GEOGRAPHIC SCOPE, PRODUCT DIVERSIFICATION AND THE CORPORATE PERFORMANCE OF JAPANESE FIRMS

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Running Head: Geographic Scope and Performance

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Abstract.

The study extends research on the geographic scope, product diversification and performance relationship by exploring both the antecedents and consequences of geographic scope. In so doing, it addresses a fundamental criticism of the geographic scope-performance relationship; namely, that the observed positive relationship between geographic scope and performance is spurious because it is the possession of proprietary assets that are the foundation of superior performance, not expansion into international markets per se. We tested the research model with data on the corporate performance of 399 Japanese manufacturing firms. In the Partial Least Squares analyses used to examine the study's six main hypotheses, we demonstrate that geographic scope was positively associated with firm profitability, even when the competing effect of proprietary assets on firm performance was considered. Further, we find that performance was not related to the extent of product diversification; although investment levels in rent-generating, proprietary assets were related to the extent of product diversification.

An important question concerning the internationalization of a firm involves the relationship between geographic scope and performance. This question is particularly salient in a world in which multinational enterprises (MNEs) are accounting for larger and larger shares of worldwide production (UNCTAD, 1997). Increasingly, managers are being urged to increase the firm's geographic scope, presumably to increase its competitiveness and profitability. We explore this issue of geographic scope, defined as the international extent of a firm's operations, and corporate performance, by examining the international experiences of Japanese manufacturing firms.

Research in strategic management and international business has addressed the issue of geographic scope and performance in several ways, but with a common objective – to identify the nature of the relationship between the two. In general, the consensus in the literature is that (1) international diversification decreases the variability, or risk, of a firm's revenue stream (Rugman, 1979; Hisey and Caves, 1985; Kim, Hwang and Burgers, 1993), and (2) geographic scope is positively, although not necessarily linearly, related to performance (Beamish and daCosta, 1984; Tallman and Li, 1996; Hitt, Hoskisson and Kim, 1997). However, a persistent criticism is that the observed relationship between geographic scope and performance is spurious. As an example of this line of critique, Dess et al. (1995) contend geographic scope is not related to performance; rather, it is the possession of proprietary assets – which is the impetus to foreign direct investment – that is the ultimate source of superior firm performance. In this study, we address this criticism by exploring the question: Is there value intrinsic to a wide geographic scope of operations?

In addressing this question we utilize a path analytic approach that incorporates both the antecedents and consequences of geographic scope. This design is necessary because industry characteristics, diversification strategy and decisions concerning the internal development of products are inter-related with each other and corporate performance (Stimpert and Duhaime, 1997). To understand where the value arises in conducting operations internationally, it is necessary to consider the inter-relatedness of antecedent and consequent constructs, and to partial out the direct and indirect effects of these variables on corporate performance. In conducting such an analysis, this study makes several contributions. By using a causal modeling approach, this

research explicitly considers the effects of the determinants of international production on both geographic scope and performance. This form of design is necessary to separately address the questions: (i) Are multinational firms more profitable? and (ii) Is there value in internationalization in itself? In developing the research model, economics-based research on multinational enterprise is integrated with strategy-based research on geographic scope, product diversification and performance. As well, the study expands the context of coverage by utilizing a sample of Japanese firms, an area in which empirical research has been encouraged (Caves, 1998; Beamish, Delios and Lecraw, 1997). Finally, the study extends the model developed by Stimpert and Duhaime (1997) by including the international dimension, and by testing it with a different sample of firms.

RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

Ansoff (1965) and Andrews (1971) articulated the corporate and business-level strategic decisions faced by managers in growing firms. These decisions include the choice of the firm's vertical, product and geographic scope. The latter two choices have received much attention in the international business and strategic management literatures. For example, Stopford and Wells' (1972) pioneering study on the management of MNEs identified the extent of area diversification (i.e., geographic scope) and product diversification as two of the critical determinants of the success of the MNE's growth. Likewise, Penrose's (1956: 250) work concerned these two growth paths,

> The 'productive opportunity' which invites expansion is not exclusively an external one. It is largely determined by the internal resources of the firm: the products the firm can produce, the new areas in which it can successfully set up plants, the innovations it can successfully launch, the very ideas of its executives and the opportunities they see, depend as much on the kind of experience, managerial ability and technological know-how already existing within the firm as they do upon external opportunities open to all.

As in this quote and in the resource based literature (Penrose 1959), the firm's optimal expansion path is governed by factors internal and external to the firm. To develop an understanding of the decisions concerning a firm's growth, and the implications of those decisions for the firm's performance, a model must consider external factors, such as the characteristics of the firm's

industry, and internal factors that define the constraints and opportunities placed on the firm by its resource base. The research reported in this study attempts this form of integration. Figure 1 depicts this study's research model, which integrates theoretical and empirical work on the determinants of international operations with the work of Stimpert and Duhaime (1997). By bringing this model of industry, product diversification and performance into the international context, we seek to answer the question of whether there is value intrinsic to a wider geographic scope of operations.

**********Insert Figure 1 Here**********

Industry Profitability, Product Diversification and Performance

The profitability of growth by diversification is a well-explored topic in strategic management (see the reviews in Ramanujam and Varadarajan, 1989; Hoskisson and Hitt, 1990; Datta, Rajagopalan and Rasheed, 1991). Early studies on diversification and performance were guided by the IO structure-conduct-performance framework (Scherer and Ross, 1990) and explored the relationship between product diversification, market power and firm performance. However, little evidence was found for the hypothesis that product diversification increased market power and firm performance (Gort, 1962; Miller, 1973). In fact, Montgomery (1985) found that highly diversified firms tended to compete in less attractive markets in which they wielded less market power and, hence, had lower performance. The IO framework did receive some support in Christensen and Montgomery (1981) who presented evidence that the performance differences in Rumelt's (1974) categories of diversified firms were attributable to market structure variables. Along the same lines, Stimpert and Duhaime (1997) argued that firms operating in industries characterized by low profitability and few growth opportunities tended to expand by entering new businesses. Hence, diversification was a means of escaping the poor profitability of the firm's industry, (Christensen and Montgomery, 1981), and in competitive industries with slow growth rates, product diversification may be the only prospect for improving the profitability of the firm (Rumelt, 1974).

