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THE IMPACT OF FOREIGN-BASED COMPETITION ON FIRM DIVERSIFICATION: A RESOURCE-BASED PERSPECTIVE

HARRY P. BOWEN

Harry.Bowen@vlerick.be

MARGARETHE F. WIERSEMA

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HARRY P. BOWEN

Vlerick Leuven Gent Management School

MARGARETHE F. WIERSEMA

Graduate School of Management

University of California

Contact

Harry P. Bowen

Vlerick Leuven Gent Management School

Vlamingenstraat 83, 3000 Leuven, Belgium

Tel.: ++32 16 32 35 86

Fax: ++32 016 32 40 14

e-mail: Harry.Bowen@vlerick.be

ABSTRACT

The globalization of industries over the past two decades has resulted in domestic markets facing increasing inroads by foreign competitors. Utilizing resource-based theory, this paper examines how increased foreign competition impacts a firm's diversification strategy. Building on the important role of a firm's core competences as the basis for sustainable competitive advantage, we postulate that increased foreign-based competition, as measured by the degree of import penetration in a firm's core business industry, will engender a defensive response by the firm to protect its core business. This defensive response will in turn lead the firm to focus on its core business at the expense of non-core business activities with a consequent reduction in the firm's level of diversification. In addition, we conjecture that this increased focus and reduction in diversification will be greater the more attractive is the firm's core business to the firm and the more attractive is the firm's core industry.

Our empirical analysis is conducted using a unique panel data set of both diversified and undiversified U.S. firms over the period 1985-1994. The special nature of the data sample raises important methodological and statistical issues which are addressed here by the use of a nonlinear TOBIT procedure. Our results indicate strong support for the hypothesized negative relationship between firm diversification and foreign-based competition. Moreover, we find significant evidence that this negative relationship is moderated by the attractiveness of a firm's core business industry, the profitability of the firm's core business and overall firm performance. These findings lend support to the resource-based theory of the firm and they suggest that the observed trend in corporate refocusing over the last decade has, to a significant extent, been driven by increased foreign-based competition.

Key Words: Diversification, Foreign Competition, Core Competences, Resource-Based Theory

THE IMPACT OF FOREIGN-BASED COMPETITION ON FIRM DIVERSIFICATION: A RESOURCE-BASED PERSPECTIVE

The global integration of national economies and the opening of new markets over the past two decades have substantially increased the extent of global diversification. More companies are selling across multiple foreign markets with foreign sales a rising share of total sales (Denis, Denis, and Yost, 2002). This globalization has resulted in significant competitive inroads by foreign firms into the domestic markets of most nations. The growing phenomenon of competition from foreign firms is now being shared worldwide as countries increasingly adopt policies that further open their domestic markets to foreign goods (Sachs and Warner, 1995).

Increased competition from foreign firms has been predominantly in the form of imports of foreign produced goods, which we label here as *foreign-based competition*.[1] The extent of foreign-based competition in a country's domestic market is commonly measured by the level of import penetration, defined as the share of imports in total domestic consumption (IMF, 2000). U.S. firms have in particular faced large increases in foreign-based competition since the 1970s due in part to reductions in trade barriers as a result of various bilateral and multilateral trade agreements (Congressional Budget Office, 1987). 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% (from 1.6% to 14.3%). Foreign-based competition can also be measured at the industry level, with import penetration defined as the share of imports in the total domestic consumption of an industry's output. In this regard, average import penetration across U.S. manufacturing industries rose 227% (from 5.5% to 18%) between 1970 and 1994.[2]

[1] This contrasts with domestic based foreign competition, in the form of local production by foreign-owned subsidiaries located in a country's domestic market, which has also risen but at a much lower rate (Ghosal, 2002). In this paper the term foreign based competition refers to competition from goods produced abroad (and hence imported) and not from goods produced by foreign subsidiaries located in a country's domestic market.

[2] Calculations by the authors based on data from Abowd (1990) and Bartelsman and Gray (1996).

Understanding the implications of this heightened global competition for firm strategy has resulted in a wealth of studies, conducted at the industry or business unit level, that focus on the strategic benefits of having a global strategy and the underlying drivers for internationalization including comparative advantages and the potential for economies of scale and scope (Bergsten, Horst, and Moran, 1978; Buhner, 1987; Geringer, Beamish, and daCosta, 1989; Grant, Jammine, and Thomas, 1988; Kim, Hwang, and Burgers, 1989; Mascarenhas, 1992; Tallman & Li, 1996). However, increased competition from foreign firms can, like other phenomena that change a firm's business conditions, be expected to lead to changes in corporate strategy. Past strategy research on globalization has contributed to our understanding of how firms compete in global industries, but this research has not adequately addressed the question of how complex multi-business firms respond to foreign-based competition, and it has therefore said little about the implications of international competition for firm strategy at the corporate level.

A central focus of strategy research on corporate level issues is to understand the relationship between the strategic choices of firms and their performance (see Hoskisson and Hitt, 1990; Ramanujan and Varadarjan, 1989 for reviews). In this context, a dominant strand of inquiry is the relationship between firm performance and corporate diversification strategy in terms of either the level of total diversification or particular types of diversification (e.g., related and unrelated) (Amit and Livnat, 1988; Chatterjee and Wernerfelt, 1991; Robins and Wiersema, 1995). However, few of these empirical studies consider the more fundamental question of what drives the firm's choice of the level and type of diversification, and more importantly, how these choices are influenced by changes in the firm's business environment. Even when such questions are considered, the analysis often focuses on a single industry and almost exclusively considers only domestic based sources of change in a firm's business conditions (See Chatterjee and Wernerfelt, 1991; Hill and Hansen, 1991; Lecraw, 1984, as examples). As a result, there is little formal understanding of how a firm would respond in terms of diversification strategy when faced with increased foreign-based competition.

This paper seeks to increase understanding of strategic choice at the corporate level by examining how hostile competitive conditions in the form of increased foreign-based competition influence a firm's diversification strategy, a relationship not previously examined. Utilizing resource-based theory we postulate that firms will retrench around their strategic assets or "core competences" in the face of increased competitive pressures from foreign-based competition.

Given the strategic importance of a firm's core business as the repository of its distinctive resources and as the basis for the firm's dominant logic (Peteraf, 1993; Prahalad and Bettis, 1985; Wernerfelt, 1984), the management of the firm is likely to defend the firm's distinctive endowments and focus on its core business. This strategic choice will in turn lead to a reduction in the firm's level of diversification.

Our empirical investigation of the hypothesized response to foreign-based competition in terms of a firm's diversification strategy is conducted in a panel (i.e., pooled time series, cross-section) data set of U.S. firms from 1985 to 1994. As previously noted, U.S. firms have faced growing foreign-based competition since the 1970s and our sample period is no exception: between 1985 and 1994 aggregate import penetration, as measured by the ratio of total U.S. imports of goods to GNP in the U.S. market, rose 46% (from 9.8% to 14.3%). US policy shifts to bilateral negotiations accompanied with support for the GATT led in particular to an increased rate of foreign-based competition during the 1980s (Krueger, 1995).

Our empirical analysis contains several novel features. First, our use of panel data 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). Our use of panel data allows us to capture the dynamic evolution of diversification within and among firms. Second, most prior studies of diversification use linear regression methods and derive their estimates in samples containing only diversified firms. However, limiting the sample to only diversified firms subjects the resulting estimates to selection bias.[3] In contrast, our panel data set includes both diversified and undiversified firms and we derive our estimates using a nonlinear TOBIT procedure that obviates the issue of selection bias by explicitly incorporating the sample information on undiversified firms. We believe the data and estimation methods used in this paper represent important methodological contributions in the domain of empirical strategy research.

