FOREIGN-BASED COMPETITION AND CORPORATE DIVERSIFICATION STRATEGY

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Since the mid-1980s U.S. domestic firms have faced significant increases in foreign-based (i.e., import) competition as reductions in barriers to international commerce have resulted in markets and industries becoming increasingly global. Despite the growing and widespread importance of foreign-based competition, the influence that such competition may exert on corporate diversification strategy is a question largely overlooked in the strategic management literature. This paper examines the impact of foreign-based competition in a firm's core business on both the level and nature of a firm's diversification strategy at the corporate level in a panel dataset of U.S. firms over the period 1985–94. Our findings provide the first evidence that increased foreign-based competition is indeed a statistically significant factor explaining both the reduced business-level diversity and the increased strategic focus of U.S. firms that has been widely perceived over the past two decades. Copyright © 2005 John Wiley & Sons, Ltd.

For over 30 years the topic of corporate diversification strategy has been a central focus of strategy research. Despite the importance of this topic, few studies consider the fundamental question of how corporate diversification strategy evolves in response to changes in a firm's business environment. Instead, the dominant strand of inquiry (see Ramanujan and Varadarjan, 1989, for review) has been to examine the performance implications of alternative diversification strategies (Amit and Livnat, 1988; Chatterjee and Wernerfelt, 1991; Robins and Wiersema, 1995). However, if strategy research is to continue to offer credible guidelines on the strategic behavior of firms it seems imperative to have a more fundamental understanding of the factors influencing a firm's choice of diversification strategy and how this evolves in response to changing business conditions.

A significant source of change in business conditions since the late 1970s has been the growing presence and pressure of foreign competition. The growing importance of foreign competition is largely the culmination of significant reductions in both trade and non-trade barriers (Sachs and Warner, 1995) that have opened, and increasingly integrated, previously sheltered national markets. Worldwide growth in international transactions as measured, for example, by the consistently faster growth in world exports compared to world production (e.g., World Trade Organization, various years) evidences rising trade dependence at the national level.[1] At the firm level, more companies sell across multiple foreign markets and foreign sales are increasingly a higher fraction of firms' total sales (Denis, Denis, and Yost, 2002).

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[1] A nation's trade dependence is measured as the sum of its total exports and total imports divided by its GNP (Leamer, 1988). Trade dependence increased significantly for most countries during 1980–98 (OECD, 2001).

The competitive impact of the growing integration of national markets has come predominantly in the form of rising imports of foreign produced goods, and hence a rising share of imports in the domestic markets of most nations.[2] Foreign competition in the form of imports we label *foreign-based competition*.[3] U.S. firms have in particular faced large increases in foreign-based competition since the 1970s, due in part to trade barrier reductions arising from both multilateral and bilateral trade agreements (Congressional Budget Office, 1987; Krueger, 1995). For example, between 1970 and 1994 the ratio of U.S. imports of goods and non-factor services to U.S. GNP, a broad measure of overall import penetration in the U.S. market, rose almost 800 percent (from 1.6% to 14.3%).

Foreign-based competition can be both stronger in its effects and more disruptive than domestic-based competition, and it can therefore have significantly greater economic and competitive ramifications for a country's domestic markets (e.g., Caves, 1974, 1982, 1996; Chung, 2001a, 2001b; De Backer, 2002; Driffield and Munday, 2000). By introducing a new set of competitors that can have significantly different sources of competitive advantage, such as access to lower cost factor markets, different technologies, and diverse and less familiar capabilities, increased competition from foreign firms is fundamentally different from increased competition arising from the entry of a new domestic firm into an industry (Ghoshal, 1987; Kogut, 1983). Increased competition from foreign firms increases the rate of technological developments in an industry (Caves, 1974, 1996; De Backer, 2002) and, since foreign firms are likely to be leveraging specific advantages (Caves, 1971; Esposito and Esposito, 1971), creates greater pressure on domestic firms to increase efficiency to remain competitive than would a new domestic player (Caves, 1996; Chung, 2001a, 2001b;

Driffield and Munday, 2000). The evidence of falling industry profit margins, rationalization of production, pressures for greater intra-plant efficiency and technological developments all indicate that foreign-based competition significantly intensifies competition at the industry level (Chung, 2001b; Domowitz, Hubbard, and Petersen, 1986; Ghosal, 2002; Katics and Petersen, 1995; Tybout, 2001). Foreign competition also imposes a disciplining effect in that domestic firms are required to rise to a 'world class' level to remain competitive (Lucas, 1993). The fundamentally different nature of the competitive threats that arise from foreign competition can even lead to the disappearance of an entire domestic industry; whole industries are unlikely to disappear when the source of increased competition is simply another domestic firm. The documented inroads by foreign competitors, the unique impacts of foreign competition on the nature of industry competition, and the adverse effects of such competition on domestic firm profitability clearly indicate that foreign competition will demand a marked strategic response on the part of domestic firms.

Whereas the perception and observation of widespread strategic restructuring, particularly among U.S. firms (e.g., Bhagat, Shleifer, and Vishny, 1990; Markides, 1992, 1995), during the past two decades is often presumed to be largely a response to global competitive pressures, no systematic empirical investigation of this presumed link has yet to be conducted. In particular, the strategy literature contains no systematic analysis of the potential link between growing foreign competition and firms' strategic choices at the corporate level. This paper seeks to fill this important gap, and to contribute to the literature on corporate diversification strategy, by providing a theoretical framework and thorough empirical examination of how the hostile competitive conditions engendered by foreign-based competition in a firm's core business influences a firm's choice of both the extent and nature of its diversification; relationships not previously examined.

Our theoretical framework utilizes both transaction cost theory and resource-based theory to formulate predictions about a firm's strategic response, in terms of the extent and nature of its diversification, to competition from foreign-based firms. Transaction cost theory (Williamson, 1985) suggests that a firm would reduce its level of diversification in response to increasingly hostile

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[2] During the time period studied here, 1985–94, the rise in global transactions and hence also in foreign competition occurred predominantly in manufacturing (World Trade Organization, various years).

[3] Another source of foreign competition is *domestic-based foreign competition* in the form of sales by foreign subsidiaries located in the domestic market. Data on FDI (an imperfect proxy for the extent of foreign subsidiary sales in a domestic market) suggest that growth in foreign subsidiaries was less important than import growth as a source of foreign competition during our sample period: inward FDI as a percentage of GDP rose during our sample period but at a much lower rate than did import penetration (Lipsey, 2001).

competitive conditions, such as those engendered by foreign-based competition, to the extent that these increase the marginal cost of managing diversity (Bergh, 1998; Bergh and Lawless, 1998; Hill and Hoskisson, 1987). Resource-based theory suggests that, in response to foreign competition, a firm would also alter the nature of its diversification. Specifically, a firm would increase the resource-based relatedness of its business portfolio as it undertakes actions to maintain and strengthen those resource-based barriers that are the basis of its competitive advantage (Barney, 1991; Conner, 1991; Reed and DeFillippi, 1990).

