THE JOURNAL OF FINANCE • VOL. LI, NO. 4 • SEPTEMBER 1996

The Value of Diversification During the Conglomerate Merger Wave

HENRI SERVAES*

ABSTRACT

The current trend toward corporate focus reverses the diversification trend of the late 1960s and early 1970s. This article examines the value of diversification when many corporations started to diversify. I find no evidence that diversified companies were valued at a premium over single segment firms during the 1960s and 1970s. On the contrary, there was a large diversification discount during the 1960s, but this discount declined to zero during the 1970s. Insider ownership was negatively related to diversification during the 1960s, but when the diversification discount declined, firms with high insider ownership were the first to diversify.

RECENT EVIDENCE INDICATES THAT companies are becoming more focused and that increasing focus leads to higher market valuations and stock returns (see Bhagat, Shleifer, and Vishny (1990), Liebeskind and Opler (1992), Kaplan and Weisbach (1992), Lichtenberg (1992), Lang and Stulz (1994), Berger and Ofek (1995), and Comment and Jarrell (1995)). Understanding why companies increase focus also requires an understanding of the forces that led to diversification in the first place.

Two sets of arguments are commonly used to explain why companies diversify. The first set argues that firms diversify to increase shareholder wealth. Several authors have discussed various aspects of diversification that can potentially increase shareholder wealth. Williamson (1970) suggests that firms diversify to overcome imperfections in external capital markets. If the information asymmetry between the firm and potential investors becomes too large, firms may decide to forego positive net present value (NPV) projects (Myers and Majluf (1984)). Through diversification, managers create internal capital markets, which are less prone to asymmetric information problems.[1] Lewellen (1971) argues that conglomerates can sustain higher levels of debt because corporate diversification reduces

* University of North Carolina at Chapel Hill. Part of this research was completed while the author was visiting the Graduate School of Business at the University of Chicago. I would like to thank Michael Barclay, David Denis, Ajay Khorana, John Matsusaka, Eli Ofek, Tim Opler, David Ravenscraft, René Stulz, Sigrid Vandemaele, Sunil Wahal, Marc Zenner, and seminar participants at the University of North Carolina at Chapel Hill, Tilburg University, and the NBER Summer Institute for helpful comments. Carl Ackermann, Amy Dittmar, Ajay Khorana, and Prakit Narongtanupon have provided excellent research assistance.

[1] McCutcheon (1995) examines this conjecture for conglomerates in the 1960s. Contrary to the internal capital markets argument, she finds that conglomerates are capital constrained, but that the firms they acquire are not.

earnings variability. If the tax shields of debt increase firm value, this argument predicts that conglomerate firms are more valuable than companies operating in a single industry. Recently, Shleifer and Vishny (1992) have also argued that conglomerates may have a higher debt capacity because in bad states of the world they can sell assets in those industries that suffer the least from liquidity problems. Finally, Teece (1980) argues that diversification leads to economics of scope.

The second set of arguments explains diversification as an outgrowth of the agency problems between managers and shareholders. Amihud and Lev (1981) argue that managers diversify to protect the value of their human capital, and Jensen (1986) suggests that companies diversify to increase the private benefits of managers. Amihud and Lev (1981) and Morck, Shleifer, and Vishny (1990) provide empirical support for these arguments. In a similar vein, Shleifer and Vishny (1989) suggest that managers diversify because they are better at managing assets in other industries and diversifying into those industries will make their skills more indispensable to the firm.

Bhide (1990) argues that because of economic, technological, and regulatory changes during the 1970s and 1980s, information asymmetries have become less of an issue in corporate financing and that the disadvantages of diversification have started to outweigh the benefits. For example, as pointed out by Stulz (1990), one of the drawbacks of reducing potential underinvestment is that it can lead to overinvestment. The cross-subsidization of divisions within a conglomerate gives divisional managers easy access to capital (Meyer, Milgrom, and Roberts (1992)), which may exacerbate the agency costs of free cash flow (Jensen (1986)). Proponents of conglomerate diversification implicitly assume that managers of conglomerates are better at monitoring the divisions than the external capital market and that these agency costs are not large enough to offset this benefit.

Arguments suggesting that the drawbacks of diversification have become more prominent during the 1980s are based on the notion that diversification was beneficial for shareholders when many firms started to diversify. But, with the exception of Matsusaka (1993), who finds positive bidder returns at the announcement of conglomerate acquisitions in the late 1960s and early 1970s, we have little evidence to indicate that this was the case.[2] This article examines the benefits of diversification when firms started to diversify, during the 1960s and early 1970s. During this time, corporate America went through the conglomerate merger wave. Ravenscraft and Scherer (1987) document that 36 percent of all the acquisitions during 1964–1972 and 32 percent of all acquisitions during 1973–1977 were of a

[2] See also Ravenscraft and Scherer (1987) and Wernerfelt and Montgomery (1988). Ravenscraft and Scherer document that conglomerate acquisitions during the 1960s were unsuccessful because they displayed poor post-merger profitability and were more likely to be divested than related acquisitions. Wernerfelt and Montgomery find that focus contributes positively to a firm's Q ratio for 247 companies in 1976. Kaplan and Weisbach (1992) also find that unrelated acquisitions are more likely to be divested than related acquisitions; however, they find little evidence to indicate that unrelated acquisitions were less successful than related acquisitions.

conglomerate nature. Did diversification lead to higher market values during this period, and if so, what were the sources of this valuation differential?

To address these questions, this article follows samples of firms from 1961 to 1976 (in three-year intervals) and examines whether the benefits of diversification outweigh the costs. Going back 20 to 30 years is important to gain a better understanding for what we observe today. We now know that diversification was perceived poorly by capital markets during the 1980s; the current trend toward corporate focus is consistent with this notion. But, was this also the case during the 1960s and 1970s when firms moved *toward* diversification? If diversification was perceived positively when it started, then it may be argued that the current wave of de-diversification is due to technological or other changes which reduce the benefits of diversification. If not, we are left with a puzzle as to why diversification occurred in the first place.

The findings of this article leave us with precisely this puzzle. I find no evidence that diversified firms are valued more than single segment firms in the 1960s and early 1970s; on the contrary, for several years diversified firms sell at a substantial discount when compared to single segments firms. This discount is large and significant over the 1961–1970 period, but it becomes small and insignificant in 1973–1976. These results hold after controlling for industry effects and for differences between diversified and undiversified firms in profitability, leverage, and investment policy. The largest increase in diversification takes place over the 1970–1976 period when the penalty imposed by capital markets is small. Thus, the firms that diversified at that time did not impose a cost on their shareholders.

The pattern of insider ownership over the sample period is also interesting, and it provides some clues that can explain the behavior of corporations. When diversified firms were selling at a discount to single segment firms, they also had lower insider ownership than single segment firms; but when the discount was eliminated, there was little difference in insider ownership between the two groups. These results suggest that insider ownership was an effective deterrent to diversification when it was costly to shareholders. But, when the cost to shareholders was negligible, the firms with high ownership were the first to diversify, possibly because insiders wanted to lower their exposure to firm-specific risk. This does not suggest, however, that agency costs caused the discount or led to the change in discount over time.

The remainder of this article is organized as follows. The next section describes the data collection procedure. Section II presents valuation results, and Section III examines whether other characteristics of diversified firms can explain the valuation results. Section IV contains time series results, and Section V compares the levels of insider ownership of diversified and nondiversified firms. The findings of this article are discussed and summarized in Section VI.

I. Data

To examine the costs and benefits of diversification, I gather samples of firms over the period 1961–1976. The year 1961 was chosen as the starting point because it precedes the start of the conglomerate merger wave. Ravenscraft and Scherer (1987) document that 18.4 percent of all acquisitions in the manufacturing industry were of a conglomerate nature during the period 1956–1963, whereas this fraction increased to over 30 percent in the following 12 years. The sample runs through 1976 because recent work on the benefits of diversification during the 1980s starts around that period. For example, Lang and Stulz (1994) choose 1978 as their starting point. Firms in the sample meet the following selection criteria:

(i) They are listed on COMPUSTAT for at least one of the following years: 1961, 1964, 1967, 1970, 1973, and 1976.

