Product Diversification and Financial Performance of Japanese Textile Firms: An Econometric Appraisal

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I Introduction

This study examines the effectiveness in terms of financial outcomes of product diversification strategies that the Japanese textile firms have followed since the early 1990s. With a few exceptions (Kodama, 1995, Gemba and Kodama, 2001) the empirical analyses of recent diversification measures adopted by the Japanese firms have been inadequate, especially when compared to those on the U.S. companies. Besides, the diversification studies of Japanese enterprises have mostly been qualitative and descriptive. Amplifying the previous research through statistical and systematic approaches, the research takes the textile businesses of the country as a controlled industry-level sample in order to analyze the relationships between diversification conduct and economic performance.

In the strenuous market environment in terms of product maturity and international competitiveness that textile companies have long faced, this paper attempts to explore which strategies functioned most effectively for the Japanese enterprises. The following section of the paper briefly reviews the extensive literature on firm diversification. Part III explains the constructed data, employed variables and empirical tests adopted in the study. After Part IV tests the data with multiple regression analyses, Part V summarizes the results and explores their implications.

II Conceptual Framework

A review of the major diversification literature reveals that the subject has attracted one of the largest bodies of work in strategic management research. Spurred by Rumelt's seminal study on corporate diversification (1974), several studies followed the debate to explain the performance differentials among firms choosing contrasting strategies.

In his benchmark study, Rumelt defined diversification as an "entry into a new product market activity that requires an appreciable increase in the available managerial competence within the firm" (1974:10). His methodology based mostly on qualitative measures identified four major directions of diversification strategy: single, dominant, related and unrelated.

- *Single business firm:* firms that are basically committed to a particular product market with

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more than 95% of their businesses in a single activity or line of business.
- *Dominant business firm:* firms that diversified to some extent but have between 70% and 95% of their annual revenues in a principal activity. It is further divided into three subgroups: dominant-vertical, dominant-constrained and dominant-linked.
- *Related business firm:* nonvertically integrated firms which derive less than 70% of their revenues from a primary business area, but have other lines of businesses related to the primary area. Related category is divided into two subgroups: related-constrained and related-linked.
- *Unrelated business firm:* nonvertical firms that derive less than 70% of their businesses from a primary area, and have few related business lines. This category is further divided into two: unrelated-passive and acquisitive conglomerates.

Because all but single business category has been then divided into subcategories, a total of nine different classifications are ultimately employed. Those diversification strategies are: Single, dominant-vertical, dominant-constrained, dominant-linked, dominant-unrelated, related-constrained, related-linked, unrelated-passive and acquisitive conglomerates. (See Rumelt (1974) for a detailed description of the nine classifications). Strategic management studies have generally followed the basic categories that Rumelt constructed, but also reclassified his original scheme to improve its theoretical coherence and practical validity (Bettis, 1981, Bettis and Mahajan, 1985).

Some other studies have employed Jacquemin and Berry's (1979) "entropy" measure of diversification based on counting the product categories in accordance with the Standard Industrial Classification (SIC), which captured the essence of Rumelt's categories. In this measure, firm participation in different two-digit SIC codes at the industry level is treated as unrelated diversification, while the entry into a four-digit SIC code at the product level within the same two-digit SIC code is regarded as related diversification.

Following the definition above, related diversification entropy (DR) can be written as:

$$\mathrm{DR} = \sum_{j=1}^{M} DRjPj$$

where M is the number of total industry groups a firm is operating and Pj is defined as the share of the segment of j th group sales in the total sales of the firm. Unrelated diversification entropy (DU), on the other hand, can be shown as:

$$\mathrm{DU} = \sum_{j=1}^{M} Pj1n(1/Pj)$$

which is the weighted average of all the industry group shares. Upon adding these indices, the sum of related and unrelated components of diversification, is then the total diversification entropy (DT) of the firm, which can be written as:

$$\mathrm{DT} = \sum_{i=1}^{N} Pi1n(1/Pi)$$

where Pi stands for the share of the i th segment in the total sales of the firm, and N represents the industry segments in which a firm is operating. The measure thus considers two

elements of diversification; the number of segments a firm operates and the relative importance of each of the segments in the total sales. For a detailed technical explanation of the entropy measure, see Palepu (1985).