In addition to these two basic predictions regarding the extent and nature of a firm's strategic response to foreign competition, we also consider whether aspects of the firm's business conditions moderate these strategic responses. In this context, our analysis focuses on a firm's strategic responses to foreign-based competition in its core business industry.[4] Since a firm's core business is its largest and strategically most important business, increased competition in the form of increased foreign-based competition in a firm's core industry is more likely to command a strong strategic response by the firm.

Our empirical analysis of these theoretical predictions of a firm's response to foreign-based competition contains several novel elements. First, our analysis is conducted using a panel (i.e., pooled time series, cross-section) dataset of U.S. firms from 1985 to 1994, a period of increasing foreign-based competition to U.S. firms. The use of panel data allows us to capture the dynamic evolution of corporate strategy within and among firms, and contrasts with most empirical strategy research that has relied on cross-section data for a single year—an approach that has come under increasing criticism in the empirical strategy literature (Bergh, 1995; Bowen and Wiersema, 1999; Lubatkin and Chatterjee, 1991; Rumelt, 1991). Second, both the level and the nature of corporate diversification strategy are examined using appropriately valid measures that capture these two fundamentally different constructs. Lastly, we examine the issue of level of diversification using a dataset that comprises both single and multi-business firms and derive coefficient estimates using the nonlinear Tobit procedure. Our choice of dataset and estimation technique is meant to obviate potential biases that can arise when using a sample that is restricted, as have most prior studies of corporate diversification, to only multi-business firms.[5] The Tobit procedure further allows us to simultaneously model both the decision of a firm to be diversified or not and, if diversified, its decision regarding its level of diversification. Given widespread problems in the application and interpretation of limited dependent variable methods (such as Tobit) within the strategy literature (Bowen and Wiersema, 2004), our research design and choice of estimation technique represent important methodological contributions in the domain of empirical strategy research.

THEORY AND HYPOTHESES

Foreign-based competition and level of diversification

The potential benefits from diversification arise from economies of scope and potential synergies among the businesses in a firm's portfolio (Penrose, 1959; Teece, 1980, 1981, 1982). However, the spatial distribution and dissimilarity of businesses, and the combined complexity of managing a portfolio of businesses, imposes limits on organizations (Coase, 1937). Prior research has utilized transaction cost theory to posit that increases in geographic and product scope escalate the dispersion of business interests (Tallman and Li, 1996). This increased dispersion increases managerial information-processing demands and raises the cost of internal governance with a corresponding negative impact on firm performance (Morrison and Roth, 1992; Tallman and Li, 1996).

Transaction cost theory posits that a firm's optimal level of diversification is a function of balancing the economic gains from diversification against the bureaucratic costs of a multi-business firm (Jones and Hill, 1988). If changes in a firm's competitive environment due to foreign competition require it to expend more resources towards

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[4] The core business is defined as the firm's business segment that earns the largest revenue. The core business is often operationally defined as a firm's largest 4-digit SIC business (Rumelt, 1974). The core business remains a significant source of revenue for many firms. In our dataset, the core business constitutes, on average, 82 percent of sales among all firms and 63 percent of sales for multi-business firms alone.

[5] Diversification studies that use samples comprising only multi-business firms may exhibit a self-selection bias (Bowen and Wiersema, 2004: 127–128).

monitoring, integrating, and coordinating its activities then such competition would be expected to increase the costs of managing a multi-business firm (Dundas and Richardson, 1980; Hill and Hoskisson, 1987; Jones and Hill, 1988). Moreover, the different nature of foreign-based competition is more likely to engender changes in competitive conditions that increase both uncertainty and complexity in the marketplace, and will thus require higher levels of differentiation on the part of the firm. Lawrence and Lorsch (1967) argue that the degree of differences in orientations among managers in an organizational unit is directly related to the diversity of the environment in which they operate. At the same time, this increase in organizational differentiation requires greater collaboration and integration of interdependencies on the part of a firm, leading to increased costs of coordinating its activities (Lawrence and Lorsch, 1967; March and Simon, 1957).

An implicit assumption of the preceding theoretical frameworks is that firms have limited coordinative capacity that cannot be readily incremented. As a result, the increased complexity, hostility, and uncertainty engendered by foreign competition in a firm's core business industry will increase pressure on the limited amounts of managerial attention to which the firm has access. Increased foreign competition to a firm's core business would therefore be expected to raise the opportunity cost of keeping managerial resources, and hence managerial attention, focused on non-core businesses. Since the pay-off of maintaining managerial attention on non-core businesses is thereby reduced, the firm will choose to reallocate scare managerial resources and attention away from its non-core businesses, and thereby choose to lower its level of diversification.

Hypothesis 1: The level of firm diversification will be negatively related to core industry import penetration.

A firm's incentive to reduce its level of diversification in response to foreign-based competition in its core business industry may be moderated by both industry and firm-specific business conditions. Specifically, the magnitude of a firm's response to reduce its level of diversification is likely to vary with the economic attractiveness of its core business industry and the profitability of its core business. For core businesses located in attractive industries (e.g., high growth or profitability) and for those performing well, the higher will be the opportunity cost of keeping managerial attention focused on non-core businesses when a firm faces increased competition in its core business. As a result, we would expect that the more profitable is a firm's core business, and the more attractive is its core business industry, the greater will be the firm's response to reduce its level of diversification when faced with increased foreign-based competition.

Hypothesis 2a: The more attractive the firm's core business industry, the more negative the relationship between the level of firm diversification and core industry import penetration.

Hypothesis 2b: The more profitable the firm's core business, the more negative the relationship between the level of firm diversification and core industry import penetration.

Lastly, overall firm performance may also moderate the relationship between the level of diversification and foreign-based competition. High financial performance gives a firm greater access to an important resource—capital—that can insulate it from competitive conditions. Prior research suggests that firms with greater access to financial resources have greater organizational slack and are thus less likely to feel threatened by heightened competitive conditions. Pressure to reduce organizational inefficiencies in the face of increased environmental complexity arising from increased foreign competition may therefore be attenuated when a firm is performing well. On the other hand, poorly performing firms may be more attuned to respond to changes in the competitive dynamics of their core business. The pressures on financial performance may then demand that more managerial attention be directed to the core business. As a result, the response to reduce diversification in the face of increased foreign competition would be expected to be greater the lower is a firm's overall performance.

Hypothesis 2c: At low levels of firm financial performance, the more negative the relationship between the level of firm diversification and core industry import penetration.