(ii) They have sufficient COMPUSTAT data available to compute Q ratios. This criterion excludes financial firms from the analysis because the Lindenberg and Ross (1981) algorithm cannot be used to compute the replacement value of these firms' assets.[3]

(iii) They are listed in Dun & Bradstreet's Million Dollar Directory [DB] in the year COMPUSTAT data are available.

I select all firms (including nonmanufacturing firms) whose name starts with A through D that meet these requirements. DB is employed to obtain information on the number of business segments operated by a firm. Each year DB lists up to six Standard Industrial Classification (SIC) codes for each firm; they are listed in order of importance and based on the number of segments for which each firm provides financial information. If two segments are in the same industry, however, DB assigns the same SIC code. If one segment spans two or more industries, DB assigns two or more SIC codes. The only size requirement imposed by DB is that a segment contributes at least 10 percent to the revenues of a company.

An examination of the four-digit SIC codes reported by DB indicates that a simple count of the number of SIC codes may not be a good representation of the degree of diversification by a company. For example, for Copperweld Corp, DB reports the following SIC codes in 1976: 3312, 3313, 3315, 3316, and 3351.[4] Clearly all business segments of Copperweld are related. For Chris-Craft Industries, on the other hand, the 1976 SIC codes are: 3732, 3731, 3519, 2821, 2299, and 4833.[5] A measure of diversification, based simply on the number of

[3] Q ratios are computed using the Lindenberg and Ross (1981) algorithm and the specific assumptions of Hall, Cummins, Laderman, and Mundy (1990). See also Perfect and Wiles (1994) for a comparison of different Q ratio algorithms.

[4] SIC 3312 is steel works, blast furnaces, and rolling mills; SIC 3313 is electrometallurgical products, except steel; SIC 3315 is steel wiredrawing and steel nails and spikes; SIC 3316 is cold-rolled steel sheet, strip, and bars; SIC 3351 is rolling, drawing, and extruding of copper.

[5] SIC 3732 is boat building and repairing; SIC 3731 is ship building and repairing; SIC 3519 is internal combustion engines, not elsewhere classified; SIC 2821 is plastics materials, synthetic

4-digit SIC codes would incorrectly lead to the inference that both companies are highly diversified. I therefore analyze SIC codes at the 2-digit level (see also Berger and Ofek (1995)). This level of aggregation ranks Copperweld at the single segment level, but assigns five 2-digit SIC codes to Chris-Craft.[6] Thus, all the analyses in the paper are based on the number of 2-digit SIC codes. I repeat all tests at the 3-digit and 4-digit level, with weaker results (not reported).

Panel A of Table I contains an overview of the sample and the level of diversification by year. The increase in diversification over time is striking. In 1961, 55 percent of the firms in my sample operate in a single segment, and only 8 percent of the firms operate in four segments or more. By 1976, the percentage of single segment firms in the sample declines to 28, and the percentage of firms operating in four or more segments increases to 30. This increase in diversification is not due to changes in sample composition. The pattern is similar when I use panel data for 218 companies with information available throughout the sample period. Panel B of Table I reports the average number of segments by year and presents pair-wise comparisons for adjacent 3-year periods. The average number of segments increases by more than 40 percent over the sample period (from 1.74 to 2.70) and, except for 1964, there is an increase in every year. Only two of the increases are significant, but this lack of significance is caused by changes in sample composition over time, as illustrated by the figures reported in the third row of Panel B. When only firms with data available for two consecutive periods are employed, the average number of segments increases each period, and four of the five increases are significant. These figures are generally consistent with prior evidence that corporate diversification increased substantially during the 1960s and the first half of the 1970s (Ravenscraft and Scherer (1987)).

Panel C of Table I compares single and multiple segment firms in terms of size, measured by the book value of assets. The distribution of firm size is very skewed; as a result, there are never significant differences in means between the two samples, but the median single segment firm is significantly smaller than the median multiple segment firm. The differences between the two groups in changes in firm size over two consecutive periods are never significant.

II. Valuation Results

In this section, I compare the Q ratios of multiple segment firms with those of single segment firms to gauge whether diversification was valuable during the time when it was fashionable. This approach is similar to that of Lang and

resins, and nonvulcanizable elastomers; SIC 2299 is textile goods, not elsewhere classified; SIC 4833 is television broadcasting stations.

[6] The management literature classifies a firm operating in several related 4-digit SIC code industries within the same 2-digit SIC code as a firm that has entered into related diversification. Unrelated diversification is defined as operating in several 2-digit SIC codes (see Palepu (1985)). Thus, the focus of this article is on the benefits of unrelated diversification.

Table I

Sample Distribution and Summary Statistics

Panel A: Percentage of Firms Operating in 1 through 6 Business Segments

Number of Segments	Years					
	1961	1964	1967	1970	1973	1976
1	54.5	55.2	53.2	51.2	35.8	28.4
2	26.3	25.8	24.7	22.9	28.8	22.2
3	11.3	12.2	13.6	13.5	16.7	19.7
4	6.0	5.4	5.8	7.2	10.5	15.4
5	1.5	1.4	2.3	4.0	7.4	10.2
6	0.4	0.0	0.5	1.1	0.8	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of firms	266	353	397	445	514	518

Panel B: Average number of segments per year and average change over each three year period. The p-value of a t-test of equality of the average change to zero is in parentheses. Same firms refers to the average change in the number of segments for firms with data available in two subsequent periods.

	Years					
	1961	1964	1967	1970	1973	1976
Average no. of segments	1.74	1.73	1.81	1.92	2.27	2.70
Change from previous three-year period	NA	−0.01 (0.83)	0.09 (0.27)	0.11 (0.14)	0.35 (0.00)	0.43 (0.00)
Change from previous three-year period: same firms	NA	0.04 (0.18)	0.08 (0.00)	0.13 (0.00)	0.38 (0.00)	0.45 (0.00)

Panel C: Mean and median book value of total assets for firms operating in one segment and firms operating in two or more segments. Equality of means is tested using a standard t-test. Equality of medians is tested using a rank-sum test. p-values are in parentheses.

	Single segment firms			Multiple segment firms			Mean Difference (p-value)	Median Difference (p-value)
Years	Mean	Median	N	Mean	Median	N		
1961	229.5	49.2	145	214.4	59.1	121	15.1 (0.79)	−9.9 (0.46)
1964	216.3	43.7	195	212.6	61.8	158	3.7 (0.94)	−18.1 (0.02)
1967	263.2	43.6	211	273.6	82.5	186	−10.4 (0.86)	−38.9 (0.00)
1970	328.2	55.0	228	328.5	98.4	210	−0.3 (0.99)	−43.4 (0.01)
1973	402.2	58.7	184	389.2	99.0	330	13.0 (0.88)	−40.3 (0.00)
1976	525.1	77.1	147	527.1	115.1	370	−2.0 (0.99)	−38.0 (0.03)

Stulz (1994). Evidence using the sales multiplier approach (using market to sales ratios) proposed by Berger and Ofek (1995) is also presented. The mean and median Q ratios of multiple and single segments firms are compared in Table II. The average Q ratios of single segment firms are significantly higher during the first four years of the sample period. The difference ranges from −0.34 in 1970 to −0.73 in 1967. The median Q ratios are also larger for single

Table II

Average and Median Q Ratios for Single Segment and Multiple Segment Firms

Equality of means is tested using a standard t-test. Equality of medians is tested using a rank-sum test. p-values are in parentheses. Single segment firms are firms that operate in one two-digit Standard Industrial Classification (SIC) code industry. Multiple segment firms are firms that operate in two or more two-digit SIC code industries.