Chang (1992), in his search and selection model of firm growth, also imputed a performance-based motive to diversification. As argued by Chang (1992), a poorly performing firm is motivated to undertake product diversification as a means of reducing perceived performance gaps. Because the

prospects for growth and profitability within related industries are limited for poorly performing firms, expansion is made into unrelated product areas (Bowman, 1982). In this sense, it can be seen why firms engage in unrelated diversification: it is the foremost means of escaping the low profitability of the firm's industry. From this, we anticipate a negative relationship between the profitability of the principal industry in which the firm operates and its extent of diversification.

> *Hypothesis 1. The profitability of the principal industry in which the firm operates is negatively related to the extent of diversification.*

Product-Market Diversification, Proprietary Assets and Performance

In Stimpert and Duhaime (1997), diversification has an indirect, negative effect on firm performance. Similarly, we contend that a negative relationship exists; however, we further expect that the relationship involves both direct and indirect effects (see Figure 1). This contention is related to Rumelt's (1982) study, in which he argued that factor-based economies of scope and uncertain imitability (Lippman and Rumelt, 1982) were critical concepts in understanding diversified firms' performance. Likewise, Bettis (1981) found that superior performance in related diversified firms was associated with the development and exploitation of core skills.

The arguments of Bettis (1981) and Lippman and Rumelt (1982) run parallel to those fashioned by resource-based theorists. In the diversification literature, resource-based researchers moved the analysis of relatedness from the product-level to the resource-level. For example, Chatterjee and Wernerfelt (1991) found that unrelated diversifications that relied primarily on financial resources, had a lower performance than related diversifications that exploited a firm's intangible resources. Similar results, supporting a positive association between diversification related at the proprietary resource-level and performance, were found in Montgomery and Wernerfelt (1988); Wernerfelt and Montgomery (1988); Markides and Williamson (1994); and Anand and Singh (1997). Consistent with these findings, we expect product diversification and firm performance to be inversely related.

> *Hypothesis 2. The extent of product diversification is negatively related to firm performance.*

The above hypothesis stipulates a direct effect between product diversification and performance. The indirect effect operates through linkages between a firm's level of diversification and its generation of proprietary assets (unique resources) by expenditures on R&D and advertising. This expectation emerges from Stimpert and Duhaime (1997) and Hoskisson and Hitt (1988) who argued that diversification can lead to lower levels of investment in new product and process technologies. Along similar lines, Bettis (1981) and Bettis and Mahajan (1985) revealed that narrowly-diversified firms had higher levels of expenditures on R&D and advertising.

> *Hypothesis 3a. The extent of product diversification is negatively related to the R&D intensity of a firm.*
>
> *Hypothesis 3b. The extent of product diversification is negatively related to the advertising intensity of a firm.*

Proprietary Assets and Geographic Scope

Theorists on multinational enterprises argue that such firms exist because the hazards associated with market-based exchange of the MNEs' proprietary assets make internalization the most efficient means of applying those assets in international markets (Hennart, 1982). That is, the governance costs of having internationally dispersed plants under common administrative control are less than the costs of having plants under separate administrative regimes, utilizing assets exchanged via inter-firm trade (Caves, 1996). Proprietary assets are those assets owned by the investing firm which are differentiable from those possessed by other firms, which can be moved between different host country markets, and which do not depreciate quickly (Caves, 1996). Possession of one or more proprietary assets provides a firm with a unique advantage, which in the case of MNEs is transferable to foreign markets. The proprietary asset can be knowledge that is unique to the firm; it might assume the form of a specific trademark or brand built up over time; or it might stem from a firm's distinctive abilities in product research and development (Caves, 1996).

Empirical work on determinants of multinational activity has examined the role of proprietary assets (see Dunning 1993: 148-154). In this research the evidence points to a positive relationship between a firm's international involvement and its possession of proprietary assets. This evidence

exists for the technological assets of US-based (e.g., Pugel, 1978; Grubaugh, 1987), European-based (e.g., Swedenborg, 1979; Pearce, 1989), and Japanese MNEs (Pearce, 1989; Kogut and Chang, 1991). As well, research on downstream determinants has identified a positive relationship between a firm's marketing assets and multinational activity (Caves 1971; 1974; Lall, 1980; Kumar, 1990). Consequently, we expect the possession of proprietary technological assets and marketing assets to be reflected in more extensive international operations.

> *Hypothesis 4a. The R&D intensity (technological assets) of a firm is positively related to its geographic scope.*
>
> *Hypothesis 4b. The advertising intensity (marketing assets) of a firm is positively related to its geographic scope.*

Geographic Scope and Performance

The results of investigations into the relationship between geographic scope and performance have been more conclusive than those concerned with product diversification and performance. For the most part, studies examining geographic scope and firm performance argue that the superior performance of an MNE emerges from its ability to gain higher returns from exploiting proprietary assets, such as brand equity, patents or unique processes, across a greater number of markets. Advantages also stem from increased market power, the ability to source lower cost inputs, and the spread of risk across a number of host country settings (Kim, Hwang and Burgers, 1993). In particular, the exploitation of intangible asset advantages across international markets is promoted by imperfections found in markets for the trade of these assets. Consequently, multinational firms capitalize on market imperfections by internalizing the market for these assets and thereby achieve above normal returns when the asset is applied in international markets (Caves, 1971). Furthermore, theories of multinational enterprise do not specify limits to the optimal geographical scope of a firm (Caves, 1996), although some evidence points to decreasing returns at large levels of multinational operation (Beamish and daCosta, 1984; Tallman and Li, 1996). Even so, a consistently positive relationship has been observed between geographic scope and performance (Wolf, 1975; Rugman, 1979; Kim, Hwang and Burgers, 1989; Hitt, et al., 1997). Hence, the fifth hypothesis,

Hypothesis 5. The geographic scope of a firm is positively related to corporate performance.