Foreign-based competition and resource-based relatedness

Resource-based theory, i.e., the resource-based view (RBV) of the firm, provides a basis for understanding how the nature of a firm's corporate diversification strategy, in terms of the interrelationships among its businesses, is likely to be impacted by changes in competitive conditions engendered by increased foreign-based competition. Specifically, the RBV suggests that domestic firms will, over time, have developed and nurtured scarce, valuable, difficult-to-imitate, and non-substitutable capabilities that provide resource barriers to competition (Wernerfelt, 1984). However, the ability of these resources to provide sustainable competitive advantage is predicated on stability of the competitive environment, not only in term of inputs and processes, but also the nature and bases of competitive rivalry within the industry in which firms operate (Barney, 1991). Since foreign-based competitors will likely possess different combinations of resources and capabilities, and have fundamentally different approaches to the product market, competition from foreign-based firms can be expected to significantly undermine the resource barriers that incumbent domestic firms had previously established to thwart the competitive threats of domestic-based rivals (Robins and Wiersema, 2000).

To the extent that a firm's resources and capabilities are inherently limited and cannot be built quickly, the firm will face a trade-off when deciding how to allocate these scarce resources (Thomas, 2004). In a study of the Japanese pharmaceutical industry, Thomas (2004) found that it was very difficult for firms to augment their capabilities. Since the competitive position of a domestic firm is based on its core business-related resource bundles that create barriers to imitation and substitution, a firm is likely to defend its resource-based barriers when its core market comes under attack from foreign competition. The expected strategic response of the firm would be to preserve and strengthen its core resource capabilities. For example, Scherer and Huh (1992) found that large technology-intensive firms in concentrated markets invested more aggressively in long-term R&D when faced with import competition in their home market. We would therefore expect that a firm, when faced with competitive threats to its core business, would retrench around its strategic assets and defend those distinctive endowments that underlie its core business, resulting in a greater strategic emphasis on the resource-based interrelationships among the businesses within the firm's portfolio.

Hypothesis 3: The resource-based relatedness among the businesses within a firm's portfolio will be positively related to core industry import penetration.

A firm's response to defend its core related businesses, and hence to increase the resource-based relatedness of its businesses, when faced with increased foreign-based competition may be moderated by both industry- and firm-specific business conditions. A core business located in a more attractive industry provides the firm with more favorable economic structural attributes that can provide greater profit potential (Long and Ravenscraft, 1984; Porter, 1980; Schmalensee, 1985). Research on firm diversification has found that a more profitable core industry makes it attractive for the firm to 'stick to its knitting' and focus on its core business (Bass, Cattin, and Wittink, 1978; Hopkins, 1991; Miles, 1982; Reed and Luffman, 1986). In such industries, a firm has greater incentive to defend its competitive position when threatened with increased foreign-based competition.

A core business exhibiting high profitability may be indicative of unique and sustainable resource-based advantages, or significant scope advantages, and hence indicative of a core business of great strategic importance to the firm. The existence of highly valued and not easily imitated resources and capabilities provides a firm with the ability to establish a strategic response to fend off new competitors in the form of foreign-based competition. Since the firm has more to gain by focusing its resources and capabilities, we would expect that the more profitable is the firm's core business, and the more attractive is its core business industry, the greater would be the response by the firm to increase the resource-based relatedness of its businesses when faced with increased foreign-based competition.

Hypothesis 4a: The more attractive the firm's core business, the more positive the relationship between the resource-based relatedness among

the businesses within the firm's portfolio and core industry import penetration.

Hypothesis 4b: The more profitable the firm's core business, the more positive the relationship between the resource-based relatedness among the businesses within the firm's portfolio and core industry import penetration.

A firm's overall performance may also moderate its response to increase the resource-based relatedness of its businesses in response to foreign-based competition. Since financial success can insulate a firm from competitive pressures, a firm with high overall performance may be less inclined to take aggressive action to defend its strategic position when faced with increased foreign-based competition. Conversely, we would expect that a poorly performing firm would exhibit a larger response to increase the resource-based relatedness of its businesses in response to increased foreign-based competition.

Hypothesis 4c: At low levels of firm financial performance, the more positive is the relationship between the resource-based relatedness of a firm's portfolio of businesses and core industry import penetration.

METHODS

Dataset and model specification

We investigate the relationship between corporate diversification strategy and foreign-based competition in a firm's core industry using a model that specifies each diversification strategy construct (i.e., level and nature of diversification) in relation to core industry import penetration, a set of control variables suggested by prior research, independent variables, and interaction variables between import penetration and core industry and firm contextual factors.[6] The model also includes a set of time dummy variables, one for each year, to capture additional but unspecified sources of variation over time in each dependent variable.[7] Including the time dummy variables enables us to test for model stability over time. One source of instability can be variations over time in economic and political factors outside the scope of our model. The full model, but written without the time dummy variables, is

$$
\begin{aligned}
\text{Corporate Diversification Strategy} = {} & \beta_0 \\
& + \beta_1(\text{Core Industry Import Penetration}) \\
& + \beta_2(\text{Core Industry Growth}) \\
& + \beta_3(\text{Core Industry Profitability}) \\
& + \beta_4(\text{Core Business Profitability}) \\
& + \beta_5(\text{Firm Performance}) \\
& + \beta_6(\text{Core Industry Concentration}) \\
& + \beta_7(\text{Core Industry R\&D Intensity}) \\
& + \beta_8(\text{Core Industry Capital Intensity}) \\
& + \beta_9(\text{Core Industry Export Intensity}) \\
& + \beta_{10}(\text{Firm Size}) + \beta_{11}(\text{Core Industry Growth} \\
& \times \text{Core Industry Import Penetration}) \\
& + \beta_{12}(\text{Core Industry Profitability} \\
& \times \text{Core Industry Import Penetration}) \\
& + \beta_{13}(\text{Core Business Profitability} \\
& \times \text{Core Industry Import Penetration}) \\
& + \beta_{14}(\text{Firm Performance} \\
& \times \text{Core Industry Import Penetration}) + \varepsilon
\end{aligned}
$$

We conduct our empirical investigation using a panel (i.e., pooled time-series, cross-section) dataset of U.S. firms from 1985 to 1994.[8] The full panel consists of 8961 observations with varying numbers of firms in each sample year.[9] The full

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[6] Per one reviewer's suggestion, we also considered corporate governance structure as a potential control variable. Institutional ownership, a common measure of ownership concentration, was found to increase over time (from 45% in 1985 to 57% in 1994) but showed little variation across firms in a given year. Since our model already accounts for factors that vary over time but not cross-sectionally via the use of year dummy variables, we chose to not explicitly include governance structure as a control variable in the final model.