	Single Segment Firms			Multiple Segment Firms			Difference	
Years	Mean	Median	N	Mean	Median	N	Mean (p-val)	Median (p-val)
1961	1.77	1.31	145	1.37	1.21	121	−0.40 (0.01)	−0.10 (0.01)
1964	1.68	1.27	195	1.30	1.19	158	−0.38 (0.06)	−0.08 (0.11)
1967	2.18	1.45	211	1.59	1.40	186	−0.73 (0.00)	−0.05 (0.08)
1970	1.48	1.06	228	1.14	0.99	217	−0.34 (0.00)	−0.07 (0.03)
1973	1.03	0.76	184	0.99	0.79	330	−0.04 (0.55)	−0.03 (0.85)
1976	0.97	0.76	147	0.93	0.78	371	−0.04 (0.67)	0.02 (0.57)

segment firms, but the difference is more modest, and significant in only three of the first four years. The difference ranges from −0.05 in 1967 to −0.10 in 1961. For 1973 and 1976, both tests report similar findings of no diversification effect on Q. Thus, whereas diversification was never seen by the market as beneficial, the diversification penalty declined to zero over time.

The results of Table II may be spurious, because it is possible that diversified firms operate in low Q industries, whereas single segment firms operate in growth industries with high Q ratios (Lang and Stulz (1994)). It is therefore possible that the diversification penalty in the early years of the sample is caused by industry effects. To address this concern, Lang and Stulz create a pure-play comparison firm for each diversified firm. Each segment of a diversified firm is assigned the average Q ratio of all single segment firms operating in the industry with the same SIC code as that segment. Lang and Stulz then compute the replacement value weighted average of these Q ratios to obtain a pure-play Q. To ascertain the cost or benefit of diversification, this pure play ratio can then be compared to the firm's actual Q ratio. Unfortunately, this approach cannot be employed for my sample, because the weight of each segment in multiple segment firms is unknown. If DB lists two SIC codes, these segments can make up 90 percent and 10 percent of the firm's business or, at the other extreme, 50 percent each.

To overcome these drawbacks, I use two approaches. First, I adjust for the firm's first industry listed in DB (at the 2-digit level), using the following procedure: for each industry, I compute the mean and median Q ratio for those firms in the sample that operate exclusively in that industry, and I subtract this industry Q from the Q ratio of the diversified firms that list that industry

as their primary industry.[7] For example, if DB lists 34, 26, and 29 as a firm's SIC codes, this approach adjusts this firm's Q ratio by either the mean or median Q ratio of all single segment firms that have SIC 34. A negative industry-adjusted Q would suggest that diversification hurts shareholders and that this is not an industry effect. This approach may incorrectly show that diversified firms have low Qs, however, if the main industry of diversified firms (34 in the above example) is the one with the highest Q ratio. As an alternative approach, I adjust the Q ratios of diversified firms for the equally weighted average Q ratio of all its divisions. In the above example, this approach would adjust the firm's Q ratio for the equally-weighted average of the three industry Q ratios of firms that operate exclusively in industries 34, 26, and 29. The drawback of this approach is that it attaches too much weight to industries listed further down the list of SIC codes by DB. Since the first method attaches too much weight to a firm's main industry and the second method attaches too much weight to the other industries, a combination of both approaches mitigates the potential biases.[8]

Panel A of Table III lists the mean and median industry-adjusted Q ratios for diversified firms (>1 segment) over the sample period for both industry adjustments. Mean industry-adjusted Q ratios employ the industry mean to make adjustments; median industry-adjusted Q ratios employ the industry median. This approach insures that the industry-adjusted means and medians are equal to zero for single segment firms. The qualitative nature of the results is similar to those reported in Table II, but there are a number of differences in the magnitude of the effects. Diversification hurts shareholders in the 1961–1970 period, albeit that the 1964 medians are not significantly different from zero. During this four-year period, mean industry-adjusted Q ratios range from -0.33 (when the average of all industries is used in 1964) to -0.77 (when the primary industry is used in 1967). The median industry-adjusted Q ratios are somewhat smaller in absolute terms for these years (they range from -0.02 to -0.35), but the inferences are similar. There is little evidence of a diversification penalty during the other two years: 1973 and 1976. Most of the industry-adjusted Q ratios are not significantly different from zero.

Panel B of Table III compares the 1961–1970 and 1973–1976 periods. The diversification discount is large and significant during the first period, ranging from -0.59 (mean primary industry adjustment) to -0.14 (median primary industry adjustment). On the contrary, only one of the industry-adjusted Q ratios is significantly different from zero during the second period. The difference between the two periods is substantial and highly significant.

[7] An alternative to adjusting a firm's Q ratio by its industry mean or median is to compute the percentage deviation from the industry mean or median. This could lead to different inferences if the general level of Q ratios in the sample changes over time. I have repeated all my tests using the percentage deviation, without affecting the nature of the results.

[8] It is not possible to construct industry adjustments for all firms in the sample, because there are no single segment firms operating in some industries. For the equally weighted average adjustment, this problem is more severe, since single segment industry data are required for each industry the firm is operating in.

Table III

Industry-Adjusted Q Ratios for Multiple Segment Firms

Mean (median) primary industry-adjusted Q ratios are adjusted for the mean (median) Q ratio of all single segment firms in the sample that operate in the same industry as the firm's primary industry (as listed in Dun & Bradstreet). Q ratios adjusted by weighted average of all industries are adjusted by the equally weighted average of all single segment firms in the sample that operate in all the firm's industries (as listed in Dun & Bradstreet). N refers to the number of observations. There are fewer observations in the weighted average adjustment, because industry data are required for all industries in which the firm operates. The p-values of tests of equality of the mean and median industry-adjusted Q ratios to zero are in parentheses.

	Primary Industry-Adjusted			Adjusted by Weighted Average of all Industries		
Years	Mean	Median	N	Mean	Median	N
			Panel A: Yearly Data			
1961	−0.44 (0.00)	−0.34 (0.00)	112	−0.50 (0.00)	−0.35 (0.00)	94
1964	−0.51 (0.00)	−0.02 (0.42)	143	−0.33 (0.00)	−0.10 (0.22)	123
1967	−0.77 (0.00)	−0.11 (0.01)	166	−0.64 (0.00)	−0.13 (0.02)	144
1970	−0.60 (0.00)	−0.18 (0.00)	186	−0.53 (0.00)	−0.23 (0.00)	157
1973	−0.08 (0.16)	−0.02 (0.49)	305	−0.06 (0.27)	−0.05 (0.09)	256
1976	−0.05 (0.43)	−0.04 (0.11)	312	−0.05 (0.49)	−0.07 (0.00)	266
			Panel B: Subperiod Data and Difference Tests			
1961–1970	−0.59 (0.00)	−0.14 (0.00)	607	−0.52 (0.00)	−0.19 (0.00)	518
1973–1976	−0.06 (0.13)	−0.03 (0.42)	617	−0.06 (0.22)	−0.06 (0.00)	522
Difference	0.53 (0.00)	0.09 (0.00)		0.46 (0.00)	0.13 (0.00)	

In addition to making industry adjustments, it is also important to control for factors that affect within industry variation in Q. Lang and Stulz include three control variables: (i) firm size; (ii) a dummy, equal to one if the firm pays dividends, and zero otherwise; and (iii) the ratio of research and development expenses to total assets. Size is included because there may be a relation between firm size and Q (see Morck, Shleifer, and Vishny (1988)). Since more diversified firms are also larger (Table I, Panel C), the diversification effect could actually be a size effect.

The dividend dummy is included to capture access to capital markets. If single segment firms forego projects because they are unable to procure the necessary financing, their Q ratio may remain high, because only the projects with the highest NPVs are taken.[9] This could be a problem during the early years of the sample, when the unadjusted Q ratios of single segment firms are very high. If firms pay a dividend, however, it is not likely that they are capital-constrained, because they could simply cut the dividend to increase the

[9] This assumes, of course, that investors do not know that the funds required to take the projects are unavailable, or, alternatively, that these projects can be taken in the future, when more funds become available.

level of investment. If this argument is correct, the coefficient of the dividend dummy should be negative when the average Q of single segment firms is above one. Lang and Stulz (1994) also control for research and development expenses because R&D capital is an intangible, which may increase firm value without affecting the replacement value of the assets.