As the preceding paragraphs imply, influences on firm performance are not restricted to the extents of product diversification and geographic scope. We expect that the possession of proprietary assets should have a direct relationship with firm performance. This expectation is supported by research conducted in the resource-based perspective which argues that a firm's advantages in its markets stem from its unique resources, which are "all assets, capabilities, organizational processes, firm attributes, information, [and] firm knowledge" under the control of the firm and able to be utilized by the firm to design and implement strategies (Barney, 1991: 101).

Barney's (1988; 1991) descriptions of a firm's strategic resources have a high degree of overlap with the previously identified characteristics of proprietary assets. The implication of this concordance is that proprietary assets provide a firm with unique advantages in its domestic markets and international markets, and thereby augment a firm's performance. Morck and Yeung (1991) examined the proprietary asset effect using Tobin's *q* as a measure of firm performance. In their study, international acquisitions were found to have a greater value for investors than domestic ones. The market's positive response to a foreign acquisition was greater when the acquiring firm's expenditures on proprietary asset generating activities (R&D and advertising) were higher. The results imply that part of the performance benefit found in expanding geographic scope comes from increased opportunities for exploiting proprietary assets. In hypothesis 6, we posit a positive relationship between the possession of proprietary assets and firm performance.

Hypothesis 6a. The R&D intensity (technological assets) of a firm is positively related to corporate performance.

Hypothesis 6b. The advertising intensity (marketing assets) of a firm is positively related to corporate performance.

METHODOLOGY

Sample

With few exceptions, empirical studies of the corporate performance of geographic and product diversified firms have looked at the experiences of US-based multinational enterprises. Among the

exceptions has been the inclusion of UK and European based MNEs (e.g., Grant, 1987; Rugman, 1979; Beamish and daCosta, 1984). Research on the corporate performance of the world's second largest group of MNEs, Japanese firms, has been inadequate by comparison, and there have been calls to extend the empirical domain of this research stream to these firms (Tallman and Li, 1996).

To extend research in this manner, we conducted our analysis on publicly-listed Japanese manufacturing firms. The sample was derived from the *Analyst's Guide* (DIR, 1996), which reports firm-level data gathered in a 1996 survey of 1,124 companies listed on the first section of the Tokyo Stock Exchange. In the list of 1,124 firms in the *Analyst's Guide*, 714 were manufacturing firms. We matched this list of manufacturing firms to the parent firms identified in the Directory of Japanese Firms' Overseas Operations (Toyo Keizai, 1997). This publication provided data on the foreign affiliates of private and public Japanese firms. For firms in this database, the coverage is close to the population of each firm's foreign subsidiaries (Hennart, 1991; Yamawaki, 1991).

After this matching procedure, we were left with a sample of 399 firms. The industrial distribution of the sample closely mirrored that of the original 714 firms (Table 1). Firms that were involved in the chemicals industry comprised 20 percent of the sample. The next most common sectors were industrial machinery (15 percent) and electrical products (14 percent). The average firm in the sample had made 13 foreign investments, with firms in the electronics sector the most active (18-19 foreign subsidiaries). Among the 399 parent firms, Hitachi had made the most foreign investments (111). Mean product diversity of the firms was consistent across sectors. Electronics firms having the most diversified product lines, and firms in textiles and apparels the least.

**********Insert Table 1 Here**********

Methods

We selected the Partial Least Squares (PLS) technique for analysis. PLS is a relatively new technique that is being used with increasing frequency in strategy research (e.g., Cool, et al. 1989; Birkinshaw, et al. 1995). PLS is an appropriate technique when sample sizes are small, when data normality and interval-scaled data cannot be assumed, and when the goal is prediction of the

dependent variables (Barclay, et al., 1995). The last qualification guides the choice of PLS because an objective of this study is to identify the determinants of geographic scope and performance.

In a PLS model, relationships between constructs, and between constructs and measures, are defined before hand by the researcher. The output from PLS provides indications of the efficacy of the measurement model, and the model's predictive power (see Hulland, 1999 for a review of PLS). Consequently, PLS tends to be superior to OLS regression because it permits simultaneous analysis of item-construct relationships along with complex, causal paths (Barclay, et al., 1995). PLS likewise provides the researcher with the ability to test the reliability and validity of measures within the context of their nomological network. This attribute of PLS is particularly beneficial when measures are imperfect representations of their underlying constructs, such as the R&D and advertising measures discussed below (also see the Appendix). As well, the estimated parameters in a PLS model allow concurrent validity and reliability concerns to be addressed (Hulland, 1999).

Variables

Dependent. As in prior studies (Beamish and daCosta, 1984; Tallman and Li, 1996; Hitt et al., 1997), we define corporate performance using accounting-based measures. From *GlobalVantage*, a companion data set to *CompuStat* that lists accounting data for non-US-based publicly listed companies, we compiled data for three performance measures: return on assets (ROA), return on equity (ROE), and return on sales (ROS). The measures had a high degree of correlation (lowest r=0.711, see Appendix), and we modeled a composite performance construct using the three measures as items. As with the independent variables, except geographic scope, each performance measure was computed as a five year average (1991-1995).

Industry Profitability. This measure is a composite construct constructed from four profitability ratios listed in the *Analyst's Guide.* The four ratios are: operating income to sales, recurring profit to sales, net income to sales and industry ROE. The lowest inter-item correlation was 0.715.