[7] The year 1995 dummy is omitted since the model includes a constant term.
[8] U.S. firms have faced rising foreign-based competition since the 1970s and our sample period is no exception: between 1985 and 1994 aggregate import penetration (the ratio of total U.S. merchandise imports to U.S. GNP) rose 46 percent (from 9.8% to 14.3%).
[9] The number of firms per year rises over time, from 770 firms in 1985 to 1127 firms in 1994.

dataset consists of all firms appearing in Compustat's Line of Business database for which data on all model variables were available. As further discussed below, only our analysis of the level of diversification employs the full panel; our analysis of the nature of diversification instead restricts the dataset to only multi-business firms (2875 observations).

Dependent and independent variables

Level of firm diversification

We use three of the most commonly used measures of portfolio diversity to capture a firm's level of diversification: Total entropy, Herfindahl index, and Number of SIC business segments. Each measure is calculated using annual data, from Compustat's Line of Business database, on a firm's sales in each of its 4-digit SIC business segments.

Total entropy captures the extent of diversity across a firm's activities (Jacquemin and Berry, 1979; Palepu, 1985). It is calculated as

$$\text{Total entropy} = \sum_{i=1}^{N} S_i \ln(1/S_i)$$

where S_i is the share of a firm's total sales in 4-digit SIC industry i and N is the number of 4-digit SIC industries in which the firm operates. Total entropy equals zero for a single business firm and it rises with the extent of diversity.

The Herfindahl index of diversity is calculated as

$$\text{Herfindahl index} = \sum_{i=1}^{N} (S_i)^2$$

where S_i is the share of a firm's total sales in 4-digit SIC segment i and N is the number of 4-digit SIC industries in which the firm operates. Since lower values of the Herfindahl index (H) indicate higher levels of diversification we instead use the inverse measure ($1/H - 1$) for consistency with the other diversification measures used here. This inverse measure equals zero for a single business firm and it rises with the level of diversification.

Finally, we use a product-count measure calculated as the number of 4-digit SIC business segments in which the firm participates minus one, so that this measure equals zero for a single business firm.

Resource-based relatedness

Critical to the construct of resource-based relatedness is the ability to capture underlying economies of scope that determine the strategic interrelationships among businesses (Teece, 1982). Traditional measures of diversification (e.g., entropy) do not capture an underlying sharing of resources but instead rely on the hierarchical nature of the SIC system to assign relatedness among industries. These measures are also highly sensitive to the number of businesses in which the firm operates, making them inappropriate for capturing the concept of resource relatedness (Robins and Wiersema, 2003). To overcome these objections we adopt the technology relatedness measure developed by Robins and Wiersema (1995) to measure the interrelationships among businesses within a firm's portfolio. This measure captures portfolio relatedness based on patterns of technology flows among manufacturing industries.

Resource-based relatedness at the firm level is measured by aggregating over all combinations of two industries in a firm's business portfolio as follows:

$$\text{Resource-based relatedness} = \sum r_{ij}(P_i + P_j)$$

where r_{ij} is the relatedness coefficient of similarity between any two different industries i and j in terms of their pattern of inflows of technology,[10] and P_i and P_j are the percentage of the firm's sales in industries i and j. After an adjustment for the number of industries in which the firm is active, the measure has a range from -1.0 to $+1.0$, with a positive score indicating that the firm has a positively interrelated portfolio of businesses. Data on the r_{ij} were taken from Robins and Wiersema (1995). Data on a firm's sales in each of its 4-digit SIC business segments were taken from Compustat's Line of Business database.

Core industry

We define the core business as that business segment that earned the largest revenue among the firm's portfolio of businesses in 1985. The firm's core business industry is then the 4-digit SIC industry of the firm's core business. The identity

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[10] See Robins and Wiersema (1995) for further details.

of the core business industry is held fixed over the time period studied.

Foreign-based competition

Foreign-based competition is measured by the ratio of imports to total domestic purchases[11] (i.e., import penetration) in the 4-digit SIC level core industry of the firm lagged 1 year. The lagged value is used since we expect a firm's current strategic decision (with regard to the level of diversification or resource-based relatedness) to be influenced by competitive conditions in a prior period. Annual data on imports and exports at the 4-digit SIC level were taken from the National Bureau of Economic Research's (NBER) Trade and Immigration Database (Abowd, 1990). Annual sales (value of shipments) at the 4-digit SIC level were taken from the NBER's Manufacturing Productivity Database (Bartelsman and Gray, 1996).

Economic attractiveness of the core industry

The economic attractiveness of a firm's core industry is operationalized using two measures: industry growth and industry profitability. Core industry growth is measured by the annual growth in the real (constant dollar) value of shipments of the 4-digit SIC core industry of the firm. Data at the 4-digit SIC level on industry value of shipments measured in constant 1987 U.S. dollars were taken from the NBER's Productivity Database (Bartelsman and Gray, 1996). Core industry profitability is measured by the average return on assets (ROA) in the 4-digit SIC core industry of the firm. Annual data on industry assets and industry profit by 4-digit SIC were derived from *Industry Norms and Key Business Ratios* published by Dun & Bradstreet. Industry ROA was then calculated by dividing industry profits by industry assets.

Core business profitability

Core business profitability reflects the financial profitability of the firm's core business and is measured as the ratio of operating profit to revenues in the firm's 4-digit SIC core business. Annual

data on firms' operating profit and revenues were taken from Compustat's line of business segment database.

Firm performance

Firm performance is measured as the firm's return on assets (ROA). ROA is a widely employed measure of performance and has been shown to be related to a variety of other indicators of a firm's financial performance (Keats and Hitt, 1988). Annual data on firm ROA were taken from the Compustat line of business database.

Control variables

Four core industry-level variables (concentration, R&D intensity, capital intensity, and export intensity) and one firm-level variable (firm size) are used to control for variation in corporate diversification strategy due to differences in core industry characteristics and in the nature of the firm itself.[12]

Industry concentration

Industry concentration has been shown to be related to both scale economies and the degree of market power within an industry, with firms in highly concentrated industries exhibiting lower levels of diversification (Christensen and Montgomery, 1981). We therefore expect a firm's level of diversification to be negatively related to core industry concentration, and a firm's resource-based relatedness to be positively related to core industry concentration.

Industry concentration is measured by the four-firm concentration ratio of the 4-digit SIC core industry of the firm; these data are only available every 5 years from the U.S. Census of Manufacturers.

Industry R&D intensity

Industry R&D intensity is considered indicative of entry barriers. Previous research shows that firms

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[11] No data exist on total domestic purchases at the 4-digit SIC level. Instead, total domestic purchases is commonly measured by apparent consumption, defined as total sales (value of shipments) plus imports minus exports in a given 4-digit SIC industry.

[12] Firm leverage, measured by the ratio of long-term debt to common equity, was also investigated as a control variable since prior research has suggested that firm diversification may be financed through increased leverage (Kochhar and Hitt, 1998). However, this variable was not statistically significant when added to the model and its presence did not materially alter the estimates for other model variables (results available from the authors upon request). Leverage was therefore not included as a control variable in the final model.

in industries with high R&D intensity have lower levels of diversification (Chatterjee and Wernerfelt, 1991) and that change in a firm's level of diversification is negatively related to industry R&D intensity (Hill and Hansen, 1991). We therefore expect a firm's level of diversification and industry R&D intensity to be negatively related.