[3] Limiting the sample to only diversified firms results in estimates that are biased downwards and also introduces heteroscedasticity into the linear regression model. (see Greene, 1997, p. 956)

Our findings provide strong evidence that increased foreign-based competition has a significant impact on corporate strategic choice in terms of level of diversification. In particular, we find strong support for the hypothesized negative relationship between the level of firm diversification and foreign-based competition. Hence, when faced with such competition, our results imply that a firm will respond by "defending" its core business by focusing on its core business activities at the expense of its non-core business activities. This finding lends support to the resource-based theory of the firm. We also find significant evidence that this negative relationship is moderated by the attractiveness of a firm's core business industry, the profitability of the firm's core business and of the overall firm. The finding of significant moderating influences serves to underscore, and increase our understanding of, the importance of performance in driving strategic choice within a corporate context. For strategy research, the analysis and findings of this study suggests a need to re-evaluate the factors that drive diversification strategy and that may underlie the growing phenomenon of corporate refocusing.

FOREIGN COMPETITION AND CORPORATE STRATEGIC RESPONSE

Within the multi-business firm, corporate strategy entails deciding which businesses to be in and the extent of resources to dedicate to each business (Robins and Wiersema, 1995). This resource allocation decision at the corporate level is clearly influenced by the current and future business conditions facing the firm. In this context, numerous studies document, at the industry level, the significant economic and competitive ramifications of increased foreign competition in a country's domestic markets (e.g., Caves, 1974, 1996, 1982; Chung, 2001a, 2001b; De Backer, 2002; Driffield, 2000).

Foreign firms represent a set of strong new competitors that can create a more dynamic competitive environment by introducing diverse capabilities into an industry (Ghoshal, 1987; Kogut, 1983), and they can also induce greater rivalry and pressure to increase efficiency than would entry by a new domestic player since foreign firms are likely to be leveraging specific advantages (Caves, 1971). By introducing additional competitors into an industry, increased foreign-based competition has been found to significantly decrease profit (price-cost) margins in an industry (Domowitz, Hubbard, and Petersen, 1986; Chung, 2001b; Ghosal, 2002; Katics and Petersen, 1995), with the impact of reduced profit margins significantly higher for highly concentrated industries (Ghosal,

2002). Falling industry profit margins, rationalization of production, and greater intra-plant efficiency all provide evidence that foreign-based competition leads to greater competition at the industry level (Tybout, 2001). While past studies clearly indicate that increased foreign-based competition in a firm's domestic market changes its existing business conditions, the focus of these studies on industry level effects offers little information on how a firm might respond strategically to increased foreign competition, particularly with respect to diversification strategy.

In what follows we argue that a foundation for predicting a firm's corporate strategic response when faced with increased foreign-based competition is provided by the resource-based theory of the firm. Using this theory, which suggests that a firm's core competences are the basis for sustainable competitive advantage, together with the "dominant logic" paradigm that emphasizes the firm's core business as the historical basis for the mental maps by which managers make decisions about the firm's businesses, we postulate that increased foreign-based competition in a firm's core business industry will engender a defensive response by the firm to protect this business. In turn, this defensive response will lead the firm to focus on its core business at the expense of its non-core business activities with a consequent reduction in the firm's level of diversification.

Resource-based theory views the firm as a heterogeneous bundle of resources comprising physical assets, intangible assets and unique capabilities (Penrose, 1959). The basis for competitive advantage then lies in those resource bundles that are both highly valued in the marketplace and unique to the firm (in that these resource bundles are not easily substituted, imitated, or transferred) (Barney, 1986; Dierickx and Cool, 1989; Lippman and Rumelt, 1982; Peteraf, 1993). According to resource-based theory, it is these distinctive endowments of the firm that are the basis and motive for corporate strategy (Penrose, 1959; Peteraf, 1993; Teece, 1982; Wernerfelt, 1984).

Viewing the firm as a set of unique resources casts a different light on its strategic options since resource uniqueness is then analogous to an entry barrier (Reed and DeFillippi, 1990; Wernerfelt, 1984). Given this, competitive sustainability requires that a firm's resource-based advantage "resists erosion by competitor behavior" (Porter, 1980) and hence that the firm must continually invest to maintain and strengthen its resource-based barriers if it is to survive in the face of aggressive competitors (Reed and DeFillippi, 1990). The key dimension of firm strategy is then, according to resource-based theory, making choices about expenditures to accumulate and leverage the firm's strategic resources (Dierickx and Cool, 1989; Penrose, 1959).

Fundamental to a firm's strategy and performance is also the ability of management to manage the firm's portfolio of businesses. In this regard, Prahalad and Bettis (1986) argue that a firm's "dominant logic" plays a key role in providing a "mind set" or "conceptualization" that serves as the basis for setting goals and making resource allocation decisions. The firm's businesses, and the career experiences of management in those businesses, generate the dominant logic(s) by which the firm is managed. As long as the businesses comprising the firm's portfolio of businesses are strategically similar, management can rely on a single dominant logic. However, as the firm expands the strategic variety of its businesses it will need to add new dominant logics by which to manage.

A firm's core business, being the dominant background of management's career experiences, is the primary source of management's dominant logic (Prahalad and Bettis, 1986). Similarly, a firm's core business serves as the historical basis for the firm's corporate strategy in that a firm's "inherited" resources - the know-how and capabilities that reside in the core business - drive the direction of external expansion (Penrose, 1959). A firm's core business is therefore critical for determining corporate strategy since it serves as both the basis of the dominant logic managers use when making strategic decisions and the repository of the unique resources and capabilities that serve, according to resource-based theory, as the basis for the firm's sustainable competitive advantage (Penrose, 1959; Prahalad and Bettis, 1986; Teece, 1982).

Given the resource-based and dominant logic views of corporate strategy, we expect increased foreign-based competition in a firm's core industry to generate a specific strategic response. Specifically, we expect that the firm would retrench around its strategic assets and utilize its core dominant logic to undertake actions that both defend and strengthen its competitive advantages associated with its core business. For example, Scherer and Huh (1992) found that larger firms in concentrated markets invested more aggressively in long-term R&D when faced with import competition in their home market.[4] A defensive response that adopts a more focused corporate strategy, with greater emphasis on the core business and closely related areas that share the same dominant logic, is then expected to result in a lower level of diversification by the firm.[5] The

[4] Further evidence of competitive advantages gained by leveraging endogenously created resources or intangible assets include Morrison and Roth (1992), who found in their study of U.S. global firms that, unlike Japanese firms for whom low-cost strategies dominate, few U.S. firms adopted low-cost strategic approaches to global competition. Instead, they found a cluster of strategic approaches, all related to non-cost based competitive dimensions.

[5] Reduced diversification may also derive from a defensive response aimed at strengthening scale/scope based advantages in a firm's core business.

elimination of business activity peripheral to the firm's core focus and competencies, and where the firm's competitive position may not be as sustainable, has been found to lead to both improvements in operating performance and stock market valuation (John and Ofek, 1995).

Accordingly, we hypothesize a negative relationship between a firm's level of diversification and foreign-based competition in the firm's core industry assuming that the firm's dominant logic and its distinctive resource positions are important in driving corporate strategy:

Hypothesis 1**:** Firm diversification will be negatively related to core industry import penetration.

Moderating Factors

The hypothesized negative relationship between firm diversification strategy and foreign-based competition may be moderated by key core industry and firm contextual factors. In this regard, the economic attractiveness of the firm's core industry, the profitability of the firm's core business, and the firm's overall financial performance may influence the diversification response of the firm to increased foreign-based competition. As discussed below, such factors may strengthen or weaken the hypothesized negative relationship.

