MONASH University
Business and Economics

Turnover, Ownership and Productivity in Malaysian Manufacturing

Ergun Dogan,[1] Koi Nyen Wong[2] and Michael Meow-Chung Yap[3]

Abstract:

Applying Foster, Haltiwanger and Krizan's (1998) decomposition of productivity growth method to Malaysian manufacturing census data for 2000 and 2005, we analyse if firm turnover by ownership (domestic versus foreign) has any impact on the sector's aggregate productivity growth. The findings show that turnover matters regardless of ownership but, more importantly, attracting foreign direct investment inflows could induce positive 'net entry effect'. The manufacturing sector's heavy dependence on FDI is underscored by the significant contribution of large MNCs to export value. Foreign entrants also have an important positive impact on sector productivity. The analysis shows that large-sized foreign and domestic entrants are more productive than medium-sized and especially small-sized ones. Among survivors, large foreign and domestic establishments fare the worst. Medium-sized domestic survivors, on the other hand, contribute the most to boosting sector productivity. The study demonstrates the usefulness of such an analytical framework by drawing out important implications for state industrial policies based on ownership and firm size.

Keywords: Ownership, firm turnover; productivity; manufacturing; Malaysia

JEL classification codes: D24, F14, L60, O12

---

[1] School of Business, Monash University, Sunway Campus, Malaysia
[2] School of Business, Monash University, Sunway Campus, Malaysia
[3] Business School, Taylor's University College, Malaysia; Malaysian Institute of Economic Research

1

I. Introduction

Malaysia is a small open economy in which the export-oriented manufacturing sector is a key source of growth.[1] The structural transformation of the economy from being commodity-dependent to a successful manufacturing-based export economy over the past four decades has been due to the adoption of a suitable industrialization strategy. An import-substituting industrialization policy was implemented in the 1960s followed by export-oriented industrialization initiatives since the 1970s. Starting from the 1980s, industrialization policy has been successfully implemented through the Industrial Master Plans (IMP).[2]

Reflecting the openness of the Malaysian economy, its ratio of nominal trade to gross domestic product (GDP) was 184 percent in 2008. Globalization, with increasingly lower trade and investment barriers, advancement in technology and production methods, means greater competition. Hence, it is not surprising to see firms "come and go". Existing firms that cannot withstand the competition will be forced to leave the market while new firms (presumably more competitive) will enter a growing industry. This is part of the "churning" that is often referred to in the New Economy - a continuous process of creation and destruction that is masked by the growing economy's increasing output and employment at the aggregate level. One may liken it to a regeneration process that continuously keeps the economy competitive, as more efficient firms replace weak ones and emerging high growth industries displace "sun-set" ones. It is important for policymakers to be able to monitor and analyze the dynamics of this process.

In the context of the present study, we analyze the extent and effects of turnover (entry and exit) in the Malaysian manufacturing sector over the period 2000-2005, and also empirically evaluate its impact on productivity. As Malaysia relies significantly on foreign direct investment (FDI), especially in the export-oriented manufacturing sector, it is important to study this phenomenon based on firm ownership and firm size dimensions as

well. Such analysis will have policy implications in terms of incentive schemes for firms based on ownership (e.g. as part of a package to woo FDI, or nurturing home-grown entrepreneurship), size (e.g. the promotion of small and medium-scale enterprises), or sectoral targeting by the government (e.g. export promotion or nurturing high-tech sectors). Indeed, this type of analysis will assist in monitoring responses to government programs and policies, thereby providing empirical evidence for evaluating the success of state intervention. The results of such rigorous evaluation can then be used to fine-tune policies or to decide whether or not to continue with such policies.[3] This will help in proper utilization of state resources.

The rest of the paper is structured as follows. Section II provides a brief discussion of industrialization, manufacturing and foreign direct investment in Malaysia. The next section describes the data and methodology used in the study, such as turnover, and the two methods used to decompose productivity growth. A brief profile of the Malaysian manufacturing sector by ownership is provided in section IV as a lead-in to the empirical results and analysis. Section V deals with policy implications and will conclude.

II. Industrialization, Manufacturing and Foreign Direct Investment

Foreign direct investment has played a large part in the success of the Malaysian manufacturing sector, especially in the export-oriented activities. Since the mid-1980s, the government aggressively wooed FDI. Malaysia has proven to be an attractive destination for FDI, especially from the United States (US), Japan, Singapore and the European Union (EU). Hence, a significant part of the manufacturing sector has been dominated by large foreign firms in terms of their contribution to output, employment and exports.[4] In 2008, foreign investment contributed US$12.9 billion (73.4% share) to total capital investment in

manufacturing compared with US$4.7 billion (26.6%) from domestic investment (see Table 1).

[Insert Table 1 here]

One reason why multinational corporations (MNCs) in the manufacturing industry invest in a country like Malaysia is to use it as a production platform for exports to their home country or third country markets, or both (Ekholm, Forslid and Markusen 2003). A study by Athukorala and Menon (1996) suggested that the significant contribution of manufactured goods to Malaysia's exports was closely associated with the presence of large foreign firms in these product sectors. Therefore, foreign-owned firms in Malaysia tend to have relatively higher trade propensities (exports or imports as percentage of gross output or total sales) compared with local firms (Ali and Wong 1993; Ramstetter 1995, 1999; Rasiah 2003, 2004; Ramstetter and Ahmad 2009). There are similar findings for Thailand and Indonesia on manufacturing MNCs having a higher tendency to export (Ramstetter and Takii 2006; Sjöholm and Takii 2006; Ramstetter and Umemoto 2006).

Due to their massive resources, superior industrial expertise and excellent access to international markets, the presence of MNCs can generate both backward and forward linkages in the host economy.[5] Such linkages are important in developing the host economy and creating jobs. Empirical findings show that MNCs located in Asian countries performed better than domestic firms in terms of labor productivity, capital intensity and capital productivity (Ramstetter 1999).[6] Hence, there is potential for positive spillover effects in the host country. The superior performance of MNCs could be attributed to higher capacity utilization as a consequence of their larger size and operations (Lim 1976), participation in multinational networks (Globerman, Ries and Vertinsky 1994), higher physical and human capital per employee (Oulton 1998), and firm-specific advantages like superior management

and marketing capabilities (Aitken and Harrison 1999; Pfafferymayr and Bellak 2000; Siripaisalpipat and Hoshino 2000). Comparable evidence can be found in Poland, which is an economy in transition, where MNCs showed evidence of higher productivity growth owing to both superior technology and their prior experience of operating in a market economy in their home country (Roberts and Thompson 2007).

In the case of Malaysian manufacturing, Menon (1998) found general evidence that the total factor productivity (TFP) of domestic firms was larger than foreign firms[7] at 5-digit level of the International Standard Industrial Classification (ISIC) over the period 1988-1992. On the other hand, the findings by Orguchi et al. (2002) showed domestic firms to be as efficient as foreign firms at the aggregate level during the period 1992-1996 when FDI inflows were large. However, at 3-digit and 5-digit levels of manufacturing subsectors, the study revealed that the majority of foreign firms were relatively more efficient mainly because they operated in large scale with advanced technology.

