

Corporate Divestment:
The Influence of Foreign Investment Strategies

HEATHER BERRY
Department of Management
The Wharton School
2022 Steinberg Hall-Dietrich Hall
University of Pennsylvania
Philadelphia, PA 19104-6370
Tel: (215) 898-0990
Fax: (215) 898-0401
E-mail: berryh@wharton.upenn.edu

April, 2004

I would like to thank Vit Henisz for helpful comments. I would also like to thank Anthony Passero for research assistance. Finally, financial support from the Reginald H. Jones Center for Management Policy, Strategy and Organization, The Wharton School, University of Pennsylvania is gratefully acknowledged.

Corporate Divestment: The Influence of Foreign Investment Strategies

Abstract

A panel of 190 US manufacturing firms (1981-2000) is analyzed to determine the impact of both home and foreign country influences on the divestment activities of firms in their home country. By applying and developing insights from the international economics literature to the strategy literature on corporate divestment, this study analyzes how firm investment location choices, foreign experiences, different levels of proprietary assets and foreign product diversification decisions all impact firm divestment decisions. By focusing on how heterogeneous firms' foreign investment strategies evolve over time, this study contributes to the strategy literature, which hasn't considered the impact of a firm's foreign investments on a firm's divestment decisions, and to the international economics literature, by examining how the complementary and substitution relationship between home and foreign investment evolves for firms as they build their operations abroad. The empirical results show that a firm's resources, its strategic choices and its prior experiences all influence the role that foreign investment plays in corporate divestment and restructuring. Further, the results show that complementary and substitution investment strategies between home and foreign investment not only co-exist within firms, but also evolve from one type of relationship to the other as firms build capabilities and gain experiences in foreign markets.

Keywords: Divestment, Foreign Direct Investment, Substitutes, Complements

INTRODUCTION

Firm divestment activities have been analyzed from a variety of perspectives. From a strategy perspective, over-diversified firms have been found to divest operations in efforts to refocus on their core businesses and return to optimal diversification levels (Markides 1992 and 1992b). In addition, strategic mistakes or control problems in diversified firms have been argued to lead to divestiture activities (Ravenscraft and Scherer, 1987, Porter, 1987, Hill, 1983, and Hoskisson et al, 1994)). From a financial perspective, high relative debt has been found to precede restructuring and divestment (Hoskisson and Johnson, 1992, and Lee and Cooperman, 1989). Further, poor and declining profitability have been found to precede firm divestment activities (Duhaime and Grant, 1984, Hitt and Ireland, 1986, Ravenscraft and Scherer, 1987 and Bergh, 1997). Finally, from a corporate governance perspective, some studies have focused on the inadequate governance systems that lead managers to overdiversify and subsequently divest operations (Hoskisson and Turk, 1990, Gibbs, 1993, Hoskisson et al, 1994 and Haynes et al, 2003). The results from all of these studies reveal several significant determinants of a firm's divestment activities, including firms that are over-diversified, firms with poor performance and firms with high levels of debt. These studies also show that activities such as divestments are not stand-alone phenomena. Rather, as Montgomery and Thomas (1988) state, events such as divestments and acquisitions are often best understood within broader frames of reference.

Building on the notion that corporate strategic decisions, like divestment activities, need to be analyzed within the broader context of a firm's overall strategy, this paper builds on arguments from both the strategy and international economics literatures to examine how firm investment strategies in both home and foreign markets are related to firm divestment decisions. While prior studies in the strategy literature have examined a number of important influences on firm

divestment in their home market, these studies have not analyzed how a firm's foreign investment strategy may impact a firm's divestment activities. This is an important issue because many of the firms that have been classified as "over-diversified" firms in prior studies are also the larger, established firms that have extensive operations abroad. Further, the international economics literature has shown that foreign production can have either a positive (complementary) or a negative (substitute) relationship with home country production. In addition to including the significant home-country influences on divestment that have been identified in prior studies in the strategy literature, this study incorporates findings from the international economics literature to analyze how a firm's foreign investment strategy may impact corporate divestiture in its home country. Below, I build on arguments from the international economics literature to examine when foreign investment is likely to have either a substitute or complementary relationship with a firm's home country investment while considering the moderating influence that firm strategic decisions on location choices and a firm's prior experiences in foreign markets may have. I examine how divestment decisions may be different for firms depending on how important firm proprietary assets are, where a firm's foreign investment is located, the extent of the firm's foreign investment activities and whether the firm's foreign investment is in its core industry.

By applying and developing insights from the international economics literature to the strategy literature on corporate divestment, this study provides a better understanding of how firm investment location choices, foreign experiences, proprietary assets and diversification decisions all impact firm divestment. By focusing on how heterogeneous firms' investment strategies evolve over time, this study contributes to the strategy literature, which hasn't considered a firm's foreign investments in the divestment decision, and to the international economics literature, which does not focus enough on the issue that heterogeneous firms may have different investment

strategies or on how the complementary and substitution relationship between home and foreign investment may evolve for individual firms as they build their operations abroad.

The empirical results from a panel of 190 US firms over the period 1981-2000 confirm that the substitute or complementary relationship between a firm's home and foreign country investments is influenced by how R&D-intensive a firm's industry is, where the firm's foreign investment is located, the extent of the firm's foreign investments and whether the firm's foreign investment is in the firm's core business. These results show that a firm's resources, its strategic choices and its prior experiences all influence the role that foreign investment plays in corporate divestment and restructuring. Further, the results show that complementary and substitution investment strategies between home and foreign investment not only co-exist within firms (as shown by Head and Reis, 2001, and Blonigen, 2001), but can also evolve from one type of relationship to the other as firms build capabilities and gain experiences in foreign markets.

For policy makers concerned about the effects of firm foreign expansion on home country investment, the results suggest that while trade agreements may provide firms with more opportunities to increase their foreign investment (potentially at the expense of home country investment), changes from trade agreements are not likely to have a uniform impact on all firm foreign investment strategies. Rather, firm experiences may be more influential in explaining the reconfiguration of firm operations than trade agreements because firms with more experiences abroad are better positioned to take advantage of the changes.

THEORY

Corporate strategic choice involves deciding how a firm will pursue such activities as diversification, acquisition, divestiture and restructuring (Bowman and Hurry, 1993), to name some of the more complex activities of firms. The strategic decisions firms make involve choices

regarding the investment and allocation of organizational resources (Schendel and Patton, 1978) and choices that determine the strategic direction of the firm. Firm strategies unfold in different ways: they can emerge from a firm's resources, its goals, or its failures, for example. A firm's accumulated learning and experiences can also provide firms with capabilities that offer opportunities and influence future strategic choices. For multinational firms, each of these activities and strategic decisions take place in both home and foreign markets, adding additional complexity to already complex decisions managers must make. For example, managers of firms with foreign operations are likely to make different corporate restructuring decisions than firms that operate in one country only, given the more complex opportunities and challenges that are available in the multiple markets in which a multinational firm operates

Divestment is one strategic choice a firm makes that has been shown to relate to prior resource investments, performance, and the diversification level of a firm. Many studies have analyzed when firms are likely to divest activities (see, for example, Hill, 1983, Duhaime and Grant, 1984, Ravenscraft and Scherer, 1987, Porter, 1987, Hitt and Ireland, 1986, Lee and Cooperman, 1989, Markides 1992 and 1994, Hoskisson and Turk, 1990, Hoskisson et al, 1994, Hoskisson and Johnson, 1992, Gibbs, 1993, Bergh, 1997 and Haynes et al, 2003). Firm characteristics that have been found to significantly impact the probability that a firm will divest include prior poor performance, high debt levels, large size, firms with a high level of diversification and a firm's R&D intensity. What has not been considered yet in the strategic management literature is how the foreign investment strategies of multinational firms may impact a firm's divestment activities in its home country. Unlike firms that operate in only one market, multinational firms face strategic choices regarding growth, restructuring, diversifying, divesting, etc., in numerous markets. Further, as firms become more and more multinational in their operations, they need to rationalize their operations on a global scale. Thus, strategic choices that are made in one market will affect the

strategic choices that are made for another market. Given that firms with multinational operations have additional opportunities and challenges, I build on findings from the international economics literature to more fully analyze how divestment may relate to a firm's overall strategic choices, and to more fully understand both home and foreign investment influences on firm divestment choices.

Foreign Investment and Divestment Decisions:

A number of empirical studies on FDI and trade in the international economics literature focus on whether FDI stimulates or substitutes for trade. In assessing the impact of a firm's foreign investment on its home country investment, two general arguments can be found in the literature. First is the view that foreign investment is a substitute for home country investment because investments abroad and at home compete for the same firm resources and therefore, foreign investment will tend to lead to a relocation of parts of the production chain. Within this view, the main focus tends to be on the international factor cost differentials – which are believed to be primary determinants of a firm's foreign investment. A second view is that foreign investment is a complement to home investment because much of FDI is focused on serving foreign markets through a distribution network with after-sales service. In this view, goods produced in the home market will be exported to these foreign locations. In addition, firms may invest in cheaper locations abroad to manufacture inputs for finished home-country production. These types of investments are seen to be a precondition for exporting more goods produced in the home market.

