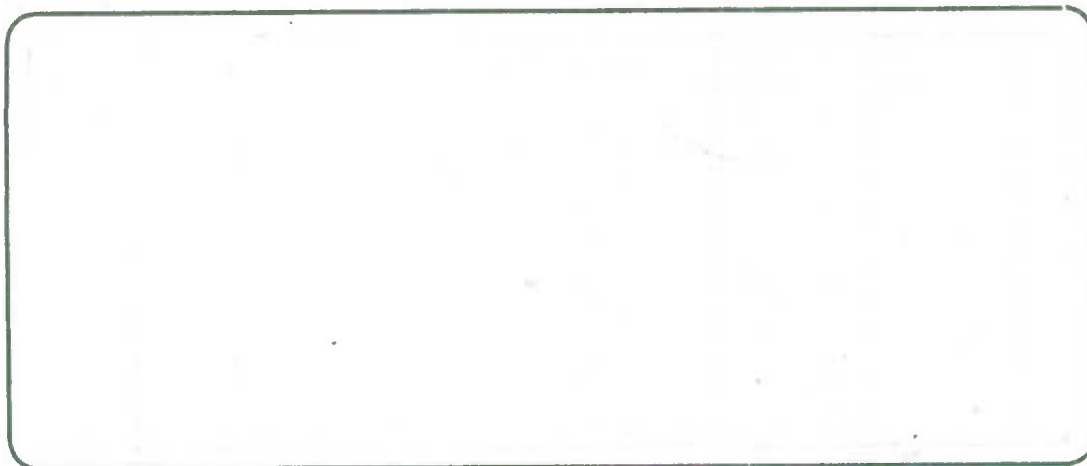


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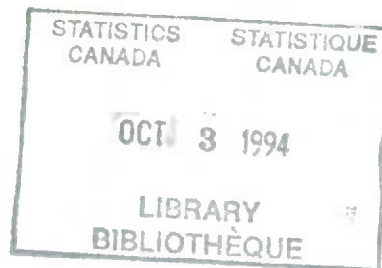
**FOREIGN MULTINATIONAL ENTERPRISES
AND MERGER ACTIVITY IN CANADA**

by

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FOREIGN MULTINATIONAL ENTERPRISES AND MERGER ACTIVITY IN CANADA

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Abstract: While Canada has had some form of agency to review foreign investment activity and, in particular, the merger activity of foreign firms since the mid 1970s, there has been little analysis of the importance of such mergers. This paper attempts to rectify this gap. It commences by examining its importance by placing the intensity of mergers in context of other turnover activity such as entry and exit and comparing it to activity in the domestic sector. It then examines the extent to which mergers are associated with productivity and wage rate changes. Finally, it asks whether differences between domestic and foreign firms are associated with the environment in which the two groups function or with intrinsic differences between the two types of firms that are not explained by the characteristics of the industries in which they are located.

Keywords: Mergers, Multinational, Foreign Control

INTRODUCTION

In this paper we show that the effects of mergers in Canada are associated with the presence of multinational enterprises and differ in the markets where they flourish from markets where their presence is less important. Mergers involving foreign multinationals have long received attention due to the offense given to preferences for national independence when control of Canadian business assets passes into foreign hands. Indeed, foreign acquisitions were made subject to review by the Foreign Investment Review Agency in 1974. The attention paid to these transactions by policy-makers was never matched, however, by economic analysis of their determinants and consequences. How these transactions differ from merger transactions among domestic firms and what effects they have on the productivity of the transferred business assets are questions addressed in this paper. We use Statistics Canada data on individual establishments in the Canadian manufacturing sector to compare the contexts and consequences of international mergers and other control changes that occurred between 1970 and 1979.

1. ANALYTICAL BACKGROUND--MERGERS

Even if the alienation of control over business assets were not a matter of concern, mergers would remain controversial purely because of their economic effects. A favourable view of mergers arises from the theory of the market for corporate control, which holds that mergers and related transactions desirably shift control of business assets into the hands of managers who are more efficient or better situated to deploy them. Improvements in performance can arise from various sources. Changes in control can economize on the use of overhead and intangible resources in ways identified in the theory of corporate diversification. They can shift resources into the hands of managers who are simply more capable or better motivated to obtain the maximum value from them.

Although the basic value of an active market for corporate control is generally accepted, sceptics in the United States and Britain have claimed to detect significant inefficiencies in transactions that bring about a change in control. These inefficiencies occur not only in horizontal mergers that restrict competition (an issue not pursued here), but also in large corporate mergers in which the acquirer's motives and competence for deploying the assets more efficiently can be doubted. Negative evidence about the productivity of large diversifying mergers in the United States was first fed by the "go-go conglomerates" of the 1960s. Analysis of data from the 1960s and 1970s indicated that acquisitions by large firms failed to raise--indeed lowered--the profitability of the transferred business units (Ravenscraft and Scherer, 1987). Mueller (1985) observed that market shares of business units transferred through large mergers during the period 1950-1972 experienced declines so large that they could hardly have resulted from the normal regression process. Indeed, until recently, most of the ex post evidence on mergers' effects in the United States has been negative, and the only specific benefit documented-

-increased reliance on tax-deductible debt--was private, not social.¹ The negative effects associated with mergers were blamed chiefly on the motives (or perhaps the hubris) of managers of large enterprises, who might derive from them personal gains inconsistent (beyond some point) with maximum value for the acquiring firms' owners.

The general drift of evidence in Canada, as exemplified in the report of the Royal Commission on Corporate Concentration (1978), was similar. The Commission (chap. 5) found evidence that unrelated diversification, usually pursued through mergers, had at best been neutral in its effects on a firm's profitability. In enumerating the reasons for the occurrence of large mergers, the report (pp. 150-154) acknowledged the play of managerial motives, as well as objectives that should increase efficiency. (Specific evidence is discussed below.)

In contrast to these negative ex post findings, there is much positive ex ante evidence about the efficiency in the market for corporate control. Ratios of market-value to book-value were found to be low for firms acquired in merger transactions, and stock-market returns prior to their acquisition were subnormal. The substantial premia paid to gain control of target firms--amounts above their market values as free-standing firms--are evidence of anticipated increases in their value. These premia certainly testify to the yawning gaps between buyers' and sellers' reservation prices. By contrast, the near-zero or negative values placed on the transactions by the acquirers' shareholders leave in doubt the existence of expected gains to acquiring and acquired firms taken together. Eckbo (1988) reported that studies of stock-market valuations of mergers in Canada show that shareholders of both target and acquiring firms benefit. The Canadian findings of benefits to target firms corresponds to findings from the United States; the Canadian findings of benefits for acquiring firms are more favourable than American findings. Eckbo attributed the difference to the fact that the sizes of Canadian acquiring and target firms differ less than do those of U.S. merger partners, thus making it easier in Canada to separate the gains due to a merger from other influences.

Although this disparity between ex ante and ex post evidence on the efficiency of large mergers persists unresolved, recent developments have significantly changed the perspective. First, while large mergers continue at an irregular pace, other transactions have grown much more common. These include sell-offs, which transfer business units from one enterprise to another, and spin-offs and buy-outs that either simplify the managerial task or strengthen managerial incentives. Sell-offs seem to shift assets into managerial hands more competent to supervise them or able to attain synergistic gains in productivity. Spin-offs and buy-outs strengthen managers' incentives to maximize profits. Evidence from the United States (for example, Kaplan, 1989) has largely affirmed the value-creating potential of these transactions. Second, the ex post negative conclusions about large mergers' effects on productivity do not seem to appear in more comprehensive data that display the consequence of mergers of all sizes and other types of

¹ Caves (1989) surveyed this literature as well as the positive findings based on ex ante market valuations. Evidence about large mergers in Great Britain (Cowling et al., 1980) leads to similar conclusions.

changes in control as well; (see Lichtenberg and Siegel (1987) on the United States and evidence cited below on Canada.) Although the U.S. evidence suggests that some large mergers with questionable effects on productivity continue to occur, the mixture of transactions in corporate control apparently shifted for the better in the 1980s.

Most of these questions about the productivity of large mergers originate outside of Canada. They may be relevant to international mergers in Canada, however, simply because some control changes in Canada are made by just these large enterprises in their guise as multinational companies. We consider below whether research on changes of control in Canada supports the favourable normative view suggested by the theory of the market for corporate control.

2. ANALYTICAL BACKGROUND--MULTINATIONAL ENTERPRISES

The economic analysis of mergers can be readily joined to that of multinational enterprises. The theory that identifies synergistic gains as a motive for (nonhorizontal) mergers corresponds closely to the standard theory of the expansion of multinationals. Both lines of analysis assume that the production process requires lumpy or intangible productive assets that a firm can employ simultaneously in more than one market. To the extent that the lumpy or intangible qualities of an asset prevent the owning firm from utilizing that asset fully in a single market of that firm,² they induce the owning firm to enter another market by making the firm's incremental cost lower than that of an entrant who must pay for the lumpy asset's full cost. Entry by established firms, therefore, prevails over *de novo* entry. This same theory, based on lumpy and intangible assets, underlies the internalization hypothesis that foreign direct investment is a transaction linking markets across national boundaries. It also appears as a theory of diversification when mergers or other transactions unite business units in different product markets within the same nation. In both cases, the lumpy asset must serve multiple uses, its services must be portable between product markets in the case of diversification, and between geographic markets in the case of foreign investment.