Nevertheless, the presence of foreign affiliates as well as new foreign entrants could enhance competition in the Malaysian manufacturing sector. For example, foreign entrants with superior performance will promote greater competition in the industry and force domestic firms to raise their productivity to survive (Ruane and Uğur 2006). Besides, previous studies also indicated that foreign entry could have an effect on the performance of domestic firms in terms of excess capacity and growth (Mata and Portugal 2000), market share (Baldwin 1995), profits (Driffield and Munday 1998) and productivity (Baldwin and Gorecki 1991). Inefficient domestic firms will be forced out of the industry if they cannot keep up with the competition from superior foreign entrants. Hence, foreign presence in a particular manufacturing industry may not only crowd-out weaker domestic firms but possibly discourage new domestic entrants due to their firm-specific advantages that act as barriers to entry (Bellak 2004).

On the other hand, foreign entrants may have to overcome cultural barriers and other obstacles in the host country especially during the initial period of their operations, which may impinge on performance (Harris and Robinson 2003). Some factors include the fixed cost of learning how things are done in the host country (Caves 1996), the time lag of assimilating new plants into the FDI network (Harris and Robinson 2003), and overcoming unethical business practices in the host country (Vicziany et al. 2001).

III. Data and Methodology

Data

The manufacturing data used for this study are from the *Census of Manufacturing* conducted by the Department of Statistics, Malaysia (DOSM) in 2000 and 2005. To provide some context to the period around the two census years from an overall economic perspective, Figure 1 depicts the annual growth rates for real GDP and real manufacturing sector output over the period 1997-2005.[8] We can see that for most years, the change in manufacturing sector was greater than that for GDP. Both GDP and manufacturing sector were badly affected in 1998 following the East Asian currency crisis. The subsequent quick recovery was disrupted in 2001 by the significant slowdown in the global economy, especially in the United States and Japan. The manufacturing sector contracted by almost six percent that year due to depressed global demand for electronic products. Thereafter growth in both the overall economy and manufacturing sector picked up, albeit at a more moderate pace.

[Insert Figure 1 here]

The census covers all manufacturing establishments registered with the Companies Commission of Malaysia. The census frame, which is updated annually, also uses information from other sources such as trade associations, and federal and state development authorities. An establishment is a single unit, which could be a part of a multi-establishment firm (each unit of a multi-establishment firm operating at a different location has to submit a different census form).

We track survival, entry, and exit by tracing the appearance or disappearance of the unique identification number assigned to each establishment.[9] An establishment whose identification number appears in both 2000 and 2005 is a survivor; an exiter is an establishment whose identification number appears in 2000 but not in 2005; and an entrant is an establishment whose identification number only appears in 2005. Entry and exit rates are calculated by dividing the number of entrants and exiters respectively by the total number of establishments in 2000. Turnover rate is the sum of entry and exit rates.

Labor productivity is calculated as real value-added per employee. Real value added is obtained through deflating the nominal value by the producer price index for the whole manufacturing sector.[10] The number of persons engaged is the total number of workers on payroll during December or the last pay period of the reference year. Hence, the aggregate labor productivity, P, is calculated as:

$$P_t = \sum_i \omega_{i,t} p_{i,t} \tag{1}$$

where ω_{it} is the share of establishment i in aggregate employment in year t and p_{it} is the labor productivity of establishment i in year t. We use labor productivity (real value added per employee) instead of a measure of total factor productivity to avoid the problems that would arise from using the book value of assets as a proxy for capital, which would be needed in the

calculations.[11] Using employment shares rather than market shares as weights for labor productivity is more common (Ahn 2001) and also more intuitive (Van Biesebroeck 2005) since the sum of weighted labor productivities over all establishments would add up to the aggregate productivity.

We omit from the dataset, 374 establishments whose value added for 2000 are negative or zero, since productivity change for these establishments cannot be calculated. Two establishments with extremely high productivity are also deleted since, as outliers, they might bias the results. Hence, we have a sample of 20,080 establishments in 2000 and 28,094 establishments in 2005 for the analysis.

We adopt the establishment size classification used by the Malaysian authorities: micro, small, medium, and large. Micro establishments have fewer than five employees, small establishments have five to 49, and medium establishments have 50 to 149. The large establishments have 150 or more employees.

The Foster-Haltiwanger-Krizan Method

Our main method of productivity decomposition is the Foster, Haltiwanger and Krizan (1998) (henceforth FHK) method, which is expressed as follows:

$$
\frac{\Delta P_t}{P_{t-k}} = \frac{\sum_{i \in S} \omega_{i,t-k} \Delta p_{i,t}}{P_{t-k}} + \frac{\sum_{i \in S} \Delta \omega_{i,t}(p_{i,t-k} - P_{t-k})}{P_{t-k}} + \frac{\sum_{i \in S} \Delta \omega_{i,t} \Delta p_{i,t}}{P_{t-k}}
$$
$$
+ \frac{\sum_{i \in N} \omega_{i,t}(p_{i,t} - P_{t-k})}{P_{t-k}} - \frac{\sum_{i \in X} \omega_{i,t-1}(p_{i,t-k} - P_{t-k})}{P_{t-k}} \qquad (2)
$$

The variables *S*, *N*, and *X* denote survivors, entrants, and exiters respectively. P_{t-k} is the aggregate (weighted average) productivity in year *t-k*, which is the year 2000 in our case. The symbol Δ indicates a change in the variable across the two years.

The first term, which is called the 'within effect', indicates the contribution of survivors to productivity growth due to increasing or decreasing establishment productivity.

The second term, the 'between effect', reflects the contribution of high or low productivity[12] survivors to productivity growth through their expansion or downsizing. The 'cross effect', which is the third term, represents the contribution to productivity growth by survivors with increasing or decreasing productivity through their expansion or downsizing. The sum of the last two terms, the 'entry effect' and 'exit effect' respectively, captures the contribution of turnover to productivity growth. It is also known as the 'net entry effect'.

Survivors and exiters are allocated to the respective ownership groups based on their status in 2000, and entrants based on their status in 2005. This means that a surviving establishment would be placed in the same size and ownership group as it was in 2000, even if its ownership changed in 2005.

The Griliches and Regev Method

To check for robustness of the results, we also use the Griliches and Regev (1995) (henceforth GR) method, which is written as follows:

$$\frac{\Delta P_t}{P_{t-k}} = \frac{\sum_{i \in S} \bar{\omega}_i \Delta p_{i,t}}{P_{t-k}} + \frac{\sum_{i \in S} \Delta \omega_{i,t} (\bar{p}_i - \bar{P})}{P_{t-k}} + \frac{\sum_{i \in N} \omega_{i,t} (p_{i,t} - \bar{P})}{P_{t-k}}$$
$$- \frac{\sum_{i \in X} \omega_{i,t-1} (p_{i,t-k} - \bar{P})}{P_{t-k}} \qquad (3)$$

All variables are defined as before and a bar over it denotes a time average. The GR method differs from the FHK method in that it uses time averages of employment shares, plant and aggregate productivities instead of the initial (base year) values of these variables. Another difference is that, due to time averaging, there is no 'cross' term in the GR method. An advantage of the GR method over the FHK method is that, by using time averages, the effect of random measurement errors is reduced (Foster et al. 1998). However, interpreting the 'within' and 'between' terms is difficult with the GR method, since by including the time

average of shares in the former and the time average of productivities in the latter, we would no longer be holding these two variables fixed at their initial values (Foster et al. 1998).