Examples of studies finding a complementary relationship are Lipsey and Weiss (1981) and (1984) on the activities of US multinationals. They estimate exports as a function of foreign affiliate sales and different control variables, such as GDP and the distance between home and host countries. They find evidence of a complementary relationship both within industries and individual firms. Thus, an increase in foreign affiliate sales is typically associated with an increase

in exports by the home operations of the multinational. Similar evidence has also been found in a number of studies on Japanese (Lipsey, Ramstetter and Blomstrom, 1999 and 2000), Swedish (Swedenborg, 1979, 1985 and 2001; Blomstrom et al. 1988) and other European multinationals. As has been pointed out by Grubert and Mutti (1991) a basic problem with these studies is that the determinants of FDI often coincide with the determinants of exports. This problem of endogeneity has been controlled for by employing various instrumental-variable techniques in papers by Svensson, (1996), Blomstrom et al., (1988), Grubert and Mutti, (1991), Clausing, (2000). In general, after controlling for the endogenous relationship, these studies confirm the earlier finding that FDI and export flows are complementary.

These general findings have been qualified in studies that use firm and product level data that classify foreign affiliates on the basis of the type of their activity (production of goods or provision of services) and the stage of production they carry out (production of intermediates or assembly of final goods). Two examples of these studies are Head and Ries (2001) and Blonigen (2001). Head and Ries (2001) use a panel dataset containing 932 Japanese manufacturing firms over a 25-year period. For the complete sample they confirm the earlier result of a complementary relationship between FDI and exports. The relationship, however, varies across firms. In particular, as expected, they find substitution when firms are not vertically integrated and assembly facilities in foreign countries are not supplied by intermediates produced at home. Blonigen (2001) also finds both complementary and substitution effects depending on the nature of the relationship between the parents and the foreign affiliates. He finds a complementary relationship for Japanese exports of auto parts for Japanese investment in car assembly in the US. In contrast, he finds that foreign auto parts production in the US substitutes for auto parts exports from Japan.

The results from empirical studies in the international economics literature suggest that the extent of divestment activity will be influenced by a firm's foreign investments depending on

whether the foreign investment has a substitute or complementary relationship with home country investment. Based on the empirical findings from the international economics literature, two general hypotheses are offered:

H1: The extent of divestment activity will be positively related to a firm's substitute foreign investments.

H2: The extent of divestment activity will be negatively related to a firm's complementary foreign investment.

In a recent NBER working paper, Lipsey (2002) summarizes the vast and sometimes contradictory findings in the international economics literature by stating that “one way of interpreting the findings is that there are no universal relationships between production abroad by a firm or a country's firms and exports by the investing firms, their industries and their country as a whole. There are circumstances in which foreign production tends to add to exports and circumstances in which it tends to reduce exports.” (page 13, 2002) To analyze how firm-level strategic investment choices may influence these circumstances, below, I consider additional firm-level issues to try to better understand whether and how firm foreign investment strategies may moderate the substitute and complementary relationships. More specifically, I consider whether a firm's foreign investment is in a developed or developing country location, the importance of technological know-how in the firm's industry, how related a firm's foreign investment is to its core industry in its home market, and the extent of a firm's foreign activities. By considering these strategic choices, I am attempting to include characteristics of a firm's growth strategy in foreign markets to better understand how heterogeneous firms develop strategies that are likely to have different impacts on their divestment decisions in their home markets. Below I explore each of these strategic choices and firm experiences in more detail.

Developed and Developing Country Investment and Divestment Decisions:

Extant literature in economics, finance and strategy suggest well-known reasons for firms to invest in industrialized and developing country locations. On a fairly general level, industrialized country locations are argued to provide firms with access to consumers with higher incomes and higher education levels, to locations with less risk, to locations where knowledge can be acquired or learned, and to more institutional protections for investments. Developing countries, on the other hand are argued to provide firms with higher returns (and higher levels of risk), lower costs and more abundant sources for inputs (including land, labor and capital), and in the specific cases of developing countries like China and India, access to areas of the world with the largest (and fastest growing) populations. US firms tend to invest first and mostly in industrialized country locations (in fact, three-quarters of worldwide flows of FDI are invested in industrialized country locations by industrialized country firms according to the United Nations Commission on Trade and Investment World Investment Reports throughout the 1990s).

Blomstrom et al (1997) analyzed a sample of US multinational firms to examine the effect of foreign direct investment on home country employment. In their analysis, they break down their sample of foreign affiliates into developed and developing countries and find that for US multinational firms, foreign subsidiaries in developing countries are associated with smaller home country employment. (They do not find foreign subsidiaries in developed countries to have a significant effect on home country employment.) Blomstrom et al. interpret their results by suggesting that US firms allocate labor-intensive portions of their output to affiliates in low-wage countries. The foreign affiliates in developing countries then supply such products or elements to the final product to the United States, and most likely, to the rest of the firm's affiliates. They attribute this strategy to the high price of unskilled labor in the US and more restrictive labor standards than in developing host countries.

Though generalized, differences across these two locations suggest that US manufacturing firms are more likely to invest in developing countries to gain access to cheaper inputs (which suggests a substitute relationship). Blomstrom's lack of significant results for industrialized countries suggests that investment in these countries may be motivated more by exploiting intangible assets and increasing rents to existing capabilities through expansion abroad (which suggests a complementary relationship). At the very least, the results suggest that foreign location choices should be considered to better analyze how firm foreign expansion strategic decisions on location impacts a firm's divestment decisions.

Knowledge Assets and the Divestment Decision:

Braunerhjelm and Oxelheim (2000) characterize competition in industries with high R&D expenditures as resting on product differentiation, while competition in low R&D intensive industries rests largely on country specific resources – where factors of production exhibit relatively low mobility across industries and products tend to be fairly homogenous. More practically, looking at data on flows of FDI, one can see large differences between the paths of international expansion in these two industry types. The United Nations Commission on Trade and Development (UNCTAD) yearly data on world FDI flows show that high R&D industries tend to dominate FDI flows, with much more investment occurring in developed country locations than lesser developing country locations. This suggests that there are likely to be different firm investment strategies across these two industry groupings.

The importance of proprietary assets in a firm's industry is also likely to affect how a firm's foreign investment is related to its home country investments. In low-R&D intensive industries, as Davies et al. (2001) argue, firms are not likely to have many opportunities for exploiting firm-specific proprietary assets in related industries. Given the importance of cost pressures in these industries, investment in foreign markets is more likely being made to provide access to cheaper

raw materials or labor than to provide access to foreign markets to exploit firm core competencies from its home market. This suggests that home and foreign investment are more likely to have a substitute relationship for firms in low R&D intensive industries. In high R&D intensive industries, firm proprietary assets have likely provided the firm with its competitive advantages in its home market. As the internalization theory suggests, expansion for firms with valuable proprietary assets is likely to involve the exploitation of these firm specific assets abroad. This would argue for a complementary relationship between home and foreign investment for firms in high R&D intensive industries that are investing abroad to exploit their firm specific assets.

Related Foreign Expansion and Divestment Decisions:

The conventional literatures that explain both firm diversification and multinationality start from the premise that proprietary assets and firm growth are causal forces for both types of firm growth. The strategy literature explains diversification as a strategy pursued by growth-oriented managers faced with limits to growth in their primary industry. The potential for technological spillovers and the exploitation of firm specific assets in related industries are often cited as important goals and outcomes of diversified firms. Similarly, the internalization theory in the international business literature (as developed by Buckley and Casson (1976), Caves (1971) and Dunning (1980), among others) is concerned with a firm's ability to obtain rents and sustain its competitive advantage. The firm-specific assets that are potentially exploited by firms through diversification activities in related industries are the same proprietary assets that are assumed to provide firms with unique growth opportunities in foreign markets. In the international business literature, the focus is not on expansion into related industries, but rather on continued exploitation of the proprietary assets in the same industry, but in foreign markets. Given the similar focus on different uses for a firm's proprietary assets, the diversification and geographic expansion strategies a firm pursues are likely to be related across a firm's product and geographic expansion.

Doukas and Lang (2003) analyzed related and unrelated foreign direct investment by US firms and found that unrelated foreign investments are associated with negative announcement valuation effects and long-term performance decreases in subsequent years, while related investments are associated with positive short-term and long-term performance. They conclude that positive synergies from global expansion are rooted in a firm's core competencies. Similarly, using a sample of US domestic and multinational firms, Bodnar, Tang and Weintrop (1998) find that single activity multinational firms have statistically significantly higher market to book ratios than single activity domestic firms, multiactivity domestic firms or multiactivity multinational firms.

The results of these two studies suggest that shareholders believe that firms should pursue foreign investments that are related to the firm's core capabilities. These results further suggest that either shareholders have an easier time evaluating related foreign expansion, or that it may in fact be more feasible for firms to manage and rationalize their operations both at home and abroad if a firm is trying to rationalize operations within fewer or a dominant product line (and specifically within those product lines that are core to the firms capabilities and competencies). To examine whether there are different influences on home divestment decisions from firms' foreign investments depending on how related the foreign investments are to a firm's core industry, I build on Bodnar, Tang and Weintrop's classification of single and multi-segment firms to analyze whether the foreign investment strategies of these two types of firms impact their divestment activities differently.

