscellaneous manufacturing | 56 | 51 | 47 | 45 | 47 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 1 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 2a: Employees in all plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|-----------|-----------|-----------|-----------|-----------|
| D | Manufacturing total | 1,574,782 | 1,392,172 | 1,489,055 | 1,502,928 | 1,542,542 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 54,654 | 50,952 | 53,615 | 58,099 | 58,882 |
| 152 | Dairy | 4,887 | 5,172 | 4,901 | 4,109 | 4,104 |
| 153 | Grain mill, starch, feeds | 11,630 | 11,380 | 11,802 | 11,602 | 10,955 |
| 154 | Other food | 51,177 | 49,720 | 52,986 | 52,258 | 53,320 |
| 155 | Beverages | 5,489 | 5,411 | 5,803 | 5,813 | 6,144 |
| 160 | Tobacco | 10,242 | 9,691 | 10,239 | 9,350 | 9,836 |
| 171 | Textiles' spinning, weaving, finishing | 26,983 | 24,213 | 27,483 | 21,466 | 19,799 |
| 172 | Other textiles | 7,848 | 6,656 | 6,336 | 6,752 | 7,168 |
| 173 | Knitted & crocheted fabrics, etc. | 11,373 | 10,100 | 10,951 | 11,041 | 10,513 |
| 181 | Apparel except furs | 76,953 | 71,797 | 81,148 | 74,225 | 81,156 |
| 191 | Leather | 2,482 | 2,569 | 2,347 | 2,247 | 2,005 |
| 192 | Footwear | 6,608 | 4,807 | 5,163 | 4,331 | 6,072 |
| 201 | Wood sawmilling & planing | 37,536 | 33,144 | 32,785 | 29,762 | 31,664 |
| 202 | Other wood | 89,880 | 82,195 | 78,571 | 84,020 | 84,660 |
| 210 | Paper | 33,253 | 30,005 | 33,522 | 31,233 | 34,822 |
| 221 | Publishing | 14,348 | 14,011 | 15,852 | 15,381 | 17,083 |
| 222+223 | Printing & recorded media | 20,787 | 18,943 | 20,740 | 19,861 | 20,624 |
| 232 | Refined petroleum | 8,212 | 5,347 | 5,595 | 4,644 | 4,353 |
| 241 | Basic chemicals | 20,144 | 19,200 | 21,741 | 22,427 | 22,750 |
| 242+243 | Other chemicals (incl. man-made fibers) | 27,373 | 24,101 | 26,566 | 27,836 | 29,931 |
| 251 | Rubber | 73,430 | 67,535 | 67,108 | 69,649 | 72,758 |
| 252 | Plastics | 95,154 | 83,895 | 100,000 | 102,783 | 101,788 |
| 261 | Glass | 11,419 | 11,241 | 11,826 | 10,182 | 8,646 |
| 269 | Other non-metallic mineral products | 47,557 | 46,941 | 46,199 | 46,321 | 47,773 |
| 271 | Basic iron & steel | 19,210 | 19,808 | 20,218 | 21,342 | 21,890 |
| 272 | Basic nonferrous metals | 12,159 | 10,082 | 11,011 | 11,291 | 10,859 |
| 273 | Metals' casting | 10,768 | 9,157 | 10,023 | 9,481 | 10,199 |
| 281 | Structural metal products, etc. | 22,123 | 19,621 | 22,614 | 22,381 | 22,649 |
| 289 | Other fabricated metals, etc. | 46,238 | 40,406 | 45,863 | 48,039 | 51,053 |
| 291 | General purpose machinery | 27,762 | 26,385 | 24,861 | 22,483 | 25,086 |
| 292 | Special purpose machinery | 19,638 | 15,219 | 17,091 | 17,370 | 17,014 |
| 293 | Other domestic appliances | 5,483 | 7,078 | 6,733 | 8,227 | 11,707 |
| 300 | Office & computing machinery | 72,175 | 65,913 | 59,607 | 57,313 | 64,289 |
| 311 | Electrical motors, generators, etc. | 22,245 | 15,004 | 16,408 | 16,702 | 14,672 |
| 312 | Electricity distribution machinery | 10,011 | 9,756 | 10,842 | 10,842 | 10,084 |
| 313 | Insulated wire & cable | 26,159 | 21,747 | 23,111 | 23,668 | 22,882 |
| 314 | Accumulators, primary cells & batteries | 3,363 | 2,713 | 3,037 | 3,060 | 4,768 |
| 315 | Electric lamps & lighting machinery | 8,493 | 6,093 | 7,233 | 7,431 | 6,911 |
| 319 | Other electrical equipment | 7,822 | 5,709 | 5,881 | 6,710 | 8,807 |
| 321 | Electronic components | 193,089 | 160,482 | 170,942 | 182,952 | 179,593 |
| 322 | Radio & tv transmitters, telephony | 15,199 | 9,689 | 12,715 | 15,621 | 19,329 |
| 323 | Radio & tv receivers, recorders | 122,261 | 80,399 | 95,576 | 98,431 | 86,314 |
| 331 | Medical machinery, etc. | 13,707 | 17,103 | 12,364 | 13,659 | 12,821 |
| 332 | Optical & photographic machinery | 6,919 | 6,342 | 5,701 | 5,771 | 5,680 |
| 333 | Watches & clocks | 8,357 | 6,380 | 5,189 | 5,257 | 6,453 |
| 341 | Motor vehicles | 14,062 | 15,907 | 21,438 | 19,179 | 23,435 |
| 342 | Motor vehicle bodies, trailers | 2,738 | 2,395 | 2,979 | 3,259 | 3,372 |
| 343 | Motor vehicle parts | 18,044 | 21,256 | 22,812 | 25,860 | 24,321 |
| 351 | Ships & boats | 12,243 | 13,186 | 16,312 | 17,090 | 18,179 |
| 3591 | Motorcycles | 4,515 | 3,843 | 4,119 | 4,346 | 4,736 |
| 3592 | Bicycles & wheelchairs | 2,648 | 2,029 | 2,002 | 1,896 | 3,223 |
| 353+3599 | Aircraft, other transport machinery | 2,146 | 2,058 | 3,064 | 3,071 | 3,533 |
| 361 | Furniture | 68,877 | 63,318 | 72,899 | 71,192 | 78,174 |
| 369 | Miscellaneous manufacturing | 26,706 | 23,801 | 22,801 | 23,295 | 23,164 |
| 370 | Recycling | 203 | 269 | 330 | 319 | 544 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 2b: Employees in majority-foreign plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 600,693 | 547,970 | 572,042 | 574,779 | 607,859 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 5,297 | 5,584 | 5,375 | 4,282 | 5,186 |
| 152 | Dairy | 1,947 | 1,981 | 2,202 | 1,902 | 1,949 |
| 153 | Grain mill, starch, feeds | 777 | 748 | 758 | 800 | 811 |
| 154 | Other food | 5,862 | 6,271 | 5,544 | 6,221 | 6,757 |
| 155 | Beverages | 1,646 | 1,604 | 1,435 | 1,183 | 1,272 |
| 160 | Tobacco | 555 | 493 | 493 | 627 | 788 |
| 171 | Textiles' spinning, weaving, finishing | 19,229 | 16,923 | 20,131 | 14,927 | 14,201 |
| 172 | Other textiles | 1,367 | 1,013 | 959 | 929 | 1,543 |
| 173 | Knitted & crocheted fabrics, etc. | 766 | 416 | 772 | 636 | 593 |
| 181 | Apparel except furs | 20,819 | 22,966 | 31,526 | 23,504 | 37,734 |
| 191 | Leather | 1,218 | 1,324 | 1,084 | 851 | 987 |
| 192 | Footwear | 1,682 | 1,217 | 1,011 | 906 | 942 |
| 201 | Wood sawmilling & planing | 678 | 264 | 223 | 65 | 134 |
| 202 | Other wood | 17,157 | 16,172 | 16,570 | 18,677 | 19,791 |
| 210 | Paper | 5,357 | 6,282 | 5,450 | 4,616 | 5,551 |
| 221 | Publishing | 558 | 350 | 418 | 486 | 520 |
| 222+223 | Printing & recorded media | 3,107 | 2,661 | 2,871 | 3,200 | 3,292 |
| 232 | Refined petroleum | 1,019 | 2,021 | 1,881 | 796 | 778 |
| 241 | Basic chemicals | 7,741 | 8,148 | 9,369 | 9,016 | 10,005 |
| 242+243 | Other chemicals (incl. man-made fibers) | 9,698 | 9,553 | 10,098 | 9,865 | 10,236 |
| 251 | Rubber | 25,857 | 24,631 | 26,322 | 28,169 | 28,495 |
| 252 | Plastics | 21,491 | 19,492 | 27,576 | 30,610 | 31,262 |
| 261 | Glass | 4,815 | 5,750 | 5,832 | 5,408 | 5,659 |
| 269 | Other non-metallic mineral products | 7,604 | 7,063 | 7,585 | 7,088 | 7,446 |
| 271 | Basic iron & steel | 2,697 | 3,092 | 2,531 | 2,937 | 1,858 |
| 272 | Basic nonferrous metals | 5,182 | 4,522 | 5,962 | 6,428 | 5,636 |
| 273 | Metals' casting | 1,697 | 1,465 | 1,713 | 1,630 | 1,798 |
| 281 | Structural metal products, etc. | 2,163 | 2,050 | 2,326 | 2,624 | 2,897 |
| 289 | Other fabricated metals, etc. | 14,159 | 11,553 | 12,739 | 14,441 | 13,338 |
| 291 | General purpose machinery | 14,303 | 14,180 | 12,885 | 11,127 | 13,045 |
| 292 | Special purpose machinery | 7,009 | 4,050 | 4,763 | 4,729 | 5,458 |
| 293 | Other domestic appliances | 3,245 | 3,106 | 1,304 | 1,294 | 2,202 |
| 300 | Office & computing machinery | 59,526 | 56,834 | 53,944 | 51,686 | 61,454 |
| 311 | Electrical motors, generators, etc. | 13,782 | 11,785 | 6,605 | 12,973 | 11,495 |
| 312 | Electricity distribution machinery | 6,071 | 4,624 | 4,878 | 6,206 | 5,693 |
| 313 | Insulated wire & cable | 11,914 | 11,614 | 11,939 | 10,693 | 10,902 |
| 314 | Accumulators, primary cells & batteries | 1,247 | 929 | 974 | 1,259 | 2,285 |
| 315 | Electric lamps & lighting machinery | 5,227 | 4,619 | 4,875 | 5,423 | 4,962 |
| 319 | Other electrical equipment | 3,469 | 3,831 | 3,816 | 4,034 | 4,627 |
| 321 | Electronic components | 125,499 | 119,710 | 116,456 | 121,521 | 124,523 |
| 322 | Radio & tv transmitters, telephony | 9,494 | 4,074 | 7,170 | 12,239 | 13,510 |
| 323 | Radio & tv receivers, recorders | 94,768 | 71,187 | 81,632 | 79,596 | 70,213 |
| 331 | Medical machinery, etc. | 8,906 | 13,274 | 11,360 | 12,508 | 11,381 |
| 332 | Optical & photographic machinery | 6,423 | 5,970 | 5,563 | 5,684 | 5,586 |
| 333 | Watches & clocks | 7,803 | 5,331 | 4,967 | 5,050 | 4,862 |
| 341 | Motor vehicles | 432 | 0 | 0 | 1,668 | 2,241 |
| 342 | Motor vehicle bodies, trailers | 0 | 105 | 116 | 0 | 121 |
| 343 | Motor vehicle parts | 4,974 | 4,576 | 4,791 | 5,299 | 5,719 |
| 351 | Ships & boats | 793 | 746 | 806 | 948 | 1,193 |
| 3591 | Motorcycles | 14 | 31 | 10 | 21 | 304 |
| 3592 | Bicycles & wheelchairs | 1,474 | 1,467 | 1,559 | 1,454 | 2,655 |
| 353+3599 | Aircraft, other transport machinery | 67 | 68 | 330 | 560 | 660 |
| 361 | Furniture | 12,547 | 10,880 | 11,440 | 9,682 | 10,830 |
| 369 | Miscellaneous manufacturing | 9,561 | 9,372 | 9,107 | 6,303 | 10,428 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 51 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 3a: Gross output in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 443,069 | 399,170 | 460,636 | 519,533 | 606,662 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 30,158 | 27,753 | 39,871 | 51,214 | 52,657 |
| 152 | Dairy | 2,323 | 2,265 | 2,307 | 2,193 | 2,294 |
| 153 | Grain mill, starch, feeds | 5,140 | 5,166 | 5,840 | 5,859 | 7,061 |
| 154 | Other food | 7,911 | 7,733 | 8,470 | 9,019 | 9,971 |
| 155 | Beverages | 2,566 | 2,697 | 2,766 | 2,859 | 3,069 |
| 160 | Tobacco | 1,717 | 1,755 | 2,154 | 1,811 | 1,959 |
| 171 | Textiles' spinning, weaving, finishing | 5,764 | 4,881 | 4,664 | 4,214 | 4,477 |
| 172 | Other textiles | 700 | 566 | 651 | 647 | 719 |
| 173 | Knitted & crocheted fabrics, etc. | 1,399 | 1,255 | 1,278 | 1,238 | 1,301 |
| 181 | Apparel except furs | 5,245 | 4,603 | 5,170 | 5,130 | 5,873 |
| 191 | Leather | 203 | 215 | 190 | 176 | 213 |
| 192 | Footwear | 360 | 340 | 321 | 352 | 602 |
| 201 | Wood sawmilling & planing | 3,930 | 3,036 | 3,236 | 3,201 | 3,610 |
| 202 | Other wood | 9,388 | 8,390 | 8,535 | 9,791 | 11,359 |
| 210 | Paper | 6,713 | 5,908 | 6,782 | 6,311 | 7,646 |
| 221 | Publishing | 2,588 | 2,542 | 3,054 | 3,187 | 3,666 |
| 222+223 | Printing & recorded media | 2,223 | 2,001 | 2,140 | 2,160 | 2,390 |
| 232 | Refined petroleum | 36,105 | 36,036 | 45,113 | 47,766 | 62,238 |
| 241 | Basic chemicals | 19,216 | 16,660 | 22,413 | 29,798 | 42,903 |
| 242+243 | Other chemicals (incl. man-made fibers) | 8,013 | 7,026 | 8,388 | 9,928 | 13,379 |
| 251 | Rubber | 11,044 | 10,398 | 11,009 | 13,214 | 15,442 |
| 252 | Plastics | 11,799 | 10,378 | 16,137 | 17,341 | 16,717 |