Firms in industries with high R&D intensity may find that R&D, due to its intangible nature, can form the basis for external expansion into closely related areas (Penrose, 1959). We therefore expect a firm's resource-based relatedness and industry R&D intensity to be positively related.

Industry R&D intensity is measured by the ratio of industry R&D expenditures to industry shipments in the 4-digit SIC core industry of the firm. Annual R&D expenditures by industry were taken from various years of the National Science Foundation's report on R&D expenditures by industry (e.g., National Science Foundation, 1995, 1996).

Industry capital intensity

High industry capital intensity can be indicative of scale economies in production and exit barriers created by substantial resource commitments that may not be fully recoverable (Porter, 1980). We therefore expect the level of diversification to be negatively related to industry capital intensity. Industry capital intensity is measured by the ratio of the real capital stock to total employment in the 4-digit SIC core industry of the firm. Real capital stock is measured in millions of 1987 dollars. Annual data on industry real capital stock and employment are from the NBER's Productivity Database (Bartelsman and Gray, 1996).

Industry export intensity

Industry export intensity, the ratio of industry exports to sales, captures an industry's degree of outward orientation and the ability of domestic firms to successfully compete in international markets. High industry export intensity is therefore indicative of technology-, skill-, or scale-based advantages (Deardorff, 1984; Leamer and Levinsohn, 1995). Since the factors found to be positively related to export performance across U.S. industries have also been found to be negatively related to the level of firm diversification, we expect a firm's level of diversification to be negatively related to core industry export intensity. On

the other hand, given that industry export intensity is indicative of competitive advantages based on underlying resources, we expect a firm's resource-based relatedness to be positively related to core industry export intensity.

Industry export intensity is measured by the ratio of industry exports to industry shipments in the 4-digit SIC core industry of the firm. Annual data on industry exports and industry shipments come from the NBER's Trade and Immigration Database (Abowd, 1990).

Firm size

Firm size is often viewed as an indicator of scale economies and market power, and empirical evidence had found a strong link between firm size and level of diversification (Grant, Jammine, and Thomas, 1988). We expect firm size and a firm's level of diversification to be positively related. Following past research, we measure firm size as the logarithm of a firm's total revenue as taken from Compustat.

Analysis

We conduct our analysis of the level of firm diversification in a dataset that includes both diversified and single business firms. This is done to limit potential sample selection bias and to fully incorporate the diversification choices available to the firm (i.e., whether or not to be diversified and, if diversified, the extent of such diversification).[13]

Almost 60 percent of the 8961 observations in our dataset are single business firms whose level of diversification—our dependent variable—has a calculated value of zero. When a high proportion of the values taken by a dependent variable equals a single 'limit value' (here zero), an appropriate estimation technique is the nonlinear Tobit procedure (Greene, 1997). This procedure takes proper statistical account of the limit value observations and, using the maximum likelihood principle, it results in parameter estimates that (unlike linear least squares) are consistent and asymptotically efficient.[14]

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[13] Limiting the sample to only multi-business firms can result in biased estimates and, in a linear regression model, may also introduce heteroscedasticity (see Greene, 1997; Bowen and Wiersema, 2004).

[14] To account for the common problem of heteroscedasticity our Tobit estimates are derived assuming a general form of

Since parameter estimates in the Tobit model are derived using the method of maximum likelihood, overall model significance is not assessed by the usual *F*-test, but rather by a chi-square test that indicates the significance of a given model when compared to a restricted model that excludes all explanatory variables. For the specific chi-square tests performed here the restricted model contains only a constant and the nine time dummy variables.

In a Tobit framework the conditional mean of the dependent variable is a nonlinear function of all explanatory variables.[15] An implication of this nonlinearity for hypothesis testing is that the value of an estimated coefficient does not equal the true size of the effect on the dependent variable due to a change in an independent variable. The correct magnitude is instead given by a variable's 'marginal effect,' whose value depends on the values of all variables in a model (Bowen and Wiersema, 2004).[16] Although a variable's estimated coefficient and its marginal effect will differ in magnitude, in a Tobit model they do not differ in sign (Bowen and Wiersema, 2004). Hence, computing a marginal effect is not required to test Hypothesis 1 since this hypothesis only deals with the *directional* effect of a change in foreign competition on the level of diversification. However, matters are not so simple for testing moderator Hypotheses 2a, 2b, and 2c since the magnitude of the associated marginal effects is important.

In particular, because the conditional mean in a Tobit model is nonlinear, the value and sign of the estimated coefficient on an interaction variable can differ from that of the 'true interaction coefficient' (Ai and Norton, 2003).[17] Hence, unlike linear regression, it is not correct in a Tobit framework to test a moderator hypothesis by examining the sign and significance of the estimated coefficient on an interaction variable. Instead, one must first calculate the true interaction coefficient and test if its value is statistically different from zero at different levels of a moderator variable. If significant, the sign of the calculated true interaction coefficient indicates the directional influence of the moderator variable on the relationship between the dependent variable and a given explanatory variable. A final analysis is to then calculate an explanatory variable's 'total marginal effect,' which includes both its direct and indirect effect (via its presence in an interaction variable) on the dependent variable. Analysis of the value and statistical significance of a variable's total marginal effect at different levels of a moderator variable is used to assess the influence of the moderator variable, i.e., the interaction effect.

Our analysis of resource-based relatedness is conducted in a dataset that comprises only multi-business firms. Single business firms are excluded because, by definition, it is not meaningful to calculate a measure of portfolio interrelationships for such firms. The dataset is further reduced because calculated values of the resource-based measure derive from data on technology flows that are only available for certain manufacturing industries (for details see Robins and Wiersema, 1995).

Finally, to facilitate comparisons of estimated coefficients, all independent variables are measured in standardized units. Each estimate coefficient therefore indicates the effect on a dependent variable of a one standard deviation change in a dependent variable. Following Jaccard, Turrisi, and Wan (1990), interaction variables are computed as the product of two standardized variables.

RESULTS

Level of diversification

Table 1 presents descriptive statistics and correlations for the full dataset used for the level

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[15] heteroscedasticity in which the disturbance variance is modeled as an exponential function of all explanatory variables (Greene, 1997). The hypothesis of homoscedasticity was rejected for our model based on an appropriate likelihood ratio test (results not shown).