The economic attractiveness of a firm's core industry may moderate its strategic diversification response to increased foreign-based competition since a core business located in a more profitable industry provides the firm with both more favorable economic structural attributes (Long and Ravenscraft, 1984; Porter, 1980; Schmalensee, 1985) and greater profit potential (Grant, 1995; Porter, 1980). In such cases a firm may therefore have greater incentive to defend its competitive position when threatened with increased foreign-based competition. Research on firm diversification has found that single business firms tend to be in industries characterized by higher growth and profitability (Lecraw, 1984) and that firms faced with unfavorable core industry characteristics are more inclined to diversify to reduce dependence on their core business (Bass, Cattin, and Wittink, 1978; Hopkins, 1991; Miles, 1982; Reed and Luffman, 1986). Given this, we expect that the more attractive is a firm's core industry (e.g. high growth or profitability), the greater

will be the firm's response to reduce diversification when faced with increased foreign-based competition in its core business. This leads to our second hypothesis:

> Hypothesis 2**:** Core industry characteristics will moderate the relationship between firm diversification and core industry import penetration.
>
> The more attractive is a firm's core industry the greater will be the response to reduce diversification in the face of increased import penetration.

The profitability of a firm's core business may also moderate the firms' diversification response to foreign-based competition. Core businesses exhibiting high profitability may be indicative of unique and sustainable resource-based advantages, or significant scale or scope advantages, and hence indicative of a core business of great strategic importance to the firm. More is at stake when the firm faces competitive pressures in a highly profitable business. As a result, we would expect that the more profitable is the firm's core business, the greater will be the firm's response to reduce diversification when faced with increased foreign-based competition in its core business. This leads to our third hypothesis:

> Hypothesis 3**:** Core business profitability will moderate the relationship between core industry import penetration and firm diversification.
>
> The more profitable is a firm's core business the greater will be the response to reduce diversification in the face of increased import penetration.

Lastly, overall firm performance may also moderate the relationship between firm diversification and foreign-based competition. In this context, a wealth of empirical studies have examined the impact of diversification on firm performance and produced conflicting results (Robins & Wiersema, 1995). However, few studies have examined the reverse relationship: the impact of firm performance on the level of diversification. Where studied, the results indicate that (certain types of) diversification depend positively on a firm's financial resources (Chatterjee and Wernerfelt, 1991). In this context, high financial performance gives the firm access to one important resource –

capital – that would enable it to pursue diversification. For example, Hill and Hansen (1991) found that a firm's current ratio (a measure of financial liquidity) was positively related to increases in its level of diversification. Prior research therefore suggests that firms with greater access to financial resources can more readily pursue diversification.

However, high firm performance may also indicate the firm's success in leveraging unique resources or capabilities not easily imitated. Firms with high overall performance may therefore have less to fear from any given increase in competition. Based on the foregoing, we would expect the motive to reduce diversification in response to increased foreign-based competition would be lower for highly performing firms. This constitutes our fourth hypothesis:

Hypothesis 4: Firm financial performance will moderate the relationship between core industry import penetration and firm diversification.

The lower is a firm's overall financial performance the greater will be the response to reduce diversification in the face of increased import penetration.

METHODS

Model Specification

To investigate the relationship between firm diversification and foreign-based competition in a firm's core industry we adopt a model that specifies the level of firm diversification in relation to the level of core industry import penetration *lagged* one period. We use lagged import penetration since we would expect a firm's current diversification decision to be influenced by competitive conditions in a prior period. The model also contains a set of firm and industry level control variables suggested by prior research. The core industry controls are growth, profitability, concentration, R&D intensity, capital intensity, and export intensity; the firm level controls are core business profitability, firm size and firm financial performance. Finally, the model also includes a set of time dummy variables to capture additional, but unspecified, sources of variation in diversification over time.

To study the potential moderating influence of core industry and firm contextual factors on a firm's diversification response to increased foreign-based competition we augment our model to include interaction terms between lagged core industry import penetration and four variables that represent business conditions at the industry and firm level: core industry profitability, core industry growth, core business profitability and a firm's overall financial performance.

Each model, the partial model excluding interaction terms and the full model that include interaction terms, is estimated for all three measures of diversification: total, related, and unrelated.

The full model can be written:

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

The partial model with no interaction effects is obtained by setting β_{11} to β_{14} to zero in the above equation. Not listed in the above equation are nine time dummy variables, one for each year between 1986 and 1994.

Data Sample and Estimation

Each of our models is estimated in a panel data set of U.S. firms covering the period 1985 to 1994. The focus on U.S. firms and choice of time period are dictated by limitations in obtaining consistent line of business data across firms as well as detailed industry import data. The full panel consists of 8,961 observations representing varying numbers of firms in each sample year (Appendix A shows the number of firms in each sample year). Unlike past studies of diversification, our sample comprises all firms (except those excluded for lack of data) available in the COMPUSTAT line of business data base. Our sample therefore includes diversified and undiversified (single business) firms. We include both types of firms in our sample for two reasons. First, over time, previously diversified firms may become undiversified and vice-versa. To fully understand the factors that influence a firm's diversification strategy, which can include whether or not to be diversified, the sample needs to include all firms. Second, if we limit (truncate) the sample to only diversified firms our estimates would be subject to sample selection bias. Methods do exist to estimate models in

truncated samples (Greene, 1997) but, as just stated, limiting ourselves to a truncated sample of only diversified firms would not allow us to fully incorporate all the diversification choices available to the firm (i.e., whether or not to be diversified and, if diversified, the extent of such diversification).

The choice to include both undiversified and diversified firms in our sample raises a further issue that will dictate the choice of estimation technique. For an undiversified (single business) firm its calculated level of diversification (based on the entropy measure) is zero. Almost 60% of the 8,961 observations in our sample are undiversified firms and hence the dependent variable in our models takes the "limit value" of zero for a significant number of the observations. When a sample contains a large number of observations that take a limit value the use of traditional linear least squares estimation is inappropriate. Not only is the underlying linear model, by construction, subject to heteroscedasticity, but the estimates derived using least squares are inconsistent and biased towards zero (Greene, 1997). The appropriate estimation technique when faced with a "censored" dependent variable is the nonlinear TOBIT procedure (Greene, 1997). This procedure takes proper statistical account of "limit" observations and, using the maximum likelihood principle, it results (unlike linear least squares) in parameter estimates that are both consistent and asymptotically efficient.

A common statistical problem that can arise when studying cross-sectional variation is heteroscedasticity (Bowen and Wiersema, 1999). Anticipating this possibility, our TOBIT estimates are derived assuming a general form of heteroscedasticity in which the disturbance variance is modeled as an exponential function of all explanatory variables (Greene, 1997). Using the appropriate likelihood ratio test (not shown) we rejected the hypothesis of homoscedasticity for each of our models.

TOBIT estimates are derived using the method of Maximum Likelihood Estimation (MLE). Analysis of the results from MLE focuses on the significance of each estimated coefficient, and on the overall significance of the model as judged by a Chi-square statistic derived from the ratio of the log-likelihoods of two models: one that includes all independent variables and one that includes only a constant term. This Chi-square test is the MLE analogue to the "overall F-test" of model significance common in least squares estimation. In the present context, our Chi-square tests of overall model significance compare each of our models against a model with only an intercept and the nine time dummy variables.

There is no natural counterpart in MLE to the R-square in linear least squares estimation because MLE is not based on obtaining a "best fit". A sometimes used measure of "goodness of fit"

is the pseudo-R^2 calculated using the formula 1 - (L_1/L_0), where L_1 is the maximized value of the log-likelihood when all variables are included in the model and L_0 is the maximized value of the log-likelihood when the model contains only an intercept term (and in our case also the time dummy variables). While the pseudo-R^2 has some intuitive appeal, and we report its value for each estimated model, we caution that higher values of the pseudo-R^2 have no direct interpretation in terms of an increasing "goodness of fit" (Greene, 1997, p. 891).[6]

Main Measures and Data Sources

Firm Diversification

Firm diversification is measured by Jacquemin and Berry's (1979) entropy measure of diversification. This measure is used to capture the extent of diversity across a firm's activities and the related and unrelated components of diversity (Palepu, 1985). Total diversification is calculated as:

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

where S_i is the share of a firm's total sales in the 4-digit SIC industry i and N is the number of the firm's businesses.

Unrelated diversification is calculated as:

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

where S_i is the share of a firm's total sales in 2-digit SIC industry i and N is the number of the firm businesses.