| 261 | Glass | 3,702 | 3,278 | 3,462 | 2,978 | 3,071 |
| 269 | Other non-metallic mineral products | 8,467 | 8,779 | 9,283 | 10,000 | 11,890 |
| 271 | Basic iron & steel | 7,826 | 8,160 | 9,818 | 12,790 | 17,505 |
| 272 | Basic nonferrous metals | 5,547 | 3,947 | 4,706 | 6,076 | 8,596 |
| 273 | Metals' casting | 2,405 | 1,986 | 2,444 | 2,392 | 2,668 |
| 281 | Structural metal products, etc. | 2,798 | 2,595 | 2,705 | 2,773 | 3,217 |
| 289 | Other fabricated metals, etc. | 9,442 | 7,467 | 9,277 | 10,981 | 12,868 |
| 291 | General purpose machinery | 7,460 | 7,842 | 7,558 | 6,303 | 7,176 |
| 292 | Special purpose machinery | 2,677 | 2,151 | 2,713 | 2,790 | 3,356 |
| 293 | Other domestic appliances | 1,475 | 2,141 | 2,653 | 2,292 | 4,031 |
| 300 | Office & computing machinery | 39,912 | 38,502 | 43,867 | 58,946 | 61,148 |
| 311 | Electrical motors, generators, etc. | 2,724 | 1,530 | 1,993 | 1,815 | 1,888 |
| 312 | Electricity distribution machinery | 1,638 | 1,346 | 2,347 | 2,730 | 2,542 |
| 313 | Insulated wire & cable | 6,899 | 4,289 | 5,210 | 4,808 | 6,000 |
| 314 | Accumulators, primary cells & batteries | 555 | 538 | 533 | 581 | 989 |
| 315 | Electric lamps & lighting machinery | 1,819 | 1,197 | 1,571 | 1,874 | 2,085 |
| 319 | Other electrical equipment | 882 | 606 | 674 | 895 | 1,315 |
| 321 | Electronic components | 74,595 | 64,823 | 65,587 | 73,960 | 82,229 |
| 322 | Radio & tv transmitters, telephony | 8,150 | 3,801 | 5,817 | 9,980 | 12,976 |
| 323 | Radio & tv receivers, recorders | 46,589 | 36,879 | 35,322 | 37,813 | 40,033 |
| 331 | Medical machinery, etc. | 2,265 | 2,587 | 2,445 | 2,178 | 2,679 |
| 332 | Optical & photographic machinery | 1,538 | 1,774 | 1,694 | 1,701 | 1,876 |
| 333 | Watches & clocks | 1,169 | 819 | 547 | 489 | 1,085 |
| 341 | Motor vehicles | 11,015 | 12,967 | 16,887 | 13,158 | 22,159 |
| 342 | Motor vehicle bodies, trailers | 394 | 369 | 518 | 541 | 689 |
| 343 | Motor vehicle parts | 2,767 | 3,646 | 5,030 | 5,376 | 4,374 |
| 351 | Ships & boats | 1,742 | 2,411 | 2,863 | 3,059 | 2,973 |
| 3591 | Motorcycles | 1,298 | 1,098 | 1,102 | 1,146 | 1,507 |
| 3592 | Bicycles & wheelchairs | 856 | 581 | 659 | 733 | 1,249 |
| 353+3599 | Aircraft, other transport machinery | 294 | 378 | 495 | 581 | 859 |
| 361 | Furniture | 6,702 | 6,202 | 7,455 | 7,452 | 9,018 |
| 369 | Miscellaneous manufacturing | 2,908 | 2,790 | 2,826 | 2,821 | 2,902 |
| 370 | Recycling | 57 | 89 | 83 | 113 | 165 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 3b: Gross output in majority-foreign plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 223,257 | 205,533 | 230,261 | 252,591 | 291,753 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 5,801 | 4,925 | 6,399 | 7,050 | 8,264 |
| 152 | Dairy | 892 | 933 | 1,041 | 1,154 | 1,334 |
| 153 | Grain mill, starch, feeds | 711 | 740 | 707 | 815 | 828 |
| 154 | Other food | 1,497 | 1,669 | 1,614 | 1,885 | 2,483 |
| 155 | Beverages | 1,541 | 1,635 | 1,582 | 1,524 | 1,459 |
| 160 | Tobacco | 460 | 446 | 563 | 527 | 606 |
| 171 | Textiles' spinning, weaving, finishing | 4,723 | 3,961 | 3,642 | 3,409 | 3,712 |
| 172 | Other textiles | 136 | 97 | 91 | 91 | 203 |
| 173 | Knitted & crocheted fabrics, etc. | 103 | 91 | 90 | 70 | 47 |
| 181 | Apparel except furs | 1,602 | 1,665 | 2,042 | 1,753 | 2,713 |
| 191 | Leather | 113 | 122 | 101 | 93 | 114 |
| 192 | Footwear | 99 | 125 | 98 | 100 | 161 |
| 201 | Wood sawmilling & planing | 58 | 10 | 9 | 1 | 4 |
| 202 | Other wood | 1,944 | 1,788 | 1,893 | 2,018 | 2,681 |
| 210 | Paper | 1,077 | 1,408 | 1,264 | 1,058 | 1,449 |
| 221 | Publishing | 104 | 85 | 129 | 140 | 154 |
| 222+223 | Printing & recorded media | 401 | 364 | 340 | 439 | 448 |
| 232 | Refined petroleum | 9,747 | 13,721 | 20,214 | 10,001 | 13,700 |
| 241 | Basic chemicals | 10,580 | 9,555 | 12,610 | 16,497 | 25,358 |
| 242+243 | Other chemicals (incl. man-made fibers) | 3,950 | 3,620 | 4,344 | 5,158 | 7,791 |
| 251 | Rubber | 3,766 | 3,592 | 3,856 | 4,963 | 5,680 |
| 252 | Plastics | 3,111 | 2,993 | 6,873 | 7,387 | 6,442 |
| 261 | Glass | 2,043 | 1,911 | 2,062 | 2,181 | 2,640 |
| 269 | Other non-metallic mineral products | 1,437 | 1,381 | 1,537 | 1,746 | 1,641 |
| 271 | Basic iron & steel | 1,392 | 1,408 | 1,230 | 2,172 | 980 |
| 272 | Basic nonferrous metals | 2,438 | 1,731 | 2,479 | 3,200 | 3,046 |
| 273 | Metals' casting | 332 | 267 | 344 | 400 | 534 |
| 281 | Structural metal products, etc. | 552 | 556 | 483 | 593 | 960 |
| 289 | Other fabricated metals, etc. | 3,615 | 2,672 | 3,063 | 4,043 | 4,154 |
| 291 | General purpose machinery | 5,197 | 5,392 | 4,729 | 4,109 | 4,985 |
| 292 | Special purpose machinery | 1,263 | 774 | 1,076 | 1,113 | 1,526 |
| 293 | Other domestic appliances | 1,178 | 1,085 | 639 | 668 | 1,613 |
| 300 | Office & computing machinery | 35,034 | 35,279 | 42,401 | 49,097 | 55,565 |
| 311 | Electrical motors, generators, etc. | 1,767 | 1,210 | 1,017 | 1,423 | 1,232 |
| 312 | Electricity distribution machinery | 970 | 629 | 1,516 | 1,901 | 1,608 |
| 313 | Insulated wire & cable | 2,985 | 2,218 | 2,296 | 2,069 | 2,444 |
| 314 | Accumulators, primary cells & batteries | 220 | 212 | 169 | 209 | 449 |
| 315 | Electric lamps & lighting machinery | 1,216 | 1,051 | 1,313 | 1,658 | 1,835 |
| 319 | Other electrical equipment | 431 | 426 | 486 | 567 | 743 |
| 321 | Electronic components | 54,694 | 50,191 | 49,458 | 55,989 | 62,526 |
| 322 | Radio & tv transmitters, telephony | 6,856 | 2,352 | 4,671 | 9,192 | 8,617 |
| 323 | Radio & tv receivers, recorders | 38,752 | 32,833 | 31,127 | 33,507 | 35,969 |
| 331 | Medical machinery, etc. | 1,677 | 2,080 | 2,217 | 1,948 | 2,303 |
| 332 | Optical & photographic machinery | 1,476 | 1,713 | 1,679 | 1,687 | 1,859 |
| 333 | Watches & clocks | 970 | 497 | 511 | 459 | 531 |
| 341 | Motor vehicles | 164 | 0 | 0 | 1,815 | 2,444 |
| 342 | Motor vehicle bodies, trailers | 0 | 12 | 12 | 0 | 34 |
| 343 | Motor vehicle parts | 932 | 869 | 967 | 1,559 | 1,310 |
| 351 | Ships & boats | 114 | 117 | 114 | 133 | 183 |
| 3591 | Motorcycles | 1 | 1 | 1 | 1 | 192 |
| 3592 | Bicycles & wheelchairs | 645 | 518 | 605 | 673 | 1,183 |
| 353+3599 | Aircraft, other transport machinery | 5 | 2 | 33 | 90 | 117 |
| 361 | Furniture | 1,527 | 1,427 | 1,384 | 1,238 | 1,599 |
| 369 | Miscellaneous manufacturing | 956 | 1,175 | 1,142 | 1,018 | 1,273 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 26 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 4a: Value added in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|--------|---------|---------|---------|
| D | Manufacturing total | 108,718 | 97,606 | 112,760 | 123,225 | 140,923 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 3,895 | 3,650 | 4,660 | 5,429 | 5,815 |
| 152 | Dairy | 635 | 561 | 577 | 568 | 621 |
| 153 | Grain mill, starch, feeds | 885 | 839 | 946 | 883 | 885 |
| 154 | Other food | 2,350 | 2,464 | 2,602 | 2,804 | 2,921 |
| 155 | Beverages | 1,308 | 1,333 | 1,330 | 1,357 | 1,407 |
| 160 | Tobacco | 479 | 491 | 724 | 695 | 745 |
| 171 | Textiles' spinning, weaving, finishing | 1,785 | 1,374 | 1,115 | 989 | 1,071 |
| 172 | Other textiles | 257 | 211 | 250 | 258 | 277 |
| 173 | Knitted & crocheted fabrics, etc. | 463 | 416 | 410 | 427 | 418 |
| 181 | Apparel except furs | 1,747 | 1,573 | 1,818 | 1,711 | 1,931 |
| 191 | Leather | 60 | 70 | 60 | 57 | 64 |
| 192 | Footwear | 129 | 123 | 126 | 133 | 230 |
| 201 | Wood sawmilling & planing | 1,103 | 858 | 922 | 892 | 987 |
| 202 | Other wood | 3,047 | 2,645 | 2,854 | 3,231 | 3,806 |
| 210 | Paper | 2,161 | 2,025 | 2,253 | 1,973 | 2,268 |
| 221 | Publishing | 1,331 | 1,257 | 1,469 | 1,681 | 1,833 |
| 222+223 | Printing & recorded media | 899 | 835 | 910 | 904 | 969 |
| 232 | Refined petroleum | 9,615 | 8,543 | 10,167 | 12,648 | 16,285 |
| 241 | Basic chemicals | 6,170 | 5,750 | 7,648 | 9,595 | 12,952 |
| 242+243 | Other chemicals (incl. man-made fibers) | 2,436 | 2,218 | 2,718 | 3,252 | 3,873 |
| 251 | Rubber | 3,612 | 2,979 | 3,032 | 3,364 | 3,641 |
| 252 | Plastics | 4,043 | 3,660 | 5,920 | 6,058 | 5,322 |
| 261 | Glass | 1,845 | 1,493 | 1,678 | 1,288 | 1,404 |
| 269 | Other non-metallic mineral products | 3,247 | 3,454 | 3,803 | 4,210 | 4,432 |
| 271 | Basic iron & steel | 1,090 | 1,175 | 2,170 | 3,063 | 3,501 |
| 272 | Basic nonferrous metals | 1,302 | 809 | 947 | 1,184 | 1,335 |
| 273 | Metals' casting | 622 | 445 | 649 | 600 | 691 |
| 281 | Structural metal products, etc. | 883 | 846 | 911 | 916 | 1,040 |
| 289 | Other fabricated metals, etc. | 2,590 | 2,177 | 2,658 | 3,015 | 3,728 |
| 291 | General purpose machinery | 2,314 | 2,114 | 2,095 | 2,076 | 2,377 |
| 292 | Special purpose machinery | 1,017 | 824 | 1,027 | 1,014 | 1,221 |
| 293 | Other domestic appliances | 364 | 548 | 408 | 474 | 966 |
| 300 | Office & computing machinery | 5,645 | 5,516 | 6,376 | 7,637 | 9,974 |
| 311 | Electrical motors, generators, etc. | 738 | 405 | 550 | 495 | 477 |
| 312 | Electricity distribution machinery | 500 | 371 | 673 | 793 | 781 |
| 313 | Insulated wire & cable | 1,510 | 1,156 | 1,389 | 1,272 | 1,490 |
| 314 | Accumulators, primary cells & batteries | 213 | 199 | 187 | 198 | 303 |
| 315 | Electric lamps & lighting machinery | 660 | 500 | 496 | 619 | 762 |
| 319 | Other electrical equipment | 338 | 238 | 273 | 380 | 473 |
| 321 | Electronic components | 18,586 | 16,073 | 14,852 | 17,169 | 16,652 |
| 322 | Radio & tv transmitters, telephony | 1,909 | 444 | 1,413 | 1,808 | 2,180 |
| 323 | Radio & tv receivers, recorders | 5,974 | 4,560 | 5,186 | 5,204 | 6,513 |
| 331 | Medical machinery, etc. | 686 | 836 | 718 | 716 | 851 |
| 332 | Optical & photographic machinery | 273 | 279 | 296 | 298 | 348 |
| 333 | Watches & clocks | 391 | 276 | 225 | 207 | 262 |
| 341 | Motor vehicles | 1,995 | 3,227 | 4,164 | 2,623 | 4,058 |
| 342 | Motor vehicle bodies, trailers | 146 | 115 | 155 | 145 | 193 |
| 343 | Motor vehicle parts | 973 | 1,256 | 1,841 | 1,685 | 1,487 |
| 351 | Ships & boats | 657 | 898 | 1,188 | 1,273 | 420 |
| 3591 | Motorcycles | 279 | 242 | 312 | 328 | 386 |
| 3592 | Bicycles & wheelchairs | 267 | 176 | 216 | 192 | 316 |
| 353+3599 | Aircraft, other transport machinery | 154 | 130 | 190 | 225 | 345 |
| 361 | Furniture | 2,181 | 1,980 | 2,304 | 2,275 | 2,605 |
| 369 | Miscellaneous manufacturing | 949 | 952 | 881 | 918 | 1,001 |