Product Diversification. The product diversification measure is an entropy measure based on Palepu (1985). We used the *Japan Company Handbook* as the source for determining the industries

in which a firm's sales occurred and the percent of sales in each segment. Three-digit SIC codes were used to classify diversification. While a four-digit SIC classification is preferred for determining related-product diversification, limitations on industry detail at the source prevented this level of classification. We review the implications of this divergence in the discussion section.

Assets. Following Horst (1972), Grubaugh (1987), Kogut and Chang (1991), and other studies (see Caves, 1996: 5-13), a firm's possession of technological (marketing) assets was assessed using R&D (advertising) intensity. The measures were computed as the ratio of R&D (advertising) expenditures to the firm's total sales, as reported at the corporate level. The *Analyst's Guide* was the source for the advertising and one R&D term. The second R&D variable was from *GlobalVantage*.

Geographic Scope. The extent of geographic operations was measured by two counts: a count of the number of foreign direct investments the firm had made by 1996 and a count of the number of countries in which FDI had occurred. These data were gathered from Toyo Keizai (1997).

Control Variables. Montgomery (1985) and Christensen and Montgomery (1981) found evidence that performance differences among diversified firms were attributable in part to differences in market structures among the industries in which the firms in the sample competed. Hence, as in Grant, et al. (1988) and Tallman and Li (1996), we introduced industry and firm level controls into the models. We used industry growth rates and concentration (Christensen and Montgomery, 1981; Scherer and Ross, 1990) to partial out the effect of performance variance attributable to differences in industry membership among firms (Schmalensee, 1985). Leverage (Grant, et al, 1988; Tallman and Li, 1996) was the firm level control. Leverage and industry growth were derived from the *Analyst's Guide.*

RESULTS

Measurement Model: Validity and Reliability

In assessing the inner model, the principle concern is with the internal consistency and the reliability of the items in the multiple-item constructs, although it is important to evaluate the

discriminant validity of all constructs. The reliability of individual items was determined by inspection of item loadings on the respective constructs. In all cases, all individual items had a high degree of reliability as each loading exceeded 0.7 (minimum = 0.844). Convergent validity, or composite reliability (see Table 2), was assessed using internal consistency, a measure similar to Cronbach's alpha (Fornell and Larcker, 1981). As reported in Table 2, all constructs had internal consistencies greater than 0.95, demonstrating strong convergent validity. Discriminant validity was gauged by comparing the correlation matrix of all constructs (Table 3). For each construct in Table 3, the diagonal elements (average variance extracted, Fornell and Larcker, 1981) were greater then the numbers in the associated row or column which is indicative of good discriminant validity.

**********Insert Tables 2 and 3 Here**********

Structural Model

Given the adequacy of the measurement model, it is appropriate to proceed with interpretation of the structural model. Table 4 reports the outcomes of hypothesis testing and the explained variance in the model's endogenous constructs. Five of the study's nine hypotheses were supported, and the full sample model explained 14.5 percent of the variance in the performance of the firms.

**********Insert Table 4 Here**********

The strongest support for the research model was received for the antecedents and consequences of geographic scope. R&D expenditure was positively and significantly associated with the geographic scope of the firm supporting H4a. Geographic scope itself was significantly and positively related to performance. This relationship was observed in the presence of competing influences on performance, including the possession of marketing and technological assets, and product diversification. Among the latter, only R&D expenditures was statistically significant in its relationship with performance (supporting H6a). However, marketing expenditures (H6b) and the extent of product diversification (H2) were not significantly related to performance.

The antecedent portion of the PLS model also received some support. The path coefficient testing the first hypothesis, that industry profitability was negatively associated with product diversification, was found to be significant, as was the path testing H3b. However, two of the

anticipated consequences of product diversification were not observed to be significant. The extent of product diversification was not related to the intensity of R&D expenditures, nor was it related to performance. The insignificance of the latter is surprising given the emerging consensus in the strategy literature that greater product diversification is associated with lower performance. We explored the product diversification result further using two sub-samples: one of firms with low levels of product diversification (sample mean or lower), and the other for firms with high product diversification.

We conducted this sub-sample analysis to examine if product diversification had non-linear relationships with performance. Tallman and Li (1996) observed the performance of US multinational firms to be positively related to product diversity at low levels of product diversification, and negatively related at high levels of product diversification. If the relationship was non-linear in our sample, than a full sample analysis might yield a trivial non-significant result because the positive effect of product diversification on performance at low product diversity levels would be nullified by the negative effect at high product diversity levels.

However, as reported in Table 4, product diversification was not related to performance either in the full sample, nor in both of the sub-samples. The insignificance of the relationship of product diversification with performance was consistent across firms with both high and low levels of product diversification. Yet, several other relationships in the model varied between the high and low product diversification sub-samples. In general, the high product diversification sample yielded results consistent with the study's hypotheses. Firms in low profit industries were more highly diversified (H1), and this diversification was associated with a lower level of expenditures on marketing assets (H3b). As well, marketing and technological assets were positively associated with geographic scope (H4a and H4b), which, in turn, was positively related to performance (H5).

Aside from the lack of significance for most of the relationship involving geographic scope or performance in the low product diversity sub-sample, the most notable difference in the two sub-samples involved the technological assets construct, specifically H3a. In the low product

diversification sample, increasing product diversification was associated with lower levels of R&D expenditures, yet in the high product diversification sample, firms with a wider product portfolio had higher R&D intensities. We review the implications of this difference in the discussion section.