A firm can accomplish both diversification and foreign direct investment by means of either building new plant (green-field entry) or the acquisition of a going firm or plant (not to mention other transactions that involve sharing the lumpy or intangible asset or its services). However, the very characteristic (the lumpy asset that is too large to be fully exploited in the home market) that leads to international diversification also suggests that entry is more likely to be accomplished by acquisition than by green-field construction. If the original home market was too small for full exploitation of the specialized asset, the Canadian market is likely to be small relative to firm size. Markets that are small relative to the size of firms operating therein are concentrated markets, and entry into these markets occurs more frequently by acquisition than

² Lumpiness refers to a fixed cost or minimum capacity that may be large relative to a single market, so that declining marginal revenue deters full utilization there. An intangible asset or skill, which is a public good proprietary to the firm, is, of course, the limiting case of lumpy capacity.

by green-field entry.³

Empirical research on foreign investment in Canada (and elsewhere) has confirmed the predictions of this line of analysis, showing how the extent of multinational activity varies from industry to industry. The causal factors verified in Canada include not only the importance of lumpy and intangible assets but also an industry's affinity for multiplant operations within the United States (Caves, 1974). Analyses have confirmed the role of the multinational enterprise in Canada as an arbitrageur of its parent's innovations (DeMelto, McMullen, and Wills, 1980) and the importance of Canadian subsidiaries as marketing agents for their affiliates' differentiated goods (McFetridge, 1987). Baldwin and Gorecki (1986a, chap. 7) observed the implied positive net effect of the prevalence of foreign investment on total factor productivity in Canada. Another line of evidence affirming the parallel between diversification and foreign investment shows that these two modes of expansion are substitutes for the growing enterprise: within a limited period of time, the enterprise's path of expansion tends to follow either the one vector or the other (Caves, 1975; Wolf, 1977).⁴

Although not devoid of normative issues, the internalization theory of multinational enterprise coincides with one line of the theory of the market for corporate control: mergers represent efficient redeployments of business assets, with the expected gains coming from better utilization of lumpy assets. However, the hypothesis that mergers increase productivity as a result of improved managerial competence or increased incentives for managers in its pure form fits the activities of the multinational poorly. A postulate that is highly plausible (if hard to test directly) holds that the effectiveness of managers is tied to their familiarity with the ambient language, culture, polity, and traditions. Put simply, if a Canadian firm is ripe for takeover because of its managers' limitations or underperformance, a Japanese multinational (in the absence of other advantages it might possess) is probably not the most effective agent of upgrade.⁵

³ See Gilbert and Newbery(1988), Caves and Mehra(1986).

⁴ An international merger that extends multinational control of business assets can be horizontal (that is, a geographic extension), vertical, or a diversification with regard to the product market(s) of the foreign acquirer. The available evidence indicates that a one-time prevalence of horizontal and vertical modes of expansion has given way somewhat to foreign investments that are diversifying in both geographic and product space (Hissey and Caves, 1985). It is not clear, however, what efficiency gains, if any, underlie this trend; Davidson and McFetridge (1984) found that the sale or liquidation of a U.S. firm's Canadian affiliate is more likely to occur if the affiliate operates in a different two-digit industry from its parent.

⁵ The propensity of any country's political system to lend a sympathetic ear to a domestic management threatened by a foreign enterprise's hostile takeover only reinforces the point.

A final point about mergers and multinational enterprises relates to the negative assessment of large corporate mergers in the United States in the era of conglomerates. Multinational enterprises tend to be large, and large firms' managers tend to be less closely monitored than those of small public companies (not to mention privately held ones). Although the fixed costs associated with the multinational co-ordination of activity across the Canada-United States border are surely lower than those across most other national boundaries, bringing multinational status within the reach of smaller firms, it remains possible that some large multinational firms may undertake international mergers with poor value-creating potential. Some Canadian businesses may have suffered losses in productivity following trans-border transactions. Some changes in the control of Canadian business units from one foreign multinational to another may be incidental to such large mergers and have at best no favourable productivity effects in Canada. Of course, other foreign-to-foreign changes of control may be productive for later undoing just such mergers.

These considerations support several predictions about foreign mergers in Canada:

1. To the extent that mergers improve the use of lumpy and intangible assets, they should occur more often in industries with heavy foreign investment. Foreign firms should be active as both buyers and sellers, although not necessarily in disproportion to their combined share of a sector's activity. Mergers involving foreign enterprises should yield productivity gains for the transferred assets at least as large as those resulting from purely domestic mergers.⁶
2. To the extent that mergers serve to improve managerial capacity or motivation, multinational firms should be under-represented as buyers, except as control changes in Canada are incidental to mergers between enterprises outside of Canada. The frequency of control changes involving foreign multinationals should be relatively independent of the percentage of activity in a sector accounted for by foreign-controlled business units. Purely domestic mergers should generate productivity gains at least as large as those involving foreign enterprises.
3. If international mergers in Canada should be infected by non-maximizing or "managerial" behaviour of large multinational firms, they would be concentrated in industries with extensive foreign ownership but be less productive than mergers involving domestic enterprises. The same prediction pertains to control changes in Canada resulting from mergers or other strategic changes occurring outside of Canada. Mergers should grow less productive as the size of the business increases.

⁶ When a Canadian business unit is (or becomes) part of a multinational enterprise, the level (change) of its reported productivity or profitability depends on transfer prices in its dealings with its corporate siblings. We assume that transfer-pricing practices may inject noise but do not systematically obscure the underlying economic relations.

3. PREVIOUS EVIDENCE ON MERGERS AND MULTINATIONALS IN CANADA

We now summarize the evidence available from prior research on mergers in Canada and the activities of foreign enterprises in control-change transactions. Baldwin and Gorecki (1986b) drew together evidence on merger patterns in the 1970s. Foreign and domestic enterprises made acquisitions roughly in proportion to their prevalence in Canadian manufacturing. Canadian firms acquired 56.3 percent of all unconsolidated firms that were absorbed; 42.8 percent of the acquired units were domestic, while 13.5 percent were foreign. The 43.8 percent acquired by foreign firms consisted of 22.6 percent domestic units and 21.2 percent other foreign units, with foreigners' acquisitions shifting from foreign toward domestic businesses over the decade.⁷ Most acquired firms were small, and acquirers picked up units generally smaller and seldom larger than themselves.

Foreign firms tended to enter through the acquisition of plant rather than through the construction of new facilities. Domestic firms relied more heavily on green-field entry. An analysis of the determinants of market entries through acquisition (Baldwin and Gorecki, 1987) showed that domestic acquirers are more sensitive than foreign acquirers to the inducements offered by the growth of both the domestic market and export sales, as well as to current profits.⁸ As previous evidence suggested, neither domestic nor foreign established firms entering Canadian markets through acquisition are generally repelled by structural barriers to entry, and foreign entrants are actually attracted by scale economies and other factors that place small incumbent firms at a disadvantage.⁹

Baldwin and Gorecki found that changes in control during the 1970s were generally favourable to productivity (as measured by shipments per employee). Their findings indicated that plants undergoing changes of control during that decade improved their positions relative to continuing plants that experienced no control changes. These results are consistent with the findings of Lichtenberg and Siegel (1987) for the United States in the 1970s: that when all types of changes in control and all sizes of units are taken into account, changes in control are typically favourable to productivity.

⁷ Globerman (1977) summarized data from various issues of the Combines Investigation Report indicating that the foreign proportion had been about 25 percent in the late 1940s, then rose by 1953 to a plateau level varying between 35 and 45 percent. The apparent trend may be an artifact of the data source, however.

⁸ This pattern is consistent with the implication of evidence discussed below that foreign firms' entries are driven more by proprietary assets possessed by the foreign parents than by opportunities newly emerging in Canada.

⁹ Shapiro (1984) obtained similar conclusions for domestic and foreign new plant creation in Canadian manufacturing industries during 1972-1976. He did not, however, break the data into continuing firm new plant creation and new plant creation by entering firms.

It is not clear whether Canada was spared the productivity losses associated with diversifying acquisitions by large firms in the United States, although the Canadian evidence suggests that firms which merged extensively or engaged in unrelated diversification did not particularly profit as a result.¹⁰ Evidence on the motives of companies undertaking acquisitions in Canada was similar in that it was generally favourable to the positive productivity of mergers but with qualifications for large-scale acquisitions by large enterprises.¹¹ Various other lines of analysis suggested that, although productivity commonly faltered in assets acquired by large firms in the United States, this pattern was not evident in Canada.

4. EMPIRICAL EVIDENCE

The hypotheses developed in Sections 1 and 2 offer competing predictions about the frequency of changes in control involving foreign enterprises and the effects of these changes on the performance of the transferred business units. We test these hypotheses using data from Statistics Canada that cover all establishments operating in Canadian manufacturing industries in the years 1970 and 1979. Each establishment is classified as under domestic or foreign control. Furthermore, we observe the fate of each establishment existing in 1970: noting whether it continued in operation to 1979 under unchanged control, was closed down (if so, whether the owning firm continued or ceased operation), or continued in operation but underwent a change in control. When a change in control occurs, an establishment can pass from one incumbent firm to another, or it can pass from an incumbent to an entrant; similarly, transfers of control can

¹⁰ Laiken (1973) found no association between acquisition activity and financial performance among Canadian firms. Lecraw (1977) found that large firms classified as unrelated diversifiers were heavily engaged in merger activity (his Table 13) and tended to report lower profits over 1960-1975 than did less diversified firms (Table 20). Jog and Riding (1988) and Tarasofsky and Corvari (1991), using a sample of mergers obtained from the merger register of the Department of Consumer and Corporate Affairs by acquirers that were listed on the Toronto Stock Exchange, found about equal numbers of post-merger failures and successes, where success is equated to profitability.

¹¹ Reuber and Roseman (1967, pp.76-8) reported that the most common reasons given for mergers were the desire of the acquiree to sell and the acquirer's desire to add capacity cheaper than through *de novo* investment. They also reported that although acquirees were no less profitable than the firms acquiring them, losses were more common among the acquirees. Lecraw (1977, pp.16-8), generalizing from case studies of large mergers, confirmed the importance of sellers' initiatives; however, he ascribed importance to what was later named the "free cash flow" hypothesis: that large enterprises undertake mergers when their cash inflows exceed outlays on profitable reinvestments in their base activities plus normal dividends.

occur between domestic controlling firms, between foreign controlling firms,¹² or in either direction between domestic and foreign. Control changes include not only mergers and acquisitions but also sell-offs of businesses from one firm to another, spin-offs to shareholders, and buy-outs; sell-offs, spin-offs, and buy-outs grew more popular in the 1980s than they were in the 1970s.

We eliminated changes in control involving all plants divested by continuing firms incumbent in the industry because they represented limited and special situations. That left the question of whether to separate the remaining sample of plants divested by exiting firms into two categories: those plants acquired by continuing incumbent firms (a horizontal merger) and those purchased by entrants (unrelated diversification). Some horizontal mergers increase the effective concentration of producers and cause price increases; in these instances any apparent gains in productivity could stem partly or wholly from increased monopoly rents. Despite this possibility, the horizontal category was retained in the analysis. Many of the mergers in this category, no doubt, represent closely related diversifications or transfers of control to managements experienced in the transferred plants' operations, and not mergers for monopoly gains. Since our hypotheses mark these mergers as likely sources of real productivity gains, we did not want to disregard them; but neither did we want to confuse their effects with those of the main category of unrelated takeovers. We therefore present in tabular form the results of the divestitures that are associated with the unrelated takeovers. We repeat all calculations for the horizontal transactions, reporting the results where they substantially differ from those of the unrelated control changes.

We chose a simple strategy to highlight the frequency and effects of mergers involving foreign enterprises, while controlling for the structures of the industries in question. We ranked the four-digit industries in the standard industrial classification in 1970 according to the proportions of their shipments accounted for by foreign-controlled establishments and divided them into thirds, ranked by high, medium, and low foreign shares. We then observed the turnover of establishments during 1970-79 for industries in each foreign-ownership group or tranche using the various weighting schemes when we calculated the average for each tranche. This simple procedure allows us to distinguish the incidence and consequences of changes in control involving foreign and domestic firms, while taking account of the structural characteristics of industries that govern their attraction for multinational enterprises. If mergers involving foreign firms differ from those of domestic companies, we can tell whether the difference stems from the opportunities inherent in their market structures or the intrinsic properties of the enterprises themselves by examining the extent to which the difference varies across the industry groupings. Because we observe the universe of Canadian manufacturing establishments to which

¹² Throughout the paper, enterprises or firms generally refer to the concept of an unconsolidated enterprise: that is, all establishments within a 4-digit SIC industry under common control.

the hypotheses pertain, we make only limited use of statistical inference.¹³

Structural Differences among Industries

Previous research has shown that the prevalence of multinational enterprises or their subsidiaries in an industry is closely associated with several underlying elements of the industry's market structure. Those elements of market structure also affect the scope for changes in control to bring about the various effects hypothesized above. Therefore, we start by reporting the averages of structural differences among industries in the three tranches grouped by foreign control. Table 1 shows the wide range and symmetrical distribution of mean shares of foreign ownership among the groups. The substantial decline in foreign shares that occurred during the 1970s is evident: the mean share fell 8.1 percent in the high foreign-ownership industries and 10.2 percent in the medium foreign-ownership industries, while increasing 5.0 percent in the low foreign-ownership sector.

The internalization theory has successfully predicted the association of foreign ownership with several traits of market structure. Table 1 confirms that industries' ratios of advertising to sales, and of research and development employees to total employment increase sharply with foreign ownership. That does not prove true, however, for the extent of multiplant operation in Canada of an industry's leading (four) firms.¹⁴ Because these predictors of foreign ownership are also predictors of concentration (shipments accounted for by the largest four firms), we expect and observe that concentration increases with foreign ownership. In each group, small decreases in concentration occurred, which might have been associated with the retreat of foreign ownership. Another substantial difference exists in the complexity and diversity of the product lines of industries in the various ownership tranches: the difference is shown by the average number of census-defined products classified to each industry. This number is more than twice as large in the sector with high foreign ownership as it is in the sector with low foreign ownership. Economies of scope in product-line distribution thus increase with foreign ownership and the increase is consistent with the foreign subsidiary's role as a distribution conduit for a product line assembled from both its own output and those of its foreign affiliates.

Tariff protection served historically to promote foreign investment in Canada, but a strong relationship between tariffs and foreign investment was not apparent in the 1970s. Nominal tariffs decreased with foreign ownership, although effective tariffs did not differ between

¹³ For an analysis similar to that made in this paper, but based on the subdivision of industries by research-intensity, see Baldwin and Gorecki (1991d).

¹⁴ The total numbers of plants per enterprise are also shown; but they are not as good a measure of multiplant operation because those numbers vary among industries mainly with the number of single-plant firms. Not surprisingly, this suggests that single-plant firms are more common in industries where foreign ownership is low.

medium-share and high-share groups. All three tranches experienced moderate reductions in both nominal and effective tariffs. As Matthews (1985) showed, the expansion of intra-industry trade occurred in a surprisingly uniform fashion across the manufacturing industries. Import-intensity is shown by the ratio of domestic disappearance (domestic shipments minus exports plus imports) to domestic shipments. Each group of industries, on balance, is import competing, especially the group with high foreign ownership. The ratio of imports to production increased during the 1970s by about the same amount for each tranche. Export intensity increases with foreign ownership, and so industries with a high proportion of foreign ownership also exhibit high levels of intra-industry trade. Export intensity rose during the 1970s by about one-fourth, and its increase was independent of the extent of foreign ownership.

Because of our focus on mergers and acquisitions that occur across industry boundaries and result in a diversified enterprise, we also analyzed information on the diversification of companies classified to each industry (Table 2). The first section reports the average Herfindahl (inverse) index of diversification for consolidated enterprises that own plants in the industry, measured over all their plants in the Canadian manufacturing, mining, and logging sectors. Foreign-controlled enterprises are more diversified than domestic enterprises in all groups (see Table 2, line 2). Diversification increases with foreign investment overall, partly because domestic companies are less diversified in industries with little foreign ownership, but mainly because of the increasing proportion of more diversified foreign-controlled companies.

Line 5, Table 2 repeats the mean number of products classified to the industry (from Table 1) and gives the mean of its inverse, which is approximately the lower bound for the Herfindahl index of diversification within the industry. Line 7 reports mean plant-level diversification at the four-digit product level.¹⁵ Like enterprise diversification, mean plant-level diversification is lowest (for all establishments taken together) in industries with low foreign ownership, and highest for the tranche with high foreign ownership. Plant-level diversification increases across foreign-ownership tranches as one would expect, on the basis of the number of products classified to an industry (line 6). The increase is slightly greater for foreign plants, but the difference is small.¹⁶

¹⁵ Plants, of course, produce some products that are not classified to their primary four-digit industries, and these are included in line 7. To that extent, the lower bound shown in line 6 is not constraining. Given the typically high plant-specialization ratios (the percentage of output produced by a plant that is classified to the SIC industry to which the plant is assigned), however, the constraint is still approximately relevant.

¹⁶ Plant size is also related to diversity and to foreign-control status within industries (Caves, 1975). We, therefore, ascertained by a regression procedure which controls for plant size that the foreign-domestic differences in plant characteristics shown here are not solely due to plant-size differences.

Thus the industries with high foreign ownership also exhibit high levels of enterprise diversification. Potential diversification within the industry is also greater. The greater diversification stems from joint costs or complementarities in non-production activities and not from joint plant costs. Actual plant-level diversification increases correspondingly; the increase is slightly less in domestic plants.

These structural differences imply differences in the processes of turnover of establishments and their control as shown in Table 3. The shares of shipments originated by each category of establishments were obtained for each industry in a group, and unweighted averages were than taken across industries.¹⁷ Thus, in the average industry, establishments accounting for 18.8 percent of shipments in 1970 were closed down during the decade by firms that exited from the industry (line 1), while establishments accounting for 18.8 percent of 1979 shipments were opened by firms entering the industry (Table 3, line 2). Slightly smaller shares of shipments were accounted for in 1970 by plants subsequently divested by exiting firms (12.5 percent, Table 3, line 5) and in 1979 by plants acquired by entering firms (10.4 percent, Table 3, line 6). Mergers were thus important avenues for entry into (exit from) industries, although slightly more turnover of enterprises occurred through green-field entry and exit via close-down of plant. Openings and closures of plants by firms that continued in the industry accounted for about 5 percent of market share each (Table 3, lines 3 and 4). Plants subject to horizontal acquisition during the decade accounted for 2.8 percent in 1979 (line 8), and plants to be divested by continuing firms, for 1.1 percent in 1970 (line 7).

The first three columns of Table 3 show that the relative frequency of turnover resulting from green-field entry and close-down exit declines sharply with foreign ownership (lines 1 and 2), while turnover through the acquisition and divestiture of firms is less important in industries with low foreign ownership than in other industries. Turnover associated with plants opened and closed by continuing firms is also less important for industries with low foreign ownership (lines 3 and 4), while horizontal changes in control are independent of foreign ownership (lines 7 and 8).¹⁸

Overall, Table 3 tells us that changes in control of continuing establishments increase in frequency with an increase in foreign ownership. Changes in control occur frequently where

¹⁷ For a description of the data and the definitions of entry and exit used, see Baldwin and Gorecki (1991a).

¹⁸ These relations were investigated extensively by Baldwin and Gorecki (1990), showing that green-field entrants and entrants by acquisition affect different segments of an industry's firm-size distribution. Moreover, when industries are sorted by producer concentration rather than foreign ownership, as in Table 3, essentially the same conclusions follow about green-field entry in contrast to entry by acquisition.

foreign ownership is high, although the causal relationship (if any) is unknown at this stage. The turnover of firms in the high foreign-ownership tranche is less connected with the birth and death of establishments, in that green-field entry and close-down exit are less important.¹⁹ One salient implication is that green-field entry provides a weaker competitive stimulus for efficiency in industries with high foreign ownership, leaving a larger task for the market for corporate control and competition from abroad.

Table 4 elaborates on the findings of Table 3, by focusing on changes in the shares of four-digit industry shipments held by firms operating in 1970, 1979, or both years. Specifically, we calculated for each industry the sum of absolute value of shares changes:

$$\sum_i |SH79_i - SH70_i|$$

where $SH79_i$ is the i th firm's share of industry shipments in 1979 and $SH70_i$ is its share in 1970. The calculation includes green-field entrants that went from zero to positive shares and close-down exits that went from positive share to zero. As the table shows, industries with high foreign ownership exhibit not only much less turnover arising from entry and exit but also slightly less turnover in the positions of incumbents present in the industry throughout the 1970s.

Control Changes and Changes in Establishments' Shares and Performance

To this point, this paper has addressed the structural conditions surrounding mergers and other changes in control. The main contention is that industries that harbour extensive foreign ownership provide the greatest scope for "lumpiness", intangible assets, and product-line complexity. The evidence indicates that these industries exhibit the most turnover of control of plants among firms and entry and exit of firms as a result of merger transactions. We now can consider the specific effects of these control changes, both overall and by nationality of the firms involved.

We identified the establishments in each industry that continued in operation from 1970

¹⁹ The interindustry averages shown in Table 3 are unweighted. When we weight these averages by industry size, the changes in the data indicate that except for continuing-plant turnover, the intensity of turnover is greater in smaller industries. A sufficient (but not necessary) explanation for this is the tendency for absolute sizes of plants (and firms) to be correlated to the size of the industry (market). The proportion of a plant's costs that are sunk probably increases with the plant's absolute size (capital intensity certainly increases), both within and between industries. Smaller plants in smaller industries accordingly exhibit greater turnover.

to 1979 but underwent changes of control during the period because of divestiture by exiting firms and acquisition by entering firms; we also grouped those firms in each industry by the nationality pattern of the control change: that is between domestic companies, between foreign companies, and between foreign and domestic companies. Market shares of the establishments in each category were summed for 1970 and for 1979 in each industry, and unweighted averages within each tranche of the resulting industry sums were calculated. The results appear in Table 5, along with the average relative plant size of acquired plant in 1979. Relative plant size is calculated in relation to plants that continued over the decade without a change in ownership.

It is well established that turnover in larger firms tends to take the form of mergers and other control changes, while green-field entry and close-down exit tends to involve smaller firms (Baldwin and Gorecki, 1991b). This tendency for larger firms is confirmed in Table 5, in that the average size of acquired plant in 1979 is greater than that for plants that continued over the decade without a change of ownership. There is a marked difference in the relative plant size of acquired plants across the foreign-ownership tranches. Acquired plants are larger than average in the sector with the most domestic ownership and less than average in the high foreign-ownership tranche. There is also a difference in size of plants that are acquired by foreign and domestic firms. Plants that are divested and acquired by foreign firms are generally larger than plants divested and acquired by domestic firms. This difference partially reflects the differences in the underlying populations.

Because initially large plants or firms tend subsequently to lose market share (the regression process outlined in Baldwin (1992), we expect the shares of the larger establishments undergoing changes in control to decline, and the reverse to occur for smaller establishments that are acquired. What matters, therefore, is deviations from this expected pattern.

Changes in shares for domestic-to-domestic transfers accord with our expectations. Share losses occur in the low foreign-ownership tranche where the acquired plants are larger than continuing plants, and share gains occur in the high foreign-ownership tranche where the affected plant is smaller than other continuing plants. In contrast, the plants involved in foreign-to-foreign transfers experience a small share gain across all tranches, even though the relative size of acquired plant differs across foreign-ownership tranches in much the same way as do plants involved in domestic-to-domestic transfers. These results suggest that mergers between foreign enterprises have favourable effects generally because most such control changes involve the type of asset transfer hypothesized by the theory of the multinational firm. That transfers among domestic enterprises have unfavourable effects in industries where domestic control is high and where acquired plant is relatively large, suggests that there is a strong component here of transfers that involve difficult turnaround situations.

We checked to see whether any patterns emerge when Table 5 is recalculated using horizontal acquisitions only: that is, control changes that transfer plant from exiting firms to firms that are present in the industry throughout the decade. In the horizontal category, the success of foreign-to-foreign transfers is less in the high foreign-ownership tranche, and higher in the low foreign-ownership tranche. The direction of the other changes remains basically the same. This

confirms the earlier hypothesis that closely related mergers by foreign firms may be less successful, but shows that the problems here are basically restricted to the high foreign-ownership tranche. This is probably also the sector where most of the mergers occurred that were incidental to control changes effected abroad and that had questionable effects.

The market-share changes that have been described for divested and acquired plants appear to be partially explained by the nature of the stochastic process at work in the firm population. To investigate this proposition further, a growth equation that allows for the regression to the mean phenomena was estimated for all plants in the manufacturing sector. The dependent variable chosen for the analysis was the log of the ratio of 1979 share to 1970 share for all continuing plants.²⁰ The dependent variable was regressed against 1970 share, a binary variable that takes on a value of one when the plant size is greater than the median in an industry. Both of these regressands had significant and negative coefficients, indicating that growth rates were inversely related to plant size. Also included were binary variables for industry foreign-ownership tranche, the nationality of the control change (foreign-to-foreign, domestic-to-domestic, domestic-to-foreign, and foreign-to-domestic), and the extent to which the control change involved a horizontal component. Four horizontal categories were defined. These categories were based on whether the acquiring and divesting firm continued in the industry over the period. Divesting and acquiring firms were classified as: 1) entrants/exits--unrelated control changes 2) continuing/exits--horizontal mergers 3) entrants/continuing--unrelated spin-offs 4) continuing/continuing--related spin-offs.

The core regression included only the initial market share and the dummy variable that divided each industry at the median. The strategy pursued was to add binary variables first for each tranche, then for each type of horizontal category, and then for nationality of the transaction. When only foreign-ownership tranche is considered, the two tranches with the highest foreign ownership have a negative coefficient, thereby indicating more share loss for these plants than would have been expected on the basis of the regression to the mean process. This is primarily the result of the interaction with horizontal merger type. Inclusion of horizontal type along with interaction terms for ownership tranche produces a significant positive coefficient in the lowest foreign-ownership tranche and a significant negative coefficient on the high foreign-ownership tranche for horizontal mergers (the continuing/exiting category) and, therefore, accords with the previous finding that these mergers do well in the domestic sector and poorly in the foreign segment. On the other hand, the coefficients attached to the unrelated control change category (entry/exits) do not show that the lowest and highest foreign-ownership tranches are markedly different from all continuing establishments. Observed differences in the share changes across all plants in the unrelated control change category are explained by the regression to the mean process. Finally, the horizontal type, nationality and tranche variables were all entered to test whether there were significant differences in the cross-tranche performance of each horizontal type by nationality of the transfer. None of the components of the merger class on which we are focusing in this paper (unrelated control changes) showed a pattern in market share changes that

²⁰ See Baldwin (1992). This dependent variable allows for fixed industry effects.

could be distinguished from the general population of continuing plants.²¹

In conclusion, the micro-economic analysis demonstrates that once the regression to the mean phenomenon is considered, the pattern of share changes does not vary systematically with the level of foreign ownership. The relative changes in share following transfers of control indicate that nationality-related differences in transferred units' abilities to maintain their market shares is related to initial position. Nevertheless, it is clear that transfers in the domestic sector do differ from those in the foreign sector because the relative size of plants differs. We cannot reject the hypothesis that transfers of plants between foreign enterprises have favourable effects in industries with high foreign ownership, while transfers of plants between domestic enterprises have unfavourable effects in industries where domestic control prevails because of these plant-size effects.

We pointed out that the comparative incidence of mergers involving foreign and domestic firms should shed light on the importance of two sources of potential gain from mergers: synergies in the use of resources and improvement in managerial effectiveness. If the latter source prevails, foreign firms should be disproportionately inactive in the tranche with low foreign ownership. The data in Table 1 show that the mean foreign-ownership share in the high industries is about six times the mean foreign-ownership share in low industries in 1970; domestic ownership in the first tranche is about twice that in the third tranche. Foreign-to-foreign transfers and domestic-to-domestic transfers vary across tranches in about these same proportions. That is not the case for transfers from domestic to foreign firms. This finding confounds our expectation that these shares should be similar or smaller in the low foreign-ownership industries. Perhaps the pattern results from the differential changes in the prevalence of foreign ownership noted in Table 1. Perhaps it reflects a division of labour in the market for corporate control not anticipated by our hypotheses--a question to be investigated below.

Market shares can change for many reasons; although according to Darwinian reasoning, an increasing share suggests an improvement in productivity, the association between the two is by no means automatic. In order to investigate the effect of control changes on productivity (and other variables), we divided each industry into those establishments that continued without a change of control between 1970 and 1979 and those that did not.²² Characteristics of the plants that continued with no change in control (foreign and domestic taken together) were used to normalize data for plants that underwent changes: changes in control, or entry or shutdown of

²¹ Differences were found in the related spin-off merger component. Transfers between continuing firms both of which are foreign--spin-offs to incumbents--show a differential pattern between domestic and foreign industry tranches. These foreign-to-foreign transfers gain share in the low foreign-ownership tranche and lose it in the higher tranches.

²² Recall that horizontal mergers and plants transferred between continuing firms are excluded from this analysis.

the plants themselves. A comprehensively weighted average (that is, both within and between industries) was computed for each foreign-ownership group by calculating the weighted average of the variable across plants in the changed category, then across all continuing plants without changes in control, and then by dividing the former by the latter.²³

The first section of Table 6 shows relative productivity, measured by value added per employee. Productivity changes show larger gains in the tranche where foreign ownership is highest. In the high foreign-ownership industries, plants undergoing a control change moved from only 69 per cent of the productivity of the control group (column 3, line 2) to 80 per cent of the productivity of the control group (column 3, line 1): a gain of 11 percentage points. In contrast, the gain was only 5 percentage points in the tranche with the highest domestic ownership. The pattern of productivity changes, as expected, corresponds to that for share changes described in Table 5. Industries with traits that dispose them toward extensive foreign ownership are those in which changes in control have the most positive effects. This pattern is fully consistent with the internalization theory of foreign investment and diversification, which marks these industries as the ones where changes in control can contribute most to the utilization of lumpy and intangible assets.

When these calculations are performed only on the horizontal component, the results are exactly the opposite. Productivity gains are 14 points in the lowest foreign-ownership tranche, 11 points in the middle tranche, and 6 points in the highest tranche. These changes accord with the share changes recorded for this category of mergers across ownership tranches. This pattern conforms to the interpretation offered for Table 5: where foreign ownership is low, the productivity of mergers depends on the close similarity of activities between the acquiring and acquired units.²⁴

While these increases are positive, they need to be set in the context of the gains being made by plant exit and entry. The gains stemming from replacement by continuing firms of closed plants by new plants range from 13 to 20 points in the high foreign-ownership tranche and from 15 to 36 points in the lowest foreign-ownership tranche. Here the largest gains are made

²³ Thus, for example, relative output per worker was calculated as follows. The numerator is the sum of output divided by the sum of workers taken across all merged plants in one foreign-ownership group. The denominator is the sum of output divided by the sum of workers taken across all continuing plants that did not experience a control change in the same foreign-ownership group.

²⁴ The greater productivity gain from horizontal mergers might suggest monopoly rents. However, it should be noted that firms merging purely for monopoly profits, unless they actually achieve a monopoly, generally must give up some market share to non-merging firms in order to increase their profit margins. The evidence of Table 5 indicated that horizontal mergers in industries dominated by domestic firms also achieve market-share increase.

in the lowest foreign-ownership tranche.²⁵

The remainder of Table 6 supplies evidence on certain changes relating to labour inputs and costs that might accompany changes in control. A change in control might be profitable to the acquirer because it can curb the payment of above-market wages or salaries. However, only in industries with low foreign ownership are both wages and salaries initially higher in establishments that change control than in all continuing establishments. In those industries, changes in control pull wages down toward the norm, but increase salaries. Sectors with medium and high foreign investment exhibit more containment of salaries. The normalized percentage of nonproduction workers decreases in plants subject to control change in industries with low foreign ownership: this decrease is consistent with new owners reaping pecuniary gains by squeezing out excess costs (staff and compensation), particularly in the domestic sector.²⁶ These same results are also found if the calculations are redone for the horizontal mergers. Mergers in the high domestic ownership sector are accompanied by both wage and salary declines (5 and 6 points, respectively) and by decreases in the percentage of nonproduction workers (49 points). On the other hand, only the percentage of nonproduction workers decreases in the high foreign-ownership sector and by much less (6 points).

The indexes reported in Table 6 use plant-size-weighted averages,²⁷ which seems appropriate for the questions under investigation. Whether changes in control raise or lower average productivity is the question important for economic welfare; large establishments, *ceteris paribus*, matter more for aggregate welfare, quite apart from the fact that any impairment of productivity by mergers is suspected mainly in the case of those undertaken by large enterprises, which in turn are likely to operate large establishments. These aggregate results depend both on the distribution of changes across firms and industries and also on the sizes of the firms and the industries in which the mergers are occurring, because the average is weighted. Therefore, it seemed desirable to ask whether the results depended on the weights used. To pursue this

²⁵ See Baldwin and Gorecki (1991c) for a discussion of the contribution that plant turnover makes to productivity growth.

²⁶ The nonproduction-worker percentages of plants subject to control changes in the high-foreign-ownership sector are less than those of continuing plants both before and after acquisition, and the percentages of nonproduction workers in plants opened and closed in general decline across groups with the extent of foreign ownership. These patterns suggest that in industries with high foreign ownership the high-ground positions of continuing units are held by foreign-controlled units employing large nonproduction contingents and subject to low turnover. This is consistent with the evidence from Table 5 on the variation of foreign-to-foreign mergers with the extent of foreign control.

²⁷ The weights are calculated in relation to all plants in a foreign-ownership tranche, that is, value-added and labour inputs are totalled for all plants in a foreign-ownership tranche.

question, we took the industry-level weighted averages²⁸ of the gain in productivity accruing from changes in control and correlated them with several industry attributes, overall and for industries in each foreign-investment tranche. There is relatively little association between the productivity gains and various measures of unit size. What stands out is that the productivity gains decrease with the productivity of to-be-divested plants relative to continuing plants in 1970. The shortcoming of large mergers in the domestic sector may lie not so much in their limited ability to raise productivity in purchased units as in the purchase of units with little scope for improvement. This result is similar to that observed for changes in market shares.

The strategy of dividing all 4-digit industries by the degree of foreign ownership was designed to stratify industries based on the multitude of factors that are associated with foreign ownership, most of which are also predicted to affect the success of mergers. This strategy will be particularly powerful if the factors that affect foreign ownership also affect the efficacy of mergers. The results suggest that this does in part occur. This finding should not be misconstrued to imply that factors other than those determining foreign investment also influence the effect of mergers, nor that there are some reasons for foreign investment that might be less conducive to the success of mergers.

In order to investigate the extent to which other factors affect the success of mergers and of foreign ownership, all 4-digit manufacturing industries were divided into five groups: resource-based, labour-intensive, scale-related, product-differentiated, and science-based industries. These categories are based on a taxonomy outlined by the OECD (1987, chapter 7, Annex A). Canadian industries were assigned to the classification used by the OECD using the Statistics Canada concordance between the Canadian SIC and the ISIC used by the OECD. Then a discriminant analysis was performed using variables such as wage rate, percent of value added accounted for by labour remuneration, concentration, economies of scale estimates, R&D intensity, and advertising-to-sales ratios to verify the classification. Corrections were made when the original assignment was shown to be wanting. Then the same weighted-average relative-productivity variable used in Table 6 was calculated for each of the five main industry groupings, cross-classified by foreign-ownership tranche. Changes in the relative productivity of each category are reported in Table 7, panel A. Panel B reports the number of industries classified to the cell and the percentage of foreign ownership in each.

The effect of mergers on productivity differs substantially across the sample, both for industry totals and across foreign-ownership tranches. In natural resource industries and labour-intensive industries, the overall effect of mergers on productivity is negative. Scale-based industries experience a small gain from control changes. Product-differentiated and science-based industries exhibit the greatest productivity gains. It is the assets primarily associated with marketing and innovation that generate the greatest gains from merger activity. Differences across the five sectors in the tranche with the highest foreign ownership (column 3) mirror the

²⁸ The weights are calculated for all plants in an industry: that is, value-added and the labour input are totalled for all plants in an industry.

overall total. Few gains are made in natural resources, labour-intensive industries, or even in scale industries; all of the gains are in the product-differentiated and science-based industries. In contrast, the foreign-ownership tranche with the highest domestic ownership (column 1) makes relatively more gains in resource and scale industries, but does poorly in the product-differentiated tranche as compared to the high foreign ownership tranche. A comparison of the high and medium foreign-ownership tranches for the science-based industries (row 5, columns 2 and 3) shows that domestic ownership leads to lower gains in this sector.

We have established the basic relation between the prevalence of foreign ownership in an industry and the character of gains that stem from changes in the control of establishments. During the 1970s, productivity gains typically resulted from changes in control. Where foreign ownership is low, there is some evidence that gains come from containing excess costs or that they come from closely related diversification. Where foreign ownership is high, gains seem to stem from improved usage of lumpy and intangible assets. Especially for the industries with high foreign ownership, there remains the important question whether those gains come specifically from control changes involving foreign enterprises or whether they are independent of the firms' nationalities. To answer that question, we divided the establishments that in 1970 were fated for control changes and those that in 1979 had undergone changes into those under foreign and domestic control. This division allows us to classify control changes into those subject to the four classes of changes shown in Table 8--foreign-to-foreign, foreign-to-domestic, domestic-to-foreign, and domestic-to-domestic. Table 8 reports on the same characteristics as Table 6: labour productivity, production and non-production worker remuneration, and the proportion of the workforce employed as non-production workers. In each section, we repeat the data from Table 6 on the ratios for all establishments subject to changes in control to all continuing establishments. Then, using the same control group, we report ratios for the groups subdivided by nationality of enterprise.

Several conclusions emerge from the pattern of productivity changes. First, although the largest gains are centred in the industries with high foreign ownership (Table 8, column 4), domestic-to-domestic and foreign-to-domestic transfers both perform well. In this sector, gains involving domestic enterprises as buyers are just as large as those which involve foreign firms as buyers. Thus, where foreign ownership is high, the environment benefits both domestic and foreign takeovers. Secondly, the lowest foreign ownership-tranche demonstrates a tendency for foreign firms to do well. Foreign-to-foreign and domestic-to-foreign transfers lead to gains, though domestic-to-domestic transfers lead to losses. This finding suggests that foreign transfers in all tranches involve lumpy asset transfer, whereas for the most part lumpy assets are involved only for domestic transfers in the high foreign-ownership sector.

Exercises similar to those presented in Table 8 for productivity were also done using the five-fold classification, consisting of natural resource, labour-intensive, scale-related, product differentiated, and science-based industries. All cells where there were particularly large losses or gains were chosen, and differences between productivity gains for domestic-to-domestic and foreign-to-foreign transfers were examined. The differences were found to be small. The environment rather than nationality is the primary determining factor of success for transfers

within each of the two nationality groups.

In Table 6, we found that control changes reduce above-norm wages slightly in industries with low foreign ownership, while employee compensation starts below norm in industries with high foreign ownership and increases. Table 8 shows that the "excess" wages²⁹ in low foreign-ownership industries appear mainly in domestic establishments and are alleviated most in domestic-to-domestic mergers. Where foreign ownership is high, changes in control tend to bring wage increases except for transfers of control to domestic firms. Thus, both industry environment and nationality affect the extent to which wages change after a transfer of control. Wages decline more in the low foreign-ownership tranche for both domestic-to-domestic and foreign-to-foreign transfers than in the high foreign-ownership tranche. (wages actually increase in the high foreign-ownership tranche.) However, the difference in the performance of domestic-to-domestic transfers is greater than the difference in the performance of foreign-to-foreign transfers when the low and high foreign-ownership tranches are compared.

In Table 6, we noted that transfers tended to increase salaries in industries with low foreign ownership and to decrease salaries in the high foreign-ownership industries. Table 8 shows that the tendency to increase salaries comes from domestic acquisitions in the low foreign-ownership sector. The compression of salaries in the high foreign-ownership industries following changes in control occurs in every category other than foreign-to-foreign changes. As occurred with wage rates, the effect of control changes on salary differs across tranches, and the differential effect is greatest in the domestic-to-domestic sector.

In Table 6, we saw that changes in control bring about reductions in the nonproduction worker component of the workforce where foreign ownership is low, but cause virtually no change where it is high. Table 8 shows those staff reductions in firms characterized by low foreign ownership occur in all sectors except the domestic-to-foreign changes. Where foreign ownership is high, the percentage employed as non-production workers is unaffected by foreign-to-foreign control changes but increases in the classes where a domestic divestor is involved.

The descriptions provided by the weighted averages in Table 8 give a broad overview of the effects of changes in control. In order to provide a more precise test of the effect of nationality and foreign-ownership tranche on control changes, a regression using the underlying micro-units was performed. All establishments existing in 1970 and 1979 were pooled, and value-added per worker was regressed on size of plant, industry binary variables, a shift term to allow intercept and size slope to vary between 1970 and 1979 and binary variables for all entry, exit, acquisition and divestiture categories. The binary variables permit estimation of the

²⁹ The term should not be given a normative connotation. All we know is the level of average compensation in the control-change establishments relative to continuing establishments with no changes in control. We do not know whether compensation levels lie above or below employees' opportunity costs in either group.

productivity of a category relative to plants that continue over the decade without a change in control. Earlier results (Baldwin, 1991), founded on micro-data base, showed that there was no productivity gain, on average, for the unrelated control changes (the exit/entry category) and a significant gain for horizontal mergers (the exit/continuing category).³⁰

Building on this framework, we divided each of the acquisition categories into domestic-to-domestic, foreign-to-foreign, foreign-to-domestic, and domestic-to-foreign so as to test whether the effect of a category depended on the nationalities involved in a transfer. By interacting each of these with binary variables for the foreign-ownership tranche, the hypothesis that environment (i.e., industry sector) is a matter of importance was also examined.

The analysis of unrelated control changes (plants divested by exiting firms and acquired by entering firms), indicated that differences across tranches and across nationality groupings were both insignificant. For horizontal mergers--divestitures by exiting firms that were acquired by continuing firms--foreign-ownership tranche was more important than nationality. Most of the control changes for different nationality types did better in the low foreign-ownership tranche.

In conclusion, when nationality of transaction party is examined, neither type of acquirer appears systematically to outperform the other. In the high foreign-ownership tranche, domestic-to-domestic transfers are characterized by higher productivity and non-production worker gains, but lower wage gains and greater salary losses compared with foreign-to-foreign transfers. In the low foreign-ownership tranche, foreign-to-foreign transfers have better productivity gains and lower wage-rate losses than domestic-to-domestic transfers, but lower salary and non-production worker changes. There is also evidence of a division of labour between domestic-to-domestic and foreign-to-foreign transfers. Domestic enterprises achieve more containment of costs. When control changes across all tranches are considered, domestic-to-domestic transfers experience either a decline or no change in their relative wage, salary and non-production worker percentages; the reverse occurs in the case of foreign-to-foreign transfers. Foreign enterprises effect more relocations of resources that might lead to synergistic gains. Their productivity gains extend across all industries, whereas these gains occur only in the high foreign-ownership tranche for domestic-to-domestic transfers. There is an evident difference between the types of opportunities for productive control changes that arise in industry structures congenial to foreign ownership and those that arise in industries uncongenial to such ownership.

5. SUMMARY AND CONCLUSIONS

This paper has investigated the effects of mergers and other changes in the control of establishments using the comprehensive data of Statistics Canada for manufacturing establishments in 1970 and 1979. Theory and previous research on mergers suggest that the

³⁰ The results were derived from an unweighted regression that used all plants existing in 1970 and 1979, and calculated productivity gains relative to plants that continued over the decade without a change in control.

effect of changes in control might vary with the affinity of industries' structures for the operation of multinational enterprises: the same opportunities for the synergistic deployment of lumpy and intangible assets that foster foreign investment also create opportunities for beneficial changes in control. On the other hand, if mergers increase efficiency in the use of establishments' existing input flows, no such association should appear. The data support a number of conclusions:

1. The proportion of establishments subject to changes in control over 1970-1979 increases with the importance of foreign ownership. The occurrence of green-field entry by new firms and close-down exit decreases sharply with foreign ownership, so that industries with high foreign ownership experience less pressure from this source to improve efficiency. They also experience a little less turnover of market share among incumbents. Roughly speaking, producers in industries with high foreign ownership feel pressures to achieve efficiency more from control changes and less from domestic product-market competition than do producers in industries with low foreign ownership.

2. Industries with low and high foreign ownership differ sharply in the opportunities they afford for gains through changes in control. Where foreign ownership is high, so are opportunities for the synergistic deployment of lumpy and intangible assets. Where foreign ownership is low, the opportunities for productive changes in control lie more in cost containment and improved use of the establishment's existing input flow.

3. The favourable effects of changes in control increase with an industry's foreign ownership. Changes in control lead to increases in relative market share and relative productivity that are greater in the highest foreign-ownership tranche than the lowest foreign-ownership tranche.

4. While industries with high foreign ownership show gains in productivity associated with control changes, there is a wide variation of performance within this sector. In particular, productivity gains are larger in product-differentiated and science-based industries, and less in the natural resource sector.

5. Productivity gains in high foreign-ownership industries do not come only from foreign acquisitions. Acquisitions by domestic firms also make important contributions in this sector, though not in the sector with the highest level of domestic ownership. This finding accords with the hypothesis that the predominant reason for control change in these high foreign-ownership industries relates to the synergistic merging of assets.

6. Foreign firm productivity gains are not restricted to the high foreign-ownership sector. That they also occur in the sector with the highest level of domestic ownership supports the contention that most control changes affecting multinational firms involve the transfer of specialized assets.

7. Transfers between foreign firms in the sector with the highest foreign ownership are

beneficial on several counts. Control changes involving foreign-to-foreign firms in the highest foreign-ownership sector lead to productivity gains and are not accompanied generally by wage or salary losses for production workers, nor by a decline in the proportion of the workforce employed as non-production workers.

8. There are sectoral differences in the function of transfers changing the nationality of control that suggest a specialization of function by nationality across foreign-ownership tranches. On the basis of productivity, wage, salary, and non-production worker gains, transfers from foreign-to-domestic firms do better in the domestic than the foreign sector and transfers from domestic-to-foreign firms do better in the high foreign-ownership sector.

9. Domestic-to-domestic control changes in the low foreign-ownership sector have so many negative characteristics--share losses, productivity losses, wage losses, non-production worker losses--as to suggest that problems may occur with this type of transaction.

10. Once we control for the opportunities that market structures dictate for productive changes in control, there is no evidence that either foreign or domestic acquirers achieve consistently better results across the whole range of industries.

11. Foreign firms are not proportionally more active as acquirers in industries with high foreign ownership. However, acquiring firms exhibit some division of labour by nationality. Foreign control seems more oriented toward realizing synergistic use of resources, while domestic control favours cost containment. The decline in the extent of foreign control that occurred during the 1970s has no counterpart in evidence of asymmetrical effects of shifts of establishments between domestic and foreign control.

The policy conclusions that follow from these quantitative findings are clear and largely benign. Control changes typically have favourable effects on productivity and efficiency. It is desirable to have both foreign and domestic enterprises active in the market for corporate control because both types of enterprise bring somewhat different skills to the task of resource reallocation. If any class of enterprises sports an inferior record, it is large domestic firms undertaking mergers in domestic industries; encouraging them to put their funds to other uses might be warranted. Some foreign-to-foreign changes in control in Canada (particularly horizontal mergers in the high foreign-ownership category) probably were adjuncts of similarly suspect mergers taking place outside Canada. Finally, because industries with high foreign ownership are also highly concentrated and subject to fewer pressures for efficiency from actual and potential competition, the discouragement of control changes is probably more costly than it is in industries with low foreign ownership. That consideration calls into question a procedure of public review of changes involving foreign acquirers unless the procedure recognizes the value of control changes. Little is known about the objectives actually pursued in the review of foreign control changes during this period (Rugman, 1980). The findings in general support the benign view taken of corporate mergers by the Royal Commission on Corporate Control (1978), although they do not address the question about discrepancies between private and social values that are raised by horizontal mergers and perhaps by some other types (compare Stanbury and Waverman, 1979).

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Table 1

Average characteristics¹ of industries and changes in selected characteristics, by foreign-ownership tranche²

Characteristic	Year	Foreign-ownership tranche			All Industries
		Low	Medium	High	
Foreign-ownership share ³	1970	11.9	41.0	81.1	44.4
	1979	12.5	36.8	73.9	40.9
Advertising/sales	1975	0.8	1.1	1.7	1.2
R&D/employees %	1975	.12	.73	1.43	.76
Plants per firm ⁴ , leading firms	1970	3.16	3.67	3.02	3.29
	1979	2.97	4.06	3.23	3.43
Plants per enterprise	1970	1.16	1.32	1.33	1.27
	1979	1.16	1.33	1.34	1.27
Four-firm concentration	1970	38.2	51.7	63.1	50.9
	1979	37.1	50.7	62.0	49.9
Number of products classified	1970	9.2	13.7	20.0	14.4
Nominal tariff rate	1970	15.3	10.3	9.2	11.6
	1978	13.3	9.0	7.9	10.1
Effective tariff rate ⁵	1966	17.6	13.9	14.1	15.2
	1978	15.5	10.3	10.1	12.0
Domestic disappearance/ shipments	1970	1.06	1.10	1.27	1.14
	1979	1.11	1.15	1.31	1.19
Exports/shipments	1970	10.4	15.1	20.4	15.3
	1979	13.4	18.2	26.2	19.3

¹ Average characteristics are calculated across all four-digit industries within a foreign-ownership tranche. The three tranches are derived by dividing the four-digit population into three groups with an equal number of industries, based on foreign ownership.

² For details of definitions of variables, see Baldwin and Gorecki (1986, Appendix A, pp. 172-182).

³ Foreign ownership is based on shipments under foreign control. A firm is defined as foreign controlled if there is effective foreign control, although the percentage of stock owned by the foreign parent may be less than 50 percent.

⁴ A firm is defined as all plants under common control.

⁵ The effective tariff rate reported here is version 2 in Baldwin and Gorecki (1986, Appendix A).

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 2

Average diversity characteristics of consolidated enterprises and plants, industries classified by foreign-ownership tranche, 1979

Characteristic	Foreign-ownership tranche			All Industries
	Low	Medium	High	
1. Herfindahl measure of interindustry diversification, enterprise level ¹				
All enterprises	0.89	0.77	0.72	0.80
Domestic	0.90	0.82	0.82	0.84
Foreign-controlled	0.74	0.64	0.64	0.67
2. Ratio of enterprise diversification for domestic divided by foreign enterprises				
	1.28	1.34	1.35	1.33
3. Average number of four-digit census products classified to industry ²				
Number	9.21	13.66	20.02	14.41
Inverse	0.27	0.23	0.22	0.24
4. Average Herfindahl measure of plant-level diversification within industry ³				
All establishments	0.80	0.79	0.76	0.79
Domestic	0.80	0.80	0.77	0.77
Foreign-controlled	0.81	0.78	0.75	0.63

¹ Enterprise level diversification is the parent's diversification calculated across all four-digit manufacturing, mining, and logging industries.

² "Number of products" is the number of four-digit ICC commodities (2,326 in total) per industry.

³ Plant specialization is the Herfindahl index of plant shipments at the four-digit ICC commodity level.

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 3

Average Market Shares¹ of establishments started, closed, and changing control, by status of firm and extent of foreign ownership, 1970 and 1979 (percent)

Characteristic	Foreign-ownership tranche			All Industries
	Low	Medium	High	
Establishments closed by exiting firms (1970) ²	27.0	18.3	11.3	18.8
Establishments opened by entering firms (1979) ³	24.9	18.5	13.1	18.8
Plants closed by continuing firms (1970) ⁴	3.6	5.1	5.0	4.6
New plants opened by continuing firms (1979) ⁵	3.2	6.1	5.9	5.1
Plants divested by exiting firms (1970)	9.1	14.8	13.7	12.5
Plants acquired by entering firms (1979)	7.6	11.9	11.7	10.4
Plants divested by continuing firms (1970)	1.2	0.8	1.2	1.1
Plants acquired by continuing firms (1979)	2.2	4.0	2.4	2.8

¹ These data are based on plant shipments and include all plants except head offices. For a discussion of the sample used, see Baldwin and Gorecki (1991a). The calculations in this table are unweighted averages at the four-digit industry level.

² Establishments closed are those plants in existence in 1970 in a particular four-digit industry that are no longer in that industry in 1979. Some will have been physically closed; others will have been switched to another industry. For the division between these, see Baldwin and Gorecki (1991a).

³ Establishments opened are those plants in existence in 1979 in a particular four-digit industry which were not there in 1970. Some will be plant births; others will be switched from another four-digit industry.

⁴ All divested plants are found in the same four-digit industry in 1970 and 1979.

⁵ Entering firms are those which own a plant in a particular four-digit industry in 1979 but not in 1970. Exiting firms are the reverse. Continuing firms own plants in an industry in both 1970 and 1979.

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 4

Average extent of turnover¹ of market share² among firms, by source of turnover and extent of foreign ownership, 1970 to 1979 (percent of market share transferred)

Category of firm turnover	Foreign-ownership tranche		
	Low	Medium	High
Green-field entry and close-down exit	25.8	18.4	12.1
Growth and decline of incumbents ³	16.6	16.6	14.7
Total turnover ⁴	42.2	34.0	26.8

¹ Turnover here is measured by a dissimilarity index that is described in the text.

² Market share is based on shipments data.

³ Firms are defined in this line as all establishments including head offices under common control in a four-digit industry. Head offices are omitted from line 1.

⁴ Total turnover is the sum of lines 1 and 2 and does not include the effect of acquisition entry and divestiture exit.

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 5

Average combined market shares and average relative plant size of establishments subject to changes of control¹ between 1970 and 1979, by nationality and extent of foreign ownership²

Type of Control Change	Year	Foreign-ownership tranche			
		Low	Medium	High	Total
A) <u>Average Share(per cent)</u>					
Domestic to domestic	1979	3.24	5.60	1.46	3.45
	1970	3.55	5.74	1.33	3.55
Domestic to foreign-controlled	1979	1.96	1.70	1.56	1.74
	1970	2.16	1.86	1.41	1.81
Foreign-controlled to domestic	1979	0.80	1.80	1.89	1.50
	1970	0.73	1.89	2.38	1.66
Foreign-controlled to foreign-controlled	1979	1.12	2.69	6.50	3.42
	1970	1.01	2.16	6.22	3.11
All Divested	1979	7.14	11.79	11.41	10.10
All Acquired	1970	7.44	11.66	11.33	10.14
B) <u>Average Relative Plant Size³</u>					
Domestic to domestic	1979	1.22	1.36	0.76	1.15
Domestic to foreign-controlled	1979	1.53	1.26	0.71	1.14
Foreign-controlled to domestic	1979	2.13	1.29	0.82	1.28
Foreign-controlled to foreign-controlled	1979	2.58	3.59	1.15	2.22
All Acquired	1979	1.67	1.78	0.94	1.44

¹ For plants divested by exiting firms and acquired by entering firms--unrelated mergers.

² The calculations in this table are unweighted averages at the industry level.

³ Size of plants subject to control change relative to plants that had continued between 1970 and 1979 in the same industry without a change in control.

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 6

Characteristics of establishments subject to control changes, startup, or shutdown between 1970 and 1979 normalized by characteristics of all continuing plants, by extent of foreign ownership (weighted mean ratio)¹

Characteristic by Category ²	Year	Foreign-ownership tranche		
		Low	Medium	High

<u>Productivity (value added per employee)</u>				
Continuing plants acquired	1979	1.02	1.03	0.80
Continuing plants divested	1970	0.97	1.04	0.69
New plants of green-field entrants	1979	0.89	0.91	0.80
Closed plants of exiting firms	1970	0.74	0.75	0.67
New plants of continuing firms	1979	1.22	1.05	1.00
Closed plants of continuing firms	1970	0.86	0.74	0.80
<u>Average remuneration per production worker³</u>				
Continuing plants acquired	1979	1.07	0.97	0.88
Continuing plants divested	1970	1.08	1.00	0.87
New plants of green-field entrants	1979	0.89	0.85	0.86
Closed plants of exiting firms	1970	0.87	0.80	0.81
New plants of continuing firms	1979	0.88	0.99	0.99
Closed plants of continuing firms	1970	1.00	0.89	0.92
<u>Annual salary per nonproduction worker</u>				
Continuing plants acquired	1979	1.06	0.94	0.89
Continuing plants divested	1970	1.01	0.97	0.94
New plants of green-field entrants	1979	0.98	0.90	0.94
Closed plants of exiting firms	1970	0.93	0.87	0.89
New plants of continuing firms	1979	0.91	0.95	0.99
Closed plants of continuing firms	1970	0.90	0.87	0.92

Table 6 (con't)

Characteristics of establishments subject to control changes, startup, or shutdown between 1970 and 1979 normalized by characteristics of all continuing plants, by extent of foreign ownership (weighted mean ratio)¹

Characteristic by Category ²	Year	Foreign-ownership tranche		
		Low	Medium	High
<u>Percentage of nonproduction workers⁴</u>				
Continuing plants acquired	1979	1.53	1.48	0.77
Continuing plants divested	1970	1.76	1.48	0.78
New plants of green-field entrants	1979	0.43	0.56	0.33
Closed plants of exiting firms	1970	0.53	0.48	0.33
New plants of continuing firms	1979	0.82	0.92	0.59
Closed plants of continuing firms	1970	1.31	1.05	0.65

¹ Each statistics presented in this table consists of the ratio of two weighted averages. Thus, for the relative salary of entrants, the numerator is the sum of all salary remuneration to nonproduction workers in entrant firms in a tranche divided by all nonproduction workers in entrant firms in a tranche divided by all nonproduction workers in these entrants; the denominator is the same statistics for all continuing plants that did not experience an ownership change.

² For a definition of the plant turnover categories, see Table 3. Only unrelated control changes were used here--plants divested by exiting firms and acquired by entering firms. Headquarters were omitted.

³ Remuneration refers to gross earnings of workers from salaries and wages before deductions of any kind, such as income tax, unemployment insurance, and pension benefits. Workers are defined in person-year equivalents. For further details, see Statistics Canada (1979, p. 26).

⁴ The percentage of total industry employment (production plus salaried workers) accounted for by salaried workers. For details of the distinction between production and salaried workers, see Statistics Canada (1979, pp. 23-24).

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

Table 7

Changes in Relative Productivity Between 1970 and 1979 of Plants Undergoing Unrelated Control Changes¹ by Industry Type, and Foreign Ownership by Industry Type ²

Industry Type ³	Foreign-ownership tranche			All
	Low	Medium	High	
Panel A:				
<u>Changes in Relative Productivity</u> <u>(value added per employee)</u>				
Natural Resources	0.08	-0.19	0.02	-0.02
Labour-Intensive	-0.24	0.03	-0.06	-0.09
Scale-Based	0.31	-0.01	-0.08	0.09
Product-Differentiated	-0.09	0.65	0.14	0.33
Science-Based	.	-0.14	0.28	0.22
Panel B:				
<u>Levels of 1979 Foreign Ownership(%)</u> <u>and Number of Industries(in brackets)</u>				
Natural Resources	13(21)	37(15)	82(16)	41(52)
Labour-Intensive	10(28)	42(18)	76(8)	30(54)
Scale-Based	13(6)	42(13)	82(14)	54(33)
Product-Differentiated	6(1)	44(8)	80(8)	58(17)
Science-Based	.(0)	41(2)	83(9)	75(11)
All	11(56)	41(56)	81(56)	44(167)

¹ For a definition of unrelated control change, see text.

² Relative productivity is defined as the productivity in plants undergoing control changes divided by the productivity of continuing plants that did not experience a control change. A weighted mean was calculated for productivity (value-added per worker) in each category and then the ratio of the two was computed. The value of the change in relative productivity is the difference in this ratio between 1979 and 1970.

³ Industry Groupings are defined in OECD(1987).

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada

Table 8

Effects of changes in control of continuing establishments (relative to continuing establishments without control changes), by nationality of firm and extent of foreign ownership, 1970 and 1979¹
(weighted mean ratio)

Characteristic by Category	Year	Foreign-ownership tranche			All
		Low	Medium	High	
<u>Productivity (value added per employee)</u>					
All continuing plants acquired	1979	1.02	1.03	0.80	0.95
All continuing plants divested	1970	0.97	1.04	0.69	0.87
Domestic acquired from domestic	1979	1.05	1.12	0.68	0.96
Domestic divested to domestic	1970	1.06	1.16	0.61	0.94
Domestic acquired from foreign	1979	1.12	1.01	0.86	1.01
Foreign divested to domestic	1970	0.86	0.95	0.55	0.76
Foreign acquired from domestic	1979	0.95	0.87	0.80	0.86
Domestic divested to foreign	1970	0.87	0.77	0.73	0.77
Foreign acquired from foreign	1979	0.93	0.92	0.83	0.89
Foreign divested to foreign	1970	0.85	0.91	0.79	0.83
<u>Average remuneration per production worker³</u>					
All continuing plants acquired	1979	1.07	0.97	0.88	0.97
All continuing plants divested	1970	1.08	1.00	0.87	0.98
Domestic acquired from domestic	1979	1.12	1.02	0.79	0.99
Foreign divested to domestic	1970	1.20	1.05	0.79	1.02
Domestic acquired from foreign	1979	1.09	0.98	0.91	0.99
Foreign divested to domestic	1970	0.96	1.02	0.98	1.01
Foreign acquired from domestic	1979	0.99	0.80	0.88	0.89
Domestic divested to foreign	1970	0.89	0.82	0.87	0.86
Foreign acquired from foreign	1979	0.97	0.95	0.92	0.96
Foreign divested to foreign	1970	0.98	0.94	0.87	0.93

Table 8 (con't)

Effects of changes in control of continuing establishments (relative to continuing establishments without control changes), by nationality of firm and extent of foreign ownership, 1970 and 1979¹
(weighted mean ratio)

Characteristic by Category	Year	Foreign-ownership tranche			
		Low	Medium	High	All
<u>Annual salary per nonproduction worker</u>					
All continuing plants acquired	1979	1.06	0.94	0.89	0.94
All continuing plants divested	1970	1.01	0.97	0.94	0.97
Domestic acquired from domestic	1979	1.14	0.94	0.85	0.96
Domestic divested to domestic	1970	1.08	0.96	0.91	0.96
Domestic acquired from foreign	1979	1.13	1.02	0.92	0.99
Foreign divested to domestic	1970	1.06	1.04	0.99	1.03
Foreign acquired from domestic	1979	0.91	0.89	0.86	0.88
Domestic divested to foreign	1970	0.91	0.91	0.98	0.93
Foreign acquired from foreign	1979	0.91	0.91	0.90	0.91
Foreign divested to foreign	1970	0.93	0.98	0.90	0.93
<u>Percentage of nonproduction workers⁴</u>					
All continuing plants acquired	1979	1.53	1.48	0.77	1.30
All continuing plants divested	1970	1.76	1.48	0.78	1.35
Domestic acquired from domestic	1979	1.62	1.55	0.64	1.24
Domestic divested to domestic	1970	1.72	1.56	0.57	1.23
Domestic acquired from foreign	1979	1.71	1.19	1.05	1.30
Foreign divested to domestic	1970	1.46	1.39	1.39	1.40
Foreign acquired from domestic	1979	1.21	0.92	0.60	0.93
Domestic divested to foreign	1970	1.71	1.01	0.50	0.98
Foreign acquired from foreign	1979	1.78	1.95	0.80	1.57
Foreign divested to foreign	1970	2.23	1.67	0.78	1.52

¹ Only unrelated mergers were considered. For definition of control, see Table 1. All summary statistics presented here are fully weighted averages, defined in Table 6.

Source: Special tabulations, Business and Labour Market Analysis Group, Statistics Canada.

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