[15] For the Tobit model, this conditional mean is $E[\mathbf{Y}|\mathbf{X}] = \Theta(\mathbf{X}\boldsymbol{\beta}/\sigma)\mathbf{X}\boldsymbol{\beta} + \sigma\phi(\mathbf{X}\boldsymbol{\beta}/\sigma)$ where $\Theta(.)$ is the standard normal c.d.f., $\phi(.)$ is the standard normal p.d.f., $\mathbf{X}$ is the matrix of explanatory variables, σ is the standard deviation of the disturbances, and $\boldsymbol{\beta}$ the vector of model coefficients (Bowen and Wiersema, 2004).

[16] Formally, the marginal effect of an independent variable is the first derivative of the conditional mean of the dependent variable with respect to that variable.

[17] In general, the true interaction coefficient associated with variable X and moderator Z is the cross-partial derivative of the conditional mean with respect to these variables, i.e.,

$\partial^2 E[Y|X, Z]/\partial X \partial Z$. In the linear regression model this cross-partial derivative equals the coefficient on the interaction variable $X * Z$. However, this is in general not true if a model's conditional mean is non-linear. Instead, one must derive this cross-partial derivative and compute its value at different values of the variables (Ai and Norton, 2003).

Table 1. Descriptive statistics and correlations: level of diversification dataset

Variable[a]	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
Total entropy	0.322	0.453	1											
Herfindahl index[b]	0.456	0.794	0.939	1										
Number of SICs[c]	0.847	1.309	0.935	0.889	1									
Industry import penetration[d]	0.163	0.178	−0.126	−0.108	−0.119	1								
Industry growth	0.041	0.095	−0.139	−0.115	−0.128	0.069	1							
Industry profitability	0.089	0.128	−0.045	−0.037	−0.056	0.033	0.002	1						
Core business profitability	0.082	0.175	0.052	0.044	0.042	0.009	0.004	0.031	1					
Firm performance	0.115	0.124	0.055	0.037	0.028	−0.047	0.031	0.042	0.615	1				
Industry concentration	0.371	0.170	0.016	0.019	0.047	0.015	0.062	−0.026	−0.006	−0.024	1			
Industry R&D intensity	0.044	0.055	−0.153	−0.119	−0.139	−0.078	0.178	−0.101	−0.069	−0.053	0.214	1		
Industry capital intensity	124.207	160.710	0.175	0.118	0.252	−0.078	−0.086	−0.120	−0.032	−0.071	0.029	−0.161	1	
Industry export intensity	0.139	0.132	−0.179	−0.135	−0.174	0.456	0.243	−0.019	0.001	−0.054	0.143	0.300	−0.164	1
Firm size	5.950	1.774	0.486	0.430	0.512	−0.086	−0.074	−0.053	0.157	0.083	0.218	−0.178	0.413	−0.142

$n = 8961$. Correlations are significant at $p < 0.05$ if greater in absolute value than 0.021 and significant at $p < 0.01$ if greater in absolute value than 0.027.
[a] All industry variables correspond to the core business industry of a firm.
[b] Inverse measure of Herfindahl index
[c] Number of firm lines of business minus one
[d] Lagged one period (year)

Table 2.   Results of Tobit analysis for predicting the level of firm diversification

Variable[a]	Total entropy		Herfindahl index		Number of SICs	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Industry import penetration (lagged)	−0.121***	−0.126***	−0.145***	−0.163***	−0.277***	−0.299***
Industry growth	−0.123***	−0.119***	−0.167***	−0.161***	−0.311***	−0.300***
Industry profitability	−0.043**	−0.041**	−0.046	−0.048*	−0.083*	−0.084*
Core business profitability	−0.053**	−0.103***	−0.093***	−0.172***	−0.165***	−0.268***
Firm performance	0.077***	0.107***	0.140***	0.175***	0.219***	0.274***
Industry concentration	−0.110***	−0.111***	−0.135***	−0.139***	−0.293***	−0.297***
Industry R&D intensity	−0.128***	−0.114***	−0.174***	−0.158***	−0.291***	−0.254***
Industry capital intensity	−0.093***	−0.095***	−0.123***	−0.130***	−0.118***	−0.126***
Industry export intensity	−0.029	−0.038*	−0.091***	−0.099***	−0.113**	−0.138**
Firm size	0.551***	0.556***	0.795***	0.807***	1.477***	1.490***
Industry growth × Industry import penetration		0.005		0.013		0.020
Industry profitability × Industry import penetration		−0.022		−0.039		−0.088
Core business profitability × Industry import penetration		−0.074**		−0.123**		−0.160*
Firm performance × Import penetration		0.095***		0.153***		0.227***
Constant	−0.041	−0.032	−0.079	−0.066	−0.061	−0.040
TD86[b]	−0.028	−0.027	−0.049	−0.046	−0.098	−0.095
TD87	−0.026	−0.024	−0.049	−0.046	−0.067	−0.061
TD88	−0.105**	−0.109**	−0.179**	−0.185***	−0.300**	−0.312***
TD89	−0.218***	−0.222***	−0.360***	−0.369***	−0.603***	−0.616***
TD90	−0.185***	−0.188***	−0.320***	−0.328***	−0.524***	−0.534***
TD91	−0.268***	−0.275***	−0.445***	−0.460***	−0.761***	−0.785***
TD92	−0.219***	−0.227***	−0.364***	−0.382***	−0.634***	−0.659***
TD93	−0.299***	−0.308***	−0.488***	−0.506***	−0.866***	−0.895***
TD94	−0.324***	−0.332***	−0.524***	−0.540***	−0.932***	−0.951***
Log-likelihood	−6728.6	−6717.2	−8489.4	−8475.1	−10,274.9	−10,262.8
Pseudo-R^2	0.180	0.181	0.143	0.145	0.135	0.136
Chi-square statistic for model significance[c]	2304***	2322***	1593***	1610***	2192***	2214***
Chi-square statistic for significance of interactions[d]		16.04***		19.54***		16.42***

$n = 8961$; * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
[a] All industry variables correspond to the core business industry of a firm.
[b] Each 'TD' variable is a time dummy for the indicated year.
[c] Test of the model against the model that includes only the constant and time dummy variables
[d] Test of the model against the partial model that excludes the four interaction variables

of diversification analysis. Table 2 presents the heteroscedasticity-corrected Tobit results of estimating both the full and partial (interactions excluded) model for each measure of the level of firm diversification. For each model, the chi-square statistic indicates strong model significance ($p<0.001$) over the simple model that includes only a constant and the time dummy variables.

The results for Models 1a, 2a, and 3a in Table 2 support Hypothesis 1 that core industry import penetration has a significant negative effect on all three measures of the level of firm diversification:

Total entropy, Herfindahl index, and Number of SICs. The industry control variables are significantly associated with the level of firm diversification in the direction anticipated. For Models 1b, 2b, and 3b, Table 2 reports tests of the moderating Hypotheses 2a, 2b, and 2c; in each case the chi-square statistic indicates strong model significance ($p < 0.001$) over the partial model that excludes the interaction variables. These chi-square tests indicate that the industry- and firm-specific interactions are jointly significant for explaining the variation in the level of firm diversification.