IV. Results and Analysis

We start with a profile of Malaysian manufacturing by ownership. Table 2 shows that foreigners owned eight percent of all establishments in 2000 and five percent in 2005. Malaysian-owned establishments made up 92 percent of the total in 2000 and 94 percent in 2005. A negligible percentage of establishments were jointly-owned.[13] Foreign-owned establishments employed 38 percent (32%) of workers and generated 44 percent (39%) of value added in 2000 (2005). The MNCs truly outshone the domestic establishments in contributing to export value. Although making up only eight percent of all establishments and 33 percent of all exporters in 2000, their contribution to export value (72%) far exceeded that of domestic establishments (28%). As evident from Table 2, foreign establishments were still dominant in this aspect in 2005, although their share had declined somewhat.

[Insert Table 2 here]

Table 3 shows that of the 20,080 establishments that operated in the year 2000, a total of 8,386 establishments exited by 2005. This yields a 42 percent exit rate. Entry rate for all establishments is 82 percent, giving rise to a turnover rate of 124 percent. Turnover rates for Malaysian (130%) and jointly-owned (84%) establishments are significantly higher than for foreign-owned (48%) ones, in both cases due largely to entry rates.

[Insert Table 3 here]

A comparison of survivors across the two years in Table 4 shows that the number of Malaysian-owned survivors increased at the expense of jointly-owned and foreign-owned

survivors, whose numbers declined in 2005. Calculations shown in the table indicate that this was largely driven by changes in the ownership of foreign establishments.[14] Given the non-trivial changes in ownership structure between the two years, we present decomposition results in separate tables: Table 6 with respect to the ownership groups in 2000, and Table 7 with respect to the ownership groups in 2005 (the lower panel in each table takes into account the changes of establishment size as well).

[Insert Table 4 here]

Data presented in Table 5 provide some perspective on the effect of turnover on various aspects of the Malaysian manufacturing sector. These are broken down by ownership categories. As a group, entrants made a higher contribution to employment (24.3%) and value added (21.5%) than exiters (22.0% and 15.4% respectively). The percentage of entrants among exporting establishments (32.0%) was higher than that of exiters (22.8%). However, the entrants' share of export value (15.3%) was about the same as that of exiters (15.4%).

[Insert Table 5 here]

Malaysian-owned entrants had higher shares in employment, value added and value of exports than Malaysian-owned exiters. The percentage of domestic entrants among exporters was also higher than that for exiters. Foreign-owned entrants contributed less to employment but more to value added compared with foreign-owned exiters. This suggests that foreign entrants were less labor-intensive than foreign exiters, and possibly in higher value-added activities. The percentage of foreign-owned entrants among establishments that export was higher than that for foreign-owned exiters. However, the contribution of foreign entrants to value of exports was lower than the contribution made by foreign-owned exiters. This can

mean that foreign entrants were less export-intensive than foreign exiters, and/or they needed more time to achieve higher production levels for exports.

Malaysian-owned survivors made the highest contribution to employment and value added. However, foreign-owned survivors were much better at generating high value exports. Although numbering around half of Malaysian-owned exporters, foreign-owned exporting survivors contributed significantly more in export value - 2.5 times more in 2000, and 1.6 times more in 2005. This indicates the presence of large foreign MNCs which were relatively capital-intensive and targeted the global marketplace with high value products.

Table 6 shows the decomposition of productivity change into the various components using the FHK method. Aggregate productivity of manufacturing establishments increased over the sample period by 2.38 percent. This was due to the positive 'between' and 'net entry' effects outweighing the negative 'within' and 'cross' effects.

[Insert Table 6 here]

It is clear from the first row of figures in Table 6 that without 'entry' and 'exit' (the sum of which generates the 'net entry effect'), aggregate productivity would have been much lower since the contribution of survivors (sum of 'within', 'between' and 'cross' effects) to aggregate productivity was negative. Hence, aggregate level productivity growth was due to turnover, and also the expansion of high productivity establishments and downsizing of low productivity ones ('between effect').

Turnover made a positive contribution to aggregate productivity since the 'entry' component (-2.23) was greater than the 'exit' component (-6.61), which resulted in a positive 'net entry' value (4.38). In other words, establishments that made a lower contribution to aggregate productivity growth (exiters) were replaced by establishments that made a higher contribution to it (entrants).

The 'net entry' effect was positive regardless of establishment ownership. The turnover of both domestic and foreign establishments had comparable effects on productivity growth at 2.08 percent and 1.99 percent respectively.[15] While domestic entrants made a negative contribution to productivity growth (-3.67%), foreign entrants made a significant positive contribution (1.14%). The high 'net entry effect' of domestic establishments was due to a bigger negative 'exit' component (-5.76%) compared with the negative 'entry' component (-3.67%). This means that both entrants and exiters were less productive compared with the industry average. However, as entrants were more productive than exiters, turnover had a positive contribution to aggregate productivity.

The investigation can be broken down to analyze ownership and establishment size dimensions. It is noteworthy that the 'net entry effect' of large domestic establishments (3.17%) was more than twice as large as that of large foreign-owned establishments (1.52%). Medium and especially large establishments had performed better. For others, the 'net entry effect' was either very small or negative.

At the aggregate, the negative 'within effect' (-1.40%) indicates that survivors whose productivity decreased were dominant. A positive 'between effect' (5.37%) was obtained because survivors with above average productivity whose employment shares increased, and survivors with below average productivity whose employment shares decreased, were dominant. The negative 'cross effect' (-2.23%) was due to decreasing employment shares of survivors whose productivity increased, and increasing employment shares of survivors whose productivity decreased.

Domestic survivors, especially large establishments, accounted for most of the 'between' (3.63%) and 'cross' (-4.27%) effects. It is also worth noting that foreign survivors had a sizeable negative effect on aggregate productivity growth (-1.88%) compared with domestic establishments (-0.15%).[16] Analyzing foreign survivors by size, it is obvious that

the large establishments accounted for a significant share of the (negative) effect (-1.72%). As for the overall productivity contribution of domestic survivors, it is observed that only the medium-sized survivors made a positive contribution (0.52%). Like their foreign counterparts, large domestic survivors made a negative contribution to sector productivity (-0.48%).

Regrouping establishments with respect to their ownership status in 2005 brought up some interesting findings. For instance, the contribution of Malaysian-owned survivors increased while that of foreign-owned ones decreased. These changes resulted from increases in 'within' and 'between' effects in the case of Malaysian-owned survivors, and decreases in the case of foreign-owned ones. Analyzing by firm size, it is noted that, in addition to domestic medium-sized survivors, domestic micro and small-sized survivors now made a positive contribution (see Table 7 for the full results). The contribution of domestic medium-sized survivors also went up. As for foreign-owned survivors, it is observed that foreign small and medium-sized survivors made a positive contribution while large-sized survivors showed a larger negative contribution based on the 2005 ownership structure.