Extent of Foreign Investment and Divestment Decisions:

There is some evidence in the international economics literature that suggests that the nature of the relationship between trade and FDI may change over time. For example, in contrast to earlier studies by Lipsey and Weiss based on 1970 data, Ramstetter (1991) found evidence for a significant negative relationship between parent company exports and the activity of their foreign

affiliates, using US industry-level data for export growth between 1977 and 1982. MaGuire (1995) has suggested that many US foreign affiliates now have a relatively high local content in their output, possibly reflecting the relative age of many investments and the extent to which affiliates now resemble their locally-owned competitors. Similarly, Svensson (1996), using Swedish data for 1990, found evidence for a substitution effect, while previous research using Swedish data covering the 1970s and early 1980s had typically concluded that FDI had a complementary net effect on domestic exports, with greater market proximity serving to raise overall market share. During the earlier period, increases in exports of intermediate goods more than made up for the decline in exports of finished goods, whereas in Svensson's study exports to third parties from the foreign affiliates of Swedish companies were found to take place at the expense of exports from the parent firm.

While these studies have not used panel data to analyze how individual firm strategies may evolve over time, these findings suggest that exports and FDI may change from complements to substitutes for one another as the internationalization process goes on (Markusen et al. 1996). As firms become more international, they need to reconfigure their operations to be more efficient. Similarly, the relationship between home and foreign country investments may also change as a firm increases its foreign expansion as firm goals, investment strategies and options are likely to change as a firm increases its foreign commitments and investments. This suggests that it is necessary to analyze firms at different stages of their foreign expansion process to more fully understand the substitute and complementary relationship that may exist between home and foreign country investment.

To analyze the moderating role of each of these firm strategic issues, in the analysis below I break down a firm's foreign investments into industrialized and developing country investments,

consider high and low R&D intensive industries separately, examine firms at different stages of foreign expansion using quartile subgroups of the foreign investment variable and consider single and multi-industry multinational firms separately. Finally, while I am focusing on firm-level determinants of divestment activities in this paper, tariff and non-tariff barriers can also have an important influence on a firm's foreign investment strategy. As countries become more integrated from lowered trade barriers, firms have more options to reconfigure their operations to most efficiently serve all markets. During the late 1980s and early 1990s, the US signed three substantial trade deals (The free trade agreement with Canada, the NAFTA and the GATT were passed in 1989, 1993 and 1994, respectively). The changes through these agreements should provide the same opportunities to all firms in the sample. However, to more thoroughly analyze and control for the impact of these agreements on firm foreign investment strategies, I will also break down my sample and consider whether there are differences between the 1980s and 1990s.

DATA AND METHODS:

To test the hypotheses above, I created a panel of US manufacturing firms and their home and foreign country investments. All publicly-traded manufacturing firms that are listed in the Compustat Database from 1977-2000 and provide information on their R&D expenditures are included in the sample (this results in a sample size of 190 firms).¹ This sample is an unbalanced panel data set because some firms in the sample were acquired in the second half of the 1990s. All financial figures used in the analysis below are real annual figures deflated to the base year 1977 using US Department of Commerce, Bureau of Economic Analysis GDP deflators.

¹ US firms were included in the sample as long as they reported data in at least three-quarters of the years, or at least 18 of the 24 years in this study. If a US firm did not report R&D data during four consecutive years (where I would be unable to create a stock variable), I did not include it in the sample. This yielded a sample size of 190 firms.

DIVEST. The dependent variable is a count of the number of operations divested by firm i in year t . I consulted the Directory of Corporate Affiliates for each year firm for each year from 1981-2000 to create this measure. This directory lists each operation of a firm separately in each yearly edition of the directory. This allows one to track each operation over time. Because both domestic and foreign operations are listed, this provides a comparable measure for domestic and foreign activities. Unfortunately, additional data on size, number of employees or sales are not consistently reported in this Directory. So, no weighting of plants or subsidiaries is possible.

PERFORMANCE (ROS). An accounting based measure of performance was calculated using two different measures: return on assets (ROA) and return on sales (ROS). I divided net income by total assets and total net sales, respectively, to create these variables. The data for these variables come from Compustat. Only ROS is reported in the Tables below, though both yield similar results when entered separately.

DIVERSIFICATION (DT). Firm diversification is measured using the following entropy index (Jacquemin and Berry, 1979, Palepu, 1985, Davis and Duhaime, 1992):

$$DT = \sum_{i=1}^N P_i \ln(1/P_i)$$

where P_i is the share of the i th segment in the total sales of the firm. This expression is a weighted average of the shares of the segments, the weight for each segment being the logarithm of the inverse of its share (Palepu, 1985). The measure takes into considerations two elements of diversification: first, the number of segments in which a firms operates, and second the relative importance of each of the segments in the total sales. This continuous measure has been found to have good construct validity relative to other diversification measures (Chatterjee and Blocher, 1992 and Hoskisson et al, 1993). The index was calculated using segment tape data from Compustat.

Markides (1992 and 1992b) has argued that identifying every firm's optimal diversification level, although theoretically feasible, is practically impossible. Every firm has a different limit depending on its resources, external environment, type of diversification, management team, capacity to learn from past diversification moves and so on. Markides has therefore used indirect routes and proxies to classify firms into under- and over-diversified groups. Each of his proxies produced similar results. The proxy that is used here is based on total diversification index quartiles (following Markides, 1992b). Firms were subdivided into quartiles according to the total DT index. The first quartile contains the firms with the smallest diversification levels and is designated as the under-diversified group. The fourth quartile contains the firms with the highest diversification levels and following Markides, is designated as the over-diversified group. These quartiles were calculated separately for the low and high R&D intensive industries examined below. It is expected that the fourth quartile group will have a significant relationship with divestiture. When the DT index was broken down into quartiles, the first quartile (the under-diversified quartile) contains only firms with a diversification index of 0. Therefore, only quartiles two, three and four are included in the analysis below. The impact of zero-diversification is assumed to be contained in the constant term.

SIZE. Firm size was calculated using the log of the book value of total assets.

R&D/ASSETS: Following other studies, a firm's R&D expenditures are used as a proxy for technical know-how. Because the effect of R&D expenditures can persist over time, an R&D stock measure (which includes both accumulated and current period expenditures) is used to proxy for a firm's technical know-how. Following Griliches and Mairesse (1984), a depreciation rate of 15% is applied to the previous year's expenditures going back four years. This value was then divided by a firm's total assets to create the R&D intensity measure.

Foreign Investment: In this study, a firm's foreign investment is defined as the total number of foreign subsidiaries firm i has in year t . Information regarding foreign operations that is fairly consistently reported over time can be found in the Directory of Corporate Affiliates. As with the domestic listing, this Directory lists a firm's foreign subsidiaries and the location of these subsidiaries. Unfortunately, the data is very inconsistent in the reporting of performance or financial information (like value of assets or sales, or number of employees), and therefore no weighting of this variable to reflect size or performance is possible.

The total number of foreign subsidiaries (FDITOT) was also broken down to a firm's number of industrialized country foreign subsidiaries (FDIIND) and a firm's number of developing country foreign subsidiaries (FDILDC) for each year from 1981-2000. Following other studies, industrialized countries included the US, Canada, Western European countries, Japan, Australia, and New Zealand. All other countries are classified as developing countries (including Mexico, most Asian countries (not Japan), Central and South American countries, Eastern European countries, ex-Soviet bloc countries, Russia and African countries). As the directories for each year were examined, the data reflect entry and exit, and the global reconfiguration of activities by the US firms in the sample. Domestic firms that are not multinationals and thus have no subsidiaries abroad are included in the sample; a portion of these firms became multinationals during the twenty year time period of this study.

The FDIIND and FDILDC variables were then broken down into quartiles (separately for firms in high and low R&D intensive industries) to more thoroughly analyze how the relationship between a firm's home and foreign country investments may change as a firm increases its foreign operations in different locations. The first quartile represent firms with the least foreign investments, and the fourth quartile represent firms with the most extensive foreign investment. Similar to the DT variable discussed above, the first quartile (the quartile with the least foreign

investment) contains firms with no foreign subsidiaries. Therefore, only quartiles two, three and four for each of the foreign investment locations are included in the analysis below. The impact of zero-foreign operations is assumed to be contained in the constant term.

I was unable to include all of the levels of the quartile variables for FDIIND and FDILDC in the same regression as there was fairly high correlation across the quartiles. Instead, as reported below, I ran the first difference of all variables when I included both sets of location quartiles to deal with this issue. As shown in Table Four, the correlations are relatively low across the location quartiles when the first difference is used, providing more confidence in the reported results.

Control Variables: The Dollar real exchange rate (RER) is used to control for exchange rate effects.² By including the real exchange rate, I am controlling for relative production costs in the US and foreign countries. In this way, it is intended to capture cycles in FDI due to changes in labor costs abroad (Barrell and Pain, 1996). A higher real exchange rate is expected to have a positive impact on home country divestment, as it may encourage foreign investment.

Table One describes each of the variables and gives information on data sources. Table Two summarizes the expected sign for each of the independent variables. Table Three provides summary statistics of the main variables and Table Four provides the product moment correlations for the level and change in the variables.