Related diversification is the difference between total and unrelated diversification. Annual data on firm sales in each of 10 possible 4-digit SIC business segments were taken from the COMPUSTAT Line of Business database.

[6] Moreover, when the likelihood function is a mixture of continuous and discrete distributions, as with TOBIT, the pseudo-R^2 is not bounded between zero and 1.

Core Industry

A firm's core business is traditionally defined as the firm's largest 4-digit SIC business segment (Rumelt, 1974). For this study, the core business is defined as that business segment that earns the largest revenue among the firm's portfolio of businesses in 1985. Based on the identity of the firm's core business, the core industry represents the corresponding 4-digit SIC industry in which the core business takes place. The identity of the core business is held fixed over the sample period.

Core Industry Import Penetration

Core industry import penetration is the ratio of imports to total domestic purchases in the 4-digit SIC level core industry of the firm. Since no data exists by SIC on total domestic purchases, this is instead imputed as "apparent consumption." For each industry, apparent consumption is defined as the total value of sales minus exports plus imports. 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).

Core Industry Variables

We employ six core industry variables suggested by prior strategy research (industry growth, industry profitability, industry concentration, industry R&D intensity, industry capital intensity, and industry export intensity) to control for variation in diversification due to differences in the core industry characteristics across firms.

Core Industry Growth. Industry sales growth, or the lack thereof, has been postulated to be the basis for a firm's diversification (Bass, Cattin, and Wittink, 1978; Hopkins, 1991; Miles, 1982; Montgomery, 1981). When firms face declining industry growth prospects they behave defensively by reducing their presence in such industries and entering more growth oriented markets. Prior research has found that firms operating in high growth industries have the lowest level of diversification (Lecraw, 1984). We therefore expect firm diversification to be negatively related to core industry sales growth.

Core industry sales 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 US dollars were taken from the NBER's Productivity Database (Bartelsman and Gray, 1996).

Core Industry Profitability. Industry profitability captures the overall economic attractiveness of the industry (Porter, 1980). A more profitable industry makes it attractive for the firm to "stick to its knitting" and to not pursue business opportunities elsewhere (Bass, Cattin, and Wittink, 1978; Hopkins, 1991; Miles, 1982; Montgomery, 1981). Past research has found that firms operating in high profit industries have the lowest level of diversification (Lecraw, 1984). As a result, we expect firm diversification to be negatively related to core industry profitability.

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 and Bradstreet. Industry ROA was then calculated by dividing industry profits by industry assets.

Core Industry Concentration. Industry concentration has been shown to be related to both scale economies and the degree of market power within an industry. Previous research has shown that firms in highly concentrated industries have lower levels of diversification. (Christensen and Montgomery, 1981). As a result, we expect firm diversification to be negatively related to core industry concentration.

Core industry concentration is measured by the 4-firm concentration ratio of the 4-digit SIC core industry of the firm. Concentration ratios are available only every 5 years from the U.S. Census of Manufactures. For our sample period, only the values for 1982, 1987 and 1992 were available. The 1982 values are used for sample years 1985 and 1986, the 1987 values are used for sample years 1987-91, and the 1992 values are for sample years 1992-1994.

Core Industry R&D Intensity. Like industry concentration, industry R&D intensity is considered to be indicative of entry barriers. Previous research shows that firms in industries with high R&D intensity have lower levels of diversification (Chatterjee and Wernerfelt, 1991) and that changes in diversification are negatively related to the level of industry R&D intensity (Hill and Hansen, 1991). We therefore expect firm diversification and industry R&D intensity to be negatively related.

Core 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 (National Science Foundation, 1995 and 1996).

Core Industry Capital Intensity. Industry capital intensity reflects the amount of (physical) capital available per employee in an industry. A 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 industry capital intensity to be negatively related to diversification.

Core industry capital intensity is measured by the ratio of 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 industry employment are from the NBER's Productivity Database (Bartelsman and Gray, 1996).

Core 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. Numerous studies in the field of international trade have demonstrated that export performance across US industries is positively related to an industry's R&D intensity, its employment of skilled relative to unskilled workers, and extent of scale economies (See Deardorff (1984) and Leamer and Levinson (1995) for extensive reviews). A high industry export intensity is therefore indicative of technology, skill or scale advantages. Since the factors found to be positively related to export success across US industries have also been found to be negatively related to diversification, we expect diversification to be negatively related to core industry export intensity.

Core 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 Level Variables

We use three firm level variables (core business profitability, firm size and firm performance) to account for variations in diversification arising from differences in firm characteristics.

Core Business Profitability. This variable reflects the financial profitability of the firm's core business. Research has shown that firms respond to weaknesses in performance or strategic position by moving out of current businesses and entering new ones (Hopkins, 1991; Montgomery, 1981; Ravenscraft and Scherer, 1987). As a result, we expect core business profitability to be negatively related to firm diversification.

Core business profitability is measured as the ratio of operating profit to revenues in the firm's 4-digit SIC core business industry. Annual data on firms' operating profit and revenues were taken from COMPUSTAT's line of business segment database.

Firm Size. Firm size has been viewed as an indicator of scale economies and market power, and empirical evidence exists linking firm size to level of diversification (Grant and Jammine, 1988). Due to agency problems, managers often pursue both size and diversification to enhance their compensation (Dyl, 1988). We expect firm size to be positively related to firm diversification. Following past research, we measure firm size by the logarithm of the firm's total revenue. Annual data on firm revenues was taken from COMPUSTAT.

Firm Performance. Theoretical research has postulated that high firm performance provides the firm with the ability to leverage its resources into new markets and thus diversify (Chatterjee and Wernerfelt, 1991). Two studies that examined the link between the firm's financial resources and its diversification both found that increases in the firm's level of diversification was positively related to the firm's liquidity and its access to financial resources (Chatterjee and Wernerfelt, 1991; Hill and Hansen, 1991). We therefore expect diversification to be positively related to 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.

RESULTS AND DISCUSSION

Table 1 presents the means, standard deviations, and correlations for all variables based on the full sample of 8,961 observations. Table 2 presents the heteroscedasticity corrected TOBIT results of estimating each model of firm diversification. The columns for Models 1a, 2a, and 3a correspond to the partial model testing Hypothesis 1 while the columns for Models 1b, 2b, and 3b correspond to the full model that includes the interaction terms testing Hypotheses 2-4. Prior to estimation all right-hand-side variables were standardized to have mean zero and variance equal to one in order to facilitate comparison of the estimated coefficients.

Insert Table 1 and 2 About Here

The columns in Table 2 for Models 1a, 2a, and 3a show the results of estimating total, related and unrelated diversification in relation to lagged import penetration and the firm and industry control variables. The Chi-square statistics indicate strong model significance ($p < .0001$) over the simple model that includes only the intercept and time dummy variables. Import penetration has a significant negative effect on all three measures of firm diversification; supporting Hypothesis 1 that firm diversification will be negatively related to core industry import penetration. All core industry characteristics - growth, profitability, concentration, R&D intensity, capital intensity, and export intensity – are significant and negatively associated with total and unrelated firm diversification as anticipated. For related diversification (Model 2a), three core industry characteristics (industry profitability, R&D intensity, and export intensity) are not significant. Core business profitability is significant and negatively associated with total and unrelated diversification as anticipated. Firm size and firm performance are significant and positively associated with total and unrelated diversification as anticipated. In the case of related diversification, the results for core business profitability and firm performance are significant, but in a direction opposite of that anticipated. That firm performance is negatively associated with related diversification but positively associated with total and unrelated diversification is likely to be an artifact of the related diversification measure. The related component of the entropy measure of diversification has been shown to be negatively correlated to the size of a firm's dominant or core business (Robins and Wiersema, 2003). As a result, it is theoretically consistent to find significant differences in the empirical behavior of the related diversification measure.