[Insert Table 7 here]

The transition matrix for 'within', 'between', and 'cross' effects, shown in Table 8, helps us understand what was behind some of these changes. Firstly, it was the 'within' and 'between' effects for the Malaysian-owned and foreign-owned establishments that changed significantly, not the 'cross' effect. Secondly, we see that those establishments which were Malaysian-owned in 2000 but acquired by foreign investors by 2005 (or earlier) had large negative 'within' and 'between' effects. This explained why the 'within' and 'between' effects, as well as the aggregate contributions of Malaysian-owned and foreign-owned establishments changed after reclassification. The calculations in Table 8 also indicate that

these Malaysian-owned establishments bought or taken over by foreigners in 2005 had experienced a significant decrease in productivity as indicated by the 'within' effect. A possible explanation is that these local establishments had problems and were bought over by foreign MNCs, which needed time to restructure them.

[Insert Table 8 here]

The results from the GR method are presented in Tables 9 and 10 for ownership structure in 2000 and 2005 respectively. They basically confirm the findings from the FHK method outlined earlier.[17] That is, turnover made an important contribution to productivity such that aggregate productivity growth was positive despite the negative contribution of survivors. While contributions from the turnover of domestic and foreign establishments were comparable, the contribution of foreign survivors was much lower than that of domestic ones. The overall observations pertaining to establishment size noted in the FHK method remain valid using the GR method.

[Insert Tables 9 and 10 here]

V. Policy Implications and Conclusion

This study decomposed the sources of productivity change in the Malaysian manufacturing sector with an explicit role given to establishment turnover. The analysis also took into account establishment ownership and size dimensions. In this concluding section, we raise several issues of interest to policymakers that the analysis turned up. This will illustrate the usefulness of adopting such an analytical framework.

The results showed that Malaysian-owned survivors contributed significantly to employment. This has implications for the creation of jobs, depending on the factor-intensity of the establishments (or sectors they are in). If they are labor-intensive, then promoting these

15

establishments (or sectors) will mean creating more jobs, which in itself can be a justifiable government objective.[18] However, the Malaysian economy is at a critical crossroad as rising wages following years of robust economic growth means that the comparative advantage of the country is fast changing. It is losing its attractiveness as a cheap production base for simple assembly type of manufactured exports. Other (less developed and labor-abundant) countries in the region, such as China, India and the Indochinese economies, are starting to occupy that niche.[19] The future of Malaysian manufacturing will therefore require moving up the value chain. Hence, policymakers will need to decide how to manage the transition to higher value-added activities that are less labor-intensive. This requires promoting more capital-intensive sectors. In the short term, this may mean less employment generation until these newly promoted industries further up the value chain fully take off. The domestic workforce also needs to be upgraded sufficiently to be channeled to these new industries. The transition process will take time with success dependent on many factors. In the meantime, the trade-off between short-term sacrifices (e.g. fewer low-skilled jobs) and attaining long-term key objectives (e.g. promotion of higher value-added manufacturing sectors) has to be carefully monitored to provide feedback for policies.[20]

Our results also showed the importance of foreign establishments to the Malaysian manufacturing sector. Although small in terms of numbers, many are large in size and have been contributing significantly to export value.[21] This underscores the heavy dependence of the country on FDI. The specific consequences depend on the sectors these foreign establishments operate in. For example, these establishments may be in industries where relatively low wages was an attractive factor but this is now starting to change. If this is the case, then the eventual migration of these foreign establishments to lower cost (wage) host countries will have a very damaging effect on Malaysia's export sector. This is especially so if the country cannot attract FDI in higher value sectors.[22,23]

16

From our analysis, it is of concern to note that (in percentage terms) foreign entrants contributed less to export value than foreign exiters. Although entrants may take time to fully adapt to local conditions, it is important to understand the reasons for this observation. For example, if exiters are from industries in which Malaysia is starting to lose competitiveness due to factor price differences (e.g. rising wages), it is a strong signal to the government that the restructuring process has to take place at a faster pace. Other reasons for exiting, such as the quality of institutions affecting the efficiency and cost of doing business, or the political climate of a country, need to be addressed differently.[24]

This study showed the positive effects of turnover on manufacturing sector productivity. The "churning" of the sector had resulted in less productive establishments leaving the industry and more productive establishments joining. It is noteworthy that foreign entrants made a significant contribution to productivity. This reinforces the point made earlier on the importance of foreign participation in the manufacturing sector due to their high contribution to export value.

The analysis showed large-sized entrants (both foreign and domestic) being more productive compared with medium-sized and especially small-sized ones. Possible reasons for this are larger establishments have access to superior technology and benefit from scale economies. There are implications for industrial policies related to establishment size. For example, micro and small-sized establishments may not be just lacking in having access to capital but also in areas such as technical expertise or marketing aspects. If existing state policies are largely focused on providing financial assistance, then pursuing them when the needs are really in other areas will be futile (and wasteful).

The analysis of surviving establishments' contribution to sector productivity turned up an interesting observation. Among survivors, large foreign establishments fared the worst, followed by large domestic establishments. Medium-sized domestic survivors, on the other

hand, contributed the most to boosting sector productivity. Analyzing by industries may reveal sector-specific reasons for these observations. This has potentially important implications for industrial policies and strategy based on ownership and establishment size. For example, in some sectors, deeper analysis may reveal that policies to support medium-sized establishments will yield significant pay-offs, while the case to support large ones may be weaker. As the structure of the Malaysian economy continues to change, incentives based on ownership may also need to be scrutinized to obtain the most out of FDI in addressing the development needs of the country. Emphasizing the quality of FDI will become increasingly important for Malaysia. At the same time, the pursuance of FDI should not detract the authorities from providing sufficient support to nurture indigenous firms.

In conclusion, we have shown that the type of study done in this paper provides policymakers a useful framework in which to analyze, in a rigorous manner, the transition process that a dynamic sector goes through. Improvement in productivity is critical to the long-term survival of an industry. Understanding the sources of change in productivity trends is crucial for policymaking. The authorities need to know if present policies are effective in attaining state development objectives. Given the fast changing and competitive conditions arising from globalization, it is also important to ensure that policies are continuously fine-tuned to keep pace. Adopting an analytical framework that accounts for the role of firm entry and exit (turnover), and can be broken down by firm ownership and size, is demonstrably a powerful tool. A direction for future study is more micro-based analysis accounting for sector-specific factors. This is required to fully understand some of the trends noted here and will effectively complement the macro approach adopted in this study.

References

Ahn, Sanghoon. 2001. "Firm Dynamics and Productivity Growth: A Review of Micro Evidence from OECD Countries." Working Paper no. 297, Economics Department, OECD.