In spite of the considerable study, nevertheless, the findings of several articles on the literature have been contradictory and the impact of product diversity on performance is yet not clear. Perhaps the most common finding is that related diversifiers exemplify higher results in their performances (Bettis, 1981, Varadarajan and Ramanujam, 1987, Datta et al, 1991). These results have been intuitively enticing as they support the resource-based and related models of the firm (Prahalad and Hamel, 1990; Teece et al., 1997). In these theories, economic quasi-rents and scope economies from the sharing of strategic resources and capabilities are claimed to create sustained competitive advantage and higher performance (Barney, 1991, Teece et al., 1997). Many other works, however, have shown that single or unrelated diversification strategies can be more advantageous than related diversification (Michel and Shaked, 1984, Lubatkin, 1987).

Ⅲ Research Method

Ⅲ. 1 The Data

The sample includes the textile companies listed on the First and Second sections of Japan's three largest stock exchange markets; Tokyo, Osaka and Nagoya. The apparel-making companies were ultimately excluded from the sample, unless they have been originally textile manufacturers. This was because the apparel industry was established independently from its textile counterpart in Japan. Besides, clothing operations that required different capabilities than those of material-making typified dissimilar industry dynamics. Therefore, the inclusion of apparel companies would have made the explanatory power achievable in a single industry analysis less robust, as the purpose of this study is to explore the intra-industry performance differences in an environment in which as many macro- and micro-economic factors as possible are controlled.

After this sorting-out procedure, we were left with a sample of 72 companies (See Appendix for the list of companies). As one of the firms, Carolina (later named Gro-Bels), did not fit in any of the qualitative diversification classifications, it was removed from the sample.[1] The data for the individual enterprises came from various primary and secondary sources, including Yuka Shoken Hokokusho (Report on Securities and Stocks), semiannual reports to the Ministry of Finance, Toyo Keizai Kaisha Shikiho (Quarterly Reports on Listed Corporations), and Kaisha Zaimu Karute (Analysis of Companies' Finance). Whenever data were missing in those sources, the data were obtained by contacting the individual companies. As the period the study covered is from 1991 to 2002, all the companies that the stock exchanges listed in their "textile" section are considered even when a company exited from the section for the reasons of bankruptcy, mergers and acquisitions.

1) Carolina eventually transformed into a pure real estate company in the second half of the 1990s.

Ⅲ. 2 The Variables

Two different independent variables measuring product diversity, Rumelt classification and entropy measure, were employed to explain the dependent variables that measure performance. Other variables were then included on the basis of their potential to explain the performance differences among firms. For all variables four-year averages were calculated for the periods of 1991-1994, 1995-1998, and 1999-2002. The reasoning behind this method was to capture the effects of dynamic firm strategies that changed from one diversification category to another. Table 1 lists the variables and their operational definitions used in this study.

Table 1. Variables and their definitions

Financial performance	ROA= Current (ordinary) profits[1]/total assets ROS= Current (ordinary) profits/total sales
Product diversification strategy	Rumelt Classification: V- Vertical Vur- Vertical-unrelated RC- Related-constrained RL- Related-linked UR- Unrelated Entropy measure: Er- Entropy Related Eur- Entropy Unrelated Et- Entropy Total
Technological assets	RD= R&D expenditures/total sales
Marketing assets	ADV= Advertising expenditures/total sales
Capital intensity	CAP= (Total Assets/1,000,000)/Employees
Apparel integration	APPAREL (Dummy variable, 1 or 0)
Strategy change	CHANGE (Dummy variable, 1 or 0)
Firm size	ASSET= Total Assets/1,000,000

Note: [1]Current or ordinary profits are calculated by subtracting from, or adding to, operating profit such items as balance of interest payments that represent nonoperating profit or loss.

2.1 Performance Measures

As in prior research on diversification, this paper uses accounting-based measures to define a firm's profitability. The return on assets (ROA) is employed to illustrate the profitability of companies. ROA is selected because it reflects a measurement of both strategic and operational effectiveness of the total resources under the direct control of management. Besides, it also minimizes the performance disparities between downstream and upstream production processes. This distortion may be a trouble in case of the employment of the other major measure, return on sales (ROS), which tends to inflate the performance of upstream firms for purely technical reasons. Yet, as any single measure may generate criticism, the findings based on ROA as the dependent variable is supplemented by those based on ROS.

2.2. Product Diversification

The product diversification measures employed in this study are mainly Rumelt's categories of diversification strategies. This was then supplemented by the entropy measures, total, related and unrelated, based on JSIC codes (Standard Industrial Classification for Japan). The employment of two different measurements was necessary to minimize the bias that may lead to questionable reliability and spurious results (Nunnally, 1978). Besides, we selected this approach because any SIC codes alone would not capture the primary issues underlying the relatedness of product markets, especially in the textile industry. Basically labeling a firm that moved from spinning synthetic fibers (JSIC 142) into synthetic fiber manufacturing (JSIC 204) and then synthetic leathers (JSIC 222), which are all classified under different two-digit categories, as "unrelated" would completely be misleading. In these cases, a modified procedure was taken after examining the particular firm's historical growth as well as technology and market interrelationships. Owing to the aggregated nature of the data at the source, three-digit JSIC codes were used to classify related diversification. The textile firms illustrated five basic categories of diversification in accordance with Rumelt's classification schemes. Nevertheless, some alterations were made to find more applicable procedures for the purpose of this focused study (See Appendix for the diversification classifications of the entire sample companies). We referred to individual company histories whenever any substantial doubts came up during the classification process. The five diversification categories along with the additional changes are:

1) Vertical Business: vertically integrated firms (having vertical ratios [2] of 0.7 or more) that sell a variety of end-products, no one of which contributes more than 95 percent of total sales. Through some modification to the Rumelt's (1974) original category, we included the firms that have vertical ratios of 85 percent or more and 15 percent or less unrelated businesses. The rest of vertically integrated firms with more than 15 percent unrelated businesses are classified under another category: Vertical-Unrelated Business. This type of re-categorization was essential, as the vertically integrated companies have been increasingly moving towards unrelated fields. One should be careful however that our usage of the term "vertical" is process integration from synthetic fiber manufacturing to spinning, weaving and/or knitting in general, but it does not independently examine the vertical integration within individual types of fibers, such as cotton or wool. Limitations at the source prevented as from doing this type of detailed classification.

2) Vertical-Unrelated Business: vertically integrated firms (defined as in the first category), which have more than 15 percent unrelated businesses.

3) Related-Constrained Business: related business firms (non-vertically integrated firms having specialization ratios [3] less than 0.7 and related ratios [4] more than 0.7) that have diversified mainly by connecting new activities to a specific central skill or resource and in which, therefore, each business is related to almost all of the other business activities. This definition

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2) 'Vertical ratio' is defined as the proportion of a firm's revenues attributable to all of the by-products, intermediate products, and final products of a vertically integrated sequence of manufacturing processes (Rumelt, 1974).

3) 'Specialization ratio' is defined as the proportion of a firm's revenues that is attributable to its largest discrete product-market activity. For a detailed explanation of specialization ratio and discrete business, see Rumelt, 1974.

4) 'Related ratio' is defined as the proportion of a firm's revenues that are attributable to the largest group of businesses that are related in some way to one another.

in almost all cases was apparent for the companies that diversified within the textile industry only, such as the manufacturing of ropes and finishing nets or carpets and different types of textile mats. Therefore, firms that diversified into other textile fields with specialization ratios less than 0.7 and related ratios more than 0.7 form this group. This type of classification was necessary and would be critical to analyze the performance differentials between the firms that stayed in textiles and the ones that diversified into related non-textile fields.

4) Related-Linked Business: related business firms (as defined above) that have diversified by connecting new businesses to some strength or skills already possessed, but not always the same strength or skills. This group encompasses the firms that have diversified from textiles into non-textile fields. To be more specific, synthetic fiber companies that moved into several chemicals and plastic components, pharmaceuticals and/or electronic parts are the predominant element in this group.

5) Unrelated Business: nonvertical firms that have diversified with only marginal relationships between new business and current activities. They are the companies that represent a related ratio of less than 0.7. This group includes textile firms that diversified into businesses such as real-estate, consumer finance and/or food manufacturing.

2.3 Technological and Marketing Assets

Following the other studies on the subject (Caves, 1996:5-13, Delios and Beamish, 1999), a firm's possession of technological assets is measured by its technological intensity, which is the ratio of R&D expenditures to the firm's total sales. A similar argument was then applied to marketing assets calculated as the ratio of advertising expenditures to the firm's total sales. Following Rumelt (1974) and Bettis (1981), we adopted the assumption that the ratios of research and development expenditures to sales and advertising expenditures to sales measure significant portions of opportunities for differentiation and segmentation. Besides, technological and marketing assets may also be partial measures of a firm's extensible core skills or capabilities (Rumelt, 1977).

2.4 Capital Intensity

By nature of technology, some segments in the textile industry are more capital-intensive than others. Synthetic fiber manufacturing, for instance, employs chemical processes, which differ from mechanical and labor-using operations of cotton spinning and/or weaving. A firm may then choose to be more capital-intensive than favor labor-intensive production facilities in individual lines (such as automated spinning machines versus labor-intensive ones). As Bettis (1981) suggests capital intensity, in general, imposes a greater degree of risk because assets are frozen in the long-term that may not be easy to sell. There will then be excess returns associated with such risks, given the basic proposal in economic principles. On the other hand, such assets as sunk costs may encourage retention even in the industry of overcapacity, which may lead to lower profits. We thus include this variable in our model to consider the possible differences in profitability among firms with dissimilar capital-intensity levels in the textile industry. As is employed in many other studies (Shepherd, 1979, Bettis, 1981), we use the ratio of total assets to the number of employees as a measure of capital intensity in our model.

2.5 Apparel Integration

A unique variable employed in our model is apparel integration, as it has become significant in the textile business. By apparel integration we mean the forward integration into clothing manufacturing. This variable was included because integration into the apparel industry might open up new opportunities for growth and profitability, when a textile company is able to exploit synergy economies between textile manufacturing and apparel making. The apparel business, however, required different capabilities than those of material making. It thus seemed reasonable to expect that entry into apparel operations may be associated with differences in firms' profitability. We used a dummy variable to represent integration into clothing manufacturing. The data came from Yuka Shoken Hokokusho (Report on Securities and Stocks) and individual company annual reports.

2.6 Strategy Change

One improvement of our model over conventional econometric diversification research is that the model examined the performance effects of strategy change. By strategy change, we mean the alteration of a company's strategy within the Rumelt classification scheme adopted in this study.

When an enterprise alters its basic strategic orientation, profitability may improve as long as the move represents the flexible and adaptive employment of company's internal resources and capabilities in a new market environment. Financial outcomes may actually suffer, however, if a firm abruptly shifts its basic product portfolio simply because other product markets look promising. We therefore include this variable to explore the possible impact of strategy change on profitability, for which we employed another dummy variable.

Ⅲ. 3 Analytical Model

We employed a multiple regression model to examine the effects of diversification strategy on financial performance in this study. Along with most other diversification studies, the technique employed was ordinary least squares methods. As firms' product diversity in terms of the Rumelt classification was not stable over time, we preferred to use pooled cross-sectional data set based on the average of three time periods (see Sayrs, 1989 for the advantage of this approach). This is because we were concerned with the changes in diversification strategy over time. This approach contrasts most other studies in the diversification literature that simply took the average of the data over time. The time series with average figures in the pool were 1991-1994, 1995-1998 and 1999-2002. By this method, we could reduce the transient errors, and also capture the dynamics of changing product diversification over time. Besides, we could overcome the troubles associated with the high levels of heteroscedasticity among the cross-sectional data and serial autocorrelation which often occurs with the time-series data. Averaging the data over four year time intervals appeared appropriate after examining the change of firms' product diversity.

The regression was designed to investigate performance differences among the five basic diversification categories, vertical, vertical-unrelated, related-constrained, related-linked and unrelated, and the effects of other strategic contents on profitability. Our model is specified as:

$$ROA = \beta 0 + \beta 1(V) + \beta 2(Vur) + \beta 3(RC) + \beta 4(RL) + \beta 5(Er) + \beta 6(Eur) + \beta 7(RD) + \beta 8(ADV) + \beta 9(CAP) + \beta 10(APPAREL) + \beta 11(CHANGE) + e$$

Depending on the diversification strategy of individual firms, in the model V, Vur, RC and RL are dummy variables that take the values 1 and 0. A variable for the unrelated strategy is not included. This is because the coefficients for the other strategy variables stand for the differential performances associated with these strategies in comparison to the unrelated strategy, and $\beta 0$ includes the effect of unrelated diversification among other things. Besides, when the binary variable is included for all strategies, the normal regression equation is not independent and therefore it does not have a unique solution (see Neter and Wasserman, 1974:299, Bettis, 1981 for a detailed explanation). For the same technical reasons, our model excluded the variable, Et, which represents total entropy.

Ⅳ Regression Results and Interpretations

Table 2 gives the correlation matrix among all the variables (except the dummy variables including product diversification, apparel integration and strategy change). The table illustrates that the correlation coefficients among the selected variables are not high, and thus multicollinearity does not appear to represent a major problem in this analysis. Only firm size, a commonly used control variable, interestingly enough, was correlated significantly with R&D intensity (Pearson correlation=0.722 at the 0.01 level). We thus excluded the assets variable in our regression model to prevent the distortions caused by multicollinearity.

Table 2. Pearson correlation coefficients and descriptive statistics

	ROA	ROS	Er	Eur	RD	ADV	CAP	ASSET
ROA		0.880**	-0.079	0.031	0.201**	0.090	0.084	0.211**
ROS			-0.126	0.016	0.164*	0.099	0.103	0.191**
Er				0.012	0.092	0.135	0.390**	0.283**
Eur					0.081	0.279**	0.216**	0.281**
RD						0.249**	0.051	0.722**
ADV							0.277**	0.357**
CAP								0.212**
Mean	0.008	0.014	0.498	0.460	1.208	0.712	0.822	96668.3
St. Dev.	0.045	0.062	0.424	0.442	1.483	1.164	0.867	192374.9

** Significant at 0.01 level.
* Significant at 0.05 level.

Table 3 presents the estimation of the regressions for the dependent variables ROA and ROS. Our regression results are satisfactory at a reasonable level, although one may be concerned with the relatively low explanatory power, accounting for between 16 to 22 percent of the

variance in the dependent variables. Nevertheless, the F-statistics are highly significant at least at 0.04 level. Besides, these statistical results are not atypical of such studies. For instance, Kim, Hwang and Burgers (1989) could explain less than 10 percent of the variance in their comparisons. For their work on product diversification, Hoskisson, Hitt, Johnson and Moesel (1993), Robins and Wiersema (1995) and others including Tallman and Li (1996) also found comparable levels of R^2 around 15 and 20 percent [5].

The regression results for the dependent variable ROA show that related-constrained and related-linked strategies outperform the unrelated one, and their coefficients are statistically significant. The findings indicate that the performance advantage enjoyed by related-constrained strategy over unrelated one is 6.1 percent, while related-linked firms outperform unrelated ones by 3.8 percent in terms of ROA. By contrast, the coefficients for vertical and vertical-unrelated strategies show that firms with those strategies underperform by about 0.2 percent and 1.3 percent, respectively, relative to enterprises with unrelated strategy. Their coefficients, nevertheless, were nowhere near being significant. The findings employing the Rumelt classification were further supported by the positive and statistically significant coefficient of related-entropy. Unrelated entropy, on the other hand, did not yield any significant results. [6]

Table 3. Least-square Regression for dependent variables ROA and ROS

	ROA			ROS		
	Coefficient	T-Statistic	Significance	Coefficient	T-Statistic	Significance
Constant	-0.038	-1.444	0.152	-0.026	-0.708	0.480
V	-0.002	-0.074	0.941	-0.008	-0.243	0.808
Vur	-0.013	-0.654	0.514	-0.011	-0.379	0.705
RC	0.061	2.377	0.018*	0.07	1.931	0.056*
RL	0.038	1.857	0.066*	0.019	0.638	0.525
Er	0.046	2.476	0.015*	0.037	1.372	0.173
Eur	0.019	1.174	0.243	0.014	0.621	0.536
RD	-0.004	-0.819	0.414	0.002	0.391	0.697
ADV	0.006	1.104	0.272	0.008	1.039	0.301
CAP	0.009	1.846	0.068*	0.008	1.105	0.272
APPAREL	-0.019	-1.793	0.076*	-0.013	-0.833	0.407
CHANGE	-0.020	-1.873	0.064*	-0.017	-1.124	0.264
R^2	0.222			0.162		
F-statistic	2.926 (Significance = 0.002)			1.953 (Significance = 0.040)		

* Significant at the 0.10 level.

5) For an explanation of the low levels of R^2 in these studies, see Tallman and Li (1996, pp.192-193).

6) The results for related and unrelated entropy shall be analyzed in a careful fashion. Despite the fact that unrelated entropy is a good measure to be employed in this study, the related-entropy figures are difficult to interpret. This is because in the textile industry, a firm which vertically integrated from spinning to weaving and knitting appears as diversified under related-entropy measure. Therefore the results for related-entropy can only be a supplement in this study, and one shall take into consideration of the qualitative category results in interpreting the numerical figures.

The coefficients for three numerical variables were highly significant, including capital intensity, apparel integration and strategy change. The regression results concerning technological and marketing assets measured by R&D and advertising intensity, respectively, were somewhat unexpected, as the figures were mixed and insignificant.

The presence of a positive and statistically significant coefficient for capital intensity supports the hypothesis that there may be increasing returns associated with the risk of holding assets in the long-lived forms (Bettis, 1981). Some segments of the textile industry such as synthetic fiber manufacturing are susceptible to relatively higher levels of capital intensity, and therefore the high levels of concentration and barriers to entry. Since entry barriers mean there is some degree of monopoly power for a firm, we can expect higher profits for those particular segments of the industry. This point should be carefully examined, however, as firms that enter into capital intensive businesses will achieve the high returns only when they establish the capabilities that generate an extendable core to multiple product markets. Extended product portfolio operation with scattered and unrelated markets could not nurture a core capability for the entire company (Colpan and Hikino, 2003).

Regression results show that forward integration into apparel operations has a strong, yet negative effect on profitability. This suggests that textile firms are not effective in creating the competitive advantages in apparel businesses, whose game rules are substantially different than those of material making. It is then a challenging task for these textile firms to face Japan's established apparel and trading companies. Moreover, Japan's apparel manufacturing is also in a turbulent situation, given the severe domestic competition and extensive imports especially from China.

Strategy change similarly shows significant and negative impact on profitability. This is predominantly a concern for the vertical firms, as a descriptive analysis illustrates that most strategy change is in reality from vertical to vertical-unrelated and then to unrelated businesses. Therefore, a shift towards unrelated operations adds to the declining performances of the firms with vertical-integrated orientations.

The insignificant results for research and development intensity, if not advertising, for the increasingly innovative and specialty-oriented Japanese textile firms are especially interesting. A closer look, however, reveals the reasons behind this finding. Given the depressed macroeconomic environment and declining performances in the 1990s, textile firms had to cut back their R&D expenditures, which may have caused substantial statistical disturbances. This is because the drops in those expenses were not uniform and/or clear. Whereas larger enterprises continued their technological investments, it was the smaller companies that drastically cut down their expenditures. The high correlation between firm size and R&D intensity ($r=0.722$) represents a good evidence for this premise. Given the increasing troubles to find markets for their products, smaller firms have become more dependent on the large firms and engage in subcontracting operations, not only with textile firms, but also other companies. Suminoe Textile, for instance, manufactures car interior fabrics for Toyota, Japan's largest automobile maker. On the other hand, the large textile firms are more and more splitting off their R&D operations to their subsidiary companies, which may not have been reflected under the R&D expenses announced by the parent company. Kanebo, for instance, delegated most of the company's R&D budget to individual operating subsidiaries. [7] Therefore, given all the ongoing changes of strategy and

structure in textile firms, it may not be that surprising to get insignificant results for the impact of R&D intensity on performance from this statistical study.

Similar findings were apparent when the same regression was run for the dependent variable ROS, yet the coefficients were statistically less significant in general. Related-constrained strategy outperformed the unrelated one by 7 percent, which is almost the same as the previous finding with the dependent variable ROA. The performance advantages enjoyed by related-linked strategy over unrelated one were however only 1.9 percent. This meant a decline of 50 percent in the contributing power of this variable, as compared to the results when we employed ROA as the dependent variable.

The decline of R^2 from 22.2 percent with ROA as the dependent variable to 16.2 percent in case of ROS decreased the explanatory power of the whole regression model significantly. Because of the reasons mentioned before, we believe the employment of ROA reflects the underlying performance differences in a better fashion. Nonetheless, one feature deserves special comment. The coefficient for the related-linked strategy is nowhere being statistically significant in this model as compared to the previous regression. The interpretation for the significant coefficient in the ROS-dependent variable regression for related-constrained strategy in comparison to the related-linked one may reflect the actual business profitability of related-constrained strategy. This is because generally we would expect higher returns in terms of ROS from the upstream industries and relatively lower from the downstream ones. Given the classification scheme adopted in this research, related-linked firms were originally in synthetic fiber fields that diversified into chemicals. Related-constrained firms on the other hand operate in comparatively downstream textile businesses, such as specialized fabric manufacturing, or dyeing. Hence, the fact that a contrary and significant coefficient was found may be a sign for the actual higher profitability of the firms represented by related-constrained strategy. It is the specialized firms including "niche" manufacturing companies like medical glows and felts, and dyeing, printing and processing firms that are classified under this category.

V Summary and Conclusion

The preceding analyses of the relationships between corporate diversification strategy and financial performance yielded several interesting results. The principal finding among them is that firms adopting the strategy of related diversification, either within textiles (related-constrained) or outside textiles (related-linked), outperformed the enterprises with other strategies. This result for Japan's textile industry, along with many previous studies in the literature, represents the support to the premise that the resource- and capability-based theories of the firm have been emphasizing: Internal resources within the firm function as the major sources of competitive advantage, as long as they are utilized effectively.

Vertical and vertical-unrelated strategies, however, are not found to be sufficient enough to bring significant positive outcomes. Interestingly enough, vertical integration into apparel-

7) Consolidated data in theory can capture the total expenditures on R&D. They were however not employed in this study, given the limitations of data at the source, especially for the relatively smaller companies.

making is especially negatively correlated with performance and may actually be a cause for a strategic failure. An increasing shift towards unrelated operations adds to the declining performances of these firms, since investments in unfamiliar markets are a probable cause of their ineffectiveness. Whereas this move towards unrelated product fields appears attractive and easy to escape from the declining prospects of the industry, the particular strategy certainly is not fruitful. These results lead us to conjecture that entering into "growing" and/or "soft" markets in which firms do not possess any competitive advantage is not an effective way for firms to sustain their profitability.

The basic findings of the present research summarized above pose a dilemma for Japan's textile companies in terms of their effective diversification strategy. On the one hand, the companies are certainly able to improve profitability when they utilize their accumulated capabilities in related product markets. On the other, though, their own textile and downstream businesses are not necessarily the promising targets as investment outlets, except for a few enterprises that have already secured their own market niches within textile domains. As many of the large enterprises in Japan's textiles still keep the considerable presence in their original businesses, they face a complicated and difficult choice to identify the growth directions through which they can integrate their capabilities with the market opportunities. We yet need a more detailed analysis before we identify the exact mechanism through which the capabilities, technological and marketing, of the companies will yield sales growth and/or higher profitability.