Method:

Home country divestment is examined using a count of the number of divestments made by a US firm in its home market in each year over the period 1981-2000 as the dependent variable. All independent variables are anticipated to impact a firm's divestment fairly rapidly, following Jain (1985), who found that firm performance began to suffer approximately one year prior to

² The models that are reported below include annual exchange rate variables. I also ran the models using year dummy variables instead of exchange rates and the results are the same.

divestment. A one-year lag is therefore used to analyze the influence of all independent variables.³

Using subscript i for firms and t for time, the estimation equation takes the following form:

$$\text{DIVEST}_{it} = \beta_1 \text{LNASSETS}_{it-1} + \beta_2 \text{DIVERSIFICATION}_{it-1} + \beta_3 \text{R\&D/ASSETS}_{it-1} + \beta_4 \text{LEVERAGE}_{it-1} + \beta_5 \text{ROA}_{it-1} + \beta_6 \text{FDI}_{it-1} + \beta_7 \text{RER}_{it-1} + u_{it}$$

Where LNASSETS_{it-1} is a measure of firm size, $\text{DIVERSIFICATION}_{it-1}$ is a measure of a firm's diversification level, $\text{R\&D/ASSETS}_{it-1}$ is a measure for a firm's technological know-how, LEVERAGE_{it-1} is a measure of a firm's debt level, ROA_{it-1} is a performance measure, FDI_{it-1} is a measure of a firm's foreign investment activities, RER_{it-1} is an exchange rate control and u_{it} is an error term.

The Poisson distribution has been widely used in analyzing count data where the dependent variable is discrete and defined for non-negative integers corresponding to the number of events occurring in a given interval (see Hausman et al, 1984, for example). One restriction of the basic Poisson model is the imposition of equal conditional mean and variance. In many economic applications, however, it is not uncommon to find overdispersion in the data, a situation in which the variance exceeds the mean. Overdispersion may occur if there is unobserved heterogeneity or interdependence between the occurrence of successive events. A consequence of fitting overdispersed data to the Poisson model is that the estimated covariance matrix will be biased downwards, producing smaller standard errors of the parameters and overstated t-statistics.

A common solution to the problem of overdispersion is to use a distribution that allows for a less restricted variance function. The negative binomial regression model has been proposed as an alternate to the Poisson model (see Cameron and Trivedi (1986)) because this model allows the mean and variance of the Poisson process to vary by introducing an individual unobserved disturbance.

³ Using a 2-year lag does not significantly impact the overall results (though it does impact the useable observations and fit of some of the models reported below).

I ran both the Poisson and the negative binomial specifications for each of the models below. The test of overdispersion in the data ($\alpha = 0$) was significant for each of the models shown below, rejecting the mean-variance equality assumption of the Poisson model. When re-estimating the Poisson model against the negative binomial model, the likelihood ratio statistics revealed the superiority of the negative binomial model. Because of this, I only present the results from the negative binomial model estimates below.

As noted above, I suspect that there may be differences across the high R&D and low R&D intensive industries, therefore, I run these groups of firms separately in the analysis below. I use the OECD's definition of "high R&D intensive industries"⁴ to create the high and low R&D intensive industry groupings used below. The high R&D intensive industry grouping includes firms in the chemical, electric equipment, industrial machinery, precision instruments and transportation industries. The industries that are left make up a group called the low R&D intensive industries (and include firms in the textiles, food, paper and paper products, rubber products and fabricated metals industries.)

To examine how firm divestment activity is affected by different levels of diversification activity, I examine the quartile differences for the DT variable as described above. Further, to examine how firm divestment activity is affected by different levels of a firm's foreign investment, I also examine quartile differences for the FDIIND and FDILDC variables described above. The diversification variables included in the analysis are labeled DTQ2, DTQ3 and DTQ4. The FDI variables included in the analysis are labeled FDIINDQ2, FDIINDQ3, FDIINDQ4, FDILDCQ2, FDILDCQ3, and FDILDCQ4. As noted above, I created the quartile subgroups using only those

⁴ Based on OECD data, these industries tend to have higher than 5% of R&D spending as a percent of sales ratios (<http://www.oecd.org>).

firms in the same industry types (so, FDIIND quartile subgroups for firms in the high R&D intensive industries are determined in reference to firms in the high R&D intensive industries only.)

As noted above, I use the first difference of all independent variables to be able to include the foreign location quartile groupings in one estimation. By using the first difference of each of the independent variables, I am in effect controlling for unobserved heterogeneity across firms in column 5 in Tables Five and Six.

To analyze the impact of the relatedness of a firm's foreign operations to its home operations, I follow the approach used by Bodnar, Tang and Weintrop (1998). Firms are required to report data for any activity segment making up more than ten percent of the firm's consolidated revenues, operating income or identifiable assets. The basis of segmentation is left to the discretion of the firm, but it is generally differentiated at the 4-digit SIC code level. I identify any firm reporting information in more than one industrial segment as being a multi-segment firm (firms reporting only one segment are classified as single-segment firms). Both groupings contain both domestic and multinational firms. Firms can and do change categories over the time period of the analysis.

Finally, there have been significant reductions to trade barriers over the time period considered in this study through trade agreements like GATT and NAFTA. Reports from the US General Accounting Office (GAO) have documents significant trade increases in the 1990s. Because these agreements affect the movements of goods by lowering tariff and non-tariff barriers, they influence the decisions a firm makes for exporting and importing. To control for the impact of these agreements on firm foreign investment strategies, I will run my analyses separately for the 1980s and 1990s and see if there are significant differences across these time periods.

RESULTS

The empirical results for each of the industry groupings (high and low R&D-intensive industry groupings) are reported separately in Tables Five and Six. Columns 1 and 2 in these tables show the results when using the lagged level of the independent variables while Columns 3, 4 and 5 report the results when using the first-difference of the lagged independent variables. In both of these Tables, Column 1 reports the results for just the home-country variables that have been considered in prior studies (for more direct comparison with prior studies in the strategic management literature). Column 2 adds the total count of FDI to the model. In Column 3, the first difference of just the home country variables are included, and in Column 4, the first difference of the total count of FDI is added to the model. Finally, Column 5 reports the first-differenced results using the break-down of the FDI count into industrialized and LDC countries and into quartiles. The coefficient, the t-value and the marginal effects are included for each variable in each column in Tables Five and Six.

In hypotheses one and two, it was argued that the extent of divestment activity will be positively related to a firm's substitute foreign investments and negatively related to a firm's complementary foreign investments. The coefficient estimate for a firm's total count of foreign subsidiaries is positive and significant. As revealed in Tables Five and Six, both the level and the change in FDITOT have significant relationships with firm divestment activity. These tables further reveal that this relationship is different for firms in high and low R&D intensive industries. As revealed in Table Five, for high R&D intensive industries, increases in foreign investments have a significant negative relationship with home country divestment – suggesting that a complementary relationship exists. As revealed in Table Six, for firms in low R&D intensive industries, increases in foreign investments have a significant positive relationship with home country divestment – suggesting that a substitute relationship exists.

To better explore how this relationship may be influence by the firm strategic choices and

experiences discussed above, in column 5 (in both Tables Five and Six), the FDITOT variable was broken down into quartiles and locations. The results in Table Five reveal that the relationship between foreign investment and home country divestment changes for firms in high R&D intensive industries, as firms increase their multinational activities. For firms in high R&D intensive industries, foreign investment in industrialized countries at an early stage of expansion (FDIIND2) is negatively related to firm home country divestment (suggesting a complementary relationship), but at a more advanced stage, industrialized country investment (FDIIND4) has a positive relationship with home country divestment (suggesting a substitute relationship). For firms in low R&D intensive industries (Table Six), it is only early investment in developing countries (FDILDC2) that has a significant (and positive) relationship with firm divestment. This suggests that it is only the early developing country investments by these firms that replace home country investment.

To further examine whether there are differences between foreign expansion in a firm's core or non-core industry, Table Six breaks down the sample into single and multi-segment firms in high and low R&D intensive industries. (In Table Six, Columns 1 and 2 reports results for single and multi-segment firms respectively in high R&D intensive industries while Columns 3 and 4 reports results for single and multi-segment firms respectively in low R&D intensive industries.) As shown in Columns 1 and 2, the influence of foreign investments are fairly similar across single and multi-segment multinational firms, though the results are stronger for single-segment firms. In low R&D-intensive industries, however, the results discussed above hold for single-segment firms only. For multi-segment firms, the influence of foreign investment is not significant in either developed or developing countries, at an early or late stage of foreign expansion.

Real exchange rates were included as a control in all of the models that include foreign investment. None of these coefficients is significant. When year dummies are included in each of the models (in place of exchange rates in Columns 2, 4 and 5), the main results are the same.

The marginal effects show that the foreign investment variables have the second highest marginal impact. Size has the highest impact in all of the models, while the significant foreign investment variables have higher marginal effects than any of the other variables under consideration.

Regarding the home country variables that have been included in prior empirical studies, the coefficient estimate of firm size (LNASSET) in both Tables Five and Six is highly significant. This is true for both the level (or the overall size of a firm), and the first difference (or the change in size – meaning that firms that have previously increased their asset size are also likely to divest other activities). The marginal effects reveal that this variable has the largest marginal effect of any of the variables across all of the models. To analyze the influence of firm diversification and “over-diversified” firms, in both Tables Five and Six, the diversification entropy index was broken down into quartiles to analyze differences across low and highly diversified firms. DTQ4 represents the group with the highest levels of diversification and corresponds with the “over-diversified” group that has predicted to have a positive relationship with a firm’s divestment activities. As revealed in columns 1 and 2 for both high R&D intensive firms (Table Five) and low R&D intensive firms (Table Six), these types of firms are significantly likely to have higher divestment activity. Looking at Columns 3, 4 and 5 reveals that the change in the diversification level for DTQ4 firms has a significant and negative relationship with divestment. While at first glance this appears contradictory to the hypothesis (given that it is negative), this result can be explained by thinking of the negative coefficient as signifying that “over-diversified firms” that are becoming less diversified at time $t-1$ (the change in the diversification entropy measure for firms in the top quartile of diversified firms) are significantly divesting activities at time t .