As discussed earlier, to test the moderator hypotheses (Hypotheses 2a, 2b, and 2c), the true interaction coefficient must be computed and, if significant, the directional influence can then be assessed by calculating the total marginal effect for a given explanatory variable at different levels of the moderator variable. The true interaction coefficients associated with Hypothesis 2a (industry attractiveness as a moderator) were calculated at a low, mean, and high value of each moderator variable (industry growth and industry profitability) and were found not to be significantly different from zero, indicating the absence of interaction effects.[18] These results indicate that Hypothesis 2a, that the more attractive is a firm's core business industry the more negative the relationship between firm diversification and core industry import penetration, is not supported.

The true interaction coefficients associated with Hypotheses 2b and 2c were also calculated at a low, mean, and high value of each moderator variables (core business profitability and firm performance) and were found to be significantly different from zero, indicating the presence of interaction effects. For core business profitability (Hypothesis 2b), Table 3 shows that the total marginal effect of an increase in import penetration on the level of firm diversification is negative

and significant at the low, mean, and high values of core business profitability. The total marginal effect of an increase in import penetration on firm diversification is more negative the higher the level of core business profitability. These results provide strong support for Hypothesis 2b, that the more attractive the firm's core business the more negative the relationship between the level of firm diversification and core industry import penetration.

For firm performance (Hypothesis 2c), Table 3 shows that the total marginal effect is negative and significant at the low, mean, and high levels of firm performance. The total marginal effect of an increase in import penetration on firm diversification is more negative the lower the level of firm performance. These results provide strong support for Hypothesis 2c, that at low levels of firm performance the more negative the relationship between the level of firm diversification and core industry import penetration.

Resource-based relatedness

Table 4 presents descriptive statistics and correlations for the panel of multi-business firms used for the resource-based relatedness analysis. Table 5 presents the OLS results of estimating the model predicting resource-based relatedness and Table 6 presents the analysis of the interaction terms. Initial estimation of the model including the time dummy variables indicated that none of these variables were significant. The estimates in Table 5 were therefore derived for the model that excludes the time dummy variables.

The results for Model 1a in Table 5 support Hypothesis 3 that resource-based relatedness among the businesses within the firm's portfolio will be positively related to core industry import penetration. The overall model (Model 1a) is significant, explaining 19 percent of the variance in resource-based relatedness. The industry control variables—concentration, R&D intensity, and export intensity—are significant and positively associated with resource-based relatedness as anticipated.

Model 1b in Table 5 reports tests of the moderating Hypotheses 4a, 4b, and 4c. The F-statistic for the change in R^2 indicates that addition of the four interaction variables leads to a significant

Table 3. Analysis of the total marginal effect of a change in lagged import penetration and moderator variables on the level of firm diversification

Moderator	Level of moderator	Value of moderator[a]	Total marginal effect[b]
Core business profitability	Low	−9.3%	−0.012
	Mean	8.2%	−0.045***
	High	25.7%	−0.070***
Firm performance	Low	−0.9%	−0.095***
	Mean	11.5%	−0.061***
	High	23.9%	−0.017

$n = 8961$;* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
[a] The high (low) value of each moderator is its value one standard deviation above (below) its sample mean.
[b] Independent variables are measured in standardized units so these numbers are the total effect of a one standard deviation increase in lagged import penetration on firm diversification at the given value of each modifier.

[18] Following Jaccard, Turrisi, and Wan (1990), the high (low) value of each moderator is its value one standard deviation above (below) its sample mean value.

Table 4.   Descriptive statistics and correlations: resource-based relatedness dataset

Variable[a]	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
Resource-based relatedness	0.153	0.246	1									
Industry import penetration[b]	0.127	0.115	0.202	1								
Industry growth	0.023	0.075	0.091	0.087	1							
Industry profitability	0.081	0.121	0.046	0.056	0.063	1						
Core business profitability	0.093	0.087	0.053	−0.105	0.088	0.043	1					
Firm performance	0.127	0.098	0.022	−0.096	0.121	0.079	0.653	1				
Industry concentration	0.371	0.177	0.188	0.239	0.051	−0.024	0.004	−0.014	1			
Industry R&D intensity	0.033	0.048	0.235	−0.055	0.113	−0.058	0.082	0.089	0.176	1		
Industry capital intensity	171.749	221.932	−0.294	−0.071	−0.071	−0.222	−0.198	−0.185	−0.056	−0.176	1	
Industry export intensity	0.103	0.105	0.330	0.475	0.063	0.033	−0.058	−0.056	0.225	0.266	−0.206	1
Firm size	7.026	1.678	−0.118	−0.093	−0.010	−0.154	−0.006	−0.074	0.199	0.043	0.450	−0.087

$n = 2875$. Correlations are significant at $p < 0.05$ if greater in absolute value than 0.036 and significant at $p < 0.01$ if greater in absolute value than 0.048.
[a] All industry variables correspond to the core business industry of a firm.
[b] Lagged one period (year)

Table 5.   Results of regression analysis predicting resource-based relatedness

Variable[a]	Resource-based relatedness	
	Model 1a	Model 1b
Industry import penetration (lagged)	0.019***	0.015**
Industry growth	0.010*	0.006
Industry profitability	−0.001	−0.0002
Core business profitability	0.011*	0.012*
Firm performance	−0.011*	−0.012*
Industry concentration	0.023***	0.023***
Industry R&D intensity	0.033***	0.033***
Industry capital intensity	−0.050***	−0.051***
Industry export intensity	0.047***	0.047***
Firm size	−0.008	−0.008
Industry growth × Industry import penetration		0.008**
Industry profitability × Industry import penetration		0.013**
Core business profitability × Industry import penetration		−0.004
Firm performance × Import penetration		0.004
Constant	0.153***	0.151***
Adjusted R^2	0.193	0.197
Δ Adjusted R^2		0.004
F-statistic	69.71***	51.27***
F-statistic for ΔR^{2b}		4.36***

$n = 2875$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
[a] All industry variables correspond to the core business industry of a firm.
[b] Partial F-test of joint significance of the four interaction variables

Table 6. Analysis of the total marginal effect of a change in lagged import penetration and moderator variables on resource-based relatedness

Moderator variable	Level[a]	Value of moderator	Total marginal effect[b]
Core industry growth	Low	−5.2%	0.007
	Mean	2.3%	0.015**
	High	9.8%	0.023***
Core industry profitability	Low	−4.0%	0.002
	Mean	8.1%	0.015**
	High	20.2%	0.028***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
[a] The high (low) value of each moderator is its value one standard deviation above (below) its sample mean.
[b] Independent variables are measured in standardized units so these numbers are the total effect of a one standard deviation increase in lagged import penetration on resource-based relatedness at the given value of each modifier.

increase in the explained variance of the dependent variable—resource-based relatedness. However, additional analysis (not shown) that examined these four interactions individually indicated that only core industry growth and core industry profitability were jointly (and individually) significant. Thus, Hypotheses 4b and 4c, that core business profitability and firm financial performance will moderate the relationship between core industry import penetration and resource-based relatedness, are not supported.