Aitken, Brian J., and Ann.E. Harrison. 1999. "Do Domestic Firms Benefit from Foreign Investment? Evidence from Venezuela." *American Economic Review* 89: 605-18.

Ali, Anuwar, and Poh Kam Wong. 1993. "Direct Foreign Investment in Malaysian Industrial Sector." In *Industrializing Malaysia: Policy, Performance and Prospects,* ed. Kwame Sundaram Jomo. London: Routledge.

Athukorala, Prema-chandra, and Jayant Menon. 1996. "Foreign Direct Investment and Industrialization in Malaysia: Exports, Employment and Spillovers." *Asian Economic Journal* 10: 29-44.

Baldwin, John R. 1995. *The Dynamics of Industrial Competition*. Cambridge: Cambridge University Press.

Baldwin, John R., and Paul K. Gorecki. 1991. "Entry, Exit and Productivity Growth." In *Entry and Market Contestability*, eds. Paul A. Gorecki and Joachim Schwalbach. Oxford: Basil Blackwell.

Bellak, Christian. 2004. "How Performance Gaps Between Domestic Firms and Foreign Affiliates Matter for Economic Policy." *Transnational Corporations* 13: 29-55.

Caves, Richard E. 1996. *Multinational Enterprise and Economic Analysis*. 2nd ed. Cambridge: Cambridge Surveys of Economic Literature, Cambridge University Press.

Driffield, Nigel, and Max Munday. 1998. "The Impact of Foreign Direct Investment on UK Manufacturing: Is There a Profit Squeeze in Domestic Firms?" *Applied Economics* 30: 705-9.

Ekholm, Karolina, Rikard Forslid, and James R. Markusen. 2003. "Export-platform Foreign Direct Investment." NBER Working Paper no. 9517, NBER, Cambridge, MA.

Foster, Lucia, John Haltiwanger and C.J. Krizan. 1998. "Aggregate Productivity Growth: Lessons from Microeconomic Evidence." NBER Working Paper no. 6803, NBER, Cambridge, MA.

Globerman, Steven, John C. Ries, and Ilan Vertinsky. 1994. "The Economic Performance of Foreign Affiliates in Canada." *Canadian Journal of Economics* 27: 143-56.

Griliches, Zvi, and Haim Regev. 1995. "Firm Productivity in Israeli Industry, 1979-1988." *Journal of Econometrics* 65: 175-203.

Harris, Richard, and Catherine Robinson. 2003. "Foreign Ownership and Productivity in the United Kingdom Estimates for U.K. Manufacturing Using the ARD." *Review of Industrial Organization* 22: 207-23.

Lim, David. 1976. "Capital Utilization of Local and Foreign Establishments in Malaysian Manufacturing." *Review of Economics and Statistics* 58: 209-17.

Mata, Jose, and Pedro Portugal. 2000. "Patterns of Entry, Post-Entry Growth and Survival: A Comparison between Domestic and Foreign Owned Firms." Mimeo, Universidade Nova de Lisboa, Lisbon.

Menon, Jayant. 1998. "Total Factor Productivity Growth in Foreign and Domestic Firms in Malaysian Manufacturing." *Journal of Asian Economics* 9: 251-80.

Ministry of International Trade and Industry. 2009. *The Third Industrial Master Plan*. Kuala Lumpur: Ministry of International Trade and Industry. http://www.miti.gov.my/ (accessed July 15, 2009).

Oguchi, Noriyoshi, Nor Aini Mohd Amdzah, Zainon Bakar, Rauzah Zainal Abidin, and Mazlina Shafii. 2002. "Productivity of Foreign and Domestic Firms in the Malaysian Manufacturing Industry." *Asian Economic Journal* 16: 215-28.

Oulton, Nicholas. 1998. "Investment, Capital and Foreign Ownership in UK Manufacturing." NIESR Discussion Paper no. 141, National Institute of Economic and Social Research, London.

Pfaffermayr, Michael, and Christian Bellak. 2000. "Why Foreign-Owned Firms Are Different: A Conceptual Framework and Empirical Evidence for Austria." HWWA Discussion Paper no.115, Hamburg Institute of International Economics, Hamburg.

Ramstetter, Eric D. 1995. "Characteristics of Multinational Firms in Malaysia: A Time Series Perspective." In *Ajia Kogyoken no Keizai Bunseki to Yosoku (IV)* [Projections for Asian Industrializing Region (IV)], eds. Mitsuru Toida and Daisuke Hiratsuka. Tokyo: Institute of Developing Economies.

Ramstetter, Eric D. 1999. "Comparison of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time." *Asian Economic Journal* 13: 163-203.

Ramstetter, Eric D., and Masaru Umemoto. 2006. "Exports and Foreign Ownership in Thai Manufacturing." In *Multinationals in Indonesia and Thailand: Wages, Productivity and Exports*, eds. Eric D. Ramstetter and Fredrik Sjöholm. Hampshire, U.K.: Palgrave-Macmillan.

Ramstetter, Eric D., and Sadayuki Takii, S. 2006. "Exporting and Foreign Ownership in Indonesian Manufacturing 1990-2000." *Economics and Finance in Indonesia* 54: 317-45.

Ramstetter, Eric D., and Shahrazat Binti Haji Ahmad. 2009. "Foreign Multinationals and Malaysian Manufacturing After the Crisis." Working Paper Series 2009-13, International Centre for the Study of East Asian Development, Kitakyushu.

Rasiah, Raja. 2003. "Foreign Ownership, Technology and Electronics Exports from Malaysia and Thailand." *Journal of Asian Economics* 14: 785-811.

Rasiah, Raja. 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: 587-623.

Roberts, Barbara M., and Steve Thompson. 2007. "Firm Turnover, Restructuring and Labour Productivity in Transition: The Case of Poland." *Applied Economics* 41: 1127-36.

Ruane, Frances, and Ali Uğur. 2006. "Export Platform FDI and Dualistic Development." *Transnational Corporations* 15: 75-113.

Siripaisalpipat, Pimonwan, and Yasuo Hoshino. 2000. "Firm-Specific Advantages, Entry Modes, and Performance of Japanese FDI in Thailand." *Japan and the World Economy* 12: 33-48.

Sjöholm, Fredrik, and Sadayuki Takii. 2006. "Multinational Companies and Exports in Indonesian Manufacturing." In *Multinationals in Indonesia and Thailand: Wages, Productivity and Exports*, eds. Eric D. Ramstetter and Fredrik Sjöholm. Hampshire, U.K.: Palgrave-Macmillan.

Van Biesebroeck, Johannes. 2005. "Firm Size Matters: Growth and Productivity Growth in African Manufacturing." *Economic Development and Cultural Change* 53: 545-83.

Vicziany, Marika, Ramon Navaratnam, Koi Nyen Wong, and Tim Thornton. 2001. "Australian Business Attitudes to Malaysia." In *Business in the New Era*, eds. Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany. Cheltenham, U.K.: Edward Elgar.

Endnotes

[1] The services sector (excluding government services) has also emerged as a major sector, with 41 percent share of employment and 48 percent of gross domestic product in 2008 (manufacturing: 29% of both employment and GDP share). Government services accounted for 11 percent of employment and seven percent of GDP in 2008.