Regarding a firm’s R&D intensity, there are mixed results. For firms in high R&D intensive industries, Columns 1 and 2 reveal that the level of a firm’s R&D stock, or technological know-how

is negatively related to firm divestment activities, however, this is not a significant relationship for firms in low R&D intensive industries. In addition, none of the first differenced variables is significant, suggesting that it is overall levels of R&D stock, not recent changes to a firm's R&D stock that affect firm divestment activities. Regarding firm performance, only firms in high R&D intensive industries are affected by prior changes in performance (as the change is significant, but the level is not).⁵ For firm debt, the level of a firm's debt significantly and negatively affects a firm's divestment activities for firms in both high and low R&D intensive industries. However, the change in this variable is not significant in either Table Five or Six. This suggests that overall levels of firm debt are more important than relatively recent changes to a firm's debt status.

Finally, I do not report the models separately for the 1980s and 1990s because breaking down the sample into two time periods (the 80s and the 90s) does not reveal many changes, and none of the changes in the coefficients are statistically significant. The only variable that changes from being non-significant to significant is for firms in low R&D intensive industries, FDILDC3 (the change in 3rd quartile firms' foreign investments into LDC countries) is positive and significant in the 1990s. A Wald test reveals that the coefficients are not significantly different across the 1980s and 1990s. The other changes show that the significant variables discussed above are less significant (meaning significant at a .10 level instead of .05) in the 1980s and more significant in the 1990s. This suggests that trade liberalization (and trade agreements like NAFTA and GATT) is providing more opportunities for firms to continue pursuing the foreign investment strategies they were already pursuing in the 1980s.

⁵ As noted above, the R&D variable reported in the Tables is the stock of a firm's R&D. The models were also run with a firm's R&D expenditures, which produced the same results.

DISCUSSION AND IMPLICATIONS:

This study builds on the notion that corporate strategic decisions, like divestment, need to be analyzed within the broader context of a firm's overall strategy. Given that multinational firms have opportunities to reconfigure their production across many countries to become larger and more efficient competitors, I argue that the strategic decisions a firm makes regarding its divestment activities are likely to be influenced by the choices a firm makes as it reconfigures its global strategy and organization. In this paper, I expand the frame of reference of extant studies on corporate divestiture by examining how a firm's foreign investments impact the divestment activities of a firm in its home market. I examine when foreign investment is likely to have either a substitute or complementary relationship with a firm's home country investment and argue that there will be differences depending on how important firm proprietary assets are, where the foreign investment is located and the extent of the firm's foreign investment activities. The empirical results reveal that a firm's foreign investments have a significant impact on divestitures in a firm's home market and that there are important differences across firms when analyzing a firm's strategic investment choices included in this study.

By breaking down the foreign investment variable into industrialized and developing country investment, the results reveal that these two location choices have different impacts on the home country divestiture activities of firms in high and low R&D intensive industries. For firms in high R&D intensive industries, it is industrialized country investment that significantly and negatively impacts home country divestment, suggesting that there is a complementary relationship. Developing country investment is not significant for these firms. This coincides with the idea that the intangible knowledge of the firm is essential to the success of the products that are produced by firms in high R&D intensive industries. As the internalization theory argues, firms in these industries are expanding abroad to exploit this knowledge and increase market share in

new countries. This investment is not occurring in place of home country investment. This makes intuitive sense when thinking about the foreign expansion activities of firms in the chemical, electric equipment and precision instruments industries. These firms are likely first expanding into other industrialized countries and selling similar products in both their home and other industrialized markets – where consumers can afford the products and where there is similar enough demands that there is a market for the product. As the firm is expanding sales of its product, this foreign expansion is not significantly related to home country divestment activities.

For firms in low R&D intensive industries, it is developing country investment that significantly impacts home country divestment. This developing country investment has a negative relationship with a firm's home country divestment activities (suggesting a substitute relationship). Industrialized country investment is not significant for these firms. This suggests that as foreign investment is increasing in developing countries, home country activities are being divested. This coincides with the idea that low R&D intensive products are more cheaply produced outside of the US in countries with cheaper factors of production. This also makes intuitive sense when thinking about the expansion of firms in the textiles or paper and paper products industries, for example. Manufactured goods in these industries are certainly cheaper to produce in countries like Mexico than in the US. These results hold when the sample is broken down into the 1980s and 1990s, with the results for both second and third quartile firms being significant in the 1990s. This suggests that firms in low R&D intensive industries are using this type of strategy more extensively after the passage of NAFTA and GATT.

Additional insight into the substitute and complement relationship is gathered by analyzing the differences across the foreign investment quartile subsamples to consider how the extent of a firm's foreign activities may impact the influence of the foreign investment variable. This analysis reveals that the relationship between home and foreign country investment evolves as a firm

becomes more multinational. For firms in high R&D intensive industries, the sign of the coefficient for industrialized country investment changes from negative (in an early stage of multinational expansion) to positive (at a more advanced stage of multinational expansion) – suggesting that the relationship changes from a complementary to a substitute one. This suggests that firms in high R&D intensive industries use foreign markets differently depending on their experiences in foreign markets. Initially, firms in high R&D industries may be trying to exploit what they have created in their home market. As firms increase their foreign commitments, however, they need to reconfigure and restructure operations to reduce redundancies, to better rationalize how country and regional markets are served and to compete with other global firms in their industries.

Taken together, these results show that not only do firms pursue both substitute and complementary foreign investment to home country investment, as recent international economics studies suggest, but further, that the strategies firms pursue change from one relationship to the other as firms gain capabilities and experiences in foreign markets. By building on the reasoning from both the strategic management and international economics literature, the present study reveals not only that managerial capabilities, experiences and strategic decisions influence how foreign investment impacts home-country divestment decisions, but also that these same managerial capabilities, experiences and strategic decisions influence the changing foreign investment strategies that firms pursue.

The results from single and multi-segment firms reveal that foreign investment can have a different influence on home divestment for these two categories of firms. The results discussed above apply more to single segment firms in both high and low R&D intensive industries (with the difference being more pronounced in low R&D intensive industries). These results suggest that it may be easier to ascertain substitute and complementary relationships when foreign expansion is limited to single segments. Because multi-segment firms may be pursuing different

complementary and substitution foreign investments at the same time along different product lines, the mean tendency may not be as informative for these types of firms. These findings complements those of Head and Reis (2001) and Blonigan (2001), who found both substitute and complementary relationships between exports and FDI when using disaggregated product level data for Japanese firms. These results also show that the strategic decisions a firm makes may not be similar across all product lines and further research is needed to better understand the influence of non-core foreign expansion on firm growth and expansion.

The fact that there are not large differences when the sample is broken down to the 1980s and 1990s could be explained in two ways. First, while NAFTA and GATT were passed and went into effect in the early 1990s, many of the provisions of the agreements were still being phased-in throughout the 1990s and beyond. For example, under NAFTA, tariffs on textiles weren't completely phased out until 2001 and tariffs on apparel weren't phased out until 2003. This could suggest that to properly control for the impact of these agreements, longer time-series data will be needed. Some industries, however, were more immediately impacted from these trade agreements. Perhaps a more compelling explanation for the broader similarity across these time periods focuses on firm experience. While trade agreements may provide opportunities, the changes from trade agreements are not likely to have a uniform impact on all firm foreign investment strategies. Firms that already have foreign operations may be more likely to respond to trade changes because first, the changes are likely to have more of an obvious impact to their existing operations; and second, these firms already have managerial capabilities to manage foreign operations. This reasoning would suggest that firm experiences may be more influential in explaining the reconfiguration of firm operations than trade agreements because firms with more experiences abroad may be better able to take advantage of the changes.

Similar to prior research on firm divestment decisions, this study also analyzes previously

identified firm determinants of corporate divestiture, including firm size, the level of firm diversification, prior firm performance, firm debt and a firm's R&D expenditures. The results go beyond existing studies, however, by showing that for some of previously identified firm characteristics there are different effects depending on whether firms are in high or low R&D intensive industries and whether the level of change in the variables is included in the analysis. For example, prior performance (as measured by either ROA or ROS) is not a significant determinant of a firm's divestment activities for firms in low R&D intensive industries, while for firms in high R&D intensive industries, negative changes to performance do significantly impact a firm's divestment activities. This suggests that prior performance may be more influential for firms in industries where firm proprietary assets are crucial to the success of the firm. The results also show that it is the stock of debt (for firms in both high and low R&D intensity groups) and the stock of technological know-how (for firms in high R&D intensive industries) that impact a firm's divestment activities. The one-year lagged change is not significant for firms in either high or low R&D intensive industries. This suggests that it is a firm's accumulated debt and know-how, or its overall position on these characteristics that influence divestment decisions. Shorter-term changes in either of these variables are not significant determinants of divestment activity. For two of the firm characteristics, the results remain consistent across high and low R&D intensive industries: size and over-diversification. The results in this study reveal that size is the most important determinant (has the largest marginal effect) on a firm's divestment activities across both industry groupings. Further, firms with the highest diversification indexes (with quartiles developed separately for the two industry groups) are the most likely to divest across both industry groupings. This supports work by Markides suggesting that there are optimal levels of diversification, and further suggests that firms in both high and low R&D intensive industries attempt to re-focus when they have moved into this relative state. The size and diversification results are fairly robust as

they hold when the first-difference of all of the variables are used – which provides a control for both industry effects and other unobserved firm effects.