As for the control variables, industry growth was positively related to performance, while leverage and concentration were negatively related. While these variables were not central to the objectives or the theory underlying this study, the significance of the coefficients of the variables reaffirms the importance of controlling for industry and firm level effects when examining firm performance. Finally, it should be noted that we considered adding firm size as a second firm-level control. However, coefficient estimates were robust to the inclusion or exclusion of firm size. Consequently, we report models exclusive of firm size because of: (1) the robustness of the estimates, (2) complicated issues of causality, and (3) the difficulty of interpreting results with firm size when it is related to other explanatory variables (Dunning, 1993: 163).

DISCUSSION

The preceding analysis of the relationships between geographic scope, product diversification and corporate performance yielded several interesting results. Principal in importance among these findings is that the geographic scope of the firm has positive repercussions for corporate performance. Increasing geographic scope is a response to the development and possession of proprietary assets at the upstream end of the value chain, as well as at the downstream end for highly diversified firms. But, beyond the opportunities found in exploiting these assets in new markets, operating in foreign markets provided an added measure of value to the firm. While geographic scope was shown to be positively related to performance, the extent of product diversification was not. This result spurred additional analyses, the implications of which are discussed in the following sections.

Product Diversification

The level of product diversification was shown to be strongly influenced by the profitability of the industry of the firm's main line of business. This result suggests that the industry context of the firm is an important determinant of the level of product diversification (Stimpert and Duhaime 1997). Several researchers in the diversification literature have argued that industry plays an important role in influencing the diversification-performance relationship and the results in this study are in agreement with prior observations that industry profitability and the level of diversification are negatively related (Rumelt, 1982; Bettis and Hall, 1982; Dess, Ireland and Hitt, 1990; Chang, 1992). When a firm is in an unprofitable industry, managers undertake product diversification to improve the prospects for higher firm performance (Bowman, 1982; Rumelt, 1974). The action of diversification itself is part of a larger set of decisions in the firm in which managers systematically undertake search and selection activities as a means of improving a firm's profitability (Chang, 1992). Diversification into unrelated product areas is part of the search process, and the firm cannot learn about its capabilities in a new product-market until it actually enters that market. The selection process involves the retention of successful new businesses, and the divestment of unsuccessful lines of business. The rate of entry into new product areas (the search process) is intensified when the firm is situated in low profitable industries. Hence, we observed that firms that competed in less attractive industries had higher levels of product diversification.

Accompanying a product diversification strategy was a general decline in expenditures used for developing unique marketing assets (for the full sample), and proprietary technological assets (for the low product diversification sub-sample). One interpretation of these results is that they concur with the thrust of the arguments in Stimpert and Duhaime (1997) and Hoskisson and Hitt (1988) – specifically that a strategy of product diversification leads to lower levels of investment in the generation of proprietary assets for use in existing lines of business. Yet, among the more highly diversified firms in the sample, a positive relationship was observed between the extent of product

diversification and expenditures for the development of technological assets. This result does not concur with Stimpert and Duhaime (1997) and Hoskisson and Hitt (1988).

An alternative explanation for these results centers on the concepts of economies of scope and the fungibility of a firm's assets across lines of business. When a firm invests in a new line of business, it can attempt to take advantage of scope economies. The negative relationship between product diversification and the two asset intensity terms can be interpreted as an economies of scope effect in which firms were exploiting commonalties between lines of business at the technological or marketing ends of the value chain when investing in new lines of business. However, the extent to which scope economies were achievable was dependent on the fungibility of existing assets across product lines. From the results for the relationships between the extent of product diversification and the asset intensity constructs in the two sub-samples (i.e., consistently negative), it appeared that marketing assets were fungible across product lines regardless of the firm's extent of product diversification. But, technological assets had a limited range of fungibility. Only in the low product diversification was a negative relationship observed between the extent of product diversification and technological assets. In the high product diversification sub-sample, firms made relatively larger investments in generating technological assets as the extent of product diversification increased. This larger relative investment reflects the difficulty of applying existing technological assets (i.e. the lower fungibility) to new lines of business that were more distant from existing lines of business.

The cases of Toshiba and Nintendo help illustrate these points with respect to marketing assets. In the 1992 to 1996 period, Nintendo derived almost all of its revenues from participation in the video games segment. Its advertising expenditures on an absolute basis and as a percentage of sales were among the twenty highest in our sample. During this same period, Toshiba also had a well-recognized brand name and it was among the ten leading Japanese firms in terms of absolute levels of expenditures on advertising. However, it was also in the top quartile of the most diversified firms in the sample. With this high level of product diversification, and corresponding large size, its marketing asset intensity hovered around the sample mean. Consequently, even with Toshiba's

considerable expenditures on the generation of marketing assets, compared to Nintendo, which had a narrow product line and lower sales revenues, Toshiba appeared to be a diversified firm that under-invested in the generation of marketing assets. Yet, Toshiba had developed a strong brand name which it attached to multiple product lines to achieve economies of scope in its use of marketing assets.

This line of explanation is also supported if the relationship between technological assets and product diversification is compared across the two sub-samples. As noted earlier, product diversification had a negative relationship with technological assets in the low product diversification sub-sample and a positive relationship in the high product diversification sub-sample. In the low product diversification sub-sample, 40 percent of the firms competed in essentially one line of business, the remaining 60 percent of firms had two or three principal lines of business. In this sub-sample, the observed negative relationship could extend from a diminution in R&D expenditures as a firm devoted resources towards developing new businesses. Alternatively, in an effect similar to that for marketing assets, it could have emerged as the firms in this sub-sample exploited economies of scope in moving from single-business operations to a multiple lines of business. The initial movement from a single-business entity to a multiple business firm could occur via investments in close product areas, thereby maintaining the fungibility of existing technological assets. One example is Kikkoman Corporation which derived 84 percent of its revenues from various food seasonings (sauces), and 16 percent from participation in the beverage industry. Another is Olympus Optical which obtained its revenues from participation in two similar lines of business: photographic equipment and optical instruments. Hence, an explanation for what we observed in the low product diversification sub-sample is that as firms moved into related product areas, firm size (sales) increased, but the real level of investment in the generation of technological assets did not fall. Absolute expenditures on technological assets increased, but proportionally less then sales, and the technological asset variable showed a decrease.