| 370 | Recycling | 11 | 16 | 17 | 17 | 30 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 4b: Value added in majority-foreign plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 48,328 | 43,848 | 49,034 | 53,297 | 61,166 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 634 | 725 | 782 | 670 | 839 |
| 152 | Dairy | 319 | 323 | 362 | 360 | 398 |
| 153 | Grain mill, starch, feeds | 81 | 105 | 92 | 77 | 76 |
| 154 | Other food | 576 | 755 | 593 | 698 | 785 |
| 155 | Beverages | 1,089 | 1,105 | 1,046 | 1,046 | 1,006 |
| 160 | Tobacco | 125 | 93 | 150 | 151 | 165 |
| 171 | Textiles' spinning, weaving, finishing | 1,487 | 1,095 | 804 | 721 | 817 |
| 172 | Other textiles | 40 | 29 | 35 | 37 | 87 |
| 173 | Knitted & crocheted fabrics, etc. | 24 | 18 | 22 | 16 | 14 |
| 181 | Apparel except furs | 505 | 480 | 715 | 573 | 902 |
| 191 | Leather | 28 | 38 | 25 | 25 | 29 |
| 192 | Footwear | 34 | 42 | 37 | 35 | 76 |
| 201 | Wood sawmilling & planing | 16 | 4 | 4 | 1 | 1 |
| 202 | Other wood | 618 | 566 | 610 | 646 | 897 |
| 210 | Paper | 298 | 402 | 339 | 329 | 362 |
| 221 | Publishing | 45 | 42 | 67 | 73 | 82 |
| 222+223 | Printing & recorded media | 149 | 134 | 130 | 163 | 157 |
| 232 | Refined petroleum | 685 | 574 | 1,207 | 771 | 1,599 |
| 241 | Basic chemicals | 2,358 | 2,154 | 3,206 | 3,983 | 5,441 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1,210 | 1,122 | 1,436 | 1,717 | 2,206 |
| 251 | Rubber | 1,490 | 1,256 | 1,323 | 1,623 | 1,635 |
| 252 | Plastics | 1,078 | 1,067 | 2,716 | 2,807 | 2,085 |
| 261 | Glass | 990 | 832 | 941 | 919 | 1,226 |
| 269 | Other non-metallic mineral products | 616 | 560 | 640 | 680 | 693 |
| 271 | Basic iron & steel | 183 | 213 | 216 | 369 | 154 |
| 272 | Basic nonferrous metals | 677 | 413 | 611 | 728 | 672 |
| 273 | Metals' casting | 77 | 74 | 102 | 129 | 143 |
| 281 | Structural metal products, etc. | 168 | 172 | 158 | 184 | 289 |
| 289 | Other fabricated metals, etc. | 1,018 | 818 | 928 | 1,172 | 1,292 |
| 291 | General purpose machinery | 1,688 | 1,439 | 1,467 | 1,354 | 1,709 |
| 292 | Special purpose machinery | 448 | 252 | 329 | 346 | 467 |
| 293 | Other domestic appliances | 284 | 258 | 108 | 93 | 335 |
| 300 | Office & computing machinery | 4,852 | 5,145 | 6,029 | 6,638 | 9,397 |
| 311 | Electrical motors, generators, etc. | 502 | 343 | 269 | 383 | 348 |
| 312 | Electricity distribution machinery | 285 | 174 | 432 | 542 | 457 |
| 313 | Insulated wire & cable | 702 | 735 | 808 | 700 | 773 |
| 314 | Accumulators, primary cells & batteries | 98 | 99 | 85 | 102 | 132 |
| 315 | Electric lamps & lighting machinery | 500 | 451 | 418 | 542 | 672 |
| 319 | Other electrical equipment | 192 | 179 | 210 | 267 | 284 |
| 321 | Electronic components | 13,186 | 12,653 | 11,244 | 12,645 | 12,244 |
| 322 | Radio & tv transmitters, telephony | 1,698 | 292 | 1,208 | 1,645 | 1,134 |
| 323 | Radio & tv receivers, recorders | 4,740 | 4,112 | 4,585 | 4,508 | 5,781 |
| 331 | Medical machinery, etc. | 481 | 680 | 643 | 654 | 712 |
| 332 | Optical & photographic machinery | 232 | 265 | 289 | 294 | 342 |
| 333 | Watches & clocks | 371 | 202 | 214 | 196 | 197 |
| 341 | Motor vehicles | 16 | 0 | 0 | 315 | 361 |
| 342 | Motor vehicle bodies, trailers | 0 | 5 | 5 | 0 | 10 |
| 343 | Motor vehicle parts | 336 | 287 | 342 | 455 | 392 |
| 351 | Ships & boats | 51 | 53 | 51 | 56 | 70 |
| 3591 | Motorcycles | 0 | 0 | 0 | 1 | 27 |
| 3592 | Bicycles & wheelchairs | 206 | 159 | 202 | 177 | 299 |
| 353+3599 | Aircraft, other transport machinery | 4 | 2 | 12 | 37 | 45 |
| 361 | Furniture | 511 | 427 | 411 | 357 | 394 |
| 369 | Miscellaneous manufacturing | 332 | 425 | 375 | 290 | 451 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 7 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 5a: Employee compensation in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 31,279 | 29,808 | 32,517 | 33,793 | 36,296 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 968 | 884 | 959 | 1,062 | 1,093 |
| 152 | Dairy | 169 | 182 | 179 | 165 | 161 |
| 153 | Grain mill, starch, feeds | 245 | 256 | 284 | 282 | 307 |
| 154 | Other food | 803 | 828 | 889 | 927 | 964 |
| 155 | Bevarages | 156 | 158 | 171 | 204 | 231 |
| 160 | Tobacco | 132 | 146 | 188 | 146 | 163 |
| 171 | Textiles' spinning, weaving, finishing | 529 | 484 | 458 | 410 | 408 |
| 172 | Other textiles | 117 | 103 | 106 | 119 | 124 |
| 173 | Knitted & crocheted fabrics, etc. | 183 | 172 | 181 | 187 | 179 |
| 181 | Apparel except furs | 1,029 | 963 | 1,162 | 1,013 | 1,219 |
| 191 | Leather | 35 | 41 | 36 | 34 | 33 |
| 192 | Footwear | 97 | 71 | 77 | 74 | 115 |
| 201 | Wood sawmilling & planing | 487 | 438 | 448 | 438 | 475 |
| 202 | Other wood | 1,060 | 1,019 | 990 | 1,091 | 1,168 |
| 210 | Paper | 650 | 643 | 733 | 694 | 768 |
| 221 | Publishing | 436 | 481 | 554 | 624 | 617 |
| 222+223 | Printing & recorded media | 416 | 411 | 462 | 447 | 471 |
| 232 | Refined petroleum | 355 | 338 | 364 | 352 | 342 |
| 241 | Basic chemicals | 871 | 834 | 1,097 | 1,200 | 1,257 |
| 242+243 | Other chemicals (incl. man-made fibers) | 760 | 679 | 801 | 867 | 982 |
| 251 | Rubber | 1,201 | 1,166 | 1,185 | 1,267 | 1,375 |
| 252 | Plastics | 1,575 | 1,493 | 1,955 | 2,079 | 2,112 |
| 261 | Glass | 307 | 335 | 343 | 315 | 289 |
| 269 | Other non-metallic mineral products | 955 | 1,033 | 1,025 | 1,093 | 1,173 |
| 271 | Basic iron & steel | 457 | 528 | 597 | 644 | 728 |
| 272 | Basic nonferrous metals | 310 | 292 | 316 | 349 | 343 |
| 273 | Metals' casting | 224 | 209 | 234 | 227 | 262 |
| 281 | Structural metal products, etc. | 393 | 351 | 427 | 435 | 457 |
| 289 | Other fabricated metals, etc. | 923 | 849 | 1,031 | 1,086 | 1,239 |
| 291 | General purpose machinery | 680 | 714 | 741 | 693 | 775 |
| 292 | Special purpose machinery | 451 | 382 | 457 | 453 | 497 |
| 293 | Other domestic appliances | 153 | 286 | 184 | 204 | 308 |
| 300 | Office & computing machinery | 1,691 | 1,660 | 1,479 | 1,482 | 1,795 |
| 311 | Electrical motors, generators, etc. | 337 | 222 | 236 | 280 | 264 |
| 312 | Electricity distribution machinery | 200 | 204 | 289 | 298 | 277 |
| 313 | Insulated wire & cable | 568 | 483 | 541 | 555 | 587 |
| 314 | Accumulators, primary cells & batteries | 70 | 62 | 68 | 68 | 126 |
| 315 | Electric lamps & lighting machinery | 187 | 170 | 188 | 201 | 194 |
| 319 | Other electrical equipment | 131 | 102 | 116 | 139 | 178 |
| 321 | Electronic components | 4,771 | 4,335 | 4,412 | 4,746 | 4,919 |
| 322 | Radio & tv transmitters, telephony | 330 | 184 | 279 | 395 | 442 |
| 323 | Radio & tv receivers, recorders | 2,485 | 1,959 | 2,131 | 2,225 | 2,294 |
| 331 | Medical machinery, etc. | 300 | 399 | 314 | 345 | 353 |
| 332 | Optical & photographic machinery | 153 | 155 | 165 | 149 | 154 |
| 333 | Watches & clocks | 193 | 149 | 121 | 121 | 151 |
| 341 | Motor vehicles | 404 | 521 | 632 | 580 | 804 |
| 342 | Motor vehicle bodies, trailers | 48 | 49 | 63 | 63 | 80 |
| 343 | Motor vehicle parts | 323 | 431 | 527 | 575 | 541 |
| 351 | Ships & boats | 369 | 419 | 556 | 577 | 501 |
| 3591 | Motorcycles | 94 | 86 | 93 | 104 | 112 |
| 3592 | Bicycles & wheelchairs | 56 | 45 | 52 | 51 | 79 |
| 353+3599 | Aircraft, other transport machinery | 68 | 72 | 116 | 124 | 142 |
| 361 | Furniture | 926 | 875 | 1,050 | 1,072 | 1,191 |
| 369 | Miscellaneous manufacturing | 439 | 451 | 445 | 455 | 469 |
| 370 | Recycling | 4 | 5 | 8 | 6 | 10 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 5b: Employee compensation in majority-foreign (50%+) plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 13,710 | 13,763 | 14,231 | 14,658 | 16,090 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 121 | 133 | 141 | 117 | 137 |
| 152 | Dairy | 73 | 76 | 81 | 75 | 83 |
| 153 | Grain mill, starch, feeds | 29 | 27 | 28 | 32 | 24 |
| 154 | Other food | 154 | 181 | 172 | 195 | 197 |
| 155 | Bevarages | 81 | 89 | 83 | 78 | 84 |
| 160 | Tobacco | 17 | 27 | 31 | 44 | 57 |
| 171 | Textiles' spinning, weaving, finishing | 392 | 352 | 319 | 295 | 309 |
| 172 | Other textiles | 20 | 17 | 17 | 16 | 28 |
| 173 | Knitted & crocheted fabrics, etc. | 11 | 8 | 13 | 10 | 10 |
| 181 | Apparel except furs | 338 | 335 | 528 | 371 | 653 |
| 191 | Leather | 16 | 19 | 16 | 14 | 15 |
| 192 | Footwear | 44 | 18 | 20 | 18 | 32 |
| 201 | Wood sawmilling & planing | 8 | 3 | 2 | 1 | 1 |
| 202 | Other wood | 213 | 214 | 202 | 222 | 276 |
| 210 | Paper | 100 | 141 | 124 | 117 | 133 |
| 221 | Publishing | 14 | 12 | 17 | 19 | 22 |
| 222+223 | Printing & recorded media | 61 | 61 | 63 | 75 | 76 |
| 232 | Refined petroleum | 99 | 183 | 207 | 98 | 114 |
| 241 | Basic chemicals | 369 | 400 | 523 | 531 | 607 |
| 242+243 | Other chemicals (incl. man-made fibers) | 357 | 326 | 383 | 403 | 453 |
| 251 | Rubber | 484 | 490 | 519 | 578 | 627 |
| 252 | Plastics | 410 | 395 | 634 | 722 | 694 |
| 261 | Glass | 117 | 156 | 174 | 177 | 200 |
| 269 | Other non-metallic mineral products | 180 | 185 | 199 | 203 | 222 |
| 271 | Basic iron & steel | 65 | 85 | 66 | 82 | 49 |
| 272 | Basic nonferrous metals | 152 | 147 | 184 | 220 | 190 |
| 273 | Metals' casting | 34 | 37 | 42 | 46 | 50 |
| 281 | Structural metal products, etc. | 54 | 54 | 65 | 67 | 74 |
| 289 | Other fabricated metals, etc. | 313 | 274 | 306 | 352 | 336 |
| 291 | General purpose machinery | 420 | 460 | 484 | 418 | 490 |
| 292 | Special purpose machinery | 195 | 126 | 150 | 142 | 181 |
| 293 | Other domestic appliances | 123 | 118 | 27 | 27 | 54 |
| 300 | Office & computing machinery | 1,433 | 1,463 | 1,359 | 1,360 | 1,717 |
| 311 | Electrical motors, generators, etc. | 220 | 173 | 115 | 208 | 195 |
| 312 | Electricity distribution machinery | 116 | 104 | 146 | 177 | 159 |
| 313 | Insulated wire & cable | 255 | 297 | 306 | 300 | 311 |
| 314 | Accumulators, primary cells & batteries | 32 | 31 | 26 | 32 | 65 |
| 315 | Electric lamps & lighting machinery | 139 | 149 | 150 | 166 | 158 |
| 319 | Other electrical equipment | 74 | 70 | 84 | 93 | 99 |
| 321 | Electronic components | 3,073 | 3,284 | 3,048 | 3,193 | 3,318 |
| 322 | Radio & tv transmitters, telephony | 232 | 102 | 188 | 320 | 255 |
| 323 | Radio & tv receivers, recorders | 2,009 | 1,789 | 1,866 | 1,878 | 1,981 |
| 331 | Medical machinery, etc. | 199 | 324 | 286 | 317 | 319 |
| 332 | Optical & photographic machinery | 146 | 149 | 163 | 147 | 152 |
| 333 | Watches & clocks | 186 | 135 | 114 | 115 | 123 |
