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THE CAUSES OF CORPORATE REFOCUSING

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by

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ABSTRACT

This paper investigates the extent of and causes of change in corporate focus in the 1980s. We find that most of the 2,500 largest U.S. firms became more specialized in the 1980s. The greatest change in focus took place through the exit of diversified firms which were replaced by smaller, less diversified, and more often private entrants. While most firms focused, the largest firms in the economy continued their historical trend towards greater diversification during the 1980s. As a consequence, the fraction of assets and revenues in the economy controlled by highly diversified firms fell only slightly. While the results do not support most explanations for corporate refocusing, we find that firms with strong core market positions and high R & D expenditures tended to diversify while other firms refocused. This suggests that refocusing during the 1980s was primarily a response to changing competitive forces in the U.S. economy.

1. Introduction

An important development in the 1980s was the apparent reversal of a historical trend of diversification as many firms divested lines of business, or were broken up following hostile takeovers and leveraged buyouts.¹ For this reason, corporate de-diversification (or "refocusing") has been widely cited as a key motive for the high volume of corporate restructuring activity during the 1980s.² Yet, this shift towards corporate refocusing in the 1980s remains a puzzle. Why should corporate behavior have changed so dramatically, reversing diversification decisions previously endorsed by shareholders?³ This paper attempts to answer this question in two ways. First, we document the extent of corporate refocusing during the 1980s among firms in the U.S. economy and show how such changes depend on size, initial diversification, and whether a firm is public or private. Second, we test the principal explanations which have been given for corporate refocusing. These are:

- (i) *Reduction of agency costs.* Refocusing during the 1980s may have reversed prior acquisition, diversification and expansion decisions carried out by non-value-maximizing managers [Jensen (1986, 1991), Bicksler and Chen (1991)].
- (ii) *Reduction of internal capital market efficiency.* Refocusing may have reduced the scope of firms' internal capital markets, as continuing innovation in financial markets and the reinvigorated market for corporate control during the 1980s reduced their advantage in allocating capital among lines of business relative to external capital markets [Bhide (1990)].
- (iii) *Response to antitrust relaxation.* Relaxed antitrust enforcement in the 1980s may have increased the comparative value of horizontal market expansion relative to diversification, leading firms to expand core businesses and shed peripheral businesses with small market shares [Shleifer and Vishny (1991)].
- (iv) *Reduction of misvaluation.* Refocusing may have been intended to reduce information asymmetries between shareholders and managers by simplifying the valuation problems of complex diversified firms and allowing hidden asset values to be realized [Stein (1989), LeBaron and Speidell (1987)].

These explanations rely on the benefits of refocusing. However, there are also costs of refocusing. For example, diversification may yield economies of scope in valuable firm-specific assets such as knowledge, reputation and proprietary technology which would be lost if

¹ For details see Bhagat, Shleifer and Vishny (1990), Hoskisson and Johnson (1991), Kaplan and Weisbach (1992), Comment and Jarrell (1992), Lichtenberg (1992), and Liebeskind, Wiersema and Hansen (1992).

² See, for example, Jensen (1991), Shleifer and Vishny (1991), and Bhide (1990).

³ Matsusaka (1990) shows that diversifying acquisitions during the conglomerate merger wave of the 1960s and 1970s increased firm value on average.

diversification is reversed [Teece (1980)]. Diversified firms may also be able to allocate capital more efficiently than external capital markets [Williamson (1975)]. While the factors which influence the costs and benefits of diversification strategies have been extensively analyzed, little is known about the empirical determinants of change in corporate diversification.⁴ Diversification decisions, however, may be among the most important that managers make: the costs of mistaken diversification are high and can lead to increased risk of takeover [Mitchell and Lehn (1990), Neumark and Sharpe (1992), Opler (1992)].

Two previous studies have examined corporate refocusing in the 1980s using COMPUSTAT business segment data. Lichtenberg (1992) finds that public firms reported fewer 4-digit lines of business as the 1980s progressed; he also finds that more focused firms had higher total factor productivity. Comment and Jarrell (1992) also find that public firms became more specialized and reported fewer 4-digit operating segments as the 1980s progressed. Their analysis proceeds to show that refocusing increased market value and that several sources of economies of scope often are not realized by diversified firms.⁵

Our analysis uses different data than these previous studies. This data was compiled from TRINET Inc.'s *Large Establishment Database*, a data source which is more detailed than the COMPUSTAT segment data, is less prone to self-reporting biases, and covers both public and private firms. The TRINET data therefore offers a more complete record of corporate refocusing among large firms during the 1980s.

In addition, because diversification is a complex phenomenon, the extent of refocusing measured in different studies may depend on the measures used and the level of industry aggregation followed. We use the following four measures of diversification: (1) specialization

⁴ Rumelt (1986, p. viii) comments: "We still do not really understand what triggers changes in diversification strategy. Why do some firms diversify while others retrench in the face of adversity?" One study which examines changes in diversification is Hill and Hansen (1991). They find that diversification in pharmaceutical firms is determined by market saturation in core businesses, differences in managerial incentives, and ownership structure. Another study by Gort, Grabowski and McGuckin (1985) shows that increases in diversification among 191 firms in the 1967-71 period were negatively related to prior diversification and to productivity growth in the firm's core industry.

⁵ Lang and Stulz (1992) also study the relation between focus and market value in the 1980s. They find a U-shaped relation between diversification and Tobin's q .

(the fraction of a firm's total employees in its largest 4-digit SIC code, also called the "maximum proportion"); (2) relatedness (the fraction of a firm's total employees in its largest 2-digit SIC code); (3) 4-digit span (the number of 4-digit SIC code industries in which the firm is active); and (4) 2-digit span.⁶ We find that both specialization and relatedness increased among the largest U.S. firms during the 1980s, but that 4-digit span increased. Therefore, the representative large firm in the U.S. economy generated more sales in its core business areas in 1989 than in 1981, but entered more lines of business. We also find that the very largest firms in the economy became *less* specialized in the 1980s, continuing their trend of increasing diversification documented by Gort (1962), Rumelt (1986) and Spruill (1982).

We find little support for any of the four explanations for corporate refocusing examined. First, we find that Tobin's q is an insignificant predictor of change in corporate focus in the 1980s. This finding is inconsistent with the agency cost explanation for corporate refocusing which predicts that poorly performing firms (those with low q 's) will be the most likely to refocus. However, we find a strong trend of mean reversion in diversification during the 1980s, showing that more highly diversified firms refocused the most during the 1980s, regardless of their performance. Second, we find no evidence to support the internal capital market inefficiency explanation for corporate refocusing: the largest firms in the economy continued to expand and diversify during the 1980s. Third, we find little support for the argument that changes in focus during the 1980s were a result of relaxed antitrust policy. Firms with the highest core business market shares in 1981 continued to diversify during the 1980s, despite new opportunities to increase their core business market shares through horizontal acquisitions. Moreover, large firms were most active in adding businesses to periphery rather than core business areas. Finally, we find no evidence that misvaluation influenced refocusing. Firms which had high levels of analyst forecast disagreement in 1980 were less likely, not more likely, to refocus.

⁶ These measures are based on Rumelt's (1986) classification of corporate strategies and are used widely in research on diversification. See, for example, Hill and Snell (1988) and Comment and Jarrell (1992). In an earlier version of the paper we also examined changes in the Entropy and Herfindahl measures of corporate focus but found that our results did not change with these measures. This is not surprising since these measures were highly correlated with the specialization and relatedness ratios used here.

Of course, our conclusions are only as strong as the proxies for the theories we test. It is possible that other proxy variables may provide more support for one or more of these explanations for refocusing. This proviso notwithstanding, our findings suggest that corporate refocusing during the 1980s was a response to changes in the competitive environment. First, we find that firms with smaller core business market shares in 1981 refocused more than firms with larger core market shares. Second, we find that firms with high levels of R&D expenditure were more likely to diversify, suggesting that firms which owned valuable idiosyncratic assets were not subject to pressures to refocus. Overall, therefore, we find that large firms with large core market shares and high R&D levels expanded and diversified, while smaller firms with small core market positions and few idiosyncratic assets retrenched.

The remainder of this paper proceeds as follows. Section 2 discusses the theoretical arguments regarding the benefits and costs of corporate focus in order to establish hypotheses to explain cross-sectional variation in refocusing in the 1980s. Section 3 describes the data and measures of focus used in this study. Section 4 documents the extent of corporate refocusing among the largest 2,500 firms in the U.S. economy during the 1980s. Section 5 presents longitudinal regression analyses of the determinants of corporate refocusing in public firms. Section 6 summarizes and discusses the results.

2. The Benefits and Costs of Corporate Refocusing

2.1 Benefits of Refocusing

Four explanations have been provided for the corporate refocusing phenomenon which point to the value created by reducing the costs of diversification. These explanations are:

(i) Reduction of agency costs. Poor incentive structures may cause managers in public corporations to over-invest in diversifying expansion, reducing the value of the firm. [See, for example, Marris (1964), Amihud and Lev (1981), Jensen (1986)]. Managerially-motivated diversification may reduce firm value by permitting managers to cross-subsidize unprofitable lines of business [Bhide (1990)]. Managers may also overpay for takeover targets [Roll (1986), Morck,

Shleifer and Vishny (1990)]. Refocusing may have increased during the 1980s, and not before, as the extent of the extent of agency costs associated with diversification was revealed. Pressure to refocus may also have intensified during the 1980s because the rise in real interest rates increased the costs of cross-subsidization, and because financial innovations reduced the costs of launching a hostile takeover.⁷ The agency theory explanation for refocusing suggests that private corporations, where managers typically own more equity, should be less likely to have undertaken wasteful diversification in the 1960s and 1970s than managers in public firms (Jensen 1991).

Consequently, privately held firms should have had less need to refocus during the 1980s than public firms. We investigate this issue in Section 4. The agency explanation of refocusing also predicts that firms which have a low Tobin's q should refocus since low Tobin's q signifies low expected cash flows relative to invested assets, an indicator of poor expected firm performance and agency conflict [see Lang and Litzenberger (1989)]. We investigate this issue in Section 5.

(ii) *Reduction of internal capital market inefficiency.* A second explanation for refocusing is that external governance of capital allocation among lines of business became more efficient relative to internal capital market governance in the 1980s. First, increasing shareholder activism and changes in legal precedent regarding shareholders' rights may have increased the efficiency of governance of capital allocation decisions by shareholders relative to corporate headquarters [Bhide (1990), Jensen (1991)]. Second, innovations in external financial markets (e.g. the venture capital market) may have made market governance of some capital reallocation decisions more efficient. Both of these considerations suggest that breaking up internal capital markets may have created value during the 1980s. In Section 4 we test this explanation for refocusing by examining change in the scope of internal capital markets (measured in terms of revenues) of more focused firms during the 1980s. In Section 5 we analyze the relationship between corporate refocusing and firm fixed assets in 1981. According to the internal capital market inefficiency explanation for refocusing, firms with greater fixed asset bases should be more liable to refocus than other firms

⁷ Comment and Jarrell (1992) present a related story that refocusing was the result of reduced returns from holding assets for future sale attributable to an active market for corporate assets.

since they have historically higher levels of capital investment with the resulting potential for capital misallocation.

(iii) *Relaxation of antitrust enforcement.* During the 1980s, the enforcement of anti-trust legislation was relaxed, giving many firms with large market shares a new option to undertake horizontal market expansion through merger [Shleifer and Vishny (1991)]. Consequently, some firms may have found it relatively more profitable to focus by expanding lines of business in which they held large market shares at the beginning of the decade than to diversify. We test this explanation by investigating whether firms with the highest core market shares in 1981 were more likely to refocus, since these firms should have had the most to gain from the relaxation of antitrust regulation.

(iv) *Reduction in market misvaluation.* Diversified firms may be more subject to misvaluation by the market than focused firms because of the difficulty of valuing synergies between lines of business. Evidence offered by LeBaron and Speidell (1987) is consistent with this claim. Misvaluation of diversified firms may have intensified shareholder pressure to refocus during the 1980s. In Section 5 we test this explanation for refocusing using disagreement among analysts' earnings forecasts as a proxy for misvaluation. The less analysts agree over future firm performance, the less likely it is that the firm is being valued accurately and the greater pressure to refocus. If equity market misvaluation were the primary cause of refocusing then we would also expect to see more focusing in public than in private firms.

2.2 *The Costs of Refocusing*

The four explanations outlined above suggest that refocusing will increase firm value because the costs of diversification outweigh its benefits. However, other arguments suggest that diversification in the 1980s may have brought significant benefits. We categorize these arguments into two groups:

(i) *Changing economies of scope.* Diversified firms may be able to exploit economies of scope in assets which are firm-specific by using them to produce a number of different products

[Teece (1980)]. These assets may be tangible, such as production and distribution facilities, or intangible, such as proprietary know-how or reputational capital. In either case, synergistic or "related" diversification should increase the value of the firm. Gort (1962), Hill and Hansen (1991) and others have shown that diversifying investment tends to be concentrated in technology-intensive industries. The value of economies of scope may have during the 1980s due to increased technological innovation. It is also possible that product market globalization during the 1980s created new sources of economies of scope for diversified firms. We examine the role of economies of scope in Section 4 of this paper by investigating whether related diversification increased or decreased during the 1980s. In Section 5 we investigate whether idiosyncratic and extensible assets are associated with increases in diversification, using R&D expenditures as a proxy for such assets.

(ii) *Increases in internal capital market efficiency.* Internal capital markets may be more efficient than external capital markets, despite their costs. Williamson (1975) argues that resource allocation is more efficient in internal capital markets because there is less information asymmetry between corporate headquarters and divisional managers than there is between shareholders and managers. Thus, we entertain the hypothesis that the relative efficiency of internal capital markets increased in the 1980s. This is the opposite of the relative capital market inefficiency hypothesis discussed earlier. Internal capital market efficiency may have increased in the 1980s as firms changed their procedures for making divisional investments or improved the accuracy of internal performance measurement. In certain cases, organizational innovations may have reduced cross-subsidization problems (e.g. legal "Chinese Walls" between divisions as in National Intergroup and USX).⁸

⁸The 1980s also saw the rise of leveraged buyout specialist organizations such as Kohlberg, Kravis and Roberts which performed many of the functions of the headquarters of a multi-divisional firm while disallowing cross-subsidization.

3. Data, Sample and Measures

3.1 Sample

Our base sample includes 3,609 public and private U.S. corporations which were among the 2,500 largest employers 1981 and/or 1989. This sample consists of surviving, exiting and entering firms. *Surviving* firms are defined as those which were independent legal entities in 1981 (that is, not a subsidiary firm of another corporation nor in Chapter 11) and remained independent until 1989. Firms among the largest 2,500 independent employers in 1981 were also classified as surviving firms even if they were not among the top 2,500 in 1989. Firms which were independent in 1981 but which did not survive until 1989 are defined as *exiting* firms. *Entering* firms are defined as independent firms which were not among the largest 2,500 employers in 1981, but had become so by 1989. These firms may have existed in 1981, or been started up between 1981 and 1989.

3.2 Data

Financial data for this study were collected from the COMPUSTAT *PST, Full Coverage and Research* files. These data describe firm R&D, capital expenditures, operating income, sales, and asset base. We obtained data on analysts' earnings-forecast disagreement from the I/B/E/S Inc. database. Data on firm diversification and industry market share are estimated from TRINET Inc.'s *Large Establishment Database* (hereafter referred to as TRINET). Details of these measures are given in Section 3.3 and Appendix A. TRINET provides information on establishments (i.e. plants, administrative offices or other separate geographic business locations) that employ 20 or more persons in United States. TRINET classifies each establishment according to a primary four-digit SIC code and provides information on the establishment's number of employees and estimated sales in current dollars. Establishment-level data can be aggregated to the company level using parent company codes. TRINET Inc. updates its database continually by direct surveys, telephone calls to establishments, and reference to corporate financial data and news items; new versions of the *Large Establishment Database* are issued on tape biannually for research purposes.

A particularly useful feature of TRINET is that it provides information on establishments owned by private firms as well as information on establishments owned by public firms; this allows us to compare changes in focus in public firms with changes in focus in similar private firms.

The TRINET data have several advantages over the COMPUSTAT industry segment data used in some earlier studies. First, COMPUSTAT data on diversification are collected at the "industry segment" level by firms according to Rule 14 of the Financial Accounting Standards Board (*FASB 14*). Each industry segment is then assigned one four-digit SIC code. This procedure tends to lump information from many different types of corporate activities together given that industry segments often comprise both diversified and vertically integrated activities in large firms. TRINET data are collected at the establishment level so that the activities of the firm are disaggregated in much greater detail. Second, there is no standardization in the assignment of four-digit SIC codes to industry segments by COMPUSTAT. The industry segment data in COMPUSTAT are reported by the managers of each firm, allowing them to conceal diversification by combining activities into one segment.⁹ In contrast, TRINET uses SIC codes assigned by the Bureau of the Census to operating establishments. Third, according to *FASB 14* COMPUSTAT data are only reported for industry segments that account for 10 percent or more of final sales. The effect of this ruling is to omit secondary and intermediate lines of business even though these may be important sources of corporate profits or losses [Singh and Chang (1992)]. Instead, all secondary and intermediate activities of a firm that are primary activities at the establishment level are reported in TRINET.

We do not wish to imply that TRINET data give a better account of corporate diversity in all respects; these data have several problems of their own. The most important of these is that TRINET covers only U.S. establishments which may cause underreporting of diversity for firms with large overseas operations. In addition, data on establishment-level sales are not always directly measurable (for example, an establishment may make only intrafirm sales). In this case,

⁹ *FASB 14* reads "determination of an enterprise's industry segments must depend to a considerable extent on the judgement of the management of the enterprise...."

TRINET uses data on industry labor productivity to infer establishment-level sales. This means that individual establishment-level sales data are less reliable than employee data in the TRINET database. We therefore use employee-weighted measures of diversification in our analyses.

3.3 *Measurement issues*

Definitions of financial variables used in our regressions are given in Appendix A. The measures of firm focus used in our analysis are defined as follows:

(i) *Specialization ratio*. The specialization ratio (also called the "maximum proportion") is defined as the number of employees in a firm's largest 4-digit SIC industry divided by its total employees. The specialization ratio therefore measures the degree to which a firm's business portfolio is dominated by a single "core" line of business. Managers of highly specialized firms may have detailed knowledge about products and customers since they oversee fewer lines of business.

(ii) *Relatedness ratio*. The relatedness ratio is defined as the ratio of the number of employees in a firm's largest 2-digit SIC industry sector to its total number of employees. If the relatedness ratio is high most lines of business lie within one industrial sector, increasing the potential for earning economies of scope [Rumelt (1986)]. On the other hand, if the relatedness ratio is low, the firm will be diversified into more "unrelated" business sectors, reducing the potential for exploiting economies of scope. Several studies have associated measures of relatedness and firm performance.¹⁰

(iii) *4-digit Span*. 4-digit Span is the number of 4-digit SIC codes in which the firm owns establishments. As 4-digit span increases, the level of knowledge at the corporate headquarters where capital allocation decisions are made about each individual line of business may decline, so that firms with greater span may be less efficiently managed. Firms with many lines of business

¹⁰ Rumelt (1986) and Palepu (1985) show that the accounting returns of related-diversified firms are higher than those of unrelated-diversified firms. Similarly, Wernerfelt and Montgomery (1988) show that related-diversified firms have higher Tobin's q . In contrast, Lang and Stulz (1992) show that diversified firms have lower q 's.

may have invested excessively in "exploratory" diversification at the expense of building core competitive capability [Singh and Chang (1992)].¹¹

(iv) *2-digit Span*. 2-digit span measures the number of 2-digit industries the firm participates in. If a firm participates in many 2-digit industries, its potential for exploiting economies of scope will be lower.¹²

4. Trends in Firm Focus During the 1980s

4.1 Changes in the size and focus of large corporations

Table 1 shows changes taking place in the base sample consisting of all surviving, entering and exiting firms. The table shows that firms in this sample refocused in terms of both median specialization and median relatedness in the 1980s. The specialization ratio of the median firms increased by 10.6%. By 1989, 65.8% of the median firm's sales came from one 4-digit business-- compared with 59.6% in 1981. The relatedness ratio increased even more, by a median of 16.8%, showing a significant decline in unrelated diversification. By 1989, 80.7% of the median firm's sales were within one 2-digit industry. In contrast, the 4-digit span of the median firm increased by 16.7%, although its 2-digit span was unchanged.

The results Table 1 are largely consistent with Jensen's (1991) contention that corporate restructuring in the 1980s created a population of smaller, leaner and more often private firms. Not only did the median firm refocus significantly, but median employment also dropped by 23.8% (although sales increased by 14.2%). In addition, the proportion of private firms in the population increased from 27.8% in 1981 to 39.2% in 1989.

Shleifer and Vishny (1991) describe the trend in corporate refocusing during the 1980s as "deconglomeration". Our results support their description. The increases in specialization and relatedness show that firms became more centered on core businesses during the 1980s, indicating

¹¹ Comment and Jarrell (1992) and Lichtenberg (1992) find that public firms on the average reduced their 4-digit span during the 1980s.

¹² However, Matsusaka (1990) notes that this is not always the case: some combinations of 2-digit industries offer economies of scope while others do not.

a decline in conglomerate diversification strategies which are typified by a portfolio of large businesses with no core. Our findings are also consistent with Kaplan and Weisbach (1992) who find that firms divested in more unrelated than related lines of business during the 1980s. Moreover, although we find that the median firm added one 4-digit line of business, the fact that specialization and relatedness also increased shows that this new line of business was related. Therefore, our results suggest that while firms refocused in the 1980s, they also sought new opportunities to exploit economies of scope.

A relevant question is whether the changes in focus among large firms shown in Table 1 were caused by changes in the *population* of large firms, rather than by changes in the focus of *surviving* firms. An answer to this question is provided in Table 2. This table shows that 1,906 firms which were in the top 2,500 firms in 1981 were also in the top 2,500 firms in 1989, a survival rate of 76%. However, there was a clear difference in focus between those firms which exited our sample and those which entered. The focus of the median exiting firm was no lower than that of surviving firms (the specialization ratio was somewhat higher, while the relatedness ratio was the same). In contrast, entering firms were far more focused than either exiting or surviving firms. This partly reflects the smaller size of entrants because size and focus are inversely related. Indeed, Table 2 shows that exiting firms were similar to surviving firms in terms of sales and employees in 1981, while entering firms had less sales and fewer employees.

Table 2 shows that the proportion of exiting firms which were privately held corporations was 34.6%, while the proportion of entering firms which were private was half again as high (55.8%). Therefore, exit also played a role in increasing the importance of private firms in the population of large firms observed in Table 1.

Despite the importance of exit in changing the focus of the population of large firms during the 1980s, Table 2 shows that significant changes in focus took place among *surviving* firms. Specialization in the median surviving firm increased 3.4% (compared with an increase of 10.6% in the population) and relatedness increased 10.3% (compared with an increase of 16.8% in the population). Both of these changes are statistically significant at the one percent level. Consistent

with this trend, 4-digit span increased more in surviving firms than in the overall population, by 33.3% (compared with an increase of 16.7% in the population). Therefore, focus on core businesses increased less in surviving firms, and expansion at the margin increased more, than in the overall population. These results show that the increased focus we find in Table 1 was not solely due to the disappearance of firms pursuing conglomerate diversification strategies.

In conclusion, the evidence presented in Table 2 shows that the pattern of deconglomeration observed in Table 1 was caused by two factors: (a) the disappearance of diversified firms from the population which were usually replaced by smaller, more focused firms and (b) refocusing among surviving firms. Interestingly, this evidence shows that deconglomeration in the population of large firms was caused by more than the disappearance of conglomerates. Other forces were at work pressuring surviving firms to refocus on core businesses. The rest of this paper is devoted to examining the possible causes of this phenomenon.

4.2 Firm size and refocusing in surviving firms

One factor which may have caused refocusing in surviving firms during the 1980s is over-expansion. Large firms, with their giant bureaucracies, may be too large to diversify efficiently by exploiting synergies while containing agency costs. We examine the relationship between firm size and refocusing among surviving firms in Figure 1. This figure shows changes in specialization and relatedness by size decile (the largest firms have the lowest decile number). Surprisingly, the greatest increases in specialization and relatedness during the 1980s took place in relatively small firms. Specialization among the largest 190 firms in the sample actually decreased.

One explanation for the tendency of the largest firms to diversify in the 1980s may be that they were sheltered from market discipline by their sheer size. The costs of takeover or other disciplinary mechanisms may have been too high to credibly threaten managers in very large firms with replacement if they did not perform. However, the development of the junk bond changed

this situation: the 1980s saw **both the largest buyouts and the largest takeovers ever undertaken.**¹³ This suggests that factors other than agency costs should explain this trend of continued diversification among large firms. One alternative explanation is that large firms are good diversifiers. For example, large firms may have greater stocks of firm-specific capital and so be able to generate greater economies of scope.

Table 3 gives a more detailed view of portfolio restructuring activity by size decile, in order to account for the lower rates of refocusing among large firms. The first two columