CORPORATE RESTRUCTURING, PERFORMANCE AND COMPETITIVENESS: AN EMPIRICAL EXAMINIATION[1]

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EXECUTIVE SUMMARY

This study investigates the effects of corporate restructuring – scale and scope, on the financial performance and long-term competitiveness during the 1980s in a data set of 107 manufacturing firms. Hypotheses were tested using Ordinary-least-square (OLS) Regression model. Overall, this study found that: (1) corporate restructuring scope is inversely associated with firms' performance, as expected; (2) the effects of restructuring scope on changes in competitiveness offer partial support for our hypotheses; (3) there was no support for the hypothesized relationships between restructuring scale and performance, and between restructuring scale and changes in competitiveness. Implications for future research in corporate restructuring are discussed.

INTRODUCTION

The United States is currently in the midst of a fourth wave of mergers and acquisitions starting in the late 1970s (Ravenscraft & Scherer, 1987; Singh, 1993). In addition to an unprecedented number of megadeals, the fourth wave is characterized by "corporate restructuring." Even though asset or portfolio restructuring may include a variety of operational changes such as downsizing, divestitures, acquisitions, leveraged buyouts (LBOs), sell-offs and spin-offs, we concentrated on large-scale divestitures and acquisitions (i.e., 10 percent change in a firm's total assets).

Corporate restructuring during the 1980s followed a much different course from that of predominantly acquisitive period in the 1960s (Singh, 1993). A growing number of companies that once thought diversification and expansion were vital abruptly changed course. Many conglomerates restructured their diversified businesses through divestitures and acquisitions. They rapidly "slimmed down" and narrowed their focus by selling-off divisions, assets and product lines. Firms not only jettisoned "bad" acquisitions from the early 1970s, but also moved to spin off and downsize healthy businesses in order to concentrate on "core competencies." Overall, firms reduced their degree of diversification. For example, Porter (1987) reported that half of the unrelated acquisitions made by conglomerates during the 1960s and 1970s have been reversed through divestitures. Similarly, Ravenscraft and Scherer (1987) estimated one-third of all (including related) acquisitions made in the 1960s and 1970s were later divested. Ollinger's (1994) study of the oil industry reported that by 1990 many oil companies (e.g., Exxon, Amoco and Mobil) had sold most of their unrelated businesses. By retreating from most of their unrelated business such as retailing, electronics, and electric motors, the oil companies were left with units directly related to their original oil businesses. When RCA sold CIT financial Corporation and Hertz it became an electronic and broadcasting company again. RCA almost returned the venerable Radio Corp. of American (RCA) of decades ago. General Mills also returned to "basics." After diversification into clothing (including Izod sportswear), toys (Parker Brothers. Games and Kenner Products Co.), and other products (Monet jewelry), General Mills ended its 20-year era of diversifying by abruptly reversing course back its basic food business.

The prevalence of corporate "refocusing" during the 1980s did not mean that all diversified firms abandoned diversification. Surprisingly, some firms have moved toward greater diversification. Researchers have observed that a significant number of firms are still diversifying their businesses, defying the gospel of the 1980s, which advocated focusing on a few core businesses. It turns out that continuous expansion is still a popular goal in growth-oriented corporate America. Many substantially diversified firms such as Westinghouse, Berkshire Hathaway, Philip Morris, Hanson Trust, Teledyne and 3M, have not jumped onto the "bandwagon" of "restructuring, downsizing, refocusing, and downscoping." Statistics and empirical studies show that diversification continues, despite the rhetoric of refocusing on firms' core businesses. For example, Davies et al (1994) found that 30 percent of the large firms still operated in three or more two-digit industries in 1990 and most of them showed no signs of reversing their direction.

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Corporate restructuring has attracted attention from theorists in several fields, such as financial economics, strategic management, and organization theory. The initial wave of studies has provided controversial findings about the antecedents and consequences of restructuring. Markides' (1994) study of the Fortune 500 was predicated on the assumption that firms may reach an optimal level of diversification. The study of a random sample of diversified firms showed that some might have over-diversified (above their optimal level) while others might be below their optimal diversification level. Assuming that profit-maximizing motives motivate firms, Markides reasoned that the "under-diversified" firms would increase the degree of their diversification whereas the "over-diversified" firms would decrease the degree of their diversification. He also found that the aggregate diversification level had not changed in the 1980s, which he attributed to the countervailing movements of refocusing versus diversifying. Viewing restructuring as the process by which firms reduced their diversification by refocusing on their core businesses, Markides found that refocusing was positively associated with performance improvements in his investigation of the 50 most aggressive U.S. restructurers during the 1980-1989 decade.

Hoskisson and Johnson (1992) contended that highly diversified firms were not the prime targets for corporate restructuring. Moreover, restructuring does not always result in a reduction in diversification. In their study, the authors found that inconsistent control systems (i.e., financial control vs. strategic control) firms away from intermediate "related" strategy toward focusing (reduction in diversification) on unrelated diversification (increase in diversification). Although their results are possibly inconsistent with Markides' (1994) notion of an optimal diversification level, both studies reveal a complex picture of diversification and refocusing activities in the 1980s in corporate America.

Grant and Soenen (1994) studied restructuring activities in the oil industry over a ten-year period (1979-1988). In their study, the authors defined restructuring broadly to include both asset restructuring and internal management changes. In particular, they reported that oil companies that engaged in the most radical shifts in strategy and pursued the most drastic restructuring (Exxon and Arco) also achieved the highest profitability improvements during the period of 1986 to1988 relative to the period of 1980 to1983.

A study by Brumagim and Klavans (1994) also found that some conglomerates benefited from becoming more focused. In their study, they examined only one type of restructuring, the divestiture of one or more major segments. Corporate performance (return on equity and profit margin) nearly doubled within two years after the completion of major restructuring-focusing actions. Zantout (1994) contended that aggressive restructurers of the mid to late 1980s generally performing poorly during the early 1980s, supporting the contention that voluntary corporate restructuring was a defensive measure against the possibility of capital market intervention. A survey conducted by the Strategic Planning Association indicated that nearly half of large U.S. corporations restructured in the 1980s. Among them more than 50 percent failed in their restructuring efforts (Lewis, 1990).

In the view of this sample of restructuring studies, some patterns emerge:

1. A significant number of companies engaged in major restructuring during the 1980s. That made the 1980s merger wave unique.
2. Restructuring is not always equivalent to reducing diversification.
3. Issues involving size and performance have chiefly motivated restructuring.
4. The consequences of restructuring, especially those related to long-term performance and competitiveness, have not received as much study as the causes of restructuring.
5. Many academics, business writers, and business executives have advocated the virtues of a focus strategy or constrained diversification.
6. Restructuring is not equivalent to refocusing.

Against the context of this general background, the next section presents the theoretical underpinning for our research and develops our hypotheses.

THEORETICAL DEVELOPMENT AND HYPOTHESES

Restructuring and Performance

Some theorists have noted that many restructuring programs were unsuccessful and that the performance of restructured firms varied widely (e.g., Lewis, 1990). Because firms' restructuring activities may result in either an increase or a decrease in diversification, the performance implications may vary, depending on the restructuring scope --- the changes in a firm's degree or kind of diversification.

Researchers in strategy management have often asserted that diversification is negatively related to firms' performance. This is relevant to the discussion, especially as most restructured firms

begin as "over-diversified." For example, Hill and Hansen (1991) and others (Hoskisson & Hitt, 1994; Markides, 1992) have offered conceptual grounds for the expectation that diversification could produce poor results. First, if diversification is motivated by managerial self-interest, aimed toward increasing personal compensation and employment security, then diversification has little to do with the efficiency of resource allocation. Second, an increase in business diversification scope is usually accompanied by increased debt, which could lead toward subsequent cuts in Research &Development expenditure. Any reduction in innovation may depress a firm's long-term competitiveness. Third, diversification usually means increasing bureaucratic costs. Fourthly, diversification may divert management's attention away from a firm's core business through a loss of strategic control.

In line with the foregoing argument, Markides (1994) maintained that a significant number of restructured firms decreased their business diversification because: 1) they were over-diversified after the 1960s and the 1970s merger wave; 2) even if they were optimally diversified decades ago, they are now over-diversified because of increased environmental uncertainty and volatility. Furthermore, increasing globalization has significantly increased the costs of diversification, indirectly reducing the "optimal" level of diversification.

The theories and studies cited provide the necessary background for our study. The central research questions of our study involved the relationship between restructuring, performance (i.e., ROA) and long-term competitiveness. We defined corporate restructuring in terms consistent with the definition of Hoskisson and Johnson (1992) -- as a major change in a firm's business portfolio combined with a major change in corporate strategy. In defining restructuring we included both *restructuring scope* and *restructuring scale*. Restructuring scope refers to the degree to which firms change their diversification. Restructuring scale assesses the extent to which a firm's asset base (primarily lines of business, segments, or divisions) is changed by acquisitions and divestments. In developing our hypotheses, we were guided by the following reasoning.

First, because many firms that refocused on core businesses had previously engaged in unprofitable diversification (see Jensen 1986), then the divestiture of the non-value-adding diversified assets amounts to ending a financial loss and should improve performance. We already have some evidence to support this proposition. For instance, divisions of diversified firms do not perform as well as similar businesses that standalone or are part of related-business firms (Lichtenberg, 1990). The empirical study by Brumagim and Klavans (1994) found that some conglomerates benefited from becoming more focused. They reported that corporate performance in terms of return on equity and profit margin experienced significant improvement within two years after the conglomerate's refocusing actions. The performance differences between "holders" and "focusers" were significant, even after industry profitability was controlled for. This evidence clearly suggests that the return to specialization can improve efficiency.

Second, a reduction in business diversification may improve a firm's performance by creating narrower lines of business that will better utilize synergistic resources. Hite et al. (1987) noted in their research that managers cited poor performance, lack of fit, and need for capital to expand existing lines of business as the chief reasons for sell-offs. For example, in 1983, seeking to concentrate its management skills on its publishing and video businesses, Time Inc. spun off its forest products operations. Those operations had accounted for 17 percent of Time's profit and 33 percent of its revenue. Initial results were encouraging. Time's publishing return on assets increased by 28 percent in 1984, while the post-spin-off return on assets of the new forest-product company, Temple-Inland, reached its highest level in more than six years. Duhaime and Grant (1984) and Montgomery et al. (1984) also found that when a related-strategy was involved, divestitures produced performance improvements. This line of thinking and research implies that diversified companies can improve their performance by divesting unrelated businesses that have been siphoning attention and resources away from core businesses.

Third, a reduction in diversification reduces the overall information-processing demands placed on top management. In addition, reduction in diversification provides a firm with the opportunity to reconfigure the governance structure, enabling management to devote more "quality time" to increase the efficiency of the assets that remain. Therefore, "un-divesifying" enhances the prospects for improved long-term performance through increased focus on core businesses and improved corporate governance. Research by Hite, Owers, and Rogers (1987), Sicherman and Pettway (1987), and Jain (1985) documented increases in firm value following divestiture, offering support for this perspective. On the basis of the previous discussion, we proposed:

H1: Restructuring scope is negatively associated with firms' performances.

This means that broad diversification is associated with lower performance and that focus (or concentration) is associated with better performance.

H1a: Refocusers should outperform diversifiers, or $ROA_{refocusers} > ROA_{diversifiers}$.

During the restructuring time period studied, refocusing firms should outperform firms increasing their diversification.

Restructuring Scale and Performance

Organizational learning is defined as a process of growing insights and successful redefining of organizational problems by individuals (March & Simon, 1958). Over the long term, learning becomes embedded in structural elements and outcomes of the organization itself. Organizational learning also means the process of improving actions through better knowledge and understanding. Therefore such learning will improve organizational decision-making, strategy, and performance. The organizational change literature has further distinguished between two types of change, incremental and radical (Tushman & Romanelli, 1985, Nord & Tucker, 1987). Firms' restructuring activities may also vary in their scale between incremental and radical. Some may restructure their business portfolio through incremental reshuffling, while others may make large-scale of acquisitions and divestitures. By taking up this line of reasoning and extending its implications, we expected that the scale of restructuring might also influence post-restructuring performance.

Corporate *restructuring* can be conceptualized as a learning process (March & Simon, 1958; Cybert & March, 1963). For example, Hedberg (1981, p. 5) pointed out that "learning requires both change and stability." Other theorists also wrote that the process of learning involves the creation and manipulation of the tension between constancy and change (Cangelosi & Dill, 1965; Hedberg, Nystrom & Starbuck, 1976). Organizational learning is manifested as a firm accumulates its experience during the course of restructuring—"learning by doing" (Rosenberg, 1987). Too much stability can be harmful when it leads to stagnation and provides little learning. Similarly, too much change may cause an information overload, making it difficult for an organization to learn. Salter and Weinhold (1979) noted that little corporate learning took place during the merger wave of the 1960s. More recently, an empirical study of Fortune 500 companies by Reilly, Brett & Stroh (1993) found that drastic corporate restructuring was associated with increasing corporate turbulence, lower organizational loyalty and job involvement, and lower job satisfaction and job security. In a similar vein, strategic theorists also maintain that a change in strategy involving a gradual shift over time should be more profitable than a radical change for a firm which has a minimal degree of system coupling (Miller & Frisen, 1984). For example, Zantout's (1994) empirical study of aggressive restructuring between 1980 and 1989 indicated that aggressive restructuring has not achieved better performance results than incremental restructuring.

The foregoing theoretical insights suggest that cautious restructuring through an incremental process ought to enable a firm to screen alternatives and opportunities carefully, correctly interpret performance feedback, and routinize changes. By contrast, aggressive restructuring involving large-scale acquisitions and divestitures may create organizational instability. To sum up, we find both theoretical reasons and empirical evidence supporting the position that incremental restructuring may be superior to radical restructuring in fostering organizational learning. On the basis of the preceding discussion, we proposed the following hypothesis:

H2: Restructuring scale is negatively associated with firms' performances.

In other words, the greater the rate and degree of restructuring, the lower the relative performance results.

Restructuring Scope and Competitiveness

Theorists in strategy and economics suspect that corporate restructuring may have a negative impact on long-term competitiveness. For example, an empirical study of the pharmaceutical industry by Hill and Hansen (1991) confirmed the negative relationship between R&D and changes in diversification. They concluded that pharmaceutical firms partly financed diversification through reductions in R&D expenditures. Similarly, Hall (1990) found a substitution relationship between acquisitions and R&D. She concluded that this trade-off resulted from the increased debt-levels necessary to finance acquisitions. Baysinger and Hoskisson (1989) found that highly diversified firms have, on average, invested less in innovation than less diversified firms. Hoskisson and Hitt (1994) contended that managers often prefer making acquisitions to the riskier option of investing in R&D. The managers prefer acquisitions to innovation, because acquisitions involve less personal

uncertainty. Hoskisson and Hitt also asserted that corporate executives increasingly rely on financial controls (e.g., ROI goals) instead of strategic controls (evaluation of strategic actions that have long-run influence on performance, such as R&D investment) as their firms become more and more diversified. Therefore, the increasing reliance on short-run financial control may lead to a reduction in R&D expenditures, resulting in reduced innovation and declining long-term competitiveness.

Conversely, firms that redirected their energies to their core businesses by reducing their unrelated diversification may have positioned themselves to increase their investments in R&D. Hoskisson and Johnson (1992) argued that reduced diversification leads to a reduced span of control. The reduced span of control gives corporate executives a better strategic understanding of divisional operations and markets. Top management in a more focused firm can more easily and efficiently reassert strategic control and increase the firm's commitment to innovation. This commitment can be subsequently observed in an increased level of investment in R&D (in the core businesses) and in championing new product ideas. Additionally, since refocusing strategy is usually accomplished through divestitures of unrelated businesses, the resources generated from those divestitures may be used to reduce debt levels or even free firms from previous creditors' pressures. Management may therefore concentrate more time and money on a firms long-run competitiveness. Taken in combination, these arguments present a good case that a refocusing strategy could lead to changes that improve long-term competitiveness. On the basis of the foregoing discussion, we hypothesized that:

H3: Restructuring scope is negatively associated with change in firm's R&D intensity.

H3a: The change of R&D intensity of refocusers is greater than that of diversifiers.

$\Delta R\&D_{refocusers} > \Delta R\&D_{diversifiers}$

Restructuring Scale and Competitiveness

In addition to restructuring scope, restructuring scale may also have an effect on a firm's competitiveness. As Hoskisson and Hitt (1994) noted, corporate restructuring processes often absorb a significant amount of managerial energy and time. Time and energy spent on restructuring are traded for time and energy that could have been spent on long-term strategic decisions about innovation and new products or services. To sum up, large-scale portfolio restructuring may conflict with the need for R&D investment. These points suggest the following hypothesis:

H4: Restructuring scale is negatively associated with competitiveness.

In other words, large-scale restructuring can delay or suppress R&D investments that have an important long-term effect on competitiveness.

METHODOLOGY

The Sample

Because formal announcements of corporate restructuring can rarely be found in such sources as Wall Street Journal, BusinessWeek, and Journal of Mergers and Acquisitions, we constructed our sample firms wth the following procedures. We defined restructuring as divestments and/or acquisitions involving two or more major businesses. This definition is consistent with several previous studies of restructuring (e.g., Hoskisson & Johnson, 1992). Three hundred and fifty firms in the manufacturing industries (SIC 2000-3999) were randomly selected from Compustat PC Plus. We did not include firms in which leverage-buyouts or other major changes in the corporate ownership occurred during the 1981-1990 study period. All mergers and divestitures for the sample firms were compiled from the Transaction Rosters in MergerStat Review and Journal of Mergers and Acquisitions. We eliminated firms with less than two transactions and those whose transactions were sporadic, as contrasted with a systematic restructuring program. For example, a company that made acquisitions in 1981 and 1985, and divested a business segment in 1990 was dropped from the sample because these transactions did not constitute evidence of a *pattern* of restructuring activities. Only firms that made acquisitions and divestitures during specific two-year intervals remained in the sample. Specifically, the year in which the first transaction started and the year in which the last transaction ended determined a firm's restructuring period. Business segment information for the sample firms during the restructuring period was collected from corporate annual reports as well as from Moody's Industrial Manual, depending on the availability of information. Only firms that made more than a 10 percent change in the business diversification index were included in the sample. Because of data availability, the final sample was reduced to 107 manufacturing firms. The diversification index was calculated, using an entropy measure (Palepu, 1985).

Measures

Although accounting measured have been the subject of many debates, they are still used in strategic management research (Chatterjee, 1986; Dubofsky & Varadarajan, 1987). Bromiley (1986) and Jacobson (1987) have all offered conceptual defenses that justify the continued use of accounting measures. It has also been suggested that it should not matter whether market-based or accounting-based measures of performance are used because the impact of diversification should be visible in both (Dubofsy & Varadarajan, 1987).

For our study, an efficiency view of performance was adopted and operationalized as return on total asset (ROA). ROA was defined as earnings (excluding any extraordinary items) after deduction of interest, tax, and any preferred dividends, expressed as a percentage of total assets. ROA is a widely used measure of business performance. It is strongly correlated with other relevant performance measures such as return on sales (ROS) and return on equity (ROE). Consistent with Hoskisson and Johnson (1992) and Brumagim and Klavans (1994), we averaged ROA in our analysis for the two-year post-restructuring period we designated in our definition. The two-year average ROA was used to minimize the effects of random fluctuations. To control for the profitability of different industries, we adjusted firms' ROA by deducting industry-weighted ROA, $[\Sigma(M_{ij4}*ROA_j)/\Sigma M_{ij4}]$ where the ROA_j is associated with a specific 4-digit industry j, and M_{ij4} is the percentage of firm i's total sales that are classified in industry j. Firms' ROA data were available from Compustat PC Plus, and industry profitability data were collected from Annual Industrial Norms and Business Ratios complied by Dun & Bradstreet.

Changes in competitiveness were indirectly measured through the surrogate variable, R&D intensity, which we defined as R&D expenditure divided by total sales. This measurement is well established. It has been widely used by researchers as a proxy for firms' long-term competitiveness (e.g., Hoskisson and Johnson, 1992; Hill and Hansen, 1991). As for ROA, we averaged two-year post-restructuring data to minimize random variations. The data were collected from Compustat PC Plus.

Restructuring scope was measured by changes in a firm's business diversification. The level of firm diversification was calculated using an entropy measure (Jacquemin & Berry, 1979; Palepu, 1985). The entropy measure was calculated using the approach specified by Davis and Duhaime (1992). We used the following formula, $DT=\Sigma P_j*In(1/P_j)$, Where P_j is defined as the percentage of firm sales in segment j and $In(1/P_j)$ is the weight for each segment j. This measure takes into account the number of segments in which the firm operates and the relative contribution of each segment to total sales (Palepu, 1985). This continuous measure of diversification has been shown to have good construct-validity relative to other diversification measures (Chatterjee & Blocher, 1992; Hoskisson, et al. 1993). Taking it a step farther, restructuring scope for a restructured firm becomes the difference in the diversification index between the starting year and the ending year of its restructuring period, or $\Delta DT=DT_{ending} - DT_{starting}$ where DT refers to the total diversification index. The business segment data for the sample firms are available from Moody's Industrial Manual and company annual reports.

Restructuring scale was measured by the assets that were divested and/or acquired during the restructuring period divided by the average assets during the ten-year period. Information about divested or acquired assets was obtained from Compustat PC Plus. We computed the ten-year average assets from three-year datapoints - 1981, 1985, and 1990 - which are available from Compustat PC Plus. Hopkins (1991) successfully adopted this measure.

Firms' prior performance is measured by ROA, or net income as a percentage of total assets. As with post-restructuring, we averaged the two-year, pre-restructuring ROA.

The logarithm of each firm's assets at the end of restructuring period was used to control for size. Large firms are generally viewed to have competitive advantages over small firms, because of their slack in organizational resources. In examining the effect of corporate restructuring on a firm's profitability, we controlled for the firm's size.

The 1980s have been characterized by widespread corporate downsizing—the reduction of a firm's workforce. We operationalized downsizing as the percentage change in the number of employees during the restructuring period. Although empirical research on the impact of downsizing on organizational performance has been inconsistent, downsizing could represent an important confounding factor that should be controlled for in our analysis.

Financial leverage was measured by the debt to asset ratio -- both measured as book values. Debt to assets was chosen over other measures of leverage (i.e., debt/equity) because it best captures the financing changes in the overall asset base of a firm. Book values are also less variable than market values and overall stock market movements do not affect them. Changes in a firm's financial leverage during the restructuring period can be computed as the

difference between the starting year debt to asset ratio and the ending year's ratio.

The level of firm concentration in each four-digit SIC industry was measured using the customary four-firm concentration ratio, the percentage of industry sales represented by the largest four firms (Harrigan, 1985). Although it is also acceptable to use eight-firm concentration ratios, the difference between these two measures should have no impact on statistical testing. The weighted average industry concentration for each firm was computed as $SCR4_{jt}*pS_{jt}$, where $CR4_{jt}$ is the four-firm concentration ratio in SIC four-digit industry j, pS_{jt} is the proportion of total sales generated by the firms in industry j. T represents the year 1980.

Data for prior performance, firm size, downsizing, and changes in the firm's financial leverage during the restructuring period were collected and calculated from Compustat PC Plus. The data for the calculation of weighted industry concentration ratio can be derived from Census of Manufacturing, Moody's Industrial Manual, as well as each company's annual report.

Research Design

We used ordinary-least-square (OLS) regression analysis to test the hypothetical relationships between corporate restructuring, firm's performance, and changes in firm's R&D intensity. Two-tailed tests were used to assess the significance of the independent variables and the controls. The basic form of the regression analysis for the hypothesis 1 and hypothesis 3 was:

Post-restructuring performance=a_0 + b_1*Restructuring scope + b_2*Restructuring scale + b_3*prior performance + b_4* Debt-asset ratio + b_5*Size + b_6*downsizing + b_7*Industry concentration Ratio + e

Hypothesis 2 and hypothesis 4 were tested using the following regression equation:

Changes in R&D intensity=a_0 + b_1*Restructuring scope + b_2*Restructuring scale + b_3*prior performance + b_4 * Debt-asset ratio + b_5 * Size + b_6*downsizing + e

A firm's environment may cause changes in post restructuring performance and/ or competitiveness, regardless of changes in business strategy resulting from deliberate restructuring. Environmental turbulence was particularly acute during the 1980s, which brought about extensive changes in corporate America (Bowman and Singh, 1990; Shleifer and Vishny, 1990). To compensate for these environmental influences, our regression equations have controlled for the possible effects of prior performance, change in debt-to-asset ratio, downsizing, size, and industry concentration ratio.

We also calculated power levels for the equations. In both cases, the power levels were above 0.80, which is considered satisfactory in behavioral sciences (Kraemer & Thiemann, 1987).

To test hypotheses 1a and 3a, we divided the 107 firms into two subsamples. "Diversifiers," whose business diversification increased, were coded "1," and "Refocusers," who reduced their business diversification, were coded "0." A one-tail T-test was used to compare the means of the two subsamples.

RESULTS

Table 1 shows the means, standard deviations and the zero-order correlations among the dependent and independent variables in the analysis. Note that the mean score for post-restructuring performance was naturally smaller than that for prior performance because we adjusted post-restructuring performance for industry profitability. None of the correlations had an absolute value greater than 0.7, minimizing the concern of multicollinearity. Downsizing and restructuring scale were strongly correlated (r=0.684). The strong correlation indicates that both measures were associated with a single construct -- changes in a firm's resource base. Because we theorized that asset changes differ from changes in human resources, it was important to examine the indexes separately rather than aggregate them into a single measure. By assessing tolerance and variance inflation value (VIF) for the independent variables in the full multiple- regression models, we found that none of the VIF values exceeded 10.00 and the tolerance values were less than 0.1. Therefore, we have substantial evidence to rule out the presence of multicollinearity (Table 2).

Table 3 shows the results of the regression analyses on the post-restructuring performance and changes in R&D intensity. We estimated four regression models. Two of these models, Models 1 and 3 are restricted models in which the control variables are regressed independently on the dependent variable. The other two, Models 2 and 4 are full models that include both controls and restructuring variables.

TABLE 1
Descriptive Statistics and Correlation Matrix[A]

Variables	Means	Std. Dev.	1	2	3	4	5	6	7	8	9
1. Change in R&D Intensity(%)	0.732	2.387	1.000								
2. Adjusted Post Restructuring Performance (ROA)	-2.892	7.313	0.156	1.000							
3. Prior Performance	5.853	5.183	0.322***	0.322***	1.000						
4. Debt Asset Ratio	11.248	20.340	-0.174*	-0.140	0.096	1.000					
5. Firm Size	7.081	1.773	0.134	0.240**	0.148	0.162*	1.000				
6. Downsizing	32.750	282.365	0.074	0.046	-0.040	0.148	-0.103	1.000			
7. Industry Concentration Ratio	37.438	14.294	0.042	0.102	-0.163*	0.077	0.266***	-0.085	1.000		
8. Restructuring Scale	0.294	0.343	0.057	-0.058	0.062	0.311***	-0.182**	0.684***	-0.105	1.000	
9. Restructuring Scope	-0.164	0.585	-0.335	-0.350***	-0.127	0.133	-0.010	0.017	-0.108	0.017	1.000

[a] N=107 *$p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 2
Assessing Tolerances and VIF Value of Independent Variables

Variables	Post-Restructuring Performance		Changes in R&D intensity	
	Tolerance	Variance Inflation	Tolerance	Variance Inflation
1. Industry Concentration Ratio	0.8594	1.1640		
2. Prior Performance	0.8864	1.1280	0.9379	1.0660
3. Debt Asset Ratio	0.8185	1.2220	0.8249	1.2120
4. Firm Size	0.8251	1.2120	0.8889	1.1250
5. Downsizing	0.5169	1.9350	0.5180	1.9310
6. Restructuring Scope	0.9397	1.0640	0.9619	1.0400
7. Restructuring Scale	0.4543	2.2010	0.4545	2.2000

TABLE 3
Results of Regression Analysis

	Post-restructuring Performance				Change in R&D Intensity			
	Model 1		Model 2		Model 3		Model 4	
	b	*t*	b	*t*	b	*t*	b	*t*
Control Variables								
Industry Concentration Ratio	0.131	1.372	0.085	0.922				
Prior Performance	0.340	3.664***	0.301	3.308***	0.331	3.63***	0.285	3.191***
Debt Asset Ratio	-0.234	-2.542**	-0.165	-1.737*	-0.248	-2.685***	-0.229	-2.409**
Firm Size	0.206	5.154**	0.197	2.091**	0.140	1.510	0.151	1.646
Downsizing	0.126	1.384	0.187	1.570	0.138	1.502	0.077	0.639
Independent Variable								
Restructuring Scope			-0.280	-3.163***			-0.270	-3.066***
Restructuring Scale			-0.106	-0.832			0.091	0.706
Multiple R	0.459		0.537		0.422		0.503	
R Square	0.211		0.288		0.178		0.253	
Adjusted R Square	0.171		0.237		0.146		0.208	
F Value	5.293***		5.617***		5.538***		5.651***	
Increment R Square			0.078				0.075	
Increment F Value			5.282***				5.006***	

[a] N=107 *$p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Hypothesis 1, which stated that restructuring scope would be negatively related to firms' performances was supported. As model 1 (Table 3) indicates, three of five variables were significantly related to post-restructuring performance. Both prior performance ($p<0.01$) and firm size ($p<0.05$) were positively associated with post-restructuring performance. Changes in debt-to-asset ratios ($p<0.1$) were negatively associated with post-restructuring performance. The overall R^2 for the restricted model was 0.211 ($p<0.01$). The addition of restructuring scope ($p<0.01$) and restructuring scale to the regression model provided an increment 7.8 percent ($p<0.01$) explanation of the variance of post-restructuring performance. Comparison of the beta weights (Cohen and Cohen, 1983) indicated that restructuring scope (b=-0.28) was by far the most important factor in performance effects, far more than control variables.

Hypothesis 2, which specified a relationship between restructuring scale and post-restructuring performance, was not supported. Although Model 2 indicates that restructuring scale was negatively associated with post-restructuring performance (b=-0.106) in the predicted direction, the relationship was not statistically significant.

The significant regression coefficient for restructuring scope (b=-0.27, $p<0.01$) observed in the Model 4 provided substantial support for Hypothesis 3, which stated that restructuring scope would be negatively associated with changes in competitiveness (R&D intensity). In the restricted Model 3, prior performance and size were found to be positively associated with change in R&D intensity, while debt-to-asset ratio showed a negative relationship. The full model 4 with the inclusion of restructuring scope and restructuring scale variables had a R^2 of .253 ($p<0.01$), including a significant 7.5 percent increase over the restricted model ($p<0.01$).

The negative relationship between restructuring scale and change in competitiveness (R&D intensity) proposed by Hypothesis 4 was not supported. Model 4 in Table 3 actually ran opposite to our prediction about the two variables, but it was statistically insignificant.

Results from a one-tail T-test of Table 4 provided substantial support for Hypotheses H1a and H3a, which stated that refocusers would have greater post-restructuring performance and R&D intensity than firms in which diversification increased during the restructuring period. As Table 4 demonstrates, the adjusted post-restructuring performance for refocusers (mean=-1.4109) was significantly greater than that for diversifiers (mean=-5.0873, $p<0.05$). Similarly, changes in R&D intensity of refocusers (mean=1.1909) were significantly greater than that for diversifiers (mean=0.0739, $p<0.05$).

DISCUSSION

Many scholars have postulated a relationship between the degree of diversification and business performance. The question has been refined to distinguish between different types of diversification (related vs. unrelated) and performance. However, there is little empirical evidence to suggest how restructuring may affect diversification strategy and influence performance or long-term competitiveness (Hoskisson & Johnson, 1992, Markides, 1994). The results of our study are generally consistent with previous findings that over-diversification can reduce performance, but our findings also reach significantly beyond previous work.

TABLE 4
Means, Standard Deviation and T-Tests of Two Subsamples

Groups	Cases	Adjusted Post-Restructuring Performance			Change in R&D Intensity		
		Means	Std	T-Test[a,b]	Means	Std	T-test[c]
Refocusers	63	-1.4109	6.4913	2.63***	1.1909	2.3936	2.44***
Diversifiers	44	-5.0873	7.9339		0.0739	2.2443	

[a]one-tail T-test, ***$p<0.01$

[b]Levene's test for the equality of variance: F=0.238, p=0.627. The assumption of homogeneity of variance was met. Therefore, we used pooled variance estimate to compute the test statistic.

[c]Levene's test for the equality of variance: F=2.873, p=0.093. The assumption of homogeneity of variance was not met. Thereforre, separate variance estimate was employed to compute the test statistic.

First, we found restructuring scope was negatively associated with post-restructuring performance even after we controlled for size, capital structure, industry structure and firms' prior performances. More specifically, post-restructuring performance was significantly higher in refocused firms than in more diversified firms. This finding may be consistent with the argument that there is an optimal level of diversification, beyond which a firm's performance suffers (Markides, 1992, 1994). Since most of conglomerates have been over-diversified, refocusing should be associated with performance improvement (Comment & Jarrel, 1991). Our results also lend support to propositions derived from transaction-cost economists (Montgomery & Wernefelt, 1988), who contended that the relationship between diversification and its marginal benefits is a decreasing function. They maintain that the potential benefits from over-diversification are greatly outweighed by the inefficiencies incurred (Reed & Sharp, 1987). So, as firms diversify away from their core businesses, increasing governance costs (Bhide, 1990) lead toward weakened control (Hoskisson & Turk, 1990), and underutilized capacity (Casson, 1984) and marginalize the supposed advantages gained from diversification.

Second, we found a negative relationship between restructuring scope and changes in R&D intensity. Refocusers experienced substantially greater increases in R&D intensity than diversifiers. However, the relationship was asymmetric, a finding that is only partially consistent with previous studies showing the existence of a substitution relationship between diversification and a firm's expenditure on R&D (Baysingers & Hoskisson, 1989; Hoskisson & Johnson, 1992). So, refocusing may lead to an increase in R&D intensity as resources from sell-offs are redirected to investment in R&D. A reduction of scope may increase management's strategic control. In turn, strategic control may imply policies that emphasize a firm's long-term competitiveness (i.e., R&D) over short-term financial return. On the other hand, our study also demonstrated that an increase in diversification does not *necessarily* lead to a reduction in R&D expenditure. As Table 4 indicated, R&D intensity for the diversifiers in our sample remained virtually unchanged during the restructuring period.[2] We interpret that finding to mean that increased in diversified scope were paralleled by proportional increases in R&D spending. This interesting finding is contradictory to the substitution hypothesis, which predicts that firms finance diversification through reductions in R&D expenditure. Several possible reasons may explain the asymmetric relationship: For instance, innovations in takeover-financing methods during the 1980s enabled companies to make takeovers without using their own financial resources (Lipton & Steinberger, 1988). Or the turbulent operating environment during the 1980s demanded technological innovations and made radical change into a necessity (D'Aveni & Illinitch, 1992; Quinn, Doorley & Paquette, 1990). In addition, the 1980s brought a radical increase in the number of international competitors whose success was fueled by high R&D intensity and high flexibility (Jarillo, 1988). To sum up, large firms were *forced* to increase R&D expenditure in order to maintain competitiveness (Richeto, 1988). Similarly, increased diversification scope and size reduce top management employment risks. When top managers feel more secure about their jobs, they might become more willing to make riskier decisions such as increased investments in R&D. Not all corporate restructuring is restricted to acquisitions and divestitures. Diversification through internal ventures usually relies on innovations. Therefore, given the asset base, we would expect at least unchanged, if not increased, R&D intensity,

Third, our full model tried to test the influence of restructuring scale, the process dimension of corporate restructuring. Given the theoretical rationales of our paper, we expected to find confirmation for both predictions about relationships between restructuring scale and adjusted performance and changes in R&D intensity. Even though we obtained the predicted negative sign for the performance relationship, the empirical results were not statistically significant. The insignificant findings might be explained by our suspicions that restructuring might be a more multidimensional construct than we first envisioned. In addition to the assets acquired and divested, restructuring scale may also include dimensions such as the number of business units divested and acquired, percentage of sales divested and acquired, or time elements. Therefore, the measurements used in our study may not fully capture the domain of the restructuring scale. Alternatively, restructuring scale, as it was measured in our study, only involved change in firms' assets that were brought about by divestitures and acquisitions. This measurement excludes internal reconfigurations, such as the transfer of resources from peripheral business segments to core business,

[2] T-statistics indicated that the change in R&D intensity for the diversifers is not significantly different from zero at α=0.05 level.

downsizing, and quality improvement programs. Consequently, our findings should be interpreted with caution.

Another caveat that must be taken into account when considering our results is our method of determining the restructuring period. In the absence of publicly reported information about time spent restructuring—the number of years between the announcement of restructuring and the announcement that restructuring is completed – our approach of determining the restructuring period adopted by this study remains reasonable but debatable. These limitations notwithstanding, the results show the negative relationships between restructuring scope and performance and change in R&D intensity, consistent with our predictions and most previous literature.

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

The study examined the influence of corporate restructuring on performance and competitiveness. In comparison with other restructuring research, the current research is unique and contributes to the extant restructuring research in the following aspects.

First, as Bowman and Singh (1990) pointed out, the consequences of corporate restructuring have been rather under-explored. By extending previous research on post-restructuring consequences, including both short-term accounting performance and long-run competitiveness, our study makes a significant theoretical and empirical contribution.

Second, our research focused on changes in business portfolios rather than individual acquisitions or divestitures. More specifically, we studied a series of divestitures and acquisitions carried out in the context of portfolio restructuring, rather than individual divestment or acquisition events. Therefore, our study differs from conventional business-level research on acquisitions and divestitures. It also differs from previous restructuring research that only anchors on "de-diversification" (i.e., Markides, 1992, 1994; Hoskisson et al., 1992).

Third, this research did not treat corporate restructuring as a one-dimensional construct. Instead we distinguished between different restructuring strategies in terms of both scale and scope. Our approach asserts that both "content" and "process" dimension should be considered when the phenomenon of strategic change is researched. As a result, our study marked a significant departure from current research that narrowly focuses on restructuring intensity (i.e., Hoskisson et al., 1993) or changes in business diversification (Davis, Diekmann & Tinsley, 1994).

The insignificant findings about restructuring scale call for better theoretical understanding of how restructuring processes affect a firm's performance and long-term competitiveness. Overall, our statistical findings show that restructuring scale and scope do not account for as much variation in the dependent variables as we had originally hoped. The results lead us toward speculating that restructuring must be treated as a complex phenomenon – more complex than previous studies (including ours) have allowed for. It seems to us that a more complex construct and more multi-dimensional measurements will be needed for future studies.

Relying on archival data may prove inadequate in analyzing a complex process such as corporate restructuring. A better understanding of restructuring may require richer data-collection techniques, such as surveys. Qualitative research such as case studies, used in tandem with statistical data, also hold some promise for a fuller understanding of the restructuring process. So far, with the exception of studies by Hoskisson and his associates, little has been done in those directions. We think more must be done.

Our research has adopted the entropy measure of business diversity as validated by Palepu (1985). However, there is no precise way of measuring business diversity. A variety of restructuring studies have employed different measures such as are Rumelt's (1974) strategic categories and the number of businesses a firm operates. The inconsistencies in the measure of business diversity across different studies make the comparisons of the findings extremely difficult, if not impossible. Therefore, it is worthwhile to test the sensitivity of the proposed relationships affected by the different diversity measures.

Future research efforts could also be directed toward the determinants of corporate restructuring activities. Although we found that refocusers outperformed diversifiers in both performance (ROA) and competitiveness, our current study did not explain why some firms have chosen to increase their diversified scope while others preferred refocusing. The existing literature has proposed several frameworks. For example, environmental determinism contends that the recent corporate restructuring activities fit into a broad pattern of historical episodes, such as the relaxation of anti-trust enforcement and changes in competition and market structure. Meanwhile, agency theorists contend that firms' restructuring activities are strongly associated

with issues involving corporate governance. Additional theoretical development of the idea of "optimal diversification" offers another promising line of approach to this problem. Specifically, we need a sound theoretical basis and measurements for establishing where the optimal level lies. Without a clear specification of the "optimal level," we cannot test any ideas about "over-diversification" and "under-diversification.

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