Meanwhile, in the high product diversification sub-sample, in which all firms had multiple lines of business, a positive relationship was observed between the extent of product diversification and expenditures on technological assets. At high levels of product diversification, developing an additional line of business would involve investments in more distant product lines. To support the development of these new product lines, the firms in this sample increased expenditures in technological assets, at a pace greater than the increase in sales revenues brought about by the expansion in product scope. Consequently, we observed a greater relative focus on developing technological assets as the product scope of the firm increased.

Interestingly, in the full sample and in the high product diversification sub-sample, increases in the level of technological assets were also matched by growth in the geographic scope of the firm. Given this result, we further explored the inter-relatedness of the investment decisions modeled in Figure 1 by estimating a model in which we added a path between product diversification and geographic scope. While this path was not significant in the low product diversification sub-sample, it was significant and positive in the high product diversification sub-sample. The significance of the product diversification-geographic scope relationship in the high product diversification sub-sample suggests that among Japanese firms with a wider product portfolio, the strategies of product diversification and increasing the geographic scope of the firm were being concurrently pursued. For these firms, growth into new product markets and expansion into new geographic areas were not competing or mutually exclusive activities. Rather, the two strategies were complementary, as the need for assets generated by entry into increasingly distant lines of business was met by the opportunities found to generate or acquire new assets when expanding the firm's geographic scope.

Geographic Scope

In a product diversification strategy, a firm's existing assets direct its expansion as its assets are utilized in entry to new businesses. However, depending on the extent to which existing assets are applicable to the new business, the firm must also develop or acquire new assets to support its entry (Hennart and Park, 1993). Meanwhile, expanding geographic scope involves the exploitation of

proprietary assets (Caves, 1996) as well as the acquisition of new assets. That is, foreign investment can be used as a means to build assets. By undertaking FDI, a firm can harness technological and marketing assets that exist in different foreign markets (Kogut and Chang, 1991). With a wider geographic scope to the firm, increased opportunities arise for sourcing dispersed knowledge-related assets, like technology, and physical assets, which can be internalized by the process of FDI and become a source of advantage for the firm. This motivation and support role for foreign investment is particularly salient in the 1990s, which has seen a growth in the geographic dispersion of knowledge-based assets (Dunning, 1998).

Expansion into new geographic markets is also driven by a motive of exploitation. The exploitation involved in geographic expansion is one of extension of the proprietary assets of the firm into new markets. The proprietary assets that form the motivation for geographic expansion might also be a source of advantage in the firm's home market, and contribute to superior corporate performance independent of the firm's investments in international markets. This reasoning, which is in accordance with the arguments of resource-based theorists, has also been the foundation for the main criticism of prior empirical studies that attempted to establish a linkage between geographic scope and performance.

One of the major limitations in prior research on the geographic scope-performance relationship is that it has not focused on the motives for international expansion when looking at this link (Dess, et al., 1995). This limitation is understandable given that prior researchers were addressing the question, 'Are multinational firms more profitable?' The method of analysis that emerged in these studies was typically a correlation or regression technique. Researchers found that extensive multinational operations were associated with higher performance (Beamish and daCosta, 1984; Tallman and Li, 1996; Hitt, et al., 1997) and lower levels of risk (Rugman, 1979; Kim et al., 1993). However, given that international operations encumber a firm because of the increased difficulty and costs found in operating in foreign markets, it remained at question whether the higher performance of multinational firms was attributable to a firm's possession of superior resources (i.e., proprietary assets), or to other benefits of international operations. The results of this study

pointed to both effects. That is, as we observed in the full sample and in the high product diversified sub-sample, performance was positively associated with the possession of proprietary technological assets *and* with the geographic scope of the firm.

This finding suggests that there are benefits intrinsic to international operations. These benefits extend beyond the exploitation of proprietary assets, and exceed the disadvantages found in operating in foreign markets (Hymer, 1960). The advantages of geographic scope may be in part attributable to lower production costs, as firms move productive activities in response to factor price differentials, or to take advantage of other locational advantages (Dunning, 1993). Alternatively, the advantages may come from the development of new technologies as firms expand opportunities for innovation (Hitt, et al., 1997), and increase opportunities for sourcing host country technological expertise (Kogut and Chang, 1991) by investing in new host countries. It is a limitation of this study that the specific benefits of geographic scope cannot be pinpointed, but it is a direction for future research.

This study has several other limitations. The sample was limited to publicly-listed Japanese manufacturing firms. The effect of using a sample based in Japan has been discussed to some extent, and some of the findings may be unique to the case of Japanese firms. Generalizability is also limited by the focus on large manufacturing firms. Future research should undertake to extend the sample to firms in the service-sector, or to firms of much smaller size. A third concern is that, even though product diversification and geographic scope have been demonstrated to have non-linear relationships with performance (e.g. Tallman and Li 1996), the PLS analysis did not permit direct modeling of non-linearity. Finally, the diversity in the firm's product line was assessed at the 3-digit SIC level. This was a constraint imposed by the data source, and it resulted in an entropy measure that differed from the one developed by Palepu (1985), and employed by many researchers since. While this study's entropy measure was not identical to Palepu (1985), it was comparable to Rumelt's (1974) original conceptualization of unrelated diversification.