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Appendix. The sample companies and the Rumelt diversification classifications.[1]

Code	Company name	1991-1994	1995-1998	1999-2002
3001	Katakura Industries	UR	UR	UR
3003	Shoei	UR	UR	UR
3007	Kobe Kiito	V	V	Vu
3009	Kawashima Textile Manufacturers	RC	RC	RC
3010	Jomo Twisting Thread	V	V	Vu
3011	Saitama Seni Kogyo	Vu	UR	UR
3101	Toyobo	RL	RL	RL
3102	Kanebo	UR	UR	UR
3103	Unitika	RL	RL	RL
3104	Fuji Spinning	V	V	V
3105	Nisshinbo Industries	UR	UR	UR
3106	Kurabo Industries	Vu	Vu	UR
3107	Daiwabo	V	V	V
3109	Shikibo	V	V	Vu
3110	Nitto Boseki	RL	RL	RL
3111	Omikenshi	V	V	Vu
3113	Hirabo	UR	UR	UR
3114	Doko Spinning	V	V	Vu
3115	Tesac	RL	RL	RL
3116	Toyoda Boshoku	RL	RL	RL
3117	Kowa Spinning	UR	UR	UR
3119	Daiichibo	V	n/a[2]	n/a
3121	Shin Nippon Spinning	V	V	Vu
3123	Saibo	V	Vu	Vu
3125	Shinnaigai Textile	V	V	V
3128	Terada Cotton Spinning	UR	UR	UR
3129	Toyama Spinning	Vu	UR	UR
3201	Japan Wool Textile	V	V	Vu
3202	Daito Woolen Spinning and Weaving	V	V	V
3203	Toa Wool Spinning and Weaving	V	V	Vu
3205	Daidoh	V	V	Vu
3206	Nankai Worsted Spinning	V	V	V
3207	Chuo Woolen Mills	V	Vu	UR
3209	Kanematsu Woolen Mills	V	V	V
3210	Bisai Wool Yarn Spinning	V	V	n/a
3216	Miyuki Keori	V	V	V
3302	Teikoku Sen-I	Vu	Vu	Vu
3304	Tosco	Vu	Vu	Vu
3306	Nihon Seima	UR	UR	UR
3401	Teijin	RL	RL	RL

Code	Company name	1991-1994	1995-1998	1999-2002
3402	Toray Industries	RL	RL	RL
3403	Toho Rayon	RL	RL	RL
3404	Mitsubishi Rayon	RC	RC	RC
3405	Kuraray	RC	RC	RC
3407	Asahi Chemical Industry	RL	RL	RL
3408	Sakai Ovex	V	V	V
3409	Kitanihon Spinning	V	V	V
3411	Ohtori	UR	Vu	UR
3501	Suminoe Textile	RC	RC	RC
3502	Orix Interior	UR	UR	n/a
3503	Towa Orimono	RC	RC	RC
3512	Nippon Felt	RC	RC	RC
3513	Ichikawa Woolen Textile	RC	RC	RC
3514	Japan Vilene	V	V	V
3521	Nippon Lace	V	V	Vu
3524	Nitto Seimo	V	V	V
3526	Ashimori Industry	RC	RC	RC
3532	Hotta Textile Industry	V	RC	RC
3551	Dynic	RC	RC	RC
3552	Toyo Cloth	RC	RC	RC
3553	Kyowa Leather Cloth	RC	RC	RC
3569	Seiren	RC	RC	RC
3570	Nippon Orimono Kako	RC	RC	UR
3571	Soto Kogyo	RC	RC	RC
3572	Diado-Maruta Finishing	RC	RC	RC
3576	Kanbo Pras	RC	RC	RC
3577	Tokai Senko	RC	RC	RC
3578	Soko Seiren	RC	RC	RC
3580	Komatsu Seiren	RC	RC	RC
3581	Gisen	RC	RC	RC
3593	Hogy Medical	RC	RC	RC

Note:1. V: Vertical, Vur: Vertical-Unrelated, RC: Related-Constrained, RL: Related-Linked, UR: Unrelated. See the text for the definition of individual classifications.
2.n/a: not available for the reasons of bankruptcy, mergers and acquisitions..