The columns in Table 2 for Models 1b, 2b, and 3b show the results of estimating total, related and unrelated diversification in relation to lagged core industry import penetration, the firm and industry control variables, and the interaction terms between lagged core industry import penetration and key core industry characteristics (core industry growth and core industry

profitability) and key firm characteristics (core business profitability and firm performance).[7] The Chi-square statistics indicate strong model significance ($p < .0001$) over the simple model that includes only the intercept and time dummy variables. In addition, the Chi-square statistics shown on the last line of Table 2 indicates strong significance ($p < .0001$) for the model that includes interaction variables (1b, 2b, or 3b) compared to the corresponding model that excludes these interaction variables (1a, 2a, and 3a). These latter Chi-square tests, as well as the individual significance of the estimated coefficients on the interaction variables, support the hypotheses that key core industry and firm specific characteristics are significant moderators of the relationship between firm diversification and core industry import penetration.

A comparison of the individual coefficient estimates in Table 2 indicates that the estimates obtained for Models 1a, 2a, and 3a are robust with respect to the addition of the interaction terms; the only exception being reduced significance (p-value = 0.1236) of the estimated coefficient of lagged import penetration in the equation for unrelated diversification.

To further analyze the interaction effects we calculate the *total effect* of an increase in import penetration on firm diversification individually for each modifier. For example, to study Hypothesis 2 (core industry characteristics) with respect to core industry growth, we calculate the total effect as:[8]

Total effect = $b_1 + b_2$ (core industry growth).

In this equation b_1 is the estimated coefficient on lagged core import penetration and b_2 is the estimated interaction coefficient on core industry growth. An accepted way to proceed is to calculate the total effect at only two values of a moderator variable, a "high" value and a "low" value (Jaccard, Turrisi and Wan, 1990). The results of such an analysis are shown graphically in Figures 1a – 1d; Table 3 shows the numerical results underlying these figures. In this regard, Table 3 shows for each moderator variable the calculated total effect of a change in lagged import penetration on total diversification at the low, mean, and high value of the moderator together with the p-value associated with testing if the calculated total effect is significantly different from zero. Since all independent variables are standardized to have variance equal to one, these calculated total effects measure the

[7] Each interaction variable is calculated as the standardized value of lagged import penetration times the standardized value of the moderator variable (Jaccard, Turrisi, and Wan, 1990).

[8] Formally, the total effect is the sum of all moderator variables times their interaction coefficients, that is, $\partial Y/\partial X = b_1 + \Sigma b_j M_j$ where Y is diversification, X is lagged import penetration, b_1 is the coefficient on lagged core import penetration, b_j is the interaction coefficient on moderator j and M_j is the value of moderator variable j. Here we follow convention and examine individually the influence of a moderator variable on the total effect while holding fixed the value of all other moderators at their mean level, which is here equal to zero.

effect of a one standard deviation change in lagged import penetration; from Table 1, a one standard deviation change in lagged import penetration corresponds to an absolute change in this variable of 17.8 percentage points.

Insert Table 3 About Here

Insert Figure 1a-1d About Here

For core industry growth (Hypothesis 2), Figure 1a and Table 3 show that the total effect of an increase in import penetration on total diversification is negative and significant at both the high and low value of industry growth. However, since the interaction coefficient for industry growth is positive (Table 2), the negative total effect becomes smaller as industry growth increases, contrary to that expected. This finding could reflect that firms whose core business is in a high growth industry may feel less pressure from increased foreign-based competition since, in a high growth industry, any increase in foreign-based competition can be more easily accommodated, and hence more tolerated, by incumbent domestic firms.

For core industry profitability, Figure 1b and Table 3 show that the calculated total effect of an increase in import penetration on total diversification is negative and significant at the high value of core industry profitability, supporting Hypothesis 2 that the more attractive is a firm's core industry, the greater will be the firm's response to reduce diversification in the face of increased import penetration.

For core business profitability, Figure 1c and Table 3 show that the calculated total effect of an increase in import penetration on total diversification is negative and significant at the high value of core industry profitability, supporting Hypothesis 3 that the more profitable is a firm's core business the greater will be the firm's response to reduce diversification in the face of increased import penetration. However, at low levels of core business profitability a firm's response to increased foreign-based competition could be to increase diversification. This possibility may reflect that firms with already low core business profitability are unable to successfully compete in, and therefore

defend, their core business industry. Hence, when faced with increased foreign competition the firm chooses to seek better opportunities elsewhere.

Finally, for firm financial performance, Figure 1d and Table 3 show that the total effect of increased import penetration on firm diversification is negative and significant at the low value of firm financial performance, supporting Hypothesis 4 that the lower is a firm's overall financial performance, the greater will be the firm's response to reduce diversification in the face of increased import penetration. At high levels of firm performance, the total effect is positive, but not significant at the 5% level. This finding is consistent with the view, discussed when postulating Hypothesis 4, that high financial performance may provide the firm with financial resources to pursue a high diversification strategy.

Core Business Focus

Our results clearly indicate that a firm responds to increased foreign-based competition in its core business industry by reducing its level of diversification, and that this response is moderated by key firm and core industry characteristics. The negative relationship between diversification levels and foreign-based competition found here was hypothesized to arise from a firm's strategic response to retrench around its strategic assets or "core competences" in the faced of increased competitive pressures. If the hypothesized defensive reaction does underlie the negative relationship found here between diversification and foreign-based competition then we would expect to also observe evidence of an increase in "core business focus;" by which we mean actions to enhance those activities representing the firm's core competencies.

While a complete analysis of the question of core business focus is beyond the scope of the present paper,[9] we performed a preliminary analysis under the assumption that an increase in core business focus would be reflected by an increase in the size of the firm's core business. In this regard, Figure 2 presents the mean core business size and mean core industry import penetration across our sample of firms in each sample year. As Figure 2 indicates, mean core industry import penetration rose significantly from 13.4% to 20.2% while mean core business size also rose significantly from 82.3% to 87.0% over the sample period.[10] However, when only diversified firms are considered, the

[9] A full analysis of this issue would require one to carefully specify the nature of a firm's core competences and to then assess if, and how, the firm allocates resources to enhance these competencies.
[10] Significance based on t-tests for the difference between the means in 1985 and 1994.

mean core business size was essentially unchanged.[11] This result suggests that the observed significant increase in the mean core business size *across all firms* is due largely to an increase in the number of single business firms over the sample period.

Insert Figure 2 About Here

To further explore the issue of core business focus we examined the change in the number of single business firms between 1985 and 1994. To control for a change in the number of single business firms that could arise solely from a difference in the number of firms in each sample year, we restricted our analysis to the 575 firms present in all ten sample years. Of these 575 firms, 263 firms (45.7%) were diversified in 1985 and their mean total entropy measure of diversification was 0.86. By 1994, 54 of the 263 initially diversified firms (approximately 21%) had become single business firms.[12] Among the 209 firms that remained diversified in 1994, their mean total entropy measure of diversification was 0.78. Hence, in the set of firms available in all sample years, we observe both an increase in the number of single business firms and a decline in the average level of diversification among those firms that were diversified over the entire sample period.

CONCLUSION

This study has contributed to an increased understanding of strategic choice at the corporate level in several important respects. First, utilizing resource-based theory, we developed a prediction of the effect of foreign-based competition on corporate diversification strategy, a relationship not previously examined. Second, our use of a multi-year panel data set containing both diversified and undiversified firm raised important methodological and statistical issues with respect to our empirical analysis of firms' diversification strategy. However, these same issues are also relevant for any empirical model of firm level strategic choice. Hence, the recognition and resolution of these issues,

[11] A t-test failed to reject the hypothesis of equality of the means in 1985 and 1994.
[12] Among the 312 single business firms in 1985, 39 (12.5%) were diversified in 1994. Hence, in the sample of 575 firms, the net increase in the number of single business firms between 1985 and 1994 was 15 firms.

as demonstrated here, has much wider applicability within the domain of empirical strategy research. Finally, our results also provide important insight into the phenomenon of corporate strategic refocusing that has gained increasing prominence since the late 1980s.

Foreign-Based Competition and Corporate Strategy

Our study provides strong evidence that increased foreign-based competition, in the form of increased import penetration, has a significant impact on corporate strategic choice in terms of level of diversification. When faced with such competition, our results imply that a firm will respond by "defending" its core business by focusing on its core business activities at the expense of its non-core business activities. In addition, key characteristics of the firm and its core business industry were found to moderate the relationship between foreign-based competition and firm diversification. In particular, firms whose core business exhibits high profitability, or is in a highly profitable industry, will respond more strongly to reduce their diversification in the face of increased foreign-based competition. This is compelling evidence that when its core business is valuable and profitable, a firm responds strongly to competitive pressures by strategically focusing around this business. On the other hand, firms with high overall performance, or whose core business industry is undergoing significant growth, are less inclined to reduce their level of diversification, and may even increase diversification, in response to increased foreign-based competition in their core industry. These findings underscore, and increase our understanding of, the importance of performance in driving strategic choice within a corporate context.

Our results further suggest that firms find it difficult to manage a diversified business portfolio in the face of increased foreign-based competition and will choose to focus on their core business activities when faced with such competition. A preliminary search for direct evidence of such focus found strong support in the observation that, within our sample, a number of diversified firms chose to become single business firms by the end of the sample period. Hence, both direct and indirect evidence (as provided by our TOBIT analysis of firms' diversification response) supports the hypothesis that firms respond to increased foreign-based competition by increasing their core business focus.

Our findings also lend support to the resource-based view that a firm's distinctive endowments serve as a critical basis for strategy at the corporate level. Competitive pressures in the form of import competition appear to motivate the firm to protect and defend its core competences

and thereby focus attention on its critical resource endowments. The firm's strategic choice to reduce diversification gives the benefit of operating with a single dominant logic, and it permits the firm to focus resources to strengthen and leverage its core competences. These two outcomes of increased focus serve to enhance the firm's ability to maintain a competitive advantage in the marketplace.

Lastly, no prior research has systematically examined the linkage studied here between corporate diversification strategy and foreign-based competition, and hence the influence of such competition in shaping the strategic actions of complex multi-business firms. Our finding of a significant link between diversification strategy and foreign-based competition, together with the growing globalization of industries, suggests that future empirical investigations of corporate strategy can no longer ignore the importance of foreign-based competition in shaping corporate strategy.

Empirical Methodology and Statistical Issues

Our empirical results were derived in a multi-year panel data set of both diversified and undiversified firms. Our use of panel data contrasts with most prior diversification studies whose results have been derived in a cross-section sample for a single year. The inclusion of undiversified firms in our sample was also novel, and it highlighted methodological and statistical issues that can arise in any empirical model of firm level strategic choice. Methodologically, a firm's diversification choices include not only its extent of diversification but also whether or not to be diversified. Limiting the sample to only diversified firms fails to account for the latter choice. Statistically, limiting the sample to diversified firms may yield estimates subject to sample selection bias. In the context of the present study, overcoming this bias by including both diversified and undiversified firms in the sample raised a further issue: all undiversified firms had a common value (zero) of their measured diversification. The special nature of the data sample, in which many observations have the same value of the dependent variable, meant that the use of standard linear regression methods was inappropriate. Instead, as done here, an appropriate estimation procedure in such cases is nonlinear TOBIT. The use of TOBIT not only allowed us to more completely model the factors that determine a firm's diversification decision, which can include whether or not to be diversified, it also resolved the problem of selection bias to provide statistically consistent parameter estimates.

The methodological issue of ensuring that the data sample reflects all strategic choices available to a firm, and the statistical issues raised by the (inappropriate) use of standard regression

methods when a data sample is subject to truncation or selection bias, have implications for empirical strategy research far beyond the present study of diversification strategy (Bowen and Wiersema, forthcoming). The data and estimation methods used in this paper therefore represent important methodological contributions in the domain of empirical strategy research.

Corporate Refocusing

Our finding that foreign-based competition led to increased corporate focus within a large sample of public firms over a ten year time period are consistent with recent studies that have found strategic refocusing to be a major and prominent corporate phenomenon over the last two decades (Comment and Jarrell, 1995; Markides, 1992, 1995; Zuckerman, 2000). For example, Comment and Jarrell (1995) and Zuckerman (2000) found a significant decrease in the mean number of industry segments in which firms participated during the 1980s and 1990s (this decline in mean number of segments was also evident in our sample of firms). Other studies have found that increased corporate focus is a common strategy among large firms coping with performance declines (John, Lang, and Netter, 1992; Markides, 1992). Strategic refocusing has emerged as a primary means by which managers can enhance their firm's market value (Comment and Jarrell, 1995; Lichtenberg, 1992; Stewart and Glassman, 1988). Our study suggests that a significant factor driving such refocusing has been increased foreign-based competition to U.S. domestic firms.

Directions for Further Research

Our analysis and findings point to a number of issues and directions for future investigation. First, the defensive response implied by our results deserves a more in-depth analysis that would seek additional evidence of this response at the individual firm level. In particular, a study of the individual processes whereby a firm achieves increased focus could assist in guiding managerial implementation of the implied strategic response. Second, our analysis only considered a firm's response to foreign-based competitive threats to its core business. While our focus on a firm's core business reflected the theoretical basis for our postulated defensive response, additional analysis of a firm's response to the threat of foreign-based competition across all its lines of business, or perhaps only in related businesses, may yield additional insights on the ability of resource-based theory to

serve as a basis for (testable) predictions concerning corporate strategic responses. Third, our study only considered *foreign-based* competition. As we have noted, foreign competition can also come from foreign firms who locate in the domestic market of their competitors, that is, *domestic based foreign competition*. Since foreign firms who locate in the market of their competitors will face the same underlying market conditions as those competitors, any unique advantages foreign firms may have derived from being located in their own country are then mitigated. We would expect, on the basis of the results presented here, that increased *domestic based foreign competition* would also engender a defense response on the part of domestic firms. However, the actual response of domestic firms to *domestic based foreign competition* is an empirical question that remains to be investigated. Finally, similar to an analysis of a firm's response to *domestic based foreign competition*, the rise in geographic diversification (Denis, Denis, and Yost, 2002) means companies are increasingly faced with competitive pressures from foreign firms in all of their geographic markets. With this broader view, the impact of foreign competition - whether foreign-based or domestic based - on a firm's choices for a multidimensional diversification strategy that encompasses both business units and geographic markets appears to be an exciting direction for further analysis. We hope the analysis and methods presented in this paper can serve as a basis for subsequent theoretical and empirical analysis of such issues.

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APPENDIX A

Sample of Firms

Year	Total Number of Firms
1985	770
1986	788
1987	809
1988	820
1989	827
1990	866
1991	902
1992	997
1993	1055
1994	1127
Over All Years	8961

TABLE 1

Descriptive Statistics and Correlations [a]

	Mean	Std Dev	1	2	3	4	5	6	7	8	9	10	11	12
1. Total Diversification	0.322	0.453	1											
2. Related Diversification	0.091	0.220	0.595	1										
3. Unrelated Diversification	0.231	0.368	0.877	0.135	1									
4. Lagged Import Penetration	0.163	0.178	-0.126	-0.100	-0.095	1								
5. Core Business Profitability	0.082	0.175	0.052	0.056	0.031	0.009	1							
6. Firm Size	5.950	1.774	0.486	0.298	0.420	-0.086	0.157	1						
7. Firm Performance	0.115	0.124	0.055	0.051	0.037	-0.047	0.615	0.083	1					
8. Industry Growth	0.042	0.095	-0.139	-0.087	-0.119	0.069	0.004	-0.074	0.031	1				
9. Industry Profitability	0.089	0.128	-0.045	-0.024	-0.041	0.033	0.031	-0.053	0.042	0.002	1			
10. Industry Concentration	0.371	0.170	0.016	0.008	0.015	0.015	-0.006	0.218	-0.024	0.062	-0.026	1		
11. Industry R&D Intensity	0.044	0.055	-0.153	-0.079	-0.141	-0.078	-0.069	-0.178	-0.053	0.178	-0.101	0.214	1	
12. Industry Capital Intensity	124.207	160.710	0.175	0.026	0.200	-0.078	-0.032	0.413	-0.071	-0.086	-0.120	0.029	-0.161	1
13. Industry Export Intensity	0.139	0.132	-0.179	-0.083	-0.171	0.456	0.001	-0.142	-0.054	0.243	-0.019	0.143	0.300	-0.164

[a] All industry variables correspond to the core industry of a firm.

n = 8961. Correlation coefficients greater than |0.021|are significant at $p < .05$; coefficient greater than |0.027| are significant at $p < .01$.