For policy makers worried about the giant “sucking sound” of jobs relocating to cheaper foreign locations after trade has been liberalized, the results in this paper offer two insights. First, there are no statistically significant differences across firm investment patterns from the 1980s and the 1990s. As argued above, this suggests that influence of the recent GATT and NAFTA trade agreements has likely more been to accelerate the pace of firm reorganization than to cause firm divestments in the US. Second, the results show that foreign investment has both substitute and complementary aspects. While firms in low R&D intensive industries replace home country investment with cheaper foreign investment through initial expansion abroad, the relationship between home country divestment and foreign country investment is not significant at more advanced levels of international expansion. For firm in high R&D intensive industries, initial expansion abroad has a complementary relationship with home country investment, suggesting that more jobs are created in these industries even though firms are expanding abroad. At a more advanced level of investment, the relationship between home and foreign country investment turns to a substitute one, suggesting that there are limits to how much firms can continue to grow in all markets in which they are active. Similar to Markides concept of “over-diversified” firms, this result could suggest that these firms have over-extended their operations, or that they simply need to reorganize in the most efficient locations to serve both home and foreign markets. Regardless, the results show that industries are effected in different ways – the “winners” in terms of comparative advantages will create more jobs though initial firm investment choices, while the “losers” will be negatively impacted though initial firm investment choices. Both of these relationships change as firms continue to expand abroad, however. These differences across industries and the evolution within industries suggest that the complexities make aggregate pronouncements regarding the

effects from firm foreign investment choices on home country investment only a partial explanation for the firm investment choices we actually see.

Finally, the biggest limitation of this study comes from the difficulty of gathering useful, reliable and detailed home and foreign subsidiary information. While this study uses a comparable measure for investment activity in home and foreign markets, a more detailed measure could distinguish size or performance across these counts. Information on whether the foreign activity involves distribution or production might also help to clarify how core and non-core foreign expansion influences home country divestment activities. The present study provides interesting results concerning the influence of a firm's resources, its strategic choices and its prior experiences on corporate divestment and restructuring that could be augmented and extended in future studies that used more detailed home and foreign subsidiary data.

Table One: Operationalization and Sources of Variables:

Variable:	Operationalization:	Source:
DIVEST	A firm's number of divestments in the US at time t	Directory of Corporate Affiliates
LNASSETS_{t-1}	Log of a firm's total assets at time t-1. A firm's asset Were inflation adjusted using GDP deflators.	Compustat
DIVERSIFICATION_{t-1}	Total product diversification is measured using an entropy Measure for each firm for each year using Compustat's Segment tapes. Firms were then broken into quartiles Based on this measure to examine over-diversifiers. High and low R&D intensive industries were broken down separately. Following Markides, the 4 th quartile represents over-diversifying firms in each industry grouping.	Compustat
RD/ASSETS_{t-1}	The stock of a firm's R&D represents its technical know-How. R&DStock is the total value of 100% of a firm's current year expenditures on R&D, plus R&D spending from the four previous years depreciated at a 15% rate. Yearly firm level financial data are inflation adjusted using GDP deflators and a one year lag is used.	Compustat
LEVERAGE_{t-1}	The market value of a firm's short and long term debt at time t-1. Inflation adjusted Debt (using GDP deflators) have been divided by a firm's inflationadjusted assets.	Compustat
ROS_{t-1}	Performance was measured using both Return on Assets (ROA) and return on sales (ROS) (tested separately.) Inflation adjusted net income was divided by inflation adjusted total assets and net sales respectively. Each yield similar results, and only ROS is reported below	Compustat
FDI_{t-1}	The total number of foreign investments. These counts of Investments were then divided into industrialized (FDIIND_{t-1}) Developing (FDILDC_{t-1}) country counts (see text for a list Of these countries). Firms were then broken down into Quartiles based on this count. High and low R&D-intensive Industries were broken down separately.	Directory of Corporate Affiliates
RER_{t-1}	Dollar Real Exchange Rate. deflated to the base year of 1974 (1977=100)	International Financial Statistics (IMF)

Table Two: Expected Signs of Independent Variables:

1. Variables:	Sign:
ASSETS _{t-1}	(+)
DIVERSIVICATION	
DTQ2 _{t-1}	
DTQ3 _{t-1}	
DTQ4 _{t-1}	(+)
R&D/ASSETS _{t-1}	(-)
LEVERAGE _{t-1}	(+)
ROS _{t-1}	(-)
FDITOT _{t-1}	significant (+/-)
RER _{t-1}	(+)

Table Three: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
DIVEST	3642	.98	2.66	0	28
LNASSETS _{t-1}	3611	6.34	1.95	.89	10.77
DIVERSIFICATION _{t-1}	3394	.51	.49	0	2.42
RD/ASSETS _{t-1}	3494	.044	.44	.0001	15.52
LEVERAGE _{t-1}	3473	.28	6.27	0	232.27
ROS _{t-1}	3555	.34	5.33	-56.95	178.45
FDI _{t-1}	3613	14.98	29.65	0	407
RER _{t-1}	3800	112.55	20.09	89.76	154.93

Table Four: Correlations

A. Correlations of Levels (Used in Columns 1 and 2 in Tables Five and Six)

	1.	2.	3.	4.	5.	6.	7.	8.
1. DIVEST	1.0							
2. LNASSETS _{t-1}	0.19	1.0						
3. R&D/ASSET _{t-1}	0.01	-0.04	1.0					
4. ROS _{t-1}	-0.01	-0.03	0.01	1.0				
5. LEVERAGE _{t-1}	0.01	-0.03	0.09	-0.01	1.0			
6. DIVERSIFICATION _{t-1} 0.12	0.35	0.01	-0.02	0.01	1.0			
7. FDI _{t-1}	0.26	0.32	0.09	-0.01	0.05	0.25	1.00	
8. RER _{t-1}	-0.06	-0.18	-0.01	-0.02	-0.01	0.05	-0.05	1.0

B. Correlations of first difference (Used in Columns 3, 4 and 5 in Tables Five and Six):

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. DIVEST	1.0								
2. ΔLNASSETS _{t-1}	0.11	1.0							
3. ΔR&D/ASSETS _{t-1}	-0.01	-0.12	1.0						
4. ΔROS _{t-1}	-0.01	-0.01	0.01	1.0					
5. ΔLEVERAGE _{t-1}	-0.01	0.01	0.08	-0.01	1.0				
6. ΔDTQ2 _{t-1}	0.05	0.01	-0.01	0.01	-0.01	1.0			
7. ΔDTQ3 _{t-1}	-0.06	-0.01	-0.01	0.01	-0.01	-0.01	1.0		
8. ΔDTQ4 _{t-1}	0.06	0.03	0.02	-0.01	0.01	0.01	0.01	1.0	
9. ΔFDIINDQ2 _{t-1}	-0.03	-0.01	-0.01	0.01	-0.01	0.01	-0.00	-0.01	1.00
10. ΔFDIINDQ3 _{t-1}	0.04	0.02	0.01	-0.01	0.01	0.02	-0.01	-0.03	-0.01
11. ΔFDIINDQ4 _{t-1}	0.08	0.04	0.01	-0.01	0.01	0.01	0.01	0.01	-0.01
12. ΔFDILDCQ2 _{t-1}	-0.03	-0.01	0.01	0.01	0.01	0.01	0.01	-0.06	0.31
13. ΔFDILDCQ3 _{t-1}	-0.01	-0.01	0.01	0.01	0.02	0.02	-0.01	-0.03	-0.02
14. ΔFDILDCQ4 _{t-1}	-0.05	-0.06	-0.01	-0.01	0.01	0.16	0.02	0.01	0.02
15. ΔRER _{t-1}	0.01	-0.10	-0.01	0.01	-0.02	0.02	0.04	0.05	-0.01
	10.	11.	12.	13.	14.	15.			
10. ΔFDIINDQ3 _{t-1}	1.0000								
11. ΔFDIINDQ4 _{t-1}	-0.01	1.0000							
12. ΔFDILDCQ2 _{t-1}	-0.01	-0.01	1.0000						
13. ΔFDILDCQ3 _{t-1}	0.29	-0.01	-0.01	1.0					
14. ΔFDILDCQ4 _{t-1}	0.01	0.32	0.01	0.01	1.0				
15. ΔRER _{t-1}	-0.01	0.03	-0.04	-0.01	-0.01	1.0			

**Table Five: Analysis of Home Country Divestment
Firms in High R&D-intensive manufacturing industries**

Dependent Variable: $DIVEST_t$ = count of the firm's number of divestments in the US in each year

	Level of Independent Variables $t-1$		First Differences of Independent Variables $t-1$		
	1. Level	2. Level	3. Δ	4. Δ	5. Δ
$LNASSETS_{t-1}$	0.29*** (5.11) [76.3]	0.24*** (4.17) [60.7]]	0.19*** (4.10) [34.0]	0.18** (3.95) [31.2]	0.19*** (3.82) [33.0]
<u>Diversification Quartiles</u>					
$DTQ2_{t-1}$	0.13 (1.16) [7.2]	0.11 (.98) [7.1]	-1.6 (1.48) [-3.8]	-0.09 (0.92) [-1.7]	-0.09 (0.87) [-1.2]
$DTQ3_{t-1}$	-0.48 (-0.91) [15.5]	-0.44 (-1.01) [17.2]	1.03 (1.16) [8.8]	2.53 (1.23) [4.3]	2.10 (1.05) [4.1]
$DTQ4_{t-1}$	1.97** (1.89) [19.3]	1.87* (1.67) [23.5]	-2.13** (1.91) [15.9]	-2.52** (1.97) [11.3]	-2.25* (1.73) [10.2]
$R\&D/ASSETS_{t-1}$	-1.36* (1.80) [-37.6]	-2.77** (2.16) [-51.4]	2.92 (.35) [8.51]	2.4 (1.07) [9.4]	3.6 (1.23) [10.8]
$LEVERAGE_{t-1}$	0.10** (2.04) [67.2]	0.18** (2.25) [76.4]	0.11 (0.16) [1.2]	0.12 (0.19) [1.2]	0.13 (0.20) [1.3]
ROS_{t-1}	-0.01 (0.68) [-10.4]	-0.01 (1.39) [-11.8]	-0.06** (1.99) [-12.1]	-0.05* (1.64) [-11.2]	-0.06* (1.74) [-11.9]
$FDITOT_{t-1}$		-0.01*** (3.61) [-44.3]		-0.02** (2.57) [-18.4]	
<u>FDI Quartiles Industrialized Countries</u>					
$FDIINDQ2_{t-1}$					-0.08* (1.48) [13.4]
$FDIINDQ3_{t-1}$					0.04 (0.52) [4.7]
$FDIINDQ4_{t-1}$					0.14** (2.23) [23.4]

Developing Countries:

FDILDCQ2 _{t-1}					-0.02 (.92) [2.93]
FDILDCQ3 _{t-1}					0.04 (0.15) [4.1]
FDILDCQ4 _{t-1}					-0.02 (0.80) [4.1]
RER _{t-1}		-0.01 (0.78) [7.4]		0.03 (1.08) [7.0]	0.01 (0.93) [4.54]
Intercept	-1.89*** (3.48)	-1.44*** (3.22)	-0.95*** (3.52)	-0.85*** (4.04)	-0.93*** (4.54)
X2 covariates	109.94	109.44	22.97	33.05	36.02
(df)	(7)	(9)	(7)	(9)	(14)
N	1875	1833	1590	1521	1521

***p<.01

** p<.05

* p<.10

(t-values in parentheses) [marginal effects in brackets]

Marginal Effects are the change in the expected count for a SD increase in the independent variable.

**Table Six: Analysis of Home Country Divestment
Firms in Low R&D-intensive manufacturing industries**

Dependent Variable: $DIVEST_t$ = count of the firm's number of divestments in the US in each year

	Level of Independent Variables $t-1$		First Differences of Independent Variables $t-1$		
	1. Level	2. Level	3. Δ	4. Δ	5. Δ
$LNASSETS_{t-1}$	.39*** (4.59) [67.9]	.29*** (4.42) [59.4]	.24*** (4.2) [45.8]	.32*** (4.24) [50.9]	.32*** (4.21) [48.2]
<u>Diversification Quartiles</u>					
$DTQ2_{t-1}$	.21 (1.03) [8.6]	.23 (1.87) [6.8]	2.47 (1.26) [5.6]	2.43 (1.23) [6.7]	2.55 (1.28) [5.4]
$DTQ3_{t-1}$	0.25 (1.21) [13.9]	0.29 (1.87) [15.2]	0.92 (1.32) [9.5]	0.73 (1.03) [8.2]	0.68 (0.91) [7.7]
$DTQ4_{t-1}$	1.97** (2.41) [17.2]	1.97** (2.48) [17.9]	-3.49** (2.11) [14.2]	-3.46* (1.87) [15.2]	-3.48* (1.88) [15.1]
$R\&D/ASSETS_{t-1}$	-2.30 (1.49) [-5.8]	-3.18 (1.21) [-8.7]	-2.45 (0.25) [-2.0]	-3.66 (0.37) [-3.1]	-4.06 (.041) [-3.3]
$LEVERAGE_{t-1}$	2.43** (2.27) [23.6]	3.03*** (2.73) [30.7]	0.26 (0.92) [1.8]	0.49 (0.18) [1.15]	2.55 (0.32) [2.7]
ROS_{t-1}	.38 (.87) [6.0]	.39 (0.89) [6.5]	.09 (0.18) [0.6]	.02 (0.05) [0.4]	.05 (0.13) [0.9]
$FDITOT_{t-1}$		0.01* (1.71) [16.8]		0.01** (.87) [1.5]	
<u>FDI Quartiles Industrialized Countries</u>					
$FDIINDQ2_{t-1}$					0.16 (1.01) [9.9]
$FDIINDQ3_{t-1}$					0.18 (1.19) [12.3]
$FDIINDQ4_{t-1}$					0.02 (0.57) [2.7]

Developing Countries:

FDILDCQ2 _{t-1}					.19** (2.03) [20.02]
FDILDCQ3 _{t-1}					0.51 (1.44) [17.8]
FDILDCQ4 _{t-1}					-0.01 (0.88) [1.2]
RER _{t-1}		-0.01** (2.31) [6.3]		0.01 (1.52) [9.2]	0.01 (1.43) [9.8]
Intercept	-3.10*** (4.38)	-2.62*** (3.76)	-1.27*** (3.95)	-1.62*** (4.07)	-1.63*** (4.09)
X2 covariates	129.03	132.44	34.65	42.57	47.09
(df)	(7)	(9)	(7)	(9)	(14)
N	1293	1217	1048	1006	1006

***p<.01

** p<.05

* p<.10

(t-values in parentheses) [marginal effects in brackets]

Marginal Effects are the change in the expected count for a SD increase in the independent variable

**Table Seven: Analysis of Home Country Divestment
Single and Multi Segment Firms by Industry Intensity**

Dependent Variable: $DIVEST_t$ = count of the firm's number of divestments in the US in each year
First Differences of Independent Variables $t-1$

	High R&D Intensive Industries		Low R&D Intensive Industries	
	1.Single Segment Firms	2. Multi- Segment Firms	3.Single Segment Firms	4. Multi- Segment Firms
$LNASSETS_{t-1}$	.16*** (2.95) [29.7]	.19*** (3.03) [36.7]	.35*** (3.92) [52.5]	.31*** (4.18) [39.7]
$R\&D/ASSETS_{t-1}$	3.9 (1.33) [12.4]	3.41 (0.68) [10.67]	-3.67 (0.26) [-2.8]	-4.25 (0.48) [3.9]
$LEVERAGE_{t-1}$	.11 (0.57) [1.1]	.17 (1.45) [1.45]	1.21 (0.68) [2.8]	1.98 (0.65) [2.1]
ROS_{t-1}	-0.8 (1.22) [-13.8]	-0.2 (0.57) [-9.5]	.04 (0.17) [.87]	.06 (0.29) [1.15]
<u>FDI Quartiles</u>				
<u>Industrialized Countries</u>				
$FDIINDQ2_{t-1}$	-.09* (1.53) [16.8]	-.07 (1.37) [11.7]	0.18 (1.35) [10.7]	.11 (1.12) [8.7]
$FDIINDQ3_{t-1}$	.04 (.82) [4.9]	.03 (.62) [3.8]	0.22 (1.08) [13.2]	.16 (1.34) [11.5]
$FDIINDQ4_{t-1}$	.14** (2.09) [27.6]	.10* (1.91) [21.3]	0.05 (0.95) [4.65]	.03 (.45) [2.13]
<u>Developing Countries:</u>				
$FDILDCQ2_{t-1}$	-.04 (.95) [3.1]	-.03 (.62) [2.7]	.25** (2.08) [32.6]	.11 (1.44) [13.6]
$FDILDCQ3_{t-1}$	-.04 (.21) [4.3]	.03 (.25) [4.1]	0.63** (1.49) [23.5]	.18 (1.51) [12.4]
$FDILDCQ4_{t-1}$	-.03 (.87) [4.3]	-.05 (.75) [3.83]	-0.02 (0.92) [2.56]	-.02 (0.66) [2.12]

RER _{t-1}	.02 (1.18) [1.15]	.01 (1.29) [.82]	0.02 (1.32) [1.67]	0.01 (1.49) [.95]
Intercept	-1.81*** (2.27)	-2.90*** (3.35)	-1.87*** (2.56)	-1.42*** (3.76)
X2 covariates	35.29	26.17	32.64	28.12
(df)	(11)	(11)	(11)	(11)
N	725	796	608	338

***p<.01

** p<.05

* p<.10

(t-values in parentheses) [marginal effects in brackets]

Marginal Effects are the change in the expected count for a SD increase in the independent variable

REFERENCES:

- Bane, W.T. and F.F. Neubauer, 1981. Diversification and the Failure of New Foreign Activities. *Strategic Management Journal* 2(3): 219-233.
- Bergh, D., 1997. Predicting Divestiture of Unrelated Acquisitions: An Integrative Model of Ex Ante Conditions, *Strategic Management Journal* 18: 715-732.
- Blomstrom M, Lipsey R, Kulchycky K. 1988. US and Swedish Direct Investment and Exports, in Baldwin, R. (ed.) *Trade Policy Issues and Empirical Analysis*. University of Chicago Press: Chicago IL.
- Blomstrom, M., Fors, G., and R. Lipsey, 1997. Foreign Direct Investment and Employment: Home Country Experience in the United States and Sweden, *The Economic Journal*, 107: 1787-97.
- Blonigen, Bruce A., 2001. In Search of Substitution Between Foreign Production and Exports, *Journal of International Economics*, 53(1) pp. 81-104.
- Bodnar, G., C. Tang and J. Weintrop, 1998. Both Sides of Corporate Diversification: The Value Impacts of Geographic and Industrial Diversification. Working Paper.
- Bowman, E., and D. Hurry, 1993. Strategy Through the Option Lens: An Integrated View of Resource Investments and the Incremental Choice Process. *Academy of Management Review* 18(4): 760-82.
- Braunerhjelm, P., and L. Oxelheim, 2000. Does Foreign Direct Investment Replace Home Country Investment: The Effect of European Integration on the Location of Swedish Investment. *Journal of Common Market Studies* 38(2): 199-221.
- Buckley P, Casson M. 1976. *The future of the multinational enterprise*. NY: Holmes & Meier.
- Caves R. 1971. International corporations: Industrial economics of foreign investment. *Economica* 38.
- Cameron, A.C., and P.K. Trivedi, 1986. Econometric Models Based on Count Data: Comparisons and Applications of Some Estimators and Tests. *Journal of Applied Econometrics* 1: 29-53.
- Chang, S. J. 1996. An Evolutionary Perspective on Diversification and Corporate Restructuring: Entry, Exit and Economic Performance. *Strategic Management Journal* 17: 587-611.
- Chatterjee, S., and B. Wernerfelt, 1991, The Link Between Resources and Type of Diversification: Theory and Evidence, *Strategic Management Journal* 12: 33-48.
- Clausing, K. 2000. Does Multinational Activity Displace Trade? *Economic Inquiry* 38(2): 190-205

- Davies, S., Rondi, L., and A. Sembenelli, 2001. Are Multinationality and Diversification Complementary or Substitute Strategies? An Empirical Analysis on European Leading Firms. *International Journal of Industrial Organization* 19: 1315-1346.
- Davis, R., and I.M. Duhaime, 1992. Diversification, Vertical Integration, and Industry Analysis: New Perspectives and Measurement. *Strategic Management Journal* 13: 511-524.
- Dohrn, R., 2003. Investment Abroad and Home Employment in the German Manufacturing Sector. INFER International Economics Conference Paper, May, 2003, Germany.
- Doukas, J., and LHP Lang, 2003. Foreign Direct Investment, Diversification and Firm Performance. *Journal of International Business Studies*, 34: 153-172.
- Duhaime, I.M., and J.H. Grant, 1984. Factors Influencing the Divestment Decision. *Strategic Management Journal*, October-December: 301-318.
- Dunning J. 1980. Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies* 11: 9-31.
- Franko, L.G., 1989. Global Corporate Competition: Who's Winning, Who's Losing and the R&D Factor as One Reason Why. *Strategic Management Journal* 10:449-74
- Gibbs, P.A., 1993. Determinants of Corporate Restructuring: the Relative Importance of Corporate Governance, Take-Over Threat, and Free Cash Flow. *Strategic Management Journal*, 14:51-68.
- Griliches, Z. and J. Mairesse, 1984, Productivity and R&D at the firm level, in: Griliches, (Ed.), *R&D, Patents and Productivity*, Chicago: University of Chicago Press
- Grubert, Harry and John Mutti, 1991. Taxes, Tariffs, and Transfer Pricing in Multinational Corporate Decision Making, *Review of Economics and Statistics*: 285-293.
- Haynes, M., S. Thompson and M. Wright 2003. The Determinants of Corporate Divestment: Evidence from a Panel of UK Firms. *Journal of Economic Behavior and Organization* 52: 147-166.
- Haynes, M., S. Thompson and M. Wright 2000. The Determinants of Corporate Divestment in the UK. *International Journal of Industrial Organization* 18(8): 1201-1222.
- Hausman, J., Hall, B.H., and Z. Griliches, 1984. Econometric Models for Count Data with an Application to the Patents-R&D Relationship. *Econometrica* 52: 909-983.
- Head, K., and J. Reis, 2001. Overseas Investment and Firm Exports, *Review of International Economics* 9(1): 108-122.
- Hill, C.W.L., 1983, Conglomerate Performance Over the Economic Cycle, *Journal of Industrial Economics* 32: 197-212.

Hitt, M.A., and R.A. Ireland, 1986. Relationships among Corporate Level Distinctive Competencies, Corporate Strategy, Corporate Structure and Performance, *Journal of Management Studies* 23: 401-16.

Hoskisson, R.E., Johnson, R. A., and D.D. Moesel, 1994. Corporate Divestiture Intensity in Restructuring Firms: Effects of Governance, Strategy and Performance. *Academy of Management Journal* 37: 1207-1251.

Hoskisson, R., and T.A. Turk, 1990. Corporate Restructuring: Governance and Control Limits of the Internal Capital Market, *Academy of Management Review*, 15: 459-477.

Jain, P.C., 1985. The Effect of Voluntary Sell-Off Announcements on Shareholder Wealth. *Journal of Finance* 40: 209-224.

Lee, W.B. and E.S. Cooperman, 1989. Conglomerates in the 1980s: A Performance Appraisal. *Financial Management* 18(2): 45-54.

Lewellen, W.G., 1971, A Pure Financial Rationale for the Conglomerate Merger, *Journal of Finance*, 26: 521-537.

Lipsey, R., 2002. Home and Host Country Effects on FDI. NBER Working Paper 9293.

Lipsey, R. and M.Y. Weiss, 1981. Foreign Production and Exports in Manufacturing Industries, *Review of Economics and Statistics*, 63(4): 488-494.

Lipsey R., and M.Y. Weiss, 1984. Foreign Production and Exports of Individual Firms, *Review of Economics and Statistics*, 66(2): 304-308.

Lipsey, R., E. Ramstetter, and M. Blomström 1999. Parent Exports and Affiliate Activity in Japanese Multinational Companies, 1986, 1989, 1992,” in *Analytical Research Based on Data from the Survey of Overseas Business Activities* (Institute for International Trade and Investment): 93-146.

Majd, S. and S.C. Myers, Tax Asymmetries and Corporate Income Tax Reform, in: M. Feldstein, Ed, Effects of Taxation on Capital Accumulation (University of Chicago Press, Chicago, IL).

Markides, C., 1992. Consequences of Corporate Refocusing: Ex Ante Evidence. *Academy of Management Journal* 35(2): 398-412.

Markides, C., 1992b. The Economic Characteristics of De-Diversifying Firms, *British Journal of Management* 3: 91-100

Markides, C., 1995. Diversification, Refocusing and Economic Performance. MIT Press, Cambridge.

- Markusen J. 1995. The Boundaries of Multinational Enterprises and the Theory of International Trade. *Journal of Economic Perspectives* 9: 169–189.
- Markusen, James R., Anthony J. Venables, Denise Eby Konan and Kevin H. Zhang, 1996. A Unified Treatment of Horizontal Direct Investment, Vertical Direct Investment, and the Pattern of Trade in Goods and Services, *NBER Working Paper* 5696.
- Mata, J., and P. Portugal, 2002. The Survival of New Domestic and Foreign-Owned Firms. *Strategic Management Journal* 23(4): 323-3
- Montgomery, C., and A. Thomas, 1988. Divestment: Motives and Gains. *Strategic Management Journal*, 9: 93-97.
- Meyer, M., P. Milgrom and J. Roberts, 1992, Organizational Prospects, Influence Costs, and Ownership Changes, *Journal of Economics and Management Strategy* 1: 9-35.
- Myers, S.C, 1977, The Determinants of Corporate Borrowing, *Journal of Financial Economics*, 5: 147-175.
- Myerson, R.B., 1982, Optimal Coordination Mechanisms in Generalized Principal-Agent Problems, *Journal of Mathematical Economics* 10: 67-81.
- Palepu, K., 1985. Diversification Strategy, Profit Performance and the Entropy Measure. *Strategic Management Journal* 6: 239-255.
- Porter, M., 1987. From Competitive Advantage to Corporate Strategy, *Harvard Business Review*, 65(3): 43-59.
- Ramstetter, Eric D. 1999. Comparisons of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time, *Asian Economic Journal*, 13(2): 163-203.
- Ravenscraft, D.J., and F.M. Scherer, 1987. Mergers, Sell-offs and Economic Efficiency. The Brookings Institute, Washington DC.
- Svensson, R. 1996. Effects of Overseas Production on Home Country Exports: Evidence Based on Swedish Multinationals, *Weltwirtschaftliches Archiv* 132: 304-329.
- Swedenborg B. 1979. *The Multinational Operations of Swedish Firms*. Stockholm Industrial Institute for Economic and Social Research.
- Swedenborg, B., 2001. Determinants and Effects of Multinational Growth: The Swedish Case Revisited, in Blomström and Goldberg, Editors, *Topics in Empirical International Economics*, Chicago, (University of Chicago Press): 99-131.
- Tsetsekos, G., and M. Gombola, 1992. Foreign and Domestic Divestments: Evidence on Valuation Effects of Plant Closings. *Journal of International Business Studies* 23(2): 203-223.