[2] The focus of the first Industrial Master Plan, IMP1 (1985-1995) was to further strengthen export-oriented industrialization. The IMP2 (1996-2005) contributed further to the development of the sector by strengthening industrial linkages, increasing value-added activities and enhancing productivity. The latest IMP3 (2006-2020) aims to achieve long term global competitiveness through transformation and innovation in the manufacturing sector (Ministry of International Trade and Industry, 2009).

[3] New (better designed) policies can then be put in place of failed ones.

[4] The percentage contribution to various aspects in manufacturing by firm ownership can be found in Table 2, while the analysis of the changes in shares of these contributions is available in Section IV of this paper.

[5] Linkages with the host country economy bring potential benefits. Backward linkages are established when the MNC sources its inputs from local suppliers. Forward linkages are developed if the MNC produces inputs used by indigenous firms or uses services like transportation and distribution provided by local firms.

[6] The commonly used indicators for labor productivity, capital intensity and capital productivity are value added (or total output) per employee, fixed assets per employee, and value added per unit of fixed asset, respectively.

[7] Foreign firms are classified as firms with more than 50 percent foreign ownership.

[8] Data obtained from *Economic Report*, various issues, Malaysian Ministry of Finance website (www.treasury.gov.my).

[9] We cannot identify the establishments that are sold, reorganized or changed their names, and as a result are given a different identification number. Entry and exit rates will be affected if this happens.

[10] Data on the producer price index are obtained from DOSM.

[11] There are doubts regarding the accuracy of fixed assets data for establishments reporting very low values, e.g. RM1.

[12] High or low productivity is relative to the industry average.

[13] Census statistics distinguish between non-Malaysian (or foreign) owned establishments, which are majority owned by non-residents, and jointly-owned ones in which residents and non-residents hold 50 percent of shares each.

[14] Table 4 shows that (between 2000 and 2005) 328 foreign-owned and 20 jointly-owned establishments became Malaysian-owned ones. Among Malaysian-owned establishments, 188 became foreign-owned and seven became jointly-owned. Hence, there was an increase of 153 Malaysian-owned establishments in 2005 compared with 2000.

[15] Due to the negligible share of jointly-owned firms in the total, we focus the discussion on foreign-owned and Malaysian-owned firms only.

[16] The sum of 'within', 'between' and 'cross' effects.

[17] The results of FHK 2000 (ownership structure) and GR 2000 are very similar; while FHK 2005 and GR 2005 also show very similar results.

[18] This is especially so in a country with a fast growing workforce.

[19] A good example of the regional dynamics of comparative advantage is the case of Intel, which has been operating successfully in Malaysia since the early 1970s but decided to close its assembly test facility in Penang in 2009. It has set up an assembly and test facility in

Vietnam which became operational in 2009. In a similar vein, Dell started PC manufacturing operations in Chennai, India, in 2007 and moved part of its Malaysian operations there.

[20] A successful transition will mean new higher value industries driving growth through the global market, and higher-skilled workers employed in these industries (being paid higher wages). Hence, long-term gains will more than offset short-term sacrifices.

[21] This is one of the benefits of FDI through the balance of payments effect.

[22] These sectors are likely to be capital-intensive and dependent on sophisticated technology. They will also require highly skilled labor.

[23] Essentially, the economy may be "stuck in the middle" then - unable to compete with low-wage countries but not capable of upgrading to high value sectors demanding high quality factors of production.

[24] Malaysia's image among foreign investors had taken a battering of late. In November 2009, Transparency International downgraded Malaysia's ranking on the Corruption Perception Index. It is the country's worst ranking and score in 15 years. Transparency International Malaysia had also raised questions over the manner in which a government contract was awarded for a controversial public hospital.

TABLE 1

MANUFACTURING SECTOR - CAPITAL INVESTMENT BY OWNERSHIP, 2008

	Capital investment (US$ mil.)	% share
Domestic	4,687	26.6
Foreign	12,949	73.4
Total	17,636	100.0

SOURCE.- Malaysia Industrial Development Authority.

TABLE 2
MANUFACTURING ESTABLISHMENTS - MAIN INDICATORS BY OWNERSHIP, 2000 AND 2005

Ownership:	Joint	Domestic	Foreign	Total
	2000			
Number of establishments	48	18,445	1,587	20,080
Employment	5,549	949,057	588,903	1,543,509
Value added (RM mil.)	6	486	388	881
Gross output (RM mil.)	2,458	198,076	214,243	414,777
Number of exporters	23	2,198	1,073	3,294
Value of exports (RM mil.)	1,332	59,713	154,760	215,806
	2005			
Number of establishments	61	26,517	1,516	28,094
Employment	6,567	1,112,774	538,395	1,657,736
Value added (RM mil.)	9	583	376	968
Gross output (RM mil.)	5,428	327,799	266,803	600,029
Number of exporters	32	2,040	843	2,915
Value of exports (RM mil.)	2,737	99,461	154,624	256,822
	Percentage share (2000)			
Number of establishments	0.2	91.9	7.9	100.0
Employment	0.4	61.5	38.2	100.0
Value added (RM mil.)	0.7	55.2	44.1	100.0
Gross output (RM mil.)	0.6	47.8	51.7	100.0
Number of exporters	0.7	66.7	32.6	100.0
Value of exports (RM mil.)	0.6	27.7	71.7	100.0
	Percentage share (2005)			
Number of establishments	0.2	94.4	5.4	100.0
Employment	0.4	67.1	32.5	100.0
Value added (RM mil.)	0.9	60.3	38.8	100.0
Gross output (RM mil.)	0.9	54.6	44.5	100.0
Number of exporters	1.1	70.0	28.9	100.0
Value of exports (RM mil.)	1.1	38.7	60.2	100.0

SOURCE.- Department of Statistics, Malaysia; authors' own calculations.

TABLE 3
MANUFACTURING ESTABLISHMENTS - ENTRANTS, EXITERS AND SURVIVORS

Ownership:	Joint	Domestic	Foreign	Total
		Number of establishments		
Total in 2000	48	18,445	1,587	20,080
Survivors in 2000	39	10,410	1,245	11,694
Exiters	9	8,035	342	8,386
Total in 2005	61	26,517	1,516	28,094
Survivors in 2005	30	10,563	1,101	11,694
Entrants	31	15,954	415	16,400
		Entry, exit, and turnover rates (%)		
Entry rate	65	86	26	82
Exit rate	19	44	22	42
Turnover rate	84	130	48	124

SOURCE.- Department of Statistics, Malaysia; authors' own calculations.

TABLE 4
TRANSITION MATRIX BY OWNERSHIP GROUP

	Ownership in 2005			
	Joint	Domestic	Foreign	Total in 2000
Ownership in 2000	Number of establishments			
Joint	17	20	2	39
Domestic	7	10,215	188	10,410
Foreign	6	328	911	1,245
Total in 2005	30	10,563	1,101	11,694
	Percentage of the total in 2000			
Joint	43.6	51.3	5.1	100.0
Domestic	0.1	98.1	1.8	100.0
Foreign	0.5	26.4	73.2	100.0

SOURCE.- Department of Statistics, Malaysia; authors' own calculations.