CONCLUSION

This study has added much to our understanding of the relationship between product diversification, geographic scope and performance. The path analytic approach taken in the study emphasized the integrated nature of these relationships and pointed to the different performance outcomes as the firm undertook investments in new product areas, in proprietary assets and in international markets. Returning to the two questions raised at the outset of this study, first, we found performance to be higher in more multinational firms. That is, geographic scope and proprietary assets, particularly in the more highly product diversified firms in Japan, had strong positive associations with the performance of Japanese firms. Secondly, we conclude there is value in internationalization itself because geographic scope was found to be related to higher firm profitability, even when controlling for the competing effect of the possession of proprietary assets. This finding demonstrates that expansion into new geographic markets was an effective strategy for improving the performance of Japanese firms.

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FIGURE 1
Research Model

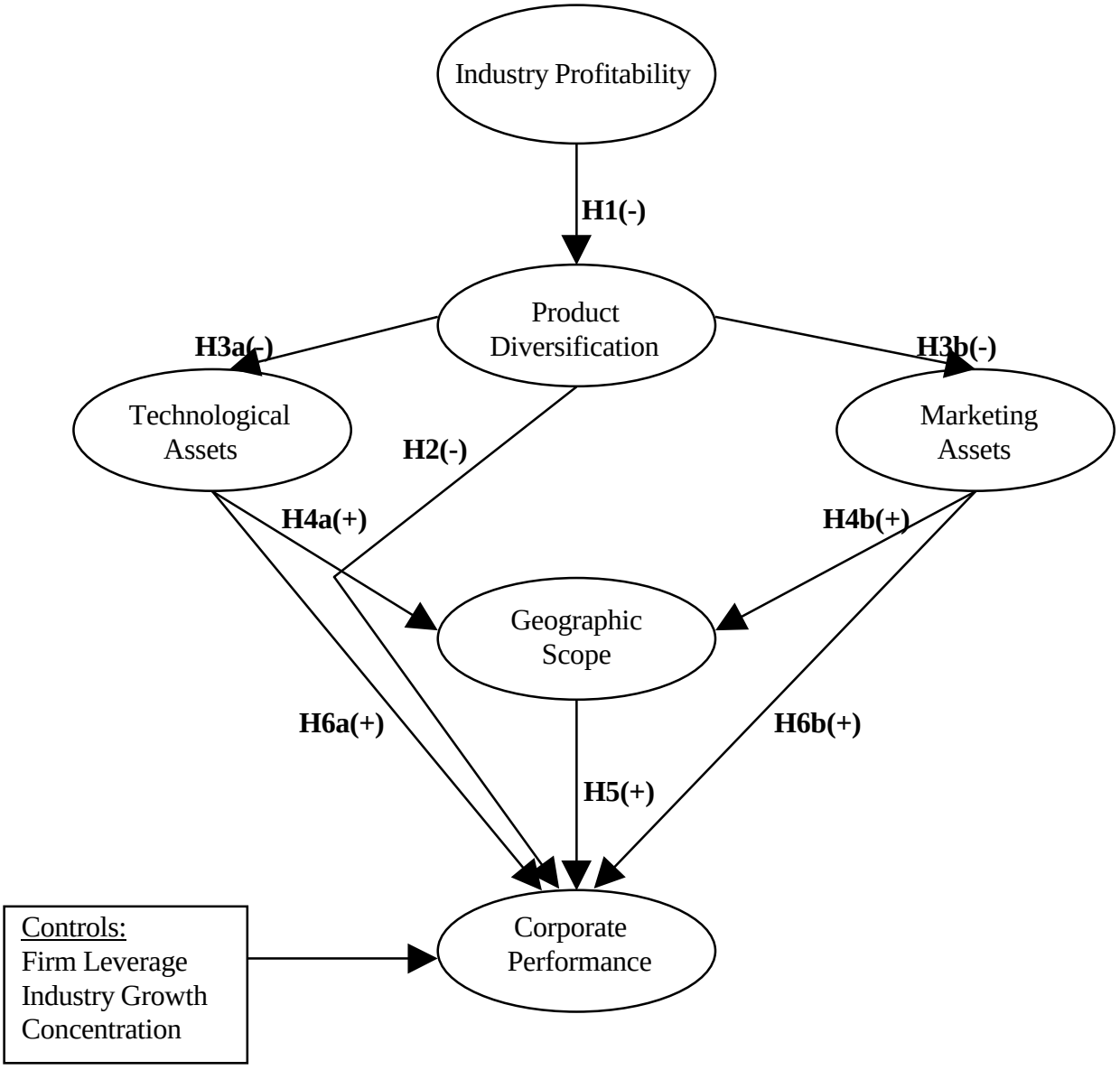

TABLE 1
Characteristics of Parent Firms in Sample

		Industry Breakdown		Industry Means	
Firm's Principal Industry	**SIC Code**	**All Firms (%)**	**Sample (%)**	**Product Diversification**	**FDI Count**
Food and Tobacco Products	20, 21	8.36	5.94	0.57	12.87
Textiles and Apparel	22, 23	6.16	6.72	0.71	9.58
Chemicals	28	17.15	19.90	0.56	10.47
Rubber / Stone, Clay Glass	30, 32	5.87	5.17	0.57	8.30
Ferrous Products	33, 34	12.32	9.04	0.70	13.97
Industrial Machinery	35	14.37	14.73	0.60	12.02
Electrical Products	36	12.75	14.21	0.60	18.44
Transportation Equipment	37	7.92	7.75	0.54	13.23
Instruments	38	6.16	8.79	0.67	19.56
Other Manufacturing Industries	24-27, 29, 31, 39	8.94	7.75	0.63	10.30
Total for column		**714 firms**	**399 firms**	**0.61**	**13.12**

Notes: 1) The 'All Firms' column represents a count of the number of manufacturing firms found on the first section of the Tokyo Stock Exchange, as listed in the *Analyst's Guide* (DIR, 1996).

2) Product diversification is defined by Palepu's (1985) entropy measure, $PD = \Gamma_i[P_i \times \ln(1/P_i)]$, in which PD is the extent of product diversification, P_i is the proportion of sales made in industry i and $\ln(1/P_i)$ is the natural logarithm of the inverse of the sales (Hitt, et al., 1997).

TABLE 2
Measurement Model

Construct	Number of Items	Internal Consistency
Industry Profitability	4	0.969
Product Diversification	1	1.000
Marketing Assets	1	1.000
Technological Assets	2	0.984
Geographic Scope	2	0.979
Corporate Performance	3	0.957

Note: Internal consistency, which is analogous to Cronbach's alpha, measures the extent to which variance in each item is attributable to variance in its associated construct. The calculation is $(E8_{yi})^2/((E8_{yi})^2 + EVar(,_i))$: 8_{yi} is the loading of item *i* on construct *y*, and $,_i$ is the measurement error in item *i*.

TABLE 3
Discriminant Validity

Construct	Correlations between constructs					
Industry Profitability	0.889					
Product Diversification	-0.251	1.000				
Marketing Assets	0.402	-0.197	1.000			
Technological Assets	0.410	-0.048	0.216	0.967		
Geographic Scope	-0.010	0.122	0.093	0.258	0.959	
Corporate Performance	0.431	-0.053	0.137	0.179	0.048	0.881

Note: The average variance shared by a construct and its measures (measured by the average variance extracted or $E8_{yi}^2 / (E8_{yi}^2 + EVar(,_i))$: see variable definitions under Table 2). If, as in the above matrix, values in the diagonal exceed the correlations between constructs in associated rows and columns, then the measurement model has adequate discriminant validity.

TABLE 4
Summary of Path Estimates

Hypothesis	Hypothesized Relationships	Expected Sign	Full Sample	Product Diversification Low	Product Diversification High
H1	Industry Profitability to Product Diversification	-	-0.251***	-0.225***	-0.110***
H2	Product Diversification to Performance	-	0.017	0.001	-0.017
H3a	Product Diversification to Technological Assets	-	-0.048	-0.099*	0.071**
H3b	Product Diversification to Marketing Assets	-	-0.197***	-0.147***	-0.152**
H4a	Technological Assets to Geographic Scope	+	0.250***	0.122	0.428***
H4b	Marketing Assets to Geographic Scope	+	0.039	0.045	0.172***
H5	Geographic Scope to Performance	+	0.063**	-0.035	0.162***
H6a	Technological Assets to Performance	+	0.093*	0.045	0.112**
H6b	Marketing Assets to Performance	+	0.026	0.045	-0.032
Controls					
Firm	Leverage to Performance	-	-0.302***	-0.295***	-0.339***
Industry	Industry Growth to Performance	+	0.144***	0.149**	0.128**
Industry	Industry Concentration to Performance	+	-0.075**	-0.109	-0.042
Variance Explained in Endogenous Constructs			**R^2 Values for Each Sample**		
	Product Diversification		0.063	0.051	0.012
	Marketing Assets		0.039	0.022	0.023
	Technological Assets		0.002	0.010	0.005
	Geographic Scope		0.068	0.019	0.218
	Corporate Performance		0.145	0.152	0.162
		Number of Cases	399	184	215

Note: *** p < 0.01; ** p < 0.05; * p < 0.10; all two-tailed tests.

APPENDIX
Means, Standard Deviations and Correlations

Variable																
Industry Profitability																
1. Operating Income / Sales	1.000															
2. Recurring Profit / Sales	0.953	1.000														
3. Net Income / Sales	0.906	0.950	1.000													
4. Return on Equity (Industry)	0.715	0.751	0.838	1.000												
Product Diversification																
5. Product Diversification	-0.236	-0.277	-0.254	-0.143	1.000											
Technological Assets																
6. R&D Intensity (*Analysts' Guide*)	0.456	0.455	0.386	0.163	-0.060	1.000										
7. R&D Intensity (*GlobalVantage*)	0.432	0.431	0.374	0.162	-0.048	0.942	1.000									
Marketing Assets																
8. Advertising Intensity	0.408	0.440	0.384	0.251	-0.200	0.197	0.181	1.000								
Geographic Scope																
9. Total FDI Count	-0.040	-0.023	-0.018	-0.025	0.138	0.243	0.258	0.055	1.000							
10. Country Count	-0.005	0.026	0.012	-0.020	0.102	0.243	0.260	0.099	0.918	1.000						
Corporate Performance																
11. Return on Assets	0.382	0.410	0.458	0.451	-0.059	0.183	0.174	0.162	0.031	0.032	1.000					
12. Return on Equity (Firm)	0.272	0.290	0.329	0.400	-0.045	0.142	0.132	0.083	0.058	0.035	0.803	1.000				
13. Return on Sales	0.389	0.417	0.467	0.422	-0.051	0.189	0.182	0.147	0.041	0.062	0.947	0.711	1.000			
Control Variables																
14. Leverage	-0.168	-0.280	-0.252	-0.197	0.175	-0.065	-0.050	-0.205	0.157	0.133	-0.294	-0.307	-0.234	1.000		
15. Industry Growth	0.350	0.304	0.317	0.296	-0.056	0.215	0.216	0.183	0.058	0.037	0.184	0.132	0.169	0.003	1.000	
16. Industry Concentration	-0.155	-0.136	-0.094	-0.013	0.072	-0.230	-0.221	-0.003	0.076	0.062	-0.090	-0.059	-0.105	-0.032	-0.071	1.000
Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Mean	4.00	3.92	1.75	3.29	0.61	0.024	0.023	0.011	13.12	7.28	0.83	1.13	0.97	29.03	-0.01	57.07
Standard Deviation	3.05	3.46	1.78	2.66	0.45	0.028	0.026	0.019	15.81	6.13	2.69	8.95	4.47	18.77	0.03	18.53

Note: Correlations > 0.098 significant at $p < 0.05$.