Similar to Lang and Stulz (1994), I control for size and dividend payments, but I am unable to include R&D expenditures in the full sample regressions, because this data item is available on COMPUSTAT only for a limited number of firms.[10]

Panel A of Table IV reports the coefficient and p-value of the diversification dummy (b_3) in the following regression, which is estimated each year:

$$Q \text{ ratio} = a + b_1(\text{Assets}) + b_2(\text{Dividend dummy}) + b_3(\text{Diversification dummy}) + e \quad (1)$$

The diversification dummy is an indicator variable set equal to one if the firm operates in two or more industries, and zero otherwise. Three Q ratios are used: (i) the raw Q ratio; (ii) the Q ratio adjusted for the firm's primary industry; and (iii) the Q ratio adjusted for the equally weighted average of all of the firm's 2-digit SIC codes. Adding the control variables does not have a major effect on the results reported in Tables II and III. If anything, the time-series pattern in the diversification discount becomes more prominent. There is a substantial discount in the first four years and only a small discount during the last two years. In fact, the discount is smallest in 1973 and starts to widen again in 1976. Interestingly, as illustrated in columns (2) and (3) of Panel A, in each year the discount increases when industry adjustments are made, which implies that diversified firms actually operate in high Q industries. For example, the coefficient on the diversification dummy is -0.34 in 1970, when the raw Q ratio is employed as a measure of value; when Q is adjusted for the firm's primary industry, the coefficient decreases to -0.59, and when Q is adjusted for the average of all industries the coefficient declines to -0.58.

The signs of the control variables are not consistent over time or across Q adjustments (not reported in the table). Firm size, as proxied by total assets, always has a negative sign, but it is only significant in 1967 and 1970 for some specifications. The coefficient of the dividend dummy is significantly negative only in 1967, when the raw Q ratio is used as the dependent variable. It is not significantly different from zero in all other specifications. I also add an additional control variable to the regression models to capture the effect of frequent acquirers on Q. An indicator variable is set equal to one if the firm

[10] Availability of R&D expenditures varies over time. It is available for about half the sample starting in 1970. When the ratio of R&D to assets is included, the effect of diversification does not change significantly. I also include the ratio of advertising expenditures to assets, when available (see Morck, Shleifer, and Vishny (1988)), without affecting the results. Because the sample size is greatly reduced when both variables are included, these results are not presented in a table.

Table IV

Cross-Sectional Regression Models of Q Ratios on Measures of Diversification and Control Variables

Two cross-sectional regression models are estimated:

(1) Q ratio = $a + b_1$ (Assets) + b_2 (Dividend dummy) + b_3 (Diversification dummy) + e

(2) Q ratio = $a + b_1$ (Assets) + b_2 (Dividend dummy) + b_3 (Operates in two or more segments) + b_4 (Operates in three or more segments) + b_5 (Operates in four or more segments) + b_6 (Operates in five or more segments) + e

Only the coefficients on the measures of diversification are reported. Three Q ratios are used: (i) the raw Q ratio; (ii) the Q ratio adjusted for the firm's primary industry; (iii) the Q ratio adjusted for the equally weighted average of all of the firm's industries. The p-value of the t-test of equality of the coefficient to zero is in parentheses. Assets is the book value of assets. Dividend dummy is an indicator variable set equal to one if the firms pays dividends, and zero otherwise. Diversification dummy is an indicator variable set equal to one if the firm operates in two or more 2-digit SIC code industries. Number of segments is the number of different two-digit SIC codes in which the firm operates. Operates in n or more segments is an indicator variable, equal to one if the firm operates in n or more segments and zero otherwise. Model (2) is only estimated for the Q ratio adjusted for the firm's primary industry.

Years	Raw Q (1)	Q Ratio Adjusted for the Firm's Primary Industry (2)	Q Ratio Adjusted for the Equally-Weighted Average of all the Firm's Industries (3)
Panel A: Estimate of the Coefficient of the Diversification Dummy (b_3) in Regression (1)			
1961	−0.40 (0.00)	−0.51 (0.00)	−0.52 (0.00)
1964	−0.38 (0.06)	−0.41 (0.06)	−0.38 (0.10)
1967	−0.49 (0.03)	−0.68 (0.00)	−0.52 (0.00)
1970	−0.34 (0.00)	−0.59 (0.00)	−0.58 (0.00)
1973	−0.05 (0.53)	−0.09 (0.28)	−0.06 (0.48)
1976	−0.09 (0.07)	−0.10 (0.04)	−0.10 (0.04)
Panel B: Estimate of the Coefficient of the Diversification Dummy (b_3) in Regression (1) Estimated for the 1961–1970 and 1973–1976 Periods			
1961–1970	−0.43 (0.00)	−0.56 (0.00)	−0.51 (0.00)
1973–1976	−0.07 (0.11)	−0.10 (0.04)	−0.09 (0.08)
Difference	0.36 (0.00)	0.46 (0.00)	0.42 (0.00)

Years	Two or More Segments (1)	Three or More Segments (2)	Four or More Segments (3)	Five or More Segments (4) Regression (2)
Panel C: Estimate of the "Operates in n or More Segments" Coefficients (b_3 through b_6) in				
1961	−0.47 (0.01)	0.01 (0.99)	−0.55 (0.16)	1.28 (0.04)
1964	−0.42 (0.10)	0.08 (0.84)	−0.24 (0.67)	0.60 (0.63)
1967	−0.63 (0.01)	0.03 (0.93)	−0.49 (0.31)	0.51 (0.54)
1970	−0.63 (0.00)	0.07 (0.75)	0.15 (0.62)	−0.39 (0.38)
1973	0.02 (0.82)	−0.20 (0.10)	0.02 (0.91)	−0.06 (0.75)
1976	0.00 (0.96)	−0.25 (0.00)	0.15 (0.08)	0.01 (0.90)

operates in the same 4-digit SIC codes as at the end of the previous three year period (these data are not available for 1961). If a firm makes an acquisition for cash, the basis of the assets of the target firm is increased to reflect the price paid in the acquisition, thereby forcing the Q ratio toward unity. If diversified firms are more frequent acquirers, this may explain their lower Q ratio in the early years of the sample. However, if the number of SIC codes does not change over the previous 3-year period, this effect is less likely to be important. Adding this variable does not materially affect the coefficient of the diversification dummy.[11] Panel B of Table IV tests for differences between the 1961–1970 and 1973–1976 periods using all three Q measures. The differences range from 0.36 to 0.46, and they are always significantly different from zero.

Panel C of Table IV analyzes whether there is a difference between the valuation of firms operating in two segments and firms operating in more than two segments. Separate indicator variables are included in the model to capture the effect on corporate value of operating in i or more segments, where i goes from two to five. For the sake of brevity, I only report the results using the primary industry-adjusted Q ratio as a measure of value, but using the raw Q or the average industry-adjusted Q ratio leads to similar inferences. Column (1) illustrates that there is a substantial valuation discount in the 1961–1970 period for firms that operate in two or more segments. However, increasing the number of segments beyond two in these years does not lead to a further decline in value. Only one of the 12 coefficients in columns (2) through (4) over 1961–1970 is significant at the 5 percent level. For 1973 and 1976 there is no evidence of a discount when firms operate in two or more segments, but weak evidence of a decline in Q when moving from two to three segments and beyond. Overall, though, the lack of significance for most of the coefficients in columns two to four suggests that there is little difference between the values of firms that operate in two and firms that operate in more than two industries. I therefore focus on the distinction between single and multiple segment firms in the remainder of the paper.

The absence of a monotonic relation between the extent of diversification and firm value may be a cause for concern. Why does additional diversification beyond two segments not cause a further decline in corporate value? One possibility is that inefficient cross-subsidization starts with two divisions and does not get much worse when more divisions are added. Another possibility is that the two segment cut-off captures vertical integration, which is unrelated to diversification. To examine this possibility I eliminate firms if any of their SIC codes exceed 3999 (this procedure eliminates transportation and communication companies, utilities, wholesalers, retailers, and service corporations)

[11] To shed more light on whether single segment firms are more capital constrained over the sample period, which may lead to higher Q ratios, I also examine what fraction of the firms in the sample pay dividends. There is never a significant difference between the two samples in the fraction of dividend paying firms. This result remains unchanged when I control for the level of profitability in a logit model.

and repeat all my tests. The results are not significantly different when these firms are removed.

Up to this point, all estimates of corporate value are based on Q ratios. One reason for concern about the use of Q as measure of value is that two of the components of Q, the market value of debt and the replacement value of the firm's assets, have to be estimated. There is no reason to believe that these estimates are systematically biased, but it is nevertheless useful to examine the sensitivity of my results to the use of alternative valuation measures.[12] Berger and Ofek (1995) propose two alternatives: (i) market to book ratios, and (ii) market to sales ratios, and I employ these measures to verify the robustness of my results. In both instances the market value of the firm is computed as the market value of equity plus the book value of debt. The average correlation coefficient between Q and the market to book ratio is 0.97 for the firms in my sample. It is therefore not surprising that my results are virtually identical using this approach, and these results are not reported in a table.

The correlation between Q and the market to sales ratio is only 0.39, however, this makes a re-examination of the valuation results using this measure more warranted. Table V presents the results of such an examination. Columns (1) and (2) present mean and median primary industry-adjusted market to sales ratios for firms that operate in two or more segments. They are negative for all years, and significant at the 5 percent level for the first four years. Thus, these results are consistent with those that use Q as a value measure. Column (3) contains the coefficient on the diversification dummy from the following cross-sectional regression:

$$\text{Primary industry-adjusted market to sales ratio} = a + b_1(\text{Assets}) \quad (2)$$
$$+ b_2(\text{Dividend dummy}) + b_3(\text{Diversification dummy}) + e$$

This model corresponds to the second regression reported in Panel A of Table IV. The coefficients are negative and significant for all years, but they are much smaller in 1973 and 1976 than in the first four years. Also, when market to sales ratios above 25 are eliminated, the coefficients in the last two years are less negative and no longer significant. Hence, the analyses of Table V show that my results are robust with respect to the use of an alternative valuation measure.

Another reason for concern stems from the data sources and sample selection procedure employed in this paper. The articles that study diversification in the 1980s (Liebeskind and Opler (1992), Lang and Stulz (1994), Berger and Ofek (1995), and Comment and Jarrell (1995)) use large samples of companies

[12] Q is also often used as a measure of growth opportunities. This interpretation of Q would suggest that single segment firms have better growth prospects than multiple segment firms during the period 1961–1970. Such an interpretation is not dramatically different from a corporate value interpretation. Firms with better growth prospects should also be more valuable. It is nevertheless useful to examine whether my results are robust to alternative valuation specifications.

Table V

Industry-Adjusted Market to Sales Ratios of Diversified Firms and Cross-Sectional Regression Models of the Market to Sales Ratio on Measures of Diversification and Control Variables

The market value of the firm is computed as the market value of equity plus the book value of debt. Mean (median) primary industry-adjusted market to sales ratios are adjusted for the mean (median) market to sales ratio of all single segment firms in the sample that operate in the same industry as the firm's primary industry (as listed in Dun & Bradstreet). The p-values of tests of equality of the mean and median industry-adjusted market to sales ratios are in parentheses. Column (3) reports the coefficient (and p-value) of the diversification dummy (b_3) from the following cross-sectional regression:

Primary industry-adjusted market to sales ratio

$$= a + b_1(\text{Assets}) + b_2(\text{Dividend dummy}) + b_3(\text{Diversification dummy}) + e$$

Assets is the book value of total assets. Dividend dummy is an indicator variable set equal to one if the firm pays a dividend, and zero otherwise. Diversification dummy is an indicator variable set equal to one if the firm operates in two or more industries, and zero otherwise.

	Primary Industry-Adjusted		
Years	Mean (1)	Median (2)	Regression Model Results (3)
1961	−0.64 (0.00)	−0.31 (0.00)	−0.70 (0.00)
1964	−0.55 (0.00)	−0.16 (0.00)	−0.54 (0.00)
1967	−1.17 (0.00)	−0.24 (0.00)	−1.21 (0.00)
1970	−0.96 (0.00)	−0.14 (0.00)	−0.81 (0.00)
1973	−0.32 (0.00)	−0.04 (0.27)	−0.22 (0.05)
1976	−0.20 (0.00)	−0.04 (0.09)	−0.22 (0.01)

and employ data on the exact size of each division. This article uses a smaller sample of companies, and for the time period examined, there are no data available on the size of a firm's divisions. It is useful to examine whether my data sources applied to more recent data confirm the results of these papers. To answer this question, I gather data on 491 firms in 1979 that meet the sample selection criteria listed in Section 2. This allows for a direct comparison of my results with those of Lang and Stulz (1994) who start their analysis in 1978. The results of the analysis using 1979 data are presented in Table VI. The average (median) Q ratio of single segment firms in my sample is 1.01 (0.82). For multiple segment firms, the average (median) Q ratio is 0.91 (0.78). The mean difference between the two groups is significant at the 4 percent level, but the medians are not significantly different from each other. When I make an adjustment for the firms' primary industry (column (4)), the mean industry-adjusted Q is −0.17 (p-value 0.00), and the median industry-adjusted Q is −0.07 (p-value 0.00). Finally, using a regression framework, similar to Panel A of Table IV, with the primary industry-adjusted Q ratio as the dependent variable, the diversification discount is −0.16 (p-value 0.00). Lang and Stulz (1994) report a valuation discount of 0.15 in their regression model for 1979. The similarity between these two figures is comforting and

Table VI

Analysis of the Value of Diversification for 1979

The first two columns present mean and median Q ratios of single and multiple segment firms. Single segment firms are firms that operate in one two-digit Standard Industrial Classification (SIC) code industry. Multiple segment firms are firms that operate in two or more two-digit SIC code industries. The third column presents the difference between single and multiple segment firms. Equality of means is tested using a standard t-test. Equality of medians is tested using a rank-sum test. Mean (median) primary industry-adjusted Q ratios (column four) are adjusted for the mean (median) Q ratio of all single segment firms in the sample that operate in the same industry as the firm's primary industry (as listed in Dun & Bradstreet). The coefficient on the diversification dummy (column five) is b_3 obtained from the following cross-sectional regression: Primary industry adjusted Q ratio = $a + b_1$ (Assets) + b_2 (Dividend dummy) + b_3 (Diversification dummy) + e.

	Single Segment Firms (1)	Multiple Segment Firms (2)	Difference (p-Value) (3)	Primary Industry Adjusted (p-Value) (4)	Coefficient on Diversification Dummy (p-Value) (5)
N	132	359		309	
Mean	1.01	0.91	0.10 (0.04)	−0.17 (0.00)	−0.16 (0.00)
Median	0.82	0.78	0.04 (0.89)	−0.07 (0.00)	

suggests that it is fair to compare the time series pattern of the valuation discount across the two papers.

Overall, the valuation results provide no evidence to indicate that diversification benefits shareholders. As such, there does not seem to be an economic rationale for the consistent increase in diversification over the sample period. One possible motive for this trend is that managers obtain private benefits from diversification; during the early part of the sample period, however, these benefits may have been too small to outweigh the huge penalty imposed by the stock market. But, as the costs declined over time, more managers decided to diversify. This interpretation is consistent with the evidence presented in Table I. The increase in diversification was relatively small during the 1961–1970 period, when the diversification discount was large; the average number of segments per firm increased by 0.18 (from 1.74 to 1.92) over this period. When the diversification discount declined in 1973 and 1976, the average number of segments increased by 0.78 (from 1.92 to 2.70). Of course, this motive does not explain why diversified firms did not increase their focus during the early part of the sample period. In addition, it does not suggest that managers imposed substantial costs on their shareholders by diversifying over time, because the relation between the level and the cost of diversification is negative. When diversification peaked, the diversification penalty was indistinguishable from zero.

In the next section, I examine whether other characteristics of diversified firms over the sample period can explain the change in the diversification discount.

III. Why Does the Diversification Discount Change Over Time?

Three factors can potentially explain the valuation discount of diversified firms in the first four sample years and the change in the discount over time: profitability, capital structure, and investment policy.

Firms that have low profitability are likely to trade at a discount to similar firms with higher levels of profitability if this trend is expected to continue. Thus, if diversified firms are systematically less profitable than single segment firms, and if this difference changes over time, it is possible that the trend in relative profitability can explain the trend in valuation. Differences in capital structure can also lead to valuation differences if leverage and firm value are related. Finally, corporate value can be related to a firm's investment level. As suggested by Meyer, Milgrom, and Roberts (1992), firms operating in more than one business unit may overinvest because the profits of units with positive cash flows are used to finance poor investments in units with negative cash flows (see also Jensen (1986) and Stulz (1990) and, for empirical evidence, Berger and Ofek (1995)). This could lead to a decline in firm value. Alternatively, diversified firms may be able to invest more because they create an internal capital market (Williamson (1970)).

To examine whether profitability, leverage, and investment policy can explain the level and pattern of the diversification discount, I re-estimate the regression models presented in Panel A of Table IV, but I add combinations of these three variables as explanatory variables. If the diversification dummy remains significant after adding these variables, then they cannot completely explain the valuation discount.

Profitability is measured as operating return on sales. I use operating income to abstract from the level of capital expenditures (which affects depreciation) and leverage (which affects interest payments). Leverage is computed as long-term debt divided by the book value of assets; and the level of investment is computed as capital expenditures divided by the book value of assets. One problem with capital expenditures is that this data item is not reported systematically for all firms on COMPUSTAT over the sample period, with a lot of the observations missing in the first three years.

Table VII reports the results of a representative subset of these regression models. Because of missing observations on capital expenditures, the investment ratio is not included in the presented models. The investment ratio is generally not significant when added to the models, and it does not affect the other coefficients. When the industry-adjusted Q ratio is employed as the dependent variable, I also make a similar adjustment to the profitability and leverage measures.[13] In general, there is a positive relation between profitability and value and a negative relation between leverage and value. The

[13] Tables that compare profitability, leverage, and capital expenditures of multiple and single segment firms are available from the author upon request. In general, the differences in these variables between single and multiple segment firms are small, and their time series pattern does not mimic the pattern of the diversification discount. Return on sales is higher for single segment firms, but there is no difference between the two groups in return on assets. This confirms the

Table VII

Cross-Sectional Regression of *Q* Ratios on Measures of Diversification, Profitability, Leverage, and Control Variables

Estimated regression model:

$$Q \text{ ratio} = a + b_1 \text{ (Assets)} + b_2 \text{ (Dividend dummy)} + b_3 \text{ (Diversification dummy)} + b_4 \text{ (Return on sales)} + b_5 \text{ (Leverage ratio)} + e$$

Only b_3, b_4, and b_5 are reported. Return on sales is computed as the ratio of operating income and sales. Leverage is computed as the ratio of long-term debt and total assets. When the *Q* ratio is adjusted by the firm's primary industry median, the profitability and leverage measures are similarly adjusted. When the *Q* ratio is adjusted by the weighted average of all the firm's industries, the profitability and leverage measures are similarly adjusted. *p*-values of *t*-tests of equality of the coefficient to zero are in parentheses.

	Raw *Q*			*Q* Ratio Adjusted for the Firm's Primary Industry			*Q* Ratio Adjusted for the Equally-Weighted Average of all the Firm's Industries		
Year	b_3	b_4	b_5	b_3	b_4	b_5	b_3	b_4	b_5
1961	−0.44 (0.00)	0.59 (0.18)	−1.74 (0.01)	−0.45 (0.00)	2.74 (0.00)	−0.83 (0.30)	−0.45 (0.00)	2.60 (0.00)	−0.59 (0.50)
1964	−0.46 (0.03)	−0.73 (0.44)	−1.52 (0.04)	−0.43 (0.04)	−2.50 (0.02)	−2.19 (0.01)	−0.46 (0.04)	−4.28 (0.00)	−2.63 (0.01)
1967	−0.48 (0.01)	2.40 (0.00)	−3.62 (0.00)	−0.55 (0.00)	3.30 (0.00)	−1.41 (0.07)	−0.38 (0.04)	4.72 (0.00)	−1.56 (0.05)
1970	−0.31 (0.00)	1.88 (0.00)	−2.22 (0.00)	−0.51 (0.00)	0.29 (0.60)	−2.26 (0.00)	−0.52 (0.00)	0.89 (0.11)	−1.85 (0.00)
1973	0.02 (0.74)	2.13 (0.00)	−1.84 (0.00)	−0.04 (0.64)	2.74 (0.00)	−1.44 (0.00)	0.04 (0.65)	2.63 (0.00)	−1.67 (0.00)
1976	−0.05 (0.25)	1.18 (0.00)	−1.14 (0.00)	−0.06 (0.19)	0.80 (0.00)	−0.85 (0.00)	−0.09 (0.07)	2.52 (0.00)	−0.55 (0.00)

effects are fairly consistent across time periods and regression models, except for 1964, when there is a negative and significant relation between profitability and corporate value in two of the three specifications.[14] In terms of the valuation discount, there are few differences between the models reported in Table VII and those reported in Table IV, which do not control for profitability or leverage. Thus, differences between single and multiple segment firms in terms of capital structure and profitability cannot explain the pattern in the diversification discount over the sample period.

I also examine whether the betas of single segment firms and multiple segment firms differ (not reported in a table). If single segment firms have higher betas, they are more likely to have suffered from the stock market decline in the early 70s. This could potentially explain part of the decline in the diversification discount over time. Betas are obtained from the daily Center for Research in Security Prices (CRSP) Tapes (substituting 1962 for 1961 since the daily tapes start in 1962). There is no difference, however, in the betas of single and multiple segment firms during the first four years. Multiple segment firms have significantly larger betas in 1973 and 1976.

IV. Time Series Analysis

The discussion in the previous section is consistent with the conjecture that diversification causes the valuation discount. There is an alternative interpretation for these results, however. It is possible that firms with low valuations decide to diversify in an attempt to improve performance. Thus, diversification may just be an outgrowth of poor performance, not the cause (see also Lang and Stulz (1994)).

To investigate this possibility, I classify firms into four groups each year: (i) firms that operate in one segment in the current and the next period; (ii) firms that operate in more than one segment in the current and the next period; (iii) firms that operate in one segment in the current period, but in more than one segment in the next period; and (iv) firms that operate in more than one segment in the current period, but in only one segment in the next period. I define dummy variables for groups (ii) through (iv) and use these dummies as explanatory variables in several cross-sectional regressions, where the different valuation measures discussed previously are the dependent variables. In addition, I include the control variables (total assets and a dividend dummy), as specified in equation (1).

The results using the primary industry-adjusted Q ratio as the dependent variable are reported in Table VIII. The inferences are similar when the raw Q ratio or the Q ratio adjusted for the average of all industries is employed. The coefficients in the table represent the difference in valuation between the

finding of Table VII that the diversification penalty remains substantial during the first four sample years after controlling for profitability and leverage.

[14] It turns out that the negative effect is caused by one firm with extremely low profitability. Removing that firm from the sample reverses the sign on profitability, but it has no substantial effect on the coefficient of the diversification dummy.

Table VIII

Cross-Sectional Regression of Primary Industry-Adjusted Q Ratios on Measures of the Level and the Change in Diversification Over Time

Estimated regression model:

Primary industry-adjusted Q =

$$a + b_1 \text{ (Firm remains diversified)} + b_2 \text{ (Firm diversifies next period)} +$$

$$b_3 \text{ (Firm focuses next period)} + b_4 \text{ (Assets)} + b_5 \text{ (Dividend dummy)} + e$$

Only b_1, b_2, and b_3 are reported. "Firm remains diversified" is an indicator variable set equal to one if the firm operates in two or more industries during both the current and the next period. "Firm diversifies next period" is an indicator variable set equal to one if the firm operates in one industry in the current period and more than one industry in the next period. "Firm focuses next period" is a dummy variable set equal to one if the firm operates in two or more industries in the current period and in one industry in the next period. p-values of t-tests of equality of the coefficients to zero are in parentheses.

Years	Firm Remains Diversified (1)	Firm Diversifies Next Period (2)	Firm Focuses Next Period (3)
1961	−0.57 (0.00)	−0.39 (0.28)	−0.40 (0.47)
1964	−0.25 (0.02)	−0.01 (0.97)	−0.19 (0.67)
1967	−0.72 (0.00)	−0.07 (0.87)	−0.23 (0.75)
1970	−0.54 (0.00)	0.12 (0.52)	−0.88 (0.00)
1973	−0.15 (0.15)	−0.13 (0.40)	0.25 (0.36)
1976	−0.14 (0.03)	−0.09 (0.39)	−0.05 (0.74)

firms in the base category, which consists of firms that operate in one segment during the current and the next period, and firms in the category described by the column heading. Column (1) illustrates that firms that are diversified and remain diversified have valuations below those of firms that operate in one segment during the current and the next period. Only in 1973 is the coefficient not significant at the 5 percent level; it is significant in 1976, but much smaller than for the first four sample years. These results imply that the diversification discount is not caused by firms that have low Q ratios and consequently decide to diversify. In fact, the coefficients in column (2) suggest that firms that diversify in the next period (but operate in one segment currently) are not valued at a discount when compared with firms that remain focused. The coefficients are always larger than those in column (1), and they are never significantly different from zero. Hence, the Q ratios of firms that diversify in the following period are not significantly different from the Q ratios of firms that remain focused. This suggests that diversification leads to low Q ratios and not that the low Q firms decide to diversify. Two caveats with this interpretation need to be pointed out. First, firms are only sampled every three years, and it is therefore possible that the performance of single segment firms starts to deteriorate over the next two years, causing them to diversify. Second,

although the coefficients in column (2) are not significantly different from zero, they are also not significantly different from the coefficients in column (1), except for 1970. However, when I perform a joint test of equality of the coefficients in columns (1) and (2) for the first four years, I can reject equality. This supports the previous conclusion that firms do not perform poorly before they start diversifying.

The evidence on diversified firms that focus (column (3)) is mixed, mainly because the coefficients are not estimated very precisely, due to the paucity of observations in this category (the largest number of focusing firms is 22 in 1970). The coefficients are negative in five of the six years, which suggests that diversified firms trade at a discount before they decide to focus; however, only one of the coefficients is significant. Thus, one can also interpret the results in column (3) to mean that the best performers among the diversified firms increase their focus. More data points on firms that increase their focus over the sample period are required to provide more conclusive evidence about these alternative interpretations.

In sum, the time series analysis suggests that the relation between diversification and firm value is not spurious: the valuation discount is caused by firms that are diversified for two or more consecutive periods, not by firms that perform poorly, trade at a discount, and consequently decide to diversify.

V. Insider Ownership and Diversification

Section III alludes to the possibility that insiders derive private benefits from diversification. To shed some light on this conjecture, I examine the relation between insider ownership and diversification. Data on insider ownership are gathered from the *Value Line Investment Survey* for all firms in my sample. Because not all firms in my sample are listed on *Value Line* and because *Value Line* coverage improves over the sample period, these results should be interpreted with caution. It is also important to control for the market value of equity when analyzing insider ownership, because firm value and ownership are correlated. I therefore estimate the following cross-sectional regression model for each year:

$$\text{Insider Ownership} = a + b_1(\text{Ln Market value of equity}) + b_2(\text{Diversification dummy}) + e \quad (3)$$

Table IX reports the coefficient of b_2 for each year. During the first four years of the sample period, single segment firms have higher insider ownership than multiple segment firms. The difference is large and significant at the 10 percent level for three of the four years. For example, in 1970, after controlling for firm value, insiders in multiple segment firms own 3.8 percent less of their shares than insiders in single segment firms. Over these four years, multiple segment firms in my sample trade at an average discount of 0.58 (mean primary industry-adjusted Q ratio). This result is consistent with the conjec-

Table IX

Difference in Insider Ownership Between Single Segment and Multiple Segment Firms

Estimated regression model:

$$\text{Insider Ownership} = a + b_1 (\text{Ln Market Value Equity}) + b_2 (\text{Diversification dummy}) + e$$

Only b_2 is reported in the table. Diversification dummy is an indicator variable set equal to one if the firm operates in two or more 2-digit Standard Industrial Classification (SIC) code industries. N is the number of observations for which insider ownership data are available. The p-value of a t-test of equality of the coefficient to zero is in parentheses.

Years	Coefficient of Diversification Dummy (p-Value)	N
1961	−1.87 (0.45)	126
1964	−4.10 (0.07)	156
1967	−3.45 (0.10)	164
1970	−3.84 (0.07)	221
1973	0.69 (0.75)	248
1976	2.47 (0.29)	261

ture that insider ownership acted as a deterrent to diversification. Only those firms with low insider ownership diversified. It is also consistent with the findings of Denis, Denis, and Sarin (1995) who report a strong negative relation between diversification and equity ownership of officers and directors for a sample of 933 firms in 1984.

During the last two years of the sample period (1973 and 1976), however, the difference between the two groups becomes insignificant. Because ownership is relatively sticky, this implies that the firms who decided to diversify in 1973 and 1976 were the ones with high levels of ownership. This is confirmed by time-series analysis of the ownership pattern, similar to Table VIII (not reported): when the valuation discount declined to zero from 1970 to 1973, the firms that decided to diversify had significantly higher ownership (6.69 percent higher) than the firms that remained focused. This result is consistent with the notion that insiders prefer to diversify when they do not suffer financially.

These findings provide mixed support for Amihud and Lev's (1981) conjecture that managers diversify to reduce their exposure to firm-specific risk. During the first four years, the evidence runs counter to Amihud and Lev's claim, probably because the benefits from risk reduction are not offset by the diversification discount imposed by the market. In the last two years, on the other hand, managers with the highest stakes in their firms diversified.

The results presented in this section may partially explain why firms became more diversified over the sample period. Of course, they do not explain why the diversification discount declines over time or why there was a discount to begin with.

VI. Discussion and Conclusion

Recent work on the relation between corporate focus and firm performance indicates that diversification adversely affects shareholder wealth. This result may explain why firms have begun to increase focus since the late 1970s. But the ongoing tendency of firms to divest unrelated divisions can be traced back to the 1960s and early 1970s when many companies started to diversify. To assess the current de-diversification trend, it is also important to understand what factors acted as a catalyst for diversification in the first place.

In this article, I examine samples of firms in three year intervals over the 1961–1976 period to gauge how diversification was perceived by capital markets. Surprisingly, I find that diversified firms are also valued at a discount compared to single segment firms during the 1960s, when the diversification merger wave started. However, the diversification discount declines over time and is not significantly different from zero in the early and mid 1970s. It is during these latter years that the firms in my sample increased diversification the most. If managers get private benefits from diversification, the decline in the discount may explain why more firms started diversifying. Evidence on the relation between insider ownership and diversification is consistent with this conjecture. Firms with high insider ownership remained focused when the diversification discount was large (1961–1970), but when the discount declined (1973–1976), these firms were the first to diversify. Thus, managers did not impose costs on their shareholders by diversifying because the diversification penalty was close to zero when diversification peaked. However, firms that were already diversified in the 1961–1970 period did impose substantial costs on their shareholders by not increasing their focus.

I also investigate what caused the discount to occur and to change over time, but differences in profitability, capital structure, and investment policy are insufficient to explain the level and change of the discount. Time-series analysis indicates that the results are not spurious. Firms have low valuations during part of the sample period because they are diversified, not because poorly performing firms decide to diversify. However, what caused the diversification discount to change over time remains a puzzle.

This paper is not the first to examine the performance of diversified firms during the conglomerate merger wave. Weston and Mansinghka (1971) find that conglomerate firms have higher growth during the 1960s than the average Fortune 500 company. They report that conglomerates have lower operating income margins during the early 1960s, but that this effect disappears in the late 1960s. Rumelt (1974) studies the performance of Fortune 500 companies during 1949, 1959, and 1969. He subdivides firms into seven categories, however, which makes a direct comparison with the findings in this article difficult. Nevertheless, he also identifies firms that follow—what he calls—an "unrelated passive" strategy to be poor performers. Firms that follow an unrelated passive strategy are firms that have made less than five acquisitions

in the past five years, unless at most two of these acquisitions are in unrelated industries.[15]

Matsusaka (1993) examines the acquirer's stock price reaction to 199 acquisitions in 1968, 1971, and 1974. He finds that the acquirer has positive abnormal returns when the acquisition is unrelated and when target management is retained in the firm. For related acquisitions, the abnormal return is zero if target management is retained, but negative if target management is fired. In a similar vein, Schipper and Thompson (1983) report positive abnormal returns for firms announcing acquisition programs during the 1960s. These results are not entirely consistent with the findings of this article, since this article finds little evidence to support the notion that diversification was ever beneficial. However, the 1970s results are partially consistent with Matsusaka, because there was no cost to diversification in this period. The Schipper and Thompson (1983) results should be interpreted with caution because they focus on the pattern in returns of firms before they make announcements of acquisition programs.

The evidence presented in this article, combined with the evidence of Lang and Stulz (1994) and Berger and Ofek (1995), suggests that, in general, diversification has not been beneficial for U.S. corporations. However, there have been wide swings in the market's assessment of the cost of diversification, and in the first half of the 1970s there was no cost at all. In addition, some firms, with General Electric being the traditional example, have successfully followed a diversification strategy, while others have decided to de-diversify and focus on their core business (see Donaldson's (1990) description of General Mills' strategy). Further theoretical and empirical work is therefore required to determine why the market values diversification differently over time and why diversification works for some firms but not for others (see Gertner, Scharfstein, and Stein (1994) and Matsusaka and Nanda (1994)).

REFERENCES

Amihud, Yakov, and Baruch Lev, 1981, Risk reduction as a managerial motive for conglomerate mergers, *The Bell Journal of Economics* 12, 605–617.

Berger, Philip, and Eli Ofek, 1995, Diversification's effect on firm value, *Journal of Financial Economics* 37, 39–65.

Bhagat, Sanjai, Andrei Shleifer, and Robert W. Vishny, 1990, Hostile takeovers in the 1980s: The return to corporate specialization, *Brookings Papers on Economic Activity: Microeconomics*, 1–72.

Bhide, Amir, 1990, Reversing corporate diversification, 1990, *Journal of Applied Corporate Finance* 3, 70–81.

Comment, Robert, and Gregg A. Jarrell, 1995, Corporate focus and stock returns, *Journal of Financial Economics* 37, 67–87.

[15] Rumelt imposes two additional requirements for firms to be included in this category. These requirements may have caused the poor performance finding: (i) growth in earnings per share of less than 10 percent per year, which excludes the most profitable companies; (ii) equity issuances lower than dividend payments.

Donaldson, Gordon, 1990, Voluntary restructuring: The case of General Mills, *Journal of Financial Economics* 27, 117–141.

Denis, David J., Diane K. Denis, and Atulya Sarin, 1995, Agency problems, equity ownership, and corporate diversification, Working paper, Purdue University.

Gertner, Robert H., David S. Scharfstein, and Jeremy C. Stein, 1994, Internal versus external capital markets, *Quarterly Journal of Economics* 109, 1211–1230.

Hall, B., C. Cummins, E. Laderman, and J. Mundy, 1988, The R&D master file documentation, *National Bureau of Economic Research*, Boston, MA.

Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76, 323–329.

Kaplan, Steven N., and Michael S. Weisbach, 1992, The success of acquisitions: Evidence from divestitures, *Journal of Finance* 47, 107–138.

Lang, Larry H. P., and Rene M. Stulz, 1994, Tobin's q, corporate diversification and firm performance, *Journal of Political Economy* 102, 1248–1280.

Lewellen, Wilbur G., 1971, A pure financial rationale for the conglomerate merger, *Journal of Finance* 26, 521–537.

Lichtenberg, Frank R., 1992, Industrial de-diversification and its consequences for productivity, *Journal of Economic Behavior and Organization* 18, 427–438.

Liebeskind, Julia, and Tim C. Opler, 1992, The causes of corporate refocusing, Working paper, University of Southern California and Southern Methodist University.

Lindenberg, Eric, and Stephen Ross, 1981, Tobin's q and industrial organization, *Journal of Business* 54, 1–32.

Matsusaka, John G., 1993, Takeover motives during the conglomerate merger wave, *Rand Journal of Economics* 24, 357–379.

Matsusaka, John G., and Vikram Nanda, 1994, A theory of the diversified firm, refocusing, and divestiture, Working paper, Stanford University and University of Southern California.

McCutcheon, Barbara, 1995, Evidence on internal capital markets as a source of gains in conglomerate mergers, Working paper, University of Iowa.

Meyer, M., P. Milgrom, and J. Roberts, 1992, Organizational prospects, influence costs, and ownership changes, *Journal of Economics and Management Strategy* 1, 9–35.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1988, Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics* 20, 293–316.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1990, Do managerial objectives drive bad acquisitions?, *Journal of Finance* 45, 31–48.

Myers, Stewart, and Nicholas Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187–221.

Palepu, Krishna, 1985, Diversification strategy, profit performance and the entropy measure, *Strategic Management Journal* 6, 239–255.

Perfect, Steven B., and Kenneth Wiles, 1994, Alternative constructions of Tobin's q: An empirical comparison, *Journal of Empirical Finance* 1, 313–341.

Ravenscraft, David J., and F. M. Scherer, 1987, Mergers, sell-offs & economic efficiency, *The Brookings Institution*, Washington, D.C.

Rumelt, Richard P., 1974, *Strategy, Structure, and Economic Performance*, (Division of Research, Graduate School of Business Administration, Harvard University, Boston).

Schipper, Katherine, and Rex Thompson, 1983, Evidence on the capitalized value of merger activity for acquiring firms, *Journal of Financial Economics* 11, 85–119.

Shleifer, Andrei, and Robert W. Vishny, 1989, Management entrenchment: The case of manager-specific investments, *Journal of Financial Economics* 25, 123–140.

Shleifer, Andrei, and Robert W. Vishny, 1992, Liquidation values and debt capacity: A market equilibrium approach, *Journal of Finance* 45, 379–396.

Stulz, René M., 1990, Managerial discretion and optimal financing policies, *Journal of Financial Economics* 26, 3–27.

Teece, David J., 1980, Economies of scope and the scope of the enterprise, *Journal of Economic Behavior and Organization* 1, 223–247.

Wernerfelt, Birger, and Cynthia A. Montgomery, 1988, Tobin's q and the importance of focus in firm performance, *American Economic Review* 78, 246–250.

Weston, J. Fred, and Surenda K. Mansinghka, 1971, Tests of the efficiency performance of conglomerate firms, *Journal of Finance* 26, 919–936.

Williamson, Oliver E., 1970, *Corporate Control and Business Behavior: An Inquiry into the Effects of Organizational Form on Enterprise Behavior* (Prentice Hall, Englewood Cliffs, N.J).