| 341 | Motor vehicles | 13 | 0 | 0 | 66 | 79 |
| 342 | Motor vehicle bodies, trailers | 0 | 2 | 2 | 0 | 3 |
| 343 | Motor vehicle parts | 98 | 98 | 104 | 138 | 125 |
| 351 | Ships & boats | 17 | 20 | 21 | 24 | 32 |
| 3591 | Motorcycles | 0 | 0 | 0 | 0 | 8 |
| 3592 | Bicycles & wheelchairs | 36 | 37 | 44 | 44 | 70 |
| 353+3599 | Aircraft, other transport machinery | 2 | 1 | 15 | 19 | 20 |
| 361 | Furniture | 195 | 179 | 183 | 164 | 192 |
| 369 | Miscellaneous manufacturing | 172 | 204 | 189 | 133 | 229 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 1 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 6a: Profits in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 29,090 | 20,825 | 27,983 | 36,109 | 48,156 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 1,243 | 1,197 | 1,961 | 2,052 | 2,822 |
| 152 | Dairy | 219 | 134 | 115 | 131 | 160 |
| 153 | Grain mill, starch, feeds | 348 | 309 | 509 | 322 | 354 |
| 154 | Other food | 688 | 759 | 549 | 971 | 881 |
| 155 | Beverages | 319 | 369 | 229 | 246 | 209 |
| 160 | Tobacco | 134 | -363 | 154 | 189 | 221 |
| 171 | Textiles' spinning, weaving, finishing | 174 | -376 | -678 | -342 | -133 |
| 172 | Other textiles | 47 | 30 | 52 | 51 | 58 |
| 173 | Knitted & crocheted fabrics, etc. | 126 | 110 | 85 | 90 | 95 |
| 181 | Apparel except furs | 193 | 160 | 148 | 171 | 221 |
| 191 | Leather | 3 | 2 | 2 | 7 | 11 |
| 192 | Footwear | -68 | 5 | 2 | 13 | 39 |
| 201 | Wood sawmilling & planing | 199 | 6 | 51 | 121 | 184 |
| 202 | Other wood | 475 | 191 | 445 | 581 | 944 |
| 210 | Paper | 384 | 356 | 394 | 257 | 410 |
| 221 | Publishing | 279 | 47 | 89 | 5 | 386 |
| 222+223 | Printing & recorded media | 147 | 105 | 115 | 124 | 146 |
| 232 | Refined petroleum | 4,391 | 3,580 | 5,186 | 7,684 | 11,394 |
| 241 | Basic chemicals | 2,027 | 1,432 | 2,471 | 4,256 | 6,429 |
| 242+243 | Other chemicals (incl. man-made fibers) | 548 | 455 | 704 | 937 | 1,125 |
| 251 | Rubber | 1,088 | 590 | 681 | 907 | 901 |
| 252 | Plastics | 825 | 782 | 1,328 | 1,515 | 1,252 |
| 261 | Glass | 623 | 304 | 393 | 105 | 506 |
| 269 | Other non-metallic mineral products | 443 | 454 | 649 | 943 | 913 |
| 271 | Basic iron & steel | -368 | -297 | 584 | 1,525 | 1,639 |
| 272 | Basic nonferrous metals | 498 | 13 | 57 | 349 | 412 |
| 273 | Metals' casting | 102 | 48 | 190 | 162 | 199 |
| 281 | Structural metal products, etc. | 272 | 216 | 202 | 194 | 326 |
| 289 | Other fabricated metals, etc. | 468 | 366 | 580 | 749 | 1,355 |
| 291 | General purpose machinery | 691 | 438 | 254 | 459 | 681 |
| 292 | Special purpose machinery | 267 | 148 | 262 | 267 | 371 |
| 293 | Other domestic appliances | 49 | 75 | 74 | 90 | 336 |
| 300 | Office & computing machinery | 1,500 | 1,236 | 2,480 | 2,748 | 4,483 |
| 311 | Electrical motors, generators, etc. | 100 | -70 | 74 | -90 | -28 |
| 312 | Electricity distribution machinery | 127 | 42 | 172 | 253 | 231 |
| 313 | Insulated wire & cable | 189 | 50 | 14 | 87 | 344 |
| 314 | Accumulators, primary cells & batteries | 43 | 56 | 49 | 58 | 41 |
| 315 | Electric lamps & lighting machinery | 208 | 161 | 129 | 159 | 142 |
| 319 | Other electrical equipment | 105 | 98 | 108 | 132 | 149 |
| 321 | Electronic components | 6,701 | 4,242 | 2,030 | 3,307 | 2,007 |
| 322 | Radio & tv transmitters, telephony | 612 | 106 | 546 | 965 | 1,253 |
| 323 | Radio & tv receivers, recorders | 376 | 537 | 888 | 919 | 2,070 |
| 331 | Medical machinery, etc. | 197 | 174 | 176 | 189 | 261 |
| 332 | Optical & photographic machinery | 48 | 35 | 42 | 46 | 120 |
| 333 | Watches & clocks | 77 | 34 | 26 | 28 | 43 |
| 341 | Motor vehicles | 487 | 1,142 | 1,552 | 649 | 1,284 |
| 342 | Motor vehicle bodies, trailers | 44 | 24 | 54 | 35 | 48 |
| 343 | Motor vehicle parts | 314 | 438 | 831 | 538 | 448 |
| 351 | Ships & boats | 261 | 262 | 306 | 347 | -554 |
| 3591 | Motorcycles | 65 | 48 | 82 | 79 | 134 |
| 3592 | Bicycles & wheelchairs | 108 | 39 | 88 | 71 | 130 |
| 353+3599 | Aircraft, other transport machinery | 32 | 4 | -15 | 9 | 81 |
| 361 | Furniture | 460 | 347 | 393 | 322 | 413 |
| 369 | Miscellaneous manufacturing | 200 | 172 | 118 | 122 | 204 |
| 370 | Recycling | 2 | 4 | 2 | 5 | 9 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 6b: Profits in majority-foreign (50%+) plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|-------|--------|--------|--------|
| D | Manufacturing total | 13,429 | 7,960 | 10,667 | 14,647 | 18,588 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 205 | 275 | 332 | 219 | 198 |
| 152 | Dairy | 77 | 79 | 70 | 80 | 80 |
| 153 | Grain mill, starch, feeds | 22 | 43 | 29 | 14 | 20 |
| 154 | Other food | 175 | 314 | 103 | 175 | 172 |
| 155 | Beverages | 309 | 328 | 182 | 196 | 152 |
| 160 | Tobacco | 47 | 18 | 57 | 25 | -2 |
| 171 | Textiles' spinning, weaving, finishing | 153 | -410 | -723 | -393 | -186 |
| 172 | Other textiles | 10 | 0 | 2 | 5 | 16 |
| 173 | Knitted & crocheted fabrics, etc. | 5 | 4 | 3 | 3 | 1 |
| 181 | Apparel except furs | 18 | 2 | 6 | 29 | 73 |
| 191 | Leather | 3 | 6 | 2 | 2 | 4 |
| 192 | Footwear | -73 | 7 | 4 | 4 | 16 |
| 201 | Wood sawmilling & planing | -3 | -1 | -1 | 0 | -1 |
| 202 | Other wood | 97 | 43 | 92 | 91 | 219 |
| 210 | Paper | 66 | 93 | 59 | 48 | 83 |
| 221 | Publishing | 7 | 6 | 18 | 20 | 23 |
| 222+223 | Printing & recorded media | 39 | 29 | 27 | 40 | 34 |
| 232 | Refined petroleum | 121 | -427 | 171 | 262 | 1,046 |
| 241 | Basic chemicals | 526 | 137 | 889 | 1,790 | 2,245 |
| 242+243 | Other chemicals (incl. man-made fibers) | 279 | 175 | 317 | 412 | 583 |
| 251 | Rubber | 570 | 302 | 305 | 573 | 402 |
| 252 | Plastics | 264 | 331 | 794 | 897 | 652 |
| 261 | Glass | 410 | 169 | 190 | 57 | 490 |
| 269 | Other non-metallic mineral products | 111 | 78 | 62 | 119 | 166 |
| 271 | Basic iron & steel | -15 | -13 | 49 | 166 | 44 |
| 272 | Basic nonferrous metals | 257 | -4 | 65 | 173 | 132 |
| 273 | Metals' casting | 10 | 15 | 26 | 42 | 46 |
| 281 | Structural metal products, etc. | 60 | 62 | 42 | 55 | 158 |
| 289 | Other fabricated metals, etc. | 205 | 117 | 179 | 270 | 500 |
| 291 | General purpose machinery | 577 | 254 | 171 | 281 | 502 |
| 292 | Special purpose machinery | 119 | 18 | 80 | 93 | 161 |
| 293 | Other domestic appliances | 35 | 40 | 15 | -2 | 144 |
| 300 | Office & computing machinery | 1,367 | 1,362 | 2,421 | 2,181 | 3,938 |
| 311 | Electrical motors, generators, etc. | 64 | 12 | 77 | -76 | -37 |
| 312 | Electricity distribution machinery | 88 | 1 | 162 | 209 | 173 |
| 313 | Insulated wire & cable | 80 | 13 | 2 | -5 | 104 |
| 314 | Accumulators, primary cells & batteries | 24 | 31 | 29 | 34 | 10 |
| 315 | Electric lamps & lighting machinery | 204 | 159 | 117 | 141 | 126 |
| 319 | Other electrical equipment | 77 | 91 | 96 | 100 | 101 |
| 321 | Electronic components | 5,205 | 3,153 | 2,234 | 3,803 | 2,571 |
| 322 | Radio & tv transmitters, telephony | 605 | 73 | 523 | 1,001 | 701 |
| 323 | Radio & tv receivers, recorders | 339 | 496 | 851 | 898 | 1,919 |
| 331 | Medical machinery, etc. | 106 | 133 | 148 | 170 | 170 |
| 332 | Optical & photographic machinery | 21 | 29 | 40 | 46 | 118 |
| 333 | Watches & clocks | 70 | 1 | 23 | 25 | 11 |
| 341 | Motor vehicles | -1 | 0 | 0 | 90 | 117 |
| 342 | Motor vehicle bodies, trailers | 0 | 0 | -1 | 0 | 4 |
| 343 | Motor vehicle parts | 119 | 97 | 121 | 138 | 140 |
| 351 | Ships & boats | 23 | 22 | 16 | 15 | 18 |
| 3591 | Motorcycles | 0 | 0 | 0 | 0 | 4 |
| 3592 | Bicycles & wheelchairs | 97 | 39 | 88 | 69 | 128 |
| 353+3599 | Aircraft, other transport machinery | 1 | 0 | -16 | 0 | 4 |
| 361 | Furniture | 178 | 81 | 69 | 13 | 33 |
| 369 | Miscellaneous manufacturing | 75 | 79 | 49 | 50 | 59 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 2 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 7a: Fixed assets in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 154,474 | 148,980 | 167,144 | 173,535 | 177,483 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 5,955 | 5,125 | 5,794 | 5,477 | 6,198 |
| 152 | Dairy | 593 | 653 | 754 | 647 | 603 |
| 153 | Grain mill, starch, feeds | 1,145 | 1,217 | 1,457 | 1,209 | 1,608 |
| 154 | Other food | 3,010 | 3,019 | 3,432 | 3,411 | 3,790 |
| 155 | Bevarages | 1,059 | 1,009 | 987 | 945 | 1,054 |
| 160 | Tobacco | 816 | 876 | 1,087 | 849 | 869 |
| 171 | Textiles' spinning, weaving, finishing | 4,768 | 4,417 | 4,115 | 3,794 | 3,619 |
| 172 | Other textiles | 331 | 303 | 340 | 321 | 354 |
| 173 | Knitted & crocheted fabrics, etc. | 739 | 713 | 718 | 712 | 716 |
| 181 | Apparel except furs | 1,143 | 1,151 | 1,355 | 1,225 | 1,408 |
| 191 | Leather | 52 | 52 | 46 | 35 | 46 |
| 192 | Footwear | 172 | 168 | 181 | 144 | 203 |
| 201 | Wood sawmilling & planing | 1,534 | 1,361 | 1,389 | 1,087 | 1,276 |
| 202 | Other wood | 6,141 | 5,869 | 5,426 | 5,691 | 5,598 |
| 210 | Paper | 5,812 | 5,909 | 6,298 | 5,841 | 6,094 |
| 221 | Publishing | 1,621 | 2,014 | 2,936 | 1,920 | 2,126 |
| 222+223 | Printing & recorded media | 1,254 | 1,310 | 1,398 | 1,302 | 1,394 |
| 232 | Refined petroleum | 11,135 | 9,011 | 12,688 | 21,994 | 17,262 |
| 241 | Basic chemicals | 19,618 | 21,617 | 23,127 | 24,737 | 31,458 |
| 242+243 | Other chemicals (incl. man-made fibers) | 4,030 | 4,438 | 4,376 | 4,129 | 5,170 |
| 251 | Rubber | 4,255 | 4,374 | 4,606 | 4,291 | 4,246 |
| 252 | Plastics | 5,883 | 5,292 | 9,008 | 8,003 | 6,282 |
| 261 | Glass | 3,002 | 2,974 | 2,693 | 2,228 | 1,938 |
| 269 | Other non-metallic mineral products | 8,971 | 8,670 | 9,627 | 9,299 | 8,925 |
| 271 | Basic iron & steel | 6,271 | 7,168 | 7,140 | 7,120 | 6,052 |
| 272 | Basic nonferrous metals | 2,179 | 2,023 | 2,277 | 2,299 | 2,115 |
| 273 | Metals' casting | 796 | 703 | 760 | 709 | 784 |
| 281 | Structural metal products, etc. | 1,101 | 1,006 | 1,139 | 1,229 | 1,123 |
| 289 | Other fabricated metals, etc. | 4,020 | 3,572 | 4,039 | 3,730 | 3,876 |
| 291 | General purpose machinery | 1,854 | 1,996 | 1,929 | 1,968 | 2,177 |
| 292 | Special purpose machinery | 1,038 | 937 | 992 | 893 | 977 |
| 293 | Other domestic appliances | 266 | 409 | 510 | 458 | 611 |
| 300 | Office & computing machinery | 3,845 | 3,672 | 3,248 | 4,048 | 4,526 |
| 311 | Electrical motors, generators, etc. | 624 | 469 | 627 | 496 | 396 |
| 312 | Electricity distribution machinery | 397 | 360 | 524 | 544 | 471 |
| 313 | Insulated wire & cable | 2,804 | 2,500 | 2,730 | 2,278 | 2,392 |
| 314 | Accumulators, primary cells & batteries | 263 | 260 | 353 | 311 | 464 |
| 315 | Electric lamps & lighting machinery | 445 | 364 | 518 | 557 | 519 |
| 319 | Other electrical equipment | 325 | 211 | 210 | 272 | 332 |
| 321 | Electronic components | 19,583 | 18,278 | 21,265 | 21,581 | 20,300 |
| 322 | Radio & tv transmitters, telephony | 788 | 374 | 604 | 941 | 889 |
| 323 | Radio & tv receivers, recorders | 4,787 | 3,088 | 2,982 | 2,864 | 2,819 |
| 331 | Medical machinery, etc. | 522 | 530 | 408 | 517 | 551 |
| 332 | Optical & photographic machinery | 238 | 232 | 216 | 213 | 188 |
| 333 | Watches & clocks | 385 | 304 | 244 | 237 | 228 |
| 341 | Motor vehicles | 2,618 | 2,520 | 2,898 | 3,548 | 5,623 |
| 342 | Motor vehicle bodies, trailers | 134 | 147 | 193 | 180 | 203 |
| 343 | Motor vehicle parts | 1,023 | 1,321 | 1,401 | 1,533 | 1,404 |
| 351 | Ships & boats | 576 | 724 | 1,239 | 1,170 | 1,315 |
| 3591 | Motorcycles | 610 | 540 | 579 | 505 | 480 |
| 3592 | Bicycles & wheelchairs | 243 | 174 | 155 | 144 | 157 |
| 353+3599 | Aircraft, other transport machinery | 187 | 122 | 320 | 339 | 355 |
| 361 | Furniture | 2,387 | 2,349 | 2,788 | 2,611 | 3,027 |
| 369 | Miscellaneous manufacturing | 1,111 | 1,065 | 997 | 927 | 860 |
| 370 | Recycling | 16 | 23 | 21 | 21 | 35 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 7b: Fixed assets in majority-foreign plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|--------|
| D | Manufacturing total | 58,950 | 61,328 | 66,050 | 59,874 | 65,126 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 680 | 897 | 1,083 | 621 | 691 |
| 152 | Dairy | 210 | 204 | 334 | 279 | 300 |
| 153 | Grain mill, starch, feeds | 81 | 78 | 86 | 71 | 87 |
| 154 | Other food | 634 | 720 | 944 | 929 | 1,162 |
| 155 | Bevarages | 541 | 540 | 449 | 403 | 436 |
| 160 | Tobacco | 338 | 311 | 306 | 290 | 300 |
| 171 | Textiles' spinning, weaving, finishing | 4,216 | 3,826 | 3,534 | 3,385 | 3,110 |
| 172 | Other textiles | 41 | 32 | 41 | 38 | 49 |
| 173 | Knitted & crocheted fabrics, etc. | 30 | 24 | 27 | 16 | 13 |
| 181 | Apparel except furs | 322 | 364 | 412 | 324 | 564 |
| 191 | Leather | 23 | 19 | 15 | 11 | 13 |
| 192 | Footwear | 53 | 53 | 55 | 47 | 77 |
| 201 | Wood sawmilling & planing | 25 | 4 | 3 | 0 | 2 |
| 202 | Other wood | 1,359 | 1,346 | 1,281 | 1,279 | 1,339 |
| 210 | Paper | 568 | 612 | 539 | 431 | 475 |
| 221 | Publishing | 15 | 6 | 7 | 17 | 17 |
| 222+223 | Printing & recorded media | 157 | 207 | 198 | 240 | 249 |
| 232 | Refined petroleum | 3,984 | 3,821 | 6,733 | 3,497 | 3,302 |
| 241 | Basic chemicals | 6,151 | 7,653 | 8,728 | 8,844 | 13,998 |
| 242+243 | Other chemicals (incl. man-made fibers) | 2,463 | 3,077 | 2,816 | 2,655 | 3,492 |
| 251 | Rubber | 1,516 | 1,623 | 1,969 | 1,954 | 1,821 |
| 252 | Plastics | 1,395 | 1,615 | 4,429 | 3,677 | 2,168 |
| 261 | Glass | 1,431 | 1,743 | 1,465 | 1,568 | 1,643 |
| 269 | Other non-metallic mineral products | 1,786 | 1,349 | 1,380 | 1,258 | 1,251 |
| 271 | Basic iron & steel | 450 | 641 | 392 | 569 | 138 |
| 272 | Basic nonferrous metals | 803 | 936 | 1,097 | 1,120 | 884 |
| 273 | Metals' casting | 94 | 76 | 92 | 100 | 115 |
| 281 | Structural metal products, etc. | 204 | 203 | 216 | 266 | 237 |
| 289 | Other fabricated metals, etc. | 1,803 | 1,464 | 1,450 | 1,437 | 1,250 |
| 291 | General purpose machinery | 1,191 | 1,320 | 1,350 | 953 | 1,567 |
| 292 | Special purpose machinery | 416 | 321 | 333 | 293 | 360 |
| 293 | Other domestic appliances | 190 | 215 | 101 | 90 | 137 |
| 300 | Office & computing machinery | 3,210 | 3,375 | 2,771 | 3,563 | 4,223 |
| 311 | Electrical motors, generators, etc. | 356 | 339 | 186 | 349 | 263 |
| 312 | Electricity distribution machinery | 216 | 188 | 296 | 319 | 250 |
| 313 | Insulated wire & cable | 1,248 | 1,596 | 1,469 | 1,183 | 1,255 |
| 314 | Accumulators, primary cells & batteries | 74 | 74 | 80 | 86 | 147 |
| 315 | Electric lamps & lighting machinery | 268 | 288 | 396 | 468 | 424 |
| 319 | Other electrical equipment | 146 | 165 | 153 | 175 | 179 |
| 321 | Electronic components | 14,202 | 14,662 | 13,627 | 11,201 | 11,267 |
| 322 | Radio & tv transmitters, telephony | 545 | 199 | 337 | 726 | 632 |
| 323 | Radio & tv receivers, recorders | 3,239 | 2,792 | 2,481 | 2,437 | 2,374 |
| 331 | Medical machinery, etc. | 315 | 357 | 363 | 470 | 494 |
| 332 | Optical & photographic machinery | 214 | 212 | 207 | 205 | 182 |
| 333 | Watches & clocks | 366 | 247 | 210 | 205 | 199 |
| 341 | Motor vehicles | 18 | 0 | 0 | 210 | 376 |
| 342 | Motor vehicle bodies, trailers | 0 | 1 | 1 | 0 | 16 |
| 343 | Motor vehicle parts | 286 | 262 | 272 | 388 | 309 |
| 351 | Ships & boats | 35 | 39 | 47 | 49 | 58 |
| 3591 | Motorcycles | 2 | 2 | 2 | 2 | 24 |
| 3592 | Bicycles & wheelchairs | 140 | 136 | 125 | 114 | 118 |
| 353+3599 | Aircraft, other transport machinery | 5 | 5 | 119 | 142 | 138 |
| 361 | Furniture | 525 | 656 | 677 | 604 | 605 |
| 369 | Miscellaneous manufacturing | 371 | 429 | 366 | 317 | 339 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 4 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 8a: Educated (11 or more years) employees in all plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 755,473 | 678,048 | 722,228 | 760,295 | 804,116 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 18,001 | 17,096 | 17,828 | 19,666 | 20,735 |
| 152 | Dairy | 2,310 | 2,422 | 3,453 | 2,768 | 2,500 |
| 153 | Grain mill, starch, feeds | 4,984 | 4,762 | 4,744 | 4,763 | 4,738 |
| 154 | Other food | 19,844 | 19,203 | 20,420 | 20,985 | 23,218 |
| 155 | Beverages | 2,704 | 3,181 | 3,248 | 3,502 | 4,092 |
| 160 | Tobacco | 2,348 | 2,354 | 2,985 | 2,486 | 2,579 |
| 171 | Textiles' spinning, weaving, finishing | 11,051 | 10,562 | 11,988 | 8,713 | 7,851 |
| 172 | Other textiles | 3,185 | 2,893 | 2,652 | 2,680 | 3,276 |
| 173 | Knitted & crocheted fabrics, etc. | 4,637 | 4,364 | 4,931 | 3,809 | 4,185 |
| 181 | Apparel except furs | 19,854 | 20,766 | 21,077 | 19,995 | 23,067 |
| 191 | Leather | 1,026 | 827 | 747 | 978 | 909 |
| 192 | Footwear | 2,585 | 1,528 | 1,537 | 1,437 | 2,289 |
| 201 | Wood sawmilling & planing | 7,455 | 6,730 | 6,857 | 5,975 | 6,889 |
| 202 | Other wood | 18,133 | 16,792 | 16,390 | 17,706 | 18,897 |
| 210 | Paper | 16,117 | 14,381 | 16,776 | 16,347 | 18,475 |
| 221 | Publishing | 9,959 | 9,676 | 10,889 | 10,889 | 12,634 |
| 222+223 | Printing & recorded media | 9,824 | 9,691 | 10,763 | 10,335 | 12,152 |
| 232 | Refined petroleum | 7,007 | 4,105 | 4,491 | 3,726 | 3,502 |
| 241 | Basic chemicals | 13,939 | 13,911 | 17,217 | 17,540 | 18,041 |
| 242+243 | Other chemicals (incl. man-made fibers) | 15,705 | 14,059 | 15,331 | 17,902 | 20,083 |
| 251 | Rubber | 26,967 | 26,589 | 27,504 | 29,100 | 31,787 |
| 252 | Plastics | 45,759 | 39,825 | 49,497 | 49,568 | 49,235 |
| 261 | Glass | 5,384 | 6,194 | 6,697 | 5,656 | 4,296 |
| 269 | Other non-metallic mineral products | 19,716 | 19,442 | 18,726 | 18,927 | 19,886 |
| 271 | Basic iron & steel | 9,388 | 10,293 | 10,462 | 11,060 | 11,736 |
| 272 | Basic nonferrous metals | 6,293 | 5,648 | 6,939 | 6,743 | 6,352 |
| 273 | Metals' casting | 4,981 | 4,342 | 4,621 | 4,097 | 4,595 |
| 281 | Structural metal products, etc. | 9,679 | 8,944 | 8,976 | 9,307 | 9,994 |
| 289 | Other fabricated metals, etc. | 22,268 | 18,264 | 21,238 | 22,280 | 23,795 |
| 291 | General purpose machinery | 16,775 | 18,335 | 18,582 | 15,921 | 17,166 |
| 292 | Special purpose machinery | 10,726 | 8,580 | 9,189 | 9,414 | 10,498 |
| 293 | Other domestic appliances | 4,152 | 4,442 | 3,856 | 4,571 | 7,082 |
| 300 | Office & computing machinery | 40,478 | 39,460 | 33,320 | 40,291 | 44,076 |
| 311 | Electrical motors, generators, etc. | 11,706 | 9,396 | 10,733 | 12,100 | 11,022 |
| 312 | Electricity distribution machinery | 5,922 | 6,636 | 6,571 | 7,715 | 7,108 |
| 313 | Insulated wire & cable | 14,764 | 12,829 | 14,597 | 15,492 | 14,390 |
| 314 | Accumulators, primary cells & batteries | 2,079 | 1,279 | 1,562 | 1,643 | 3,079 |
| 315 | Electric lamps & lighting machinery | 5,865 | 3,882 | 4,314 | 4,444 | 4,528 |
| 319 | Other electrical equipment | 4,298 | 3,028 | 3,369 | 3,873 | 5,746 |
| 321 | Electronic components | 131,383 | 114,281 | 114,588 | 131,391 | 140,208 |
| 322 | Radio & tv transmitters, telephony | 8,289 | 3,973 | 8,183 | 11,277 | 12,934 |
| 323 | Radio & tv receivers, recorders | 78,242 | 53,915 | 57,084 | 62,362 | 54,740 |
| 331 | Medical machinery, etc. | 8,865 | 7,790 | 6,699 | 7,726 | 7,017 |
| 332 | Optical & photographic machinery | 3,293 | 3,217 | 2,770 | 2,741 | 3,012 |
| 333 | Watches & clocks | 5,886 | 4,938 | 3,565 | 4,119 | 3,847 |
| 341 | Motor vehicles | 9,905 | 12,366 | 17,377 | 15,821 | 19,844 |
| 342 | Motor vehicle bodies, trailers | 1,231 | 1,083 | 1,466 | 1,518 | 1,672 |
| 343 | Motor vehicle parts | 9,330 | 12,359 | 13,942 | 16,274 | 14,319 |
| 351 | Ships & boats | 3,415 | 3,579 | 5,134 | 5,649 | 6,703 |
| 3591 | Motorcycles | 2,633 | 1,978 | 2,676 | 2,717 | 2,704 |
| 3592 | Bicycles & wheelchairs | 1,818 | 1,269 | 1,078 | 1,240 | 2,189 |
| 353+3599 | Aircraft, other transport machinery | 1,482 | 1,501 | 2,637 | 2,662 | 3,161 |
| 361 | Furniture | 19,707 | 18,134 | 18,879 | 19,577 | 23,418 |
| 369 | Miscellaneous manufacturing | 12,051 | 10,848 | 10,943 | 10,713 | 11,657 |
| 370 | Recycling | 75 | 106 | 130 | 104 | 206 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 8b: Educated (11 or more years) employees in majority-foreign plants, 2000-2004 (number)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 344,168 | 330,518 | 329,656 | 357,197 | 376,687 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 2,173 | 2,625 | 2,460 | 1,982 | 2,655 |
| 152 | Dairy | 1,099 | 1,089 | 1,581 | 1,335 | 1,161 |
| 153 | Grain mill, starch, feeds | 497 | 484 | 454 | 452 | 479 |
| 154 | Other food | 3,824 | 3,837 | 3,578 | 3,920 | 4,397 |
| 155 | Beverages | 1,094 | 942 | 806 | 748 | 995 |
| 160 | Tobacco | 502 | 456 | 460 | 512 | 669 |
| 171 | Textiles' spinning, weaving, finishing | 7,543 | 7,095 | 8,624 | 5,767 | 5,153 |
| 172 | Other textiles | 512 | 610 | 492 | 488 | 766 |
| 173 | Knitted & crocheted fabrics, etc. | 272 | 192 | 371 | 300 | 358 |
| 181 | Apparel except furs | 3,607 | 7,518 | 8,575 | 6,097 | 8,316 |
| 191 | Leather | 678 | 387 | 361 | 435 | 472 |
| 192 | Footwear | 819 | 563 | 261 | 248 | 357 |
| 201 | Wood sawmilling & planing | 111 | 42 | 45 | 10 | 31 |
| 202 | Other wood | 3,593 | 3,747 | 3,787 | 4,145 | 5,631 |
| 210 | Paper | 2,598 | 3,936 | 3,940 | 3,085 | 3,706 |
| 221 | Publishing | 411 | 262 | 326 | 370 | 413 |
| 222+223 | Printing & recorded media | 1,690 | 1,451 | 1,464 | 1,589 | 2,422 |
| 232 | Refined petroleum | 910 | 1,769 | 1,756 | 736 | 707 |
| 241 | Basic chemicals | 5,970 | 6,472 | 7,863 | 7,382 | 8,241 |
| 242+243 | Other chemicals (incl. man-made fibers) | 6,515 | 6,382 | 6,343 | 7,170 | 7,769 |
| 251 | Rubber | 10,184 | 11,455 | 12,965 | 14,661 | 16,118 |
| 252 | Plastics | 11,419 | 11,542 | 16,987 | 17,049 | 16,883 |
| 261 | Glass | 1,574 | 3,041 | 3,307 | 3,479 | 2,793 |
| 269 | Other non-metallic mineral products | 3,467 | 3,635 | 3,772 | 3,880 | 3,780 |
| 271 | Basic iron & steel | 1,432 | 1,848 | 1,452 | 1,453 | 818 |
| 272 | Basic nonferrous metals | 2,886 | 2,811 | 4,102 | 4,053 | 3,297 |
| 273 | Metals' casting | 768 | 775 | 861 | 798 | 932 |
| 281 | Structural metal products, etc. | 1,264 | 1,275 | 1,461 | 1,463 | 1,476 |
| 289 | Other fabricated metals, etc. | 7,526 | 6,376 | 6,738 | 8,102 | 7,130 |
| 291 | General purpose machinery | 9,462 | 11,057 | 11,037 | 9,742 | 10,981 |
| 292 | Special purpose machinery | 4,319 | 2,877 | 3,037 | 3,144 | 4,044 |
| 293 | Other domestic appliances | 2,651 | 2,471 | 767 | 777 | 1,727 |
| 300 | Office & computing machinery | 33,950 | 32,740 | 29,411 | 36,919 | 42,236 |
| 311 | Electrical motors, generators, etc. | 5,665 | 7,216 | 4,052 | 9,749 | 9,107 |
| 312 | Electricity distribution machinery | 3,580 | 3,287 | 3,353 | 4,586 | 4,275 |
| 313 | Insulated wire & cable | 6,381 | 7,703 | 8,470 | 7,852 | 7,522 |
| 314 | Accumulators, primary cells & batteries | 889 | 461 | 747 | 996 | 1,986 |
| 315 | Electric lamps & lighting machinery | 3,532 | 3,299 | 3,321 | 3,616 | 3,435 |
| 319 | Other electrical equipment | 1,755 | 2,261 | 2,201 | 2,509 | 3,010 |
| 321 | Electronic components | 89,151 | 86,908 | 78,824 | 85,953 | 95,735 |
| 322 | Radio & tv transmitters, telephony | 5,985 | 1,773 | 4,792 | 9,371 | 8,365 |
| 323 | Radio & tv receivers, recorders | 63,432 | 48,927 | 48,584 | 53,022 | 46,349 |
| 331 | Medical machinery, etc. | 6,217 | 5,643 | 5,916 | 6,819 | 5,973 |
| 332 | Optical & photographic machinery | 2,982 | 3,009 | 2,729 | 2,696 | 2,957 |
| 333 | Watches & clocks | 5,660 | 4,451 | 3,356 | 3,916 | 3,305 |
| 341 | Motor vehicles | 336 | 0 | 0 | 1,605 | 1,879 |
| 342 | Motor vehicle bodies, trailers | 0 | 49 | 17 | 0 | 32 |
| 343 | Motor vehicle parts | 3,071 | 2,976 | 3,503 | 3,587 | 3,622 |
| 351 | Ships & boats | 488 | 419 | 464 | 584 | 759 |
| 3591 | Motorcycles | 4 | 18 | 6 | 11 | 138 |
| 3592 | Bicycles & wheelchairs | 1,288 | 1,165 | 1,002 | 1,145 | 2,052 |
| 353+3599 | Aircraft, other transport machinery | 67 | 60 | 314 | 492 | 568 |
| 361 | Furniture | 3,466 | 4,137 | 3,054 | 2,996 | 2,741 |
| 369 | Miscellaneous manufacturing | 4,899 | 4,992 | 5,511 | 3,402 | 5,944 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 21 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 9a: R&D expenditures in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|----------|----------|----------|
| D | Manufacturing total | 683.72 | 905.78 | 1,338.41 | 1,491.82 | 2,093.37 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 10.06 | 13.76 | 36.77 | 15.01 | 43.52 |
| 152 | Dairy | 1.11 | 1.54 | 1.39 | 2.61 | 1.88 |
| 153 | Grain mill, starch, feeds | 0.21 | 0.28 | 0.20 | 0.36 | 0.26 |
| 154 | Other food | 3.38 | 4.54 | 8.44 | 8.20 | 9.10 |
| 155 | Beverages | 0.16 | 0.54 | 0.94 | 0.55 | 0.60 |
| 160 | Tobacco | 4.53 | 10.39 | 15.89 | 8.43 | 9.65 |
| 171 | Textiles' spinning, weaving, finishing | 10.67 | 2.08 | 2.85 | 1.28 | 1.97 |
| 172 | Other textiles | 0.12 | 0.28 | 0.25 | 0.36 | 0.58 |
| 173 | Knitted & crocheted fabrics, etc. | 0.27 | 0.39 | 0.52 | 0.69 | 0.52 |
| 181 | Apparel except furs | 1.76 | 2.51 | 2.00 | 3.14 | 1.33 |
| 191 | Leather | 0.12 | 0.00 | 0.02 | 0.06 | 0.01 |
| 192 | Footwear | 0.00 | 0.08 | 0.39 | 0.35 | 0.28 |
| 201 | Wood sawmilling & planing | 0.19 | 0.23 | 0.29 | 0.83 | 2.53 |
| 202 | Other wood | 4.18 | 0.84 | 1.19 | 3.48 | 3.91 |
| 210 | Paper | 2.65 | 2.30 | 1.78 | 3.37 | 3.36 |
| 221 | Publishing | 0.25 | 0.22 | 0.79 | 0.72 | 0.74 |
| 222+223 | Printing & recorded media | 0.16 | 4.71 | 0.19 | 1.58 | 0.73 |
| 232 | Refined petroleum | 0.75 | 0.22 | 9.01 | 20.22 | 9.99 |
| 241 | Basic chemicals | 4.47 | 3.28 | 4.46 | 15.18 | 37.06 |
| 242+243 | Other chemicals (incl. man-made fibers) | 8.73 | 16.59 | 19.23 | 22.76 | 22.74 |
| 251 | Rubber | 39.11 | 38.63 | 37.23 | 31.00 | 27.14 |
| 252 | Plastics | 12.70 | 8.59 | 12.75 | 14.24 | 30.79 |
| 261 | Glass | 1.27 | 18.56 | 6.48 | 3.56 | 10.87 |
| 269 | Other non-metallic mineral products | 10.59 | 6.03 | 7.92 | 5.32 | 9.59 |
| 271 | Basic iron & steel | 1.00 | 2.00 | 0.43 | 3.85 | 3.61 |
| 272 | Basic nonferrous metals | 1.89 | 1.18 | 2.62 | 0.37 | 1.01 |
| 273 | Metals' casting | 0.08 | 0.25 | 0.62 | 0.88 | 2.33 |
| 281 | Structural metal products, etc. | 0.32 | 0.28 | 0.34 | 1.27 | 4.77 |
| 289 | Other fabricated metals, etc. | 6.34 | 5.14 | 8.48 | 8.31 | 3.92 |
| 291 | General purpose machinery | 57.59 | 62.75 | 62.98 | 55.51 | 58.49 |
| 292 | Special purpose machinery | 0.97 | 6.99 | 2.22 | 7.05 | 10.79 |
| 293 | Other domestic appliances | 4.81 | 10.06 | 11.14 | 11.04 | 22.60 |
| 300 | Office & computing machinery | 85.77 | 56.41 | 87.17 | 88.90 | 417.27 |
| 311 | Electrical motors, generators, etc. | 4.28 | 8.60 | 1.96 | 3.93 | 0.59 |
| 312 | Electricity distribution machinery | 1.91 | 1.78 | 4.96 | 6.46 | 7.80 |
| 313 | Insulated wire & cable | 4.48 | 8.40 | 14.42 | 12.10 | 13.15 |
| 314 | Accumulators, primary cells & batteries | 0.01 | 0.26 | 2.03 | 0.68 | 0.17 |
| 315 | Electric lamps & lighting machinery | 9.37 | 5.81 | 10.26 | 4.08 | 7.57 |
| 319 | Other electrical equipment | 2.35 | 1.97 | 2.47 | 3.87 | 1.91 |
| 321 | Electronic components | 154.74 | 244.42 | 241.24 | 324.73 | 274.85 |
| 322 | Radio & tv transmitters, telephony | 35.94 | 3.78 | 51.40 | 34.61 | 66.17 |
| 323 | Radio & tv receivers, recorders | 90.12 | 46.54 | 122.85 | 161.88 | 219.53 |
| 331 | Medical machinery, etc. | 4.00 | 2.27 | 2.97 | 5.11 | 6.05 |
| 332 | Optical & photographic machinery | 3.17 | 1.19 | 2.04 | 1.83 | 2.36 |
| 333 | Watches & clocks | 0.58 | 0.42 | 0.99 | 1.05 | 0.00 |
| 341 | Motor vehicles | 88.44 | 276.88 | 507.32 | 539.38 | 702.02 |
| 342 | Motor vehicle bodies, trailers | 0.01 | 0.00 | 0.58 | 0.02 | 0.21 |
| 343 | Motor vehicle parts | 1.38 | 6.10 | 8.95 | 27.67 | 10.59 |
| 351 | Ships & boats | 0.00 | 2.93 | 2.38 | 2.71 | 0.10 |
| 3591 | Motorcycles | 0.81 | 2.56 | 0.64 | 1.31 | 4.04 |
| 3592 | Bicycles & wheelchairs | 0.10 | 0.22 | 0.09 | 0.04 | 0.37 |
| 353+3599 | Aircraft, other transport machinery | 0.44 | 0.45 | 0.48 | 3.72 | 4.76 |
| 361 | Furniture | 3.42 | 5.32 | 6.95 | 8.46 | 7.90 |
| 369 | Miscellaneous manufacturing | 1.96 | 4.24 | 6.48 | 7.69 | 9.19 |
| 370 | Recycling | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 9b: R&D expenditures in majority-foreign plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|--------|--------|----------|
| D | Manufacturing total | 423.49 | 466.42 | 582.47 | 620.33 | 1,011.97 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 0.25 | 0.48 | 0.82 | 1.44 | 1.43 |
| 152 | Dairy | 0.83 | 0.34 | 1.09 | 2.07 | 1.47 |
| 153 | Grain mill, starch, feeds | 0.05 | 0.06 | 0.05 | 0.10 | 0.12 |
| 154 | Other food | 1.58 | 2.49 | 4.97 | 5.89 | 6.25 |
| 155 | Bevarages | 0.09 | 0.05 | 0.22 | 0.22 | 0.22 |
| 160 | Tobacco | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 |
| 171 | Textiles' spinning, weaving, finishing | 0.05 | 0.26 | 1.03 | 1.12 | 1.21 |
| 172 | Other textiles | 0.05 | 0.00 | 0.01 | 0.01 | 0.13 |
| 173 | Knitted & crocheted fabrics, etc. | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 |
| 181 | Apparel except furs | 0.62 | 2.21 | 1.41 | 2.42 | 0.36 |
| 191 | Leather | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 192 | Footwear | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 201 | Wood sawmilling & planing | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 202 | Other wood | 3.31 | 0.08 | 0.16 | 1.48 | 1.11 |
| 210 | Paper | 1.86 | 1.94 | 0.27 | 2.49 | 0.11 |
| 221 | Publishing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 222+223 | Printing & recorded media | 0.02 | 0.07 | 0.00 | 1.51 | 0.00 |
| 232 | Refined petroleum | 0.50 | 0.02 | 4.82 | 3.24 | 4.42 |
| 241 | Basic chemicals | 3.09 | 1.99 | 3.10 | 2.18 | 13.87 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1.58 | 5.44 | 9.29 | 12.41 | 10.08 |
| 251 | Rubber | 20.74 | 20.64 | 18.69 | 20.89 | 18.00 |
| 252 | Plastics | 8.28 | 2.89 | 6.36 | 7.15 | 20.87 |
| 261 | Glass | 1.08 | 18.54 | 4.73 | 3.31 | 10.85 |
| 269 | Other non-metallic mineral products | 6.81 | 1.18 | 1.84 | 0.53 | 1.60 |
| 271 | Basic iron & steel | 0.00 | 1.12 | 0.02 | 0.00 | 0.00 |
| 272 | Basic nonferrous metals | 1.59 | 0.31 | 0.24 | 0.26 | 0.72 |
| 273 | Metals' casting | 0.03 | 0.06 | 0.13 | 0.11 | 0.17 |
| 281 | Structural metal products, etc. | 0.04 | 0.07 | 0.09 | 0.09 | 2.30 |
| 289 | Other fabricated metals, etc. | 4.18 | 3.25 | 4.42 | 6.71 | 1.79 |
| 291 | General purpose machinery | 54.89 | 45.85 | 32.07 | 39.90 | 43.26 |
| 292 | Special purpose machinery | 0.40 | 4.58 | 0.61 | 0.84 | 3.79 |
| 293 | Other domestic appliances | 4.75 | 2.42 | 0.21 | 0.21 | 1.81 |
| 300 | Office & computing machinery | 84.07 | 55.12 | 86.07 | 88.57 | 416.96 |
| 311 | Electrical motors, generators, etc. | 1.09 | 0.77 | 0.12 | 1.27 | 0.38 |
| 312 | Electricity distribution machinery | 1.46 | 0.32 | 2.24 | 2.80 | 2.33 |
| 313 | Insulated wire & cable | 2.12 | 7.33 | 13.64 | 10.14 | 11.41 |
| 314 | Accumulators, primary cells & batteries | 0.01 | 0.26 | 0.03 | 0.19 | 0.00 |
| 315 | Electric lamps & lighting machinery | 9.26 | 5.71 | 10.14 | 3.84 | 7.48 |
| 319 | Other electrical equipment | 2.25 | 1.93 | 2.44 | 3.59 | 1.84 |
| 321 | Electronic components | 122.65 | 228.12 | 189.64 | 193.78 | 211.45 |
| 322 | Radio & tv transmitters, telephony | 35.69 | 3.57 | 50.58 | 33.50 | 4.58 |
| 323 | Radio & tv receivers, recorders | 41.18 | 39.27 | 122.57 | 154.23 | 198.42 |
| 331 | Medical machinery, etc. | 1.48 | 0.77 | 0.88 | 3.31 | 1.42 |
| 332 | Optical & photographic machinery | 3.17 | 1.10 | 1.97 | 1.76 | 2.27 |
| 333 | Watches & clocks | 0.58 | 0.00 | 0.01 | 0.02 | 0.00 |
| 341 | Motor vehicles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 342 | Motor vehicle bodies, trailers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 343 | Motor vehicle parts | 0.40 | 2.29 | 3.97 | 5.11 | 1.19 |
| 351 | Ships & boats | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 3591 | Motorcycles | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 |
| 3592 | Bicycles & wheelchairs | 0.10 | 0.22 | 0.09 | 0.04 | 0.37 |
| 353+3599 | Aircraft, other transport machinery | 0.00 | 0.00 | 0.28 | 0.45 | 0.59 |
| 361 | Furniture | 0.56 | 1.29 | 0.39 | 0.46 | 0.85 |
| 369 | Miscellaneous manufacturing | 0.69 | 1.97 | 0.75 | 0.65 | 4.18 |
| 370 | Recycling | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 10a: Exports in all plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 226,060 | 203,423 | 217,988 | 232,374 | 200,158 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 8,264 | 8,831 | 11,702 | 13,172 | 9,291 |
| 152 | Dairy | 214 | 282 | 320 | 252 | 132 |
| 153 | Grain mill, starch, feeds | 144 | 134 | 188 | 167 | 160 |
| 154 | Other food | 1,589 | 1,577 | 2,099 | 2,142 | 2,105 |
| 155 | Beverages | 113 | 155 | 136 | 68 | 109 |
| 160 | Tobacco | 355 | 438 | 631 | 448 | 417 |
| 171 | Textiles' spinning, weaving, finishing | 4,144 | 3,580 | 3,273 | 2,837 | 1,277 |
| 172 | Other textiles | 152 | 110 | 160 | 138 | 94 |
| 173 | Knitted & crocheted fabrics, etc. | 634 | 419 | 753 | 631 | 507 |
| 181 | Apparel except furs | 2,548 | 2,944 | 3,284 | 2,893 | 2,447 |
| 191 | Leather | 128 | 125 | 121 | 68 | 99 |
| 192 | Footwear | 54 | 66 | 52 | 67 | 78 |
| 201 | Wood sawmilling & planing | 1,410 | 996 | 1,144 | 1,003 | 1,021 |
| 202 | Other wood | 5,900 | 4,800 | 5,243 | 5,537 | 6,767 |
| 210 | Paper | 1,298 | 1,216 | 1,404 | 861 | 948 |
| 221 | Publishing | 51 | 34 | 48 | 48 | 71 |
| 222+223 | Printing & recorded media | 421 | 375 | 396 | 354 | 127 |
| 232 | Refined petroleum | 9,825 | 16,690 | 19,065 | 13,572 | 31,377 |
| 241 | Basic chemicals | 7,500 | 6,151 | 7,783 | 10,799 | 12,696 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1,584 | 1,738 | 2,152 | 2,878 | 2,937 |
| 251 | Rubber | 6,053 | 5,777 | 5,951 | 7,079 | 5,951 |
| 252 | Plastics | 3,079 | 3,194 | 7,125 | 6,804 | 4,443 |
| 261 | Glass | 1,308 | 1,126 | 2,008 | 1,636 | 773 |
| 269 | Other non-metallic mineral products | 1,372 | 936 | 1,143 | 990 | 986 |
| 271 | Basic iron & steel | 1,335 | 1,193 | 785 | 1,906 | 1,424 |
| 272 | Basic nonferrous metals | 2,474 | 1,669 | 1,912 | 1,974 | 1,327 |
| 273 | Metals' casting | 263 | 231 | 339 | 387 | 276 |
| 281 | Structural metal products, etc. | 509 | 652 | 707 | 635 | 430 |
| 289 | Other fabricated metals, etc. | 3,205 | 2,242 | 2,481 | 2,351 | 2,898 |
| 291 | General purpose machinery | 3,465 | 2,195 | 2,960 | 4,001 | 1,718 |
| 292 | Special purpose machinery | 1,015 | 664 | 1,086 | 1,062 | 976 |
| 293 | Other domestic appliances | 788 | 117 | 1,306 | 1,243 | 215 |
| 300 | Office & computing machinery | 32,104 | 35,769 | 35,752 | 43,232 | 37,971 |
| 311 | Electrical motors, generators, etc. | 1,518 | 941 | 1,061 | 917 | 362 |
| 312 | Electricity distribution machinery | 796 | 551 | 886 | 646 | 450 |
| 313 | Insulated wire & cable | 3,712 | 1,871 | 2,019 | 1,709 | 1,272 |
| 314 | Accumulators, primary cells & batteries | 203 | 169 | 237 | 208 | 242 |
| 315 | Electric lamps & lighting machinery | 1,044 | 946 | 1,184 | 1,290 | 1,622 |
| 319 | Other electrical equipment | 334 | 313 | 181 | 327 | 403 |
| 321 | Electronic components | 61,299 | 50,423 | 46,700 | 56,199 | 37,787 |
| 322 | Radio & tv transmitters, telephony | 7,316 | 3,525 | 5,395 | 6,078 | 5,004 |
| 323 | Radio & tv receivers, recorders | 35,345 | 29,213 | 27,312 | 25,596 | 13,021 |
| 331 | Medical machinery, etc. | 1,403 | 1,379 | 1,186 | 1,290 | 1,317 |
| 332 | Optical & photographic machinery | 752 | 1,382 | 1,532 | 569 | 155 |
| 333 | Watches & clocks | 860 | 433 | 406 | 321 | 394 |
| 341 | Motor vehicles | 2,359 | 291 | 440 | 354 | 131 |
| 342 | Motor vehicle bodies, trailers | 13 | 14 | 0 | 5 | 33 |
| 343 | Motor vehicle parts | 547 | 513 | 593 | 929 | 624 |
| 351 | Ships & boats | 104 | 124 | 132 | 181 | 237 |
| 3591 | Motorcycles | 122 | 131 | 92 | 89 | 206 |
| 3592 | Bicycles & wheelchairs | 610 | 492 | 545 | 27 | 91 |
| 353+3599 | Aircraft, other transport machinery | 10 | 22 | 64 | 62 | 60 |
| 361 | Furniture | 3,213 | 3,012 | 3,272 | 3,356 | 3,663 |
| 369 | Miscellaneous manufacturing | 1,182 | 1,233 | 1,222 | 923 | 960 |
| 370 | Recycling | 24 | 18 | 16 | 64 | 73 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 10b: Exports in majority-foreign plants, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 157,021 | 138,473 | 150,786 | 166,321 | 121,870 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 4,022 | 2,572 | 4,170 | 4,616 | 5,174 |
| 152 | Dairy | 74 | 105 | 168 | 114 | 25 |
| 153 | Grain mill, starch, feeds | 17 | 1 | 5 | 10 | 1 |
| 154 | Other food | 440 | 475 | 533 | 813 | 982 |
| 155 | Beverages | 93 | 137 | 118 | 37 | 59 |
| 160 | Tobacco | 326 | 323 | 431 | 376 | 394 |
| 171 | Textiles' spinning, weaving, finishing | 3,993 | 3,267 | 2,950 | 2,755 | 1,247 |
| 172 | Other textiles | 91 | 63 | 66 | 63 | 67 |
| 173 | Knitted & crocheted fabrics, etc. | 76 | 51 | 71 | 67 | 22 |
| 181 | Apparel except furs | 917 | 1,368 | 1,228 | 1,224 | 938 |
| 191 | Leather | 108 | 103 | 86 | 37 | 91 |
| 192 | Footwear | 29 | 28 | 32 | 33 | 30 |
| 201 | Wood sawmilling & planing | 7 | 7 | 4 | 0 | 0 |
| 202 | Other wood | 1,337 | 1,055 | 1,258 | 1,208 | 1,414 |
| 210 | Paper | 465 | 764 | 774 | 396 | 337 |
| 221 | Publishing | 27 | 15 | 18 | 35 | 33 |
| 222+223 | Printing & recorded media | 279 | 239 | 246 | 244 | 46 |
| 232 | Refined petroleum | 1,321 | 1,607 | 2,948 | 1,937 | 2,185 |
| 241 | Basic chemicals | 4,652 | 4,175 | 5,741 | 7,657 | 8,821 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1,236 | 1,473 | 1,745 | 2,276 | 2,568 |
| 251 | Rubber | 2,486 | 2,486 | 2,352 | 2,802 | 2,492 |
| 252 | Plastics | 1,692 | 1,390 | 4,662 | 4,761 | 2,904 |
| 261 | Glass | 557 | 930 | 1,148 | 1,483 | 696 |
| 269 | Other non-metallic mineral products | 368 | 353 | 492 | 466 | 440 |
| 271 | Basic iron & steel | 521 | 324 | 321 | 837 | 165 |
| 272 | Basic nonferrous metals | 1,262 | 962 | 1,671 | 1,098 | 917 |
| 273 | Metals' casting | 75 | 87 | 133 | 192 | 147 |
| 281 | Structural metal products, etc. | 335 | 313 | 269 | 360 | 311 |
| 289 | Other fabricated metals, etc. | 2,038 | 1,554 | 1,646 | 1,428 | 1,595 |
| 291 | General purpose machinery | 3,248 | 1,919 | 2,732 | 3,256 | 1,434 |
| 292 | Special purpose machinery | 804 | 413 | 753 | 795 | 880 |
| 293 | Other domestic appliances | 774 | 76 | 573 | 613 | 23 |
| 300 | Office & computing machinery | 29,218 | 33,342 | 35,204 | 42,438 | 37,233 |
| 311 | Electrical motors, generators, etc. | 1,031 | 866 | 428 | 854 | 323 |
| 312 | Electricity distribution machinery | 769 | 424 | 767 | 563 | 432 |
| 313 | Insulated wire & cable | 1,907 | 1,437 | 1,492 | 1,178 | 787 |
| 314 | Accumulators, primary cells & batteries | 123 | 115 | 116 | 138 | 204 |
| 315 | Electric lamps & lighting machinery | 1,005 | 914 | 1,140 | 1,272 | 1,601 |
| 319 | Other electrical equipment | 271 | 288 | 142 | 288 | 351 |
| 321 | Electronic components | 46,283 | 37,499 | 35,234 | 43,119 | 26,473 |
| 322 | Radio & tv transmitters, telephony | 6,521 | 2,290 | 4,523 | 5,886 | 1,223 |
| 323 | Radio & tv receivers, recorders | 30,596 | 27,079 | 26,639 | 24,075 | 12,413 |
| 331 | Medical machinery, etc. | 1,154 | 1,215 | 1,130 | 1,249 | 1,189 |
| 332 | Optical & photographic machinery | 709 | 1,382 | 1,528 | 568 | 155 |
| 333 | Watches & clocks | 855 | 430 | 404 | 320 | 394 |
| 341 | Motor vehicles | 3 | 0 | 0 | 107 | 59 |
| 342 | Motor vehicle bodies, trailers | 0 | 9 | 0 | 0 | 33 |
| 343 | Motor vehicle parts | 387 | 290 | 331 | 637 | 483 |
| 351 | Ships & boats | 102 | 116 | 100 | 116 | 152 |
| 3591 | Motorcycles | 0 | 0 | 0 | 0 | 117 |
| 3592 | Bicycles & wheelchairs | 560 | 491 | 544 | 26 | 90 |
| 353+3599 | Aircraft, other transport machinery | 0 | 0 | 28 | 42 | 56 |
| 361 | Furniture | 1,327 | 1,014 | 1,159 | 1,034 | 1,143 |
| 369 | Miscellaneous manufacturing | 533 | 637 | 531 | 423 | 507 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 16 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 11a: Gross output of 4 largest plants by industry, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|---------|---------|---------|---------|---------|
| D | Manufacturing total | 159,241 | 157,498 | 189,249 | 205,738 | 243,210 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 3,813 | 4,416 | 6,682 | 8,762 | 8,539 |
| 152 | Dairy | 1,439 | 1,372 | 1,377 | 1,476 | 1,544 |
| 153 | Grain mill, starch, feeds | 744 | 838 | 1,121 | 1,100 | 1,745 |
| 154 | Other food | 1,540 | 1,718 | 1,849 | 1,897 | 1,954 |
| 155 | Beverages | 1,737 | 1,769 | 1,790 | 1,875 | 1,961 |
| 160 | Tobacco | 1,599 | 1,640 | 2,010 | 1,645 | 1,784 |
| 171 | Textiles' spinning, weaving, finishing | 3,771 | 3,173 | 2,940 | 2,956 | 3,409 |
| 172 | Other textiles | 160 | 164 | 182 | 160 | 192 |
| 173 | Knitted & crocheted fabrics, etc. | 620 | 574 | 574 | 565 | 662 |
| 181 | Apparel except furs | 889 | 801 | 1,285 | 1,133 | 1,905 |
| 191 | Leather | 99 | 116 | 114 | 124 | 141 |
| 192 | Footwear | 152 | 164 | 133 | 141 | 271 |
| 201 | Wood sawmilling & planing | 282 | 212 | 307 | 285 | 413 |
| 202 | Other wood | 930 | 945 | 921 | 1,166 | 1,410 |
| 210 | Paper | 1,335 | 1,478 | 1,393 | 1,151 | 1,538 |
| 221 | Publishing | 1,334 | 1,358 | 1,541 | 1,667 | 1,785 |
| 222+223 | Printing & recorded media | 380 | 380 | 370 | 371 | 432 |
| 232 | Refined petroleum | 25,815 | 23,343 | 30,151 | 27,543 | 35,685 |
| 241 | Basic chemicals | 5,359 | 4,985 | 6,059 | 7,921 | 11,189 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1,336 | 1,321 | 1,686 | 2,057 | 3,814 |
| 251 | Rubber | 1,680 | 1,866 | 1,383 | 1,555 | 1,917 |
| 252 | Plastics | 851 | 684 | 3,655 | 3,675 | 2,129 |
| 261 | Glass | 2,914 | 2,532 | 2,589 | 2,319 | 2,446 |
| 269 | Other non-metallic mineral products | 1,394 | 1,310 | 1,474 | 1,535 | 2,565 |
| 271 | Basic iron & steel | 2,590 | 2,599 | 3,136 | 4,560 | 6,429 |
| 272 | Basic nonferrous metals | 1,683 | 1,345 | 1,500 | 2,240 | 3,749 |
| 273 | Metals' casting | 731 | 605 | 777 | 761 | 995 |
| 281 | Structural metal products, etc. | 880 | 892 | 810 | 611 | 767 |
| 289 | Other fabricated metals, etc. | 1,464 | 973 | 1,096 | 2,046 | 2,350 |
| 291 | General purpose machinery | 3,507 | 3,912 | 4,560 | 3,167 | 3,582 |
| 292 | Special purpose machinery | 469 | 360 | 649 | 611 | 766 |
| 293 | Other domestic appliances | 1,086 | 1,796 | 2,012 | 1,511 | 3,301 |
| 300 | Office & computing machinery | 16,381 | 22,785 | 29,115 | 39,420 | 40,273 |
| 311 | Electrical motors, generators, etc. | 1,311 | 885 | 1,080 | 970 | 845 |
| 312 | Electricity distribution machinery | 671 | 531 | 1,334 | 1,398 | 1,464 |
| 313 | Insulated wire & cable | 2,802 | 1,008 | 1,451 | 1,129 | 1,659 |
| 314 | Accumulators, primary cells & batteries | 280 | 297 | 306 | 349 | 639 |
| 315 | Electric lamps & lighting machinery | 1,326 | 922 | 1,190 | 1,428 | 1,681 |
| 319 | Other electrical equipment | 295 | 262 | 284 | 366 | 507 |
| 321 | Electronic components | 22,446 | 21,396 | 21,514 | 25,811 | 26,970 |
| 322 | Radio & tv transmitters, telephony | 6,491 | 3,005 | 5,161 | 8,581 | 10,733 |
| 323 | Radio & tv receivers, recorders | 15,816 | 14,576 | 14,695 | 15,895 | 16,053 |
| 331 | Medical machinery, etc. | 1,130 | 1,731 | 1,610 | 1,308 | 1,560 |
| 332 | Optical & photographic machinery | 1,345 | 1,593 | 1,523 | 1,562 | 1,709 |
| 333 | Watches & clocks | 873 | 606 | 408 | 384 | 982 |
| 341 | Motor vehicles | 10,171 | 12,349 | 15,900 | 11,351 | 19,481 |
| 342 | Motor vehicle bodies, trailers | 146 | 168 | 209 | 259 | 298 |
| 343 | Motor vehicle parts | 491 | 699 | 1,825 | 1,437 | 832 |
| 351 | Ships & boats | 1,358 | 1,881 | 2,098 | 2,137 | 1,991 |
| 3591 | Motorcycles | 982 | 868 | 879 | 870 | 1,094 |
| 3592 | Bicycles & wheelchairs | 704 | 510 | 599 | 679 | 1,121 |
| 353+3599 | Aircraft, other transport machinery | 269 | 369 | 452 | 510 | 766 |
| 361 | Furniture | 970 | 933 | 1,029 | 838 | 1,001 |
| 369 | Miscellaneous manufacturing | 567 | 652 | 582 | 545 | 570 |
| 370 | Recycling | 50 | 78 | 68 | 97 | 108 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 11b: Gross output of 4 largest plants that are majority-foreign, 2000-2004 (RM\$ millions)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|--------|--------|---------|---------|---------|
| D | Manufacturing total | 94,000 | 88,308 | 112,212 | 114,868 | 135,056 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 2,145 | 1,105 | 1,625 | 2,018 | 2,089 |
| 152 | Dairy | 642 | 664 | 363 | 704 | 801 |
| 153 | Grain mill, starch, feeds | 0 | 372 | 196 | 547 | 292 |
| 154 | Other food | 204 | 520 | 0 | 0 | 317 |
| 155 | Beverages | 1,205 | 1,300 | 1,172 | 1,217 | 1,173 |
| 160 | Tobacco | 420 | 438 | 526 | 463 | 533 |
| 171 | Textiles' spinning, weaving, finishing | 3,580 | 3,003 | 2,770 | 2,775 | 3,266 |
| 172 | Other textiles | 72 | 44 | 0 | 0 | 93 |
| 173 | Knitted & crocheted fabrics, etc. | 0 | 0 | 0 | 0 | 0 |
| 181 | Apparel except furs | 460 | 433 | 1,035 | 637 | 1,569 |
| 191 | Leather | 91 | 108 | 89 | 87 | 108 |
| 192 | Footwear | 95 | 123 | 96 | 97 | 157 |
| 201 | Wood sawmilling & planing | 0 | 0 | 0 | 0 | 0 |
| 202 | Other wood | 269 | 249 | 257 | 291 | 338 |
| 210 | Paper | 213 | 448 | 448 | 216 | 353 |
| 221 | Publishing | 0 | 0 | 0 | 0 | 0 |
| 222+223 | Printing & recorded media | 214 | 125 | 125 | 119 | 123 |
| 232 | Refined petroleum | 5,274 | 4,564 | 14,995 | 0 | 7,648 |
| 241 | Basic chemicals | 3,584 | 3,033 | 3,821 | 4,326 | 8,864 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1,336 | 1,127 | 1,453 | 2,057 | 3,814 |
| 251 | Rubber | 484 | 684 | 263 | 717 | 448 |
| 252 | Plastics | 445 | 322 | 3,103 | 3,353 | 1,854 |
| 261 | Glass | 1,679 | 1,466 | 1,764 | 1,866 | 2,356 |
| 269 | Other non-metallic mineral products | 0 | 0 | 0 | 0 | 0 |
| 271 | Basic iron & steel | 606 | 603 | 0 | 0 | 0 |
| 272 | Basic nonferrous metals | 790 | 529 | 626 | 951 | 612 |
| 273 | Metals' casting | 0 | 0 | 0 | 0 | 136 |
| 281 | Structural metal products, etc. | 276 | 262 | 226 | 254 | 443 |
| 289 | Other fabricated metals, etc. | 1,131 | 973 | 1,096 | 1,259 | 1,276 |
| 291 | General purpose machinery | 3,507 | 3,912 | 2,855 | 2,653 | 3,005 |
| 292 | Special purpose machinery | 469 | 211 | 532 | 490 | 642 |
| 293 | Other domestic appliances | 1,086 | 923 | 528 | 528 | 1,412 |
| 300 | Office & computing machinery | 16,381 | 22,785 | 29,115 | 31,163 | 36,139 |
| 311 | Electrical motors, generators, etc. | 985 | 885 | 493 | 970 | 620 |
| 312 | Electricity distribution machinery | 506 | 338 | 1,181 | 1,239 | 1,247 |
| 313 | Insulated wire & cable | 1,308 | 534 | 254 | 515 | 387 |
| 314 | Accumulators, primary cells & batteries | 171 | 160 | 155 | 191 | 431 |
| 315 | Electric lamps & lighting machinery | 927 | 922 | 1,095 | 1,428 | 1,566 |
| 319 | Other electrical equipment | 295 | 207 | 227 | 221 | 412 |
| 321 | Electronic components | 17,254 | 14,330 | 16,154 | 20,573 | 19,935 |
| 322 | Radio & tv transmitters, telephony | 5,813 | 1,729 | 4,307 | 8,581 | 7,011 |
| 323 | Radio & tv receivers, recorders | 15,816 | 14,576 | 14,695 | 15,895 | 16,053 |
| 331 | Medical machinery, etc. | 881 | 1,464 | 1,610 | 1,308 | 1,560 |
| 332 | Optical & photographic machinery | 1,345 | 1,593 | 1,523 | 1,562 | 1,709 |
| 333 | Watches & clocks | 694 | 322 | 408 | 384 | 430 |
| 341 | Motor vehicles | 0 | 0 | 0 | 1,696 | 1,970 |
| 342 | Motor vehicle bodies, trailers | 0 | 0 | 0 | 0 | 0 |
| 343 | Motor vehicle parts | 227 | 0 | 0 | 598 | 479 |
| 351 | Ships & boats | 102 | 0 | 0 | 0 | 0 |
| 3591 | Motorcycles | 0 | 0 | 0 | 0 | 179 |
| 3592 | Bicycles & wheelchairs | 619 | 495 | 582 | 663 | 1,121 |
| 353+3599 | Aircraft, other transport machinery | 0 | 0 | 30 | 86 | 57 |
| 361 | Furniture | 439 | 189 | 378 | 201 | 249 |
| 369 | Miscellaneous manufacturing | 0 | 313 | 113 | 90 | 230 |
| 370 | Recycling | 0 | 0 | 0 | 0 | 26 |

Source: Authors' calculations from Department of Statistics (various years b)

Appendix Table 12: Herfindahl indexes for all plants, 2000-2004 (percent)

| MSIC | Industry | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------|--|-------|-------|-------|-------|-------|
| D | Manufacturing, means | 10.75 | 11.80 | 12.28 | 11.30 | 11.28 |
| 151 | Meat, fish, fruits, vegetables, oils, fats | 0.98 | 1.41 | 1.41 | 1.55 | 1.42 |
| 152 | Dairy | 12.23 | 11.20 | 11.63 | 12.96 | 13.12 |
| 153 | Grain mill, starch, feeds | 1.48 | 1.64 | 1.97 | 1.84 | 2.85 |
| 154 | Other food | 1.82 | 2.13 | 2.01 | 1.95 | 1.87 |
| 155 | Beverages | 14.42 | 13.50 | 13.05 | 13.15 | 12.27 |
| 160 | Tobacco | 32.29 | 32.18 | 32.54 | 27.07 | 26.41 |
| 171 | Textiles' spinning, weaving, finishing | 19.20 | 19.51 | 18.70 | 21.81 | 27.04 |
| 172 | Other textiles | 2.58 | 3.46 | 3.54 | 3.04 | 3.23 |
| 173 | Knitted & crocheted fabrics, etc. | 10.25 | 9.45 | 8.73 | 9.45 | 11.29 |
| 181 | Apparel except furs | 1.64 | 1.74 | 2.76 | 2.16 | 5.04 |
| 191 | Leather | 9.29 | 10.11 | 11.28 | 15.90 | 14.77 |
| 192 | Footwear | 5.71 | 8.28 | 6.35 | 6.06 | 6.63 |
| 201 | Wood sawmilling & planing | 0.54 | 0.57 | 0.71 | 0.71 | 0.90 |
| 202 | Other wood | 0.93 | 1.07 | 1.10 | 1.19 | 1.28 |
| 210 | Paper | 1.82 | 2.44 | 1.95 | 1.64 | 1.73 |
| 221 | Publishing | 7.82 | 8.44 | 7.84 | 8.22 | 7.38 |
| 222+223 | Printing & recorded media | 1.48 | 1.70 | 1.49 | 1.50 | 1.62 |
| 232 | Refined petroleum | 15.47 | 14.52 | 14.85 | 11.98 | 12.37 |
| 241 | Basic chemicals | 3.48 | 3.91 | 3.27 | 3.11 | 3.32 |
| 242+243 | Other chemicals (incl. man-made fibers) | 1.55 | 1.86 | 2.12 | 2.45 | 3.49 |
| 251 | Rubber | 1.13 | 1.62 | 1.09 | 1.14 | 1.14 |
| 252 | Plastics | 0.43 | 0.47 | 2.20 | 2.13 | 0.82 |
| 261 | Glass | 25.12 | 24.74 | 24.06 | 24.13 | 29.87 |
| 269 | Other non-metallic mineral products | 1.50 | 1.38 | 1.48 | 1.41 | 2.21 |
| 271 | Basic iron & steel | 4.17 | 4.41 | 4.31 | 4.96 | 5.18 |
| 272 | Basic nonferrous metals | 4.36 | 5.34 | 4.89 | 5.34 | 7.78 |
| 273 | Metals' casting | 3.79 | 3.87 | 4.36 | 4.32 | 5.22 |
| 281 | Structural metal products, etc. | 3.43 | 5.56 | 4.21 | 2.06 | 2.38 |
| 289 | Other fabricated metals, etc. | 1.23 | 1.08 | 1.02 | 1.57 | 1.48 |
| 291 | General purpose machinery | 6.84 | 7.63 | 10.74 | 8.98 | 8.73 |
| 292 | Special purpose machinery | 1.60 | 1.45 | 2.38 | 2.08 | 2.46 |
| 293 | Other domestic appliances | 20.84 | 23.46 | 20.05 | 13.27 | 20.89 |
| 300 | Office & computing machinery | 6.60 | 13.90 | 17.94 | 16.75 | 20.00 |
| 311 | Electrical motors, generators, etc. | 7.89 | 11.96 | 9.36 | 11.83 | 7.16 |
| 312 | Electricity distribution machinery | 5.83 | 5.92 | 16.47 | 13.46 | 14.55 |
| 313 | Insulated wire & cable | 6.72 | 2.83 | 3.61 | 2.81 | 3.47 |
| 314 | Accumulators, primary cells & batteries | 9.74 | 10.59 | 11.20 | 12.23 | 13.98 |
| 315 | Electric lamps & lighting machinery | 19.04 | 28.37 | 26.18 | 28.66 | 35.75 |
| 319 | Other electrical equipment | 4.99 | 6.65 | 6.41 | 6.26 | 5.59 |
| 321 | Electronic components | 3.44 | 4.06 | 4.05 | 4.42 | 4.13 |
| 322 | Radio & tv transmitters, telephony | 23.57 | 17.59 | 41.81 | 22.44 | 20.25 |
| 323 | Radio & tv receivers, recorders | 5.08 | 6.18 | 6.22 | 6.79 | 6.07 |
| 331 | Medical machinery, etc. | 8.53 | 14.87 | 16.22 | 12.24 | 11.05 |
| 332 | Optical & photographic machinery | 28.66 | 32.42 | 35.65 | 37.33 | 34.32 |
| 333 | Watches & clocks | 20.67 | 18.77 | 18.83 | 21.31 | 32.79 |
| 341 | Motor vehicles | 46.43 | 50.08 | 42.51 | 25.93 | 29.62 |
| 342 | Motor vehicle bodies, trailers | 5.60 | 7.70 | 6.70 | 7.52 | 7.17 |
| 343 | Motor vehicle parts | 2.42 | 2.66 | 8.14 | 3.47 | 2.58 |
| 351 | Ships & boats | 21.09 | 18.62 | 16.51 | 14.37 | 12.13 |
| 3591 | Motorcycles | 18.41 | 19.67 | 21.16 | 19.29 | 15.77 |
| 3592 | Bicycles & wheelchairs | 46.57 | 53.11 | 60.57 | 65.15 | 46.46 |
| 353+3599 | Aircraft, other transport machinery | 45.84 | 59.72 | 51.00 | 42.05 | 33.48 |
| 361 | Furniture | 1.00 | 1.15 | 1.05 | 0.92 | 0.84 |
| 369 | Miscellaneous manufacturing | 1.89 | 2.40 | 2.28 | 2.19 | 2.02 |
| 370 | Recycling | 31.76 | 29.48 | 23.64 | 25.16 | 14.90 |

Source: Authors' calculations from Department of Statistics (various years b)