TABLE 5
EFFECTS OF TURNOVER ON MANFACTURING
SECTOR, 2000-2005 (% share)

	Joint	Domestic	Foreign	Total
		Establishments		
Survivors (2000)	0.2	51.8	6.2	58.2
Exiters	0.0	40.0	1.7	41.8
Survivors (2005)	0.1	37.6	3.9	41.6
Entrants	0.1	56.8	1.5	58.4
		Employment		
Survivors (2000)	0.4	45.4	32.2	78.0
Exiters	0.0	16.1	6.0	22.0
Survivors (2005)	0.3	47.5	27.9	75.7
Entrants	0.1	19.6	4.6	24.3
		Value added		
Survivors (2000)	0.7	44.9	39.0	84.6
Exiters	0.0	10.3	5.1	15.4
Survivors (2005)	0.5	44.7	33.3	78.5
Entrants	0.4	15.6	5.6	21.5
		Gross output		
Survivors (2000)	0.6	38.5	42.9	81.9
Exiters	0.0	9.3	8.8	18.1
Survivors (2005)	0.4	40.2	38.8	79.5
Entrants	0.5	14.4	5.6	20.5
		Exporters		
Survivors (2000)	0.7	50.6	25.9	77.2
Exiters	0.0	16.1	6.7	22.8
Survivors (2005)	0.6	45.7	21.8	68.0
Entrants	0.6	24.3	7.1	32.0
		Value of exports		
Survivors (2000)	0.6	23.7	60.3	84.6
Exiters	0.0	3.9	11.4	15.4
Survivors (2005)	0.5	32.9	51.3	84.7
Entrants	0.6	5.8	8.9	15.3

TABLE 6

DECOMPOSITION OF MANUFACTURING LABOR PRODUCTIVITY CHANGE, 2000-2005, BY FHK METHOD (2000 OWNERSHIP STRUCTURE)

Ownership	Effects:					Aggregate contribution	Contribution of turnover (net entry effect)	Contribution of survivors
	Within (w)	Between (b)	Cross (c)	Entry (n)	Exit (x)	(w+b+c+n-x)	(n-x)	(w+b+c)
With respect to ownership in 2000								
Joint	0.13	-0.03	-0.07	0.30	-0.01	0.34	0.31	0.03
Domestic	0.49	3.63	-4.27	-3.67	-5.76	1.93	2.08	-0.15
Foreign	-2.02	1.76	-1.62	1.14	-0.85	0.11	1.99	-1.88
Aggregate	-1.40	5.37	-5.96	-2.23	-6.61	2.38	4.38	-2.00
With respect to ownership and size in 2000								
Joint/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Joint/Small	-0.01	0.01	-0.01	0.17	-0.01	0.17	0.17	0.00
Joint/Medium	0.01	0.01	-0.02	-0.01	0.00	0.00	-0.01	0.01
Joint/Large	0.12	-0.05	-0.04	0.15	0.00	0.18	0.15	0.03
Domestic/Micro	0.00	0.00	-0.05	-0.96	-0.47	-0.54	-0.49	-0.06
Domestic/Small	0.01	0.33	-0.47	-2.94	-2.01	-1.06	-0.93	-0.13
Domestic/Medium	0.13	0.72	-0.33	-1.19	-1.52	0.85	0.33	0.52
Domestic/Large	0.36	2.59	-3.43	1.41	-1.76	2.69	3.17	-0.48
Foreign/Micro	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Foreign/Small	-0.15	0.24	-0.19	0.05	0.03	-0.08	0.02	-0.10
Foreign/Medium	-0.15	0.32	-0.24	0.33	-0.12	0.39	0.46	-0.06
Foreign/Large	-1.72	1.19	-1.19	0.76	-0.75	-0.20	1.52	-1.72
Aggregate	-1.40	5.37	-5.96	-2.23	-6.61	2.38	4.38	-2.00

SOURCE.- Authors' own calculations.

NOTE.- Contribution of each group to productivity growth equals (w+b+c+n-x)

TABLE 7
DECOMPOSITION OF MANUFACTURING LABOR PRODUCTIVITY CHANGE, 2000-2005, BY FHK METHOD (2005 OWNERSHIP STRUCTURE)

Ownership	Effects:					Aggregate contribution	Contribution of turnover (net entry effect)	Contribution of survivors
	Within (w)	Between (b)	Cross (c)	Entry (n)	Exit (x)	(w+b+c+n-x)	(n-x)	(w+b+c)
With respect to ownership in 2005								
Joint	0.13	-0.03	-0.05	0.30	-0.01	0.36	0.31	0.06
Domestic	1.26	4.72	-4.53	-3.67	-5.76	3.53	2.08	1.44
Foreign	-2.79	0.68	-1.38	1.14	-0.85	-1.51	1.99	-3.49
Aggregate	-1.40	5.37	-5.96	-2.23	-6.61	2.38	4.38	-2.00
With respect to ownership and size in 2005								
Joint/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Joint/Small	0.00	0.00	0.00	0.17	-0.01	0.17	0.17	0.00
Joint/Medium	0.00	0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00
Joint/Large	0.14	-0.04	-0.04	0.15	0.00	0.20	0.15	0.05
Domestic/Micro	0.06	0.19	-0.05	-0.96	-0.47	-0.29	-0.49	0.20
Domestic/Small	1.28	1.02	-1.20	-2.94	-2.01	0.16	-0.93	1.09
Domestic/Medium	0.44	0.97	-0.75	-1.19	-1.52	0.99	0.33	0.66
Domestic/Large	-0.51	2.54	-2.54	1.41	-1.76	2.67	3.17	-0.51
Foreign/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign/Small	0.04	0.10	-0.06	0.05	0.03	0.10	0.02	0.09
Foreign/Medium	1.03	0.29	-0.89	0.33	-0.12	0.88	0.46	0.42
Foreign/Large	-3.86	0.28	-0.43	0.76	-0.75	-2.49	1.52	-4.00
Aggregate	-1.40	5.37	-5.96	-2.23	-6.61	2.38	4.38	-2.00

SOURCE.- Authors' own calculations.
NOTE.- Contribution of each group to productivity growth equals (w+b+c+n-x)

TABLE 8
TRANSITION MATRIX FOR WITHIN, BETWEEN AND CROSS EFFECTS, 2000 TO 2005

Ownership in 2000	Ownership in 2005			Total in 2000
	Joint	Domestic	Foreign	
	Within effect			
Joint	0.11	0.01	0.01	0.13
Domestic	-0.01	1.37	-0.87	0.49
Foreign	0.03	-0.12	-1.92	-2.02
Total in 2005	0.13	1.26	-2.79	-1.40
	Between effect			
Joint	-0.02	-0.01	0.00	-0.03
Domestic	0.00	4.22	-0.59	3.63
Foreign	0.00	0.50	1.27	1.76
Total in 2005	-0.03	4.72	0.68	5.37
	Cross effect			
Joint	-0.05	-0.02	0.00	-0.07
Domestic	0.00	-4.22	-0.05	-4.27
Foreign	0.00	-0.29	-1.33	-1.62
Total in 2005	-0.05	-4.53	-1.38	-5.97

SOURCE.- Authors' own calculations.

TABLE 9
DECOMPOSITION OF MANUFACTURING LABOR PRODUCTIVITY CHANGE, 2000-2005, BY GR METHOD (2000 OWNERSHIP STRUCTURE)

Ownership	Effects:				Aggregate contribution	Contribution of turnover (net entry effect)	Contribution of survivors
	Within (w)	Between (b)	Entry (n)	Exit (x)	(w+b+n-x)	(n-x)	(w+b)
					With respect to ownership in 2000		
Joint	0.10	-0.06	0.30	-0.01	0.34	0.30	0.03
Domestic	-1.65	1.50	-3.91	-5.95	1.89	2.04	-0.15
Foreign	-2.83	0.97	1.09	-0.92	0.15	2.01	-1.86
Aggregate	-4.38	2.41	-2.52	-6.87	2.38	4.35	-1.97
					With respect to ownership and size in 2000		
Joint/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Joint/Small	-0.01	0.01	0.17	-0.01	0.17	0.17	0.00
Joint/Medium	0.00	0.00	-0.01	0.00	-0.01	-0.01	0.01
Joint/Large	0.10	-0.07	0.15	0.00	0.18	0.15	0.03
Domestic/Micro	-0.03	-0.03	-0.97	-0.48	-0.55	-0.50	-0.06
Domestic/Small	-0.23	0.09	-3.01	-2.06	-1.09	-0.95	-0.14
Domestic/Medium	-0.03	0.55	-1.25	-1.56	0.83	0.31	0.52
Domestic/Large	-1.36	0.89	1.33	-1.85	2.71	3.18	-0.47
Foreign/Micro	-0.01	0.01	0.00	0.00	0.00	0.00	0.00
Foreign/Small	-0.24	0.14	0.04	0.03	-0.08	0.02	-0.10
Foreign/Medium	-0.27	0.20	0.33	-0.13	0.39	0.46	-0.07
Foreign/Large	-2.32	0.62	0.72	-0.82	-0.16	1.54	-1.69
Aggregate	-4.38	2.41	-2.52	-6.87	2.38	4.35	-1.97

SOURCE.- Authors' own calculations.
NOTE.- Contribution of each group to productivity growth equals (w+b+n-x).

TABLE 10

DECOMPOSITION OF MANUFACTURING LABOR PRODUCTIVITY CHANGE, 2000-2005, BY GR METHOD (2005 OWNERSHIP STRUCTURE)

Ownership	Effects:				Aggregate contribution	Contribution of turnover (net entry effect)	Contribution of survivors
	Within	Between	Entry	Exit			
	(w)	(b)	(n)	(x)	(w+b+n-x)	(n-x)	(w+b)
					With respect to ownership in 2005		
Joint	0.11	-0.05	0.30	-0.01	0.36	0.30	0.06
Domestic	-1.01	2.46	-3.91	-5.95	3.49	2.04	1.45
Foreign	-3.48	0.00	1.09	-0.92	-1.47	2.01	-3.48
Aggregate	-4.38	2.41	-2.52	-6.87	2.38	4.35	-1.97
					With respect to ownership and size in 2005		
Joint/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Joint/Small	0.00	0.00	0.17	-0.01	0.17	0.17	0.00
Joint/Medium	-0.01	0.01	-0.01	0.00	-0.01	-0.01	0.00
Joint/Large	0.11	-0.06	0.15	0.00	0.20	0.15	0.06
Domestic/Micro	0.03	0.17	-0.97	-0.48	-0.30	-0.50	0.20
Domestic/Small	0.67	0.43	-3.01	-2.06	0.15	-0.95	1.11
Domestic/Medium	0.07	0.61	-1.25	-1.56	0.99	0.31	0.68
Domestic/Large	-1.78	1.25	1.33	-1.85	2.65	3.18	-0.53
Foreign/Micro	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign/Small	0.02	0.07	0.04	0.03	0.11	0.02	0.09
Foreign/Medium	0.58	-0.15	0.33	-0.13	0.88	0.46	0.43
Foreign/Large	-4.07	0.08	0.72	-0.82	-2.46	1.54	-3.99
Aggregate	-4.38	2.41	-2.52	-6.87	2.38	4.35	-1.97

SOURCE.- Authors' own calculations.

NOTE.- Contribution of each group to productivity growth equals (w+b+n-x).

FIGURE 1
MALAYSIA: REAL GDP AND MANUFACTURING SECTOR GROWTH
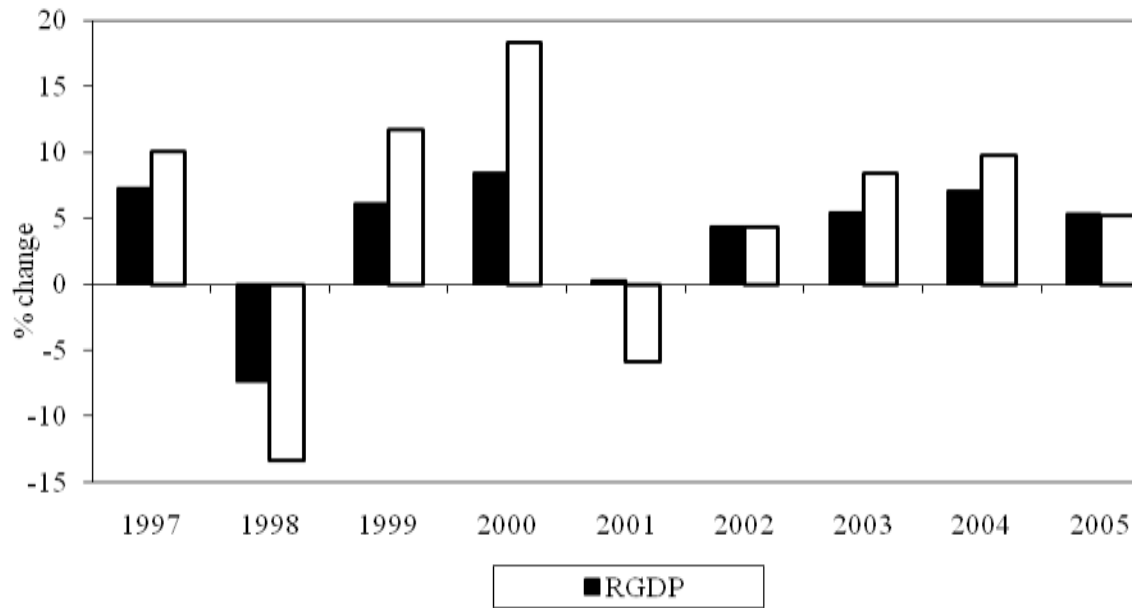
SOURCE.- Data from Ministry of Finance, Malaysia.