With respect to the attractiveness of a firm's core industry, Table 6 shows that the total marginal effect of an increase in import penetration on resource-based relatedness is positive and significant at the high and mean value of core industry profitability and core industry growth. This finding provides strong support for Hypothesis 4a, that the more attractive is a firm's core business industry the greater will be a firm's response to increase resource-based relatedness in the face of increased import penetration.

DISCUSSION

Despite the growing and widespread importance of foreign competition, and continuing efforts in the strategy management literature to understand the causes and consequences of corporate diversification strategy, the influence that foreign competition may exert on the evolution of corporate diversification strategy is a question largely overlooked in the field. While 'global competitive pressures' is often used anecdotally to explain the widespread empirical evidence of significant portfolio restructuring and increased strategic focus by U.S. firms over the past two decades (Bhagat *et al.*, 1990; Comment and Jarrell, 1995; John and Ofek, 1995; Markides, 1992, 1995; Zuckerman, 2000), no formal empirical analysis of this presumed link has yet to be made. This study fills this important gap in the literature by presenting the first rigorous and systematic investigation of how changes in business conditions arising from increased foreign competition impact corporate diversification strategy.

The study contributes to the theoretical literature on corporate diversification strategy by articulating a much-needed framework for understanding why and how a firm would be expected to refocus in the face of increased foreign competition. This framework encompasses both a firm's response to change its extent of diversification as well as the nature of its diversification, as reflected by the interrelationships among the firm's businesses. Both transaction cost theory (TCE) and the resource-based view of the firm (RBV) were shown to contribute to an understanding of how foreign-based competition would be expected to influence corporate diversification strategy.

In general, the study argued that foreign-based competition is unusual. It introduces new and unfamiliar bases of competitive advantage, and it can be both stronger in its effects and more disruptive than entry by a new domestic firm. To sharpen these ideas, the study focused on the expected effects of increased foreign-based competition in a firm's core business.

Regarding a firm's extent of diversification, it was argued that the unique aspects of foreign-based competition generate increased complexity and uncertainty for the firm. In turn, the scarcity and fixity of managerial attention as a resource to the firm implied that these changes would increase the internal costs of managing a diversified firm. From transaction cost theory, it was then predicted that a firm would be expected to respond to a higher cost of maintaining scarce managerial attention in non-core activities by shifting this resource away from such activities and thereby reduce the firm's extent of diversification.

As to the nature of a firm's diversification, it was argued that the unique aspects of foreign-based

competition (and in particular such competition in a firm's core business) would, from the perspective of the RBV, threaten the resource barriers underlying a firm's competitive position. To counter this threat, the firm would react to focus its attention on its critical resource endowments and would seek to strengthen and leverage these resources by increasing the strategic interrelationships among its businesses.

These theoretical predictions were examined empirically using a unique panel dataset of U.S. firms covering the period 1985–94. For statistical reasons, estimation of our model of the extent of diversification required the use of the non-linear Tobit procedure applied to a dataset consisting of both single and multi-business firms. Our empirical findings provided strong support for each of the hypothesized responses by a firm to increased foreign-based competition. Specifically, firms respond to increased foreign-based competition in their core business by reducing the diversity of their business portfolio and by becoming focused strategically by increasing the relatedness, in terms of shared underlying resources, of the businesses in their portfolio.

In addition to testing for these direct responses to foreign-based competition, hypotheses specifying that these direct responses would be moderated by key characteristics of the firm and its core business industry were also examined. The results indicated that firm-specific conditions (core business profitability and overall firm performance) were significant moderators of a firm's response to reduce its level of diversification in the face of increased foreign competition. In particular, the more attractive a firm's core business or the lower a firm's overall performance, the stronger is a firm's response to reduce the extent of its diversification in the face of increased foreign competition. These findings are consistent with the base hypothesis that foreign competition raises the cost of keeping scarce managerial attention directed at non-core activities which then leads the firm to reduce its extent of diversification. The further moderating effect arises because firms with a highly profitable core business or low overall firm performance will face an even higher cost of not shifting managerial resources to their core business. Such firms will therefore exhibit a stronger response to reduce their extent of diversification in the face of foreign competition.

For the nature of diversification, the results indicated that industry-specific conditions (core industry growth and core industry profitability) are significant moderators of a firm's response to increase the interrelatedness of its business in response to foreign competition. These findings are consistent with the base hypothesis, derived from the RBV, that foreign competition threatens to undermine those resource endowments that are the firm's basis for its competitive position. The further moderating effect arises since a firm operating in an economically attractive industry has greater potential to benefit from leveraging its unique resources, which increases the potential adverse consequences to the firm of not defending its resource endowments. Hence, when threatened by increased foreign competition, a firm whose core business is in an economically attractive industry exhibits an even stronger response to increase its portfolio interrelationships.

Since no single study can embrace all aspects of an issue, we conclude by noting some limitations of the present study and directions for future investigation. First, this study only considered foreign-based competition.[19] But, as we have noted, foreign competition can also come from foreign firms who locate production (via subsidiaries) in the domestic market of their competitors, that is, *domestic-based foreign competition*. By operating in the same market as their competitors, any location-specific advantages that foreign firms may have derived from their home country are neutralized, suggesting that firm-specific advantages will be more important in shaping the competitive environment. Since unfamiliar location-specific and firm-specific advantages are what make foreign competition unusual, we would expect a firm's responses to increased domestic-based foreign competition to be the same as those found in this study with respect to increased foreign-based competition. Of course, the magnitude of the responses may differ according to the source of foreign competition. Despite our expectations, the true nature and significance of the response to domestic-based

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[19] Evidence (OECD, 2003: Table C2.3) indicates that domestic-based foreign affiliates have high import rates due to sourcing intermediate products from related affiliates abroad (intra-firm trade). Our measure of import penetration includes these import flows and hence captures to some extent the presence of domestic-based foreign firms and hence also the presence of domestic-based foreign competition.

foreign competition is an empirical question that remains to be investigated.

Finally, the growing integration of national markets arising from expanded trade has been accompanied by a rising geographic diversification of firms' activities (Denis *et al.*, 2002). Companies are therefore increasingly faced with competitive pressures from foreign firms in all their geographic markets. With this broader view, the impact of foreign competition—whether foreign-based or domestic-based—on a firm's choice of corporate strategy that encompasses both product market diversity and geographic market diversity appears an exciting direction for further analysis. We hope the methods and analysis presented in this paper can serve as a basis for subsequent theoretical and empirical investigation of these issues.

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