TABLE 2

Results Of TOBIT Analysis For Predicting Firm Diversification

Variable [a]	**Total Diversification**		**Related Diversification**		**Unrelated Diversification**	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Import Penetration	-0.076***	-0.065***	-0.126***	-0.159***	-0.030**	-0.0211
Core Business Profitability	-0.055**	-0.167***	0.239***	0.347***	-0.050**	-0.148***
Firm Size	0.548***	0.552***	0.463***	0.454***	0.433***	0.441***
Firm Performance	0.084***	0.131***	-0.071**	-0.136***	0.045**	0.096***
Industry Growth	-0.112***	-0.121***	-0.090***	-0.092***	-0.090***	-0.095***
Industry Profitability	-0.047**	-0.047**	-0.046	-0.042	-0.041**	-0.039**
Industry Concentration	-0.116***	-0.122***	-0.105***	-0.105***	-0.080***	-0.087***
Industry R&D Intensity	-0.119***	-0.099***	0.003	0.008	-0.091***	-0.067***
Industry Capital Intensity	-0.092***	-0.091***	-0.156***	-0.146***	-0.028**	-0.029**
Industry Export Intensity	-0.056**	-0.065**	-0.004	-0.011	-0.098***	-0.114***
Industry Growth x Import Penetration		0.035***		-0.010		0.039**
Industry Profitability x Import Penetration		-0.095***		-0.021		-0.099***
Core Business Profitability x Import Penetration		-0.160***		0.283***		-0.136**
Firm Performance x Import Penetration		0.112***		-0.185***		0.136***
Intercept	-0.038	-0.029	-0.672***	-0.689***	-0.171***	-0.163***
TD86[b]	-0.027	-0.023	-0.007	-0.010	-0.037	-0.032
TD87	-0.031	-0.016	0.016	0.002	-0.052	-0.037
TD88	-0.106**	-0.109**	-0.071	-0.071	-0.101**	-0.105**
TD89	-0.214***	-0.218***	-0.181***	-0.174***	-0.177***	-0.184***
TD90	-0.178***	-0.184***	-0.149**	-0.152**	-0.149***	-0.156***
TD91	-0.258***	-0.268***	-0.201***	-0.192***	-0.220***	-0.232***
TD92	-0.219***	-0.229***	-0.138**	-0.129**	-0.210***	-0.221***
TD93	-0.294***	-0.299***	-0.181***	-0.175***	-0.277***	-0.283***
TD94	-0.316***	-0.317***	-0.188***	-0.180***	-0.304***	-0.310***
Log Likelihood	-6742	-6720	-3895	-3880	-6038	-6009
Pseudo-R^2	0.15	0.15	0.08	0.08	0.12	0.13
Chi-square statistic for model significance [c]	2376****	2420****	658****	688****	1690****	1748****
Chi-square statistic for significance of interactions [d]		44****		30****		58****

TABLE 3

Analysis Of Interaction Effects Of Import Penetration And Moderator Variables For Firm Diversification

Moderator Variable	Level [a]	Value of Moderator	Total Effect [b]
Core Industry Growth	High	13.7 %	-0.030***
	Mean	4.2 %	-0.065***
	Low	-5.4 %	-0.101***
Core Industry Profitability	High	21.7 %	-0.150***
	Mean	8.9 %	-0.065***
	Low	-4.0 %	0.029
Core Business Profitability	High	25.7 %	-0.225***
	Mean	8.2 %	-0.065***
	Low	-9.3 %	0.095***
Firm Performance	High	23.9 %	0.046
	Mean	11.5 %	-0.065***
	Low	-0.9 %	-0.177***

[a] For each moderator, its low (high) value is its value one standard deviation below (above) its sample mean.

[b] All 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 total firm diversification at a give value of each modifier.

* $p < .05$, ** $p < .01$, *** $p < .001$

FIGURE 1A
Interaction of Import Penetration and Core Industry Growth on Firm Diversification

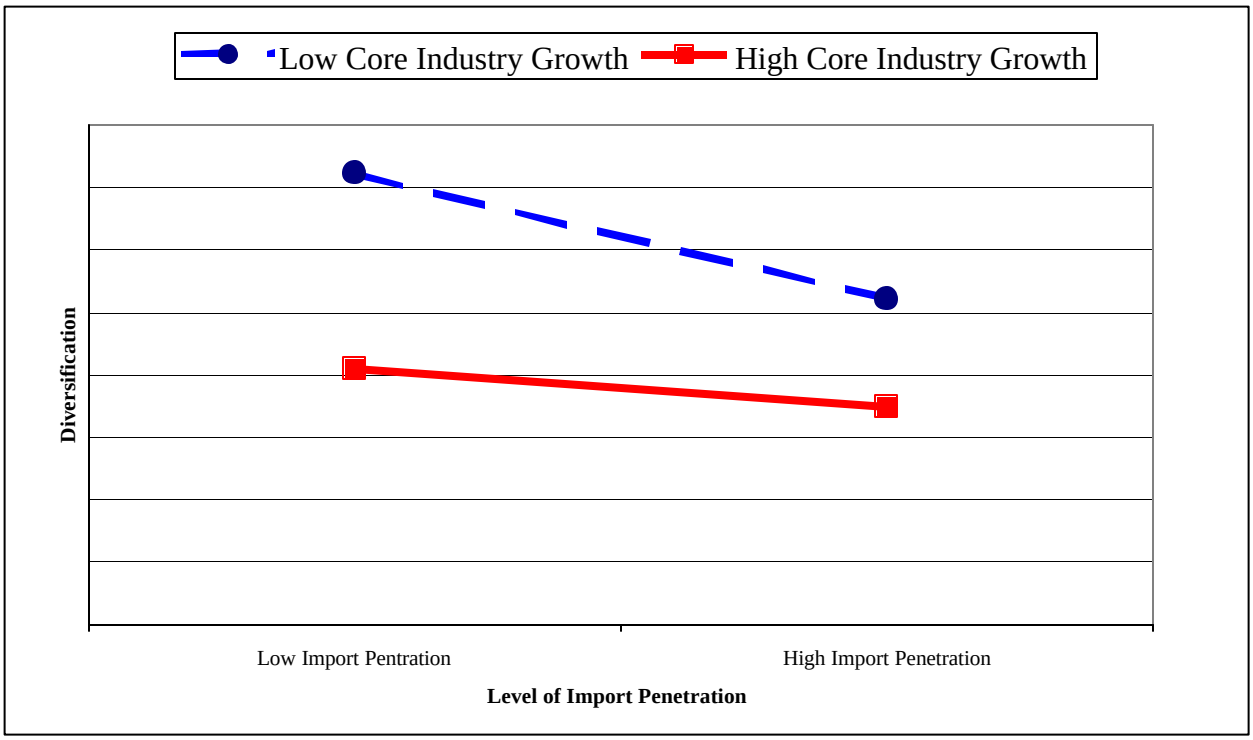

FIGURE 1B
Interaction of Import Penetration and Core Industry Profitability on Firm Diversification

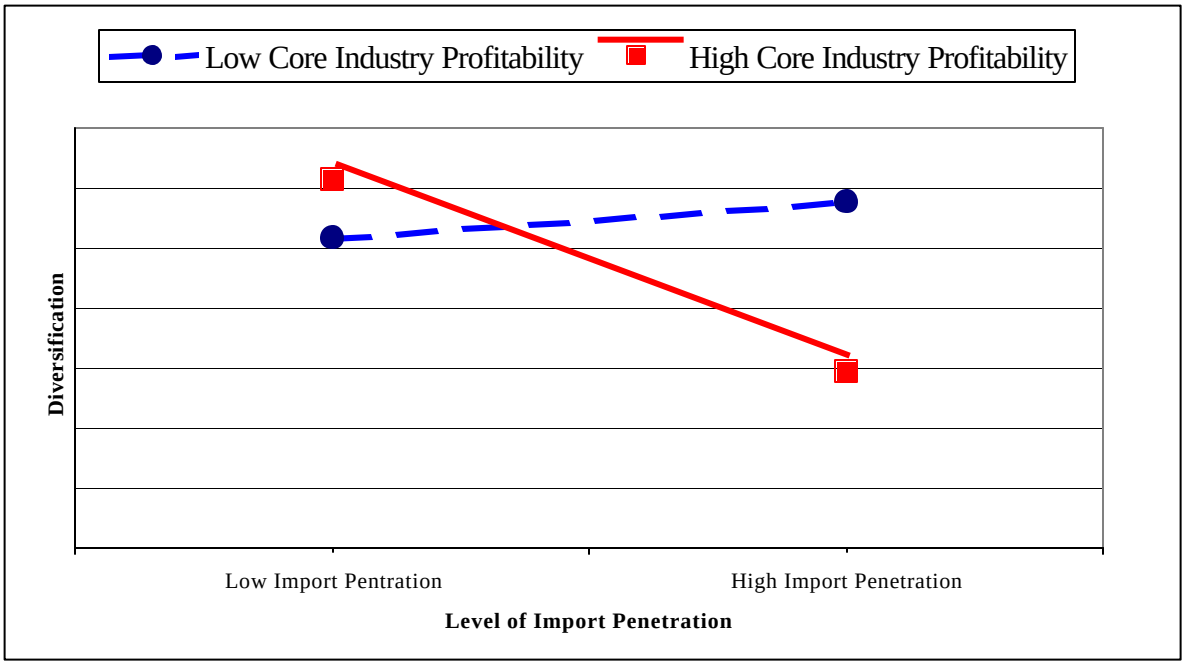

FIGURE 1C
Interaction of Import Penetration and Core Business Profitability on Firm Diversification

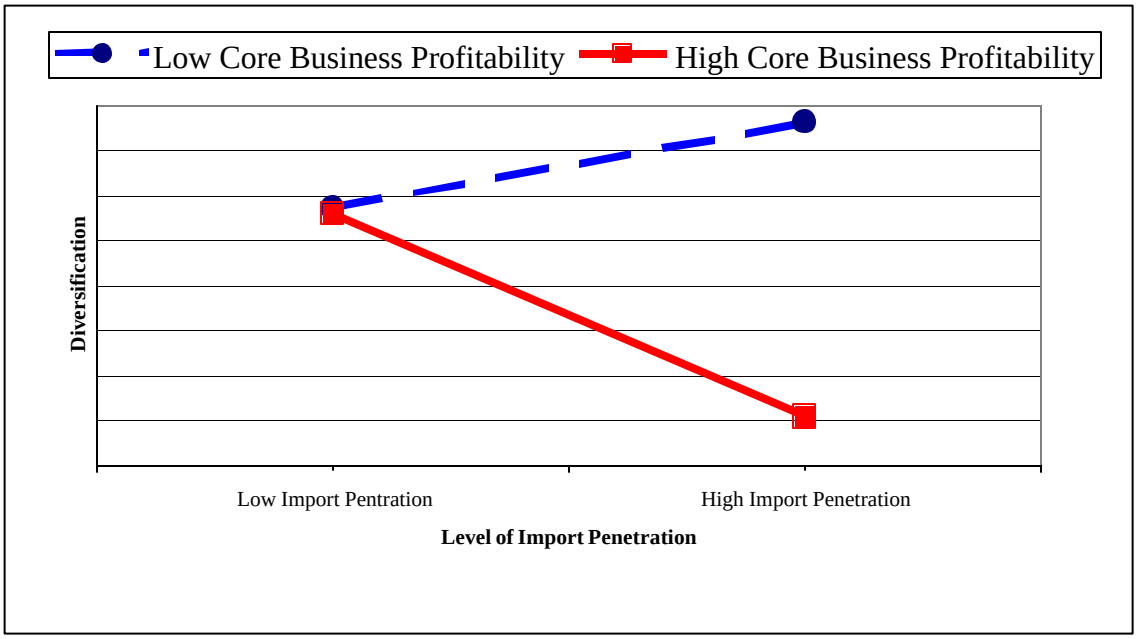

FIGURE 1D
Interaction of Import Penetration and Firm Performance on Firm Diversification

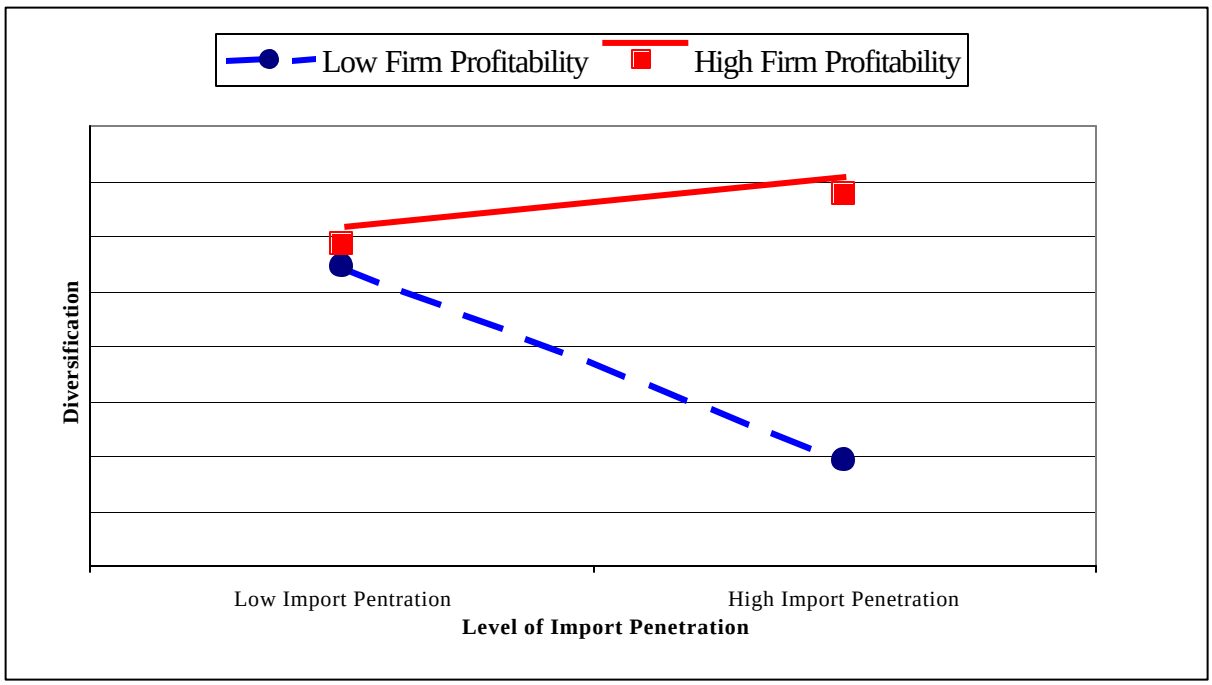

FIGURE 2

Mean Core Business Size and Mean Core Industry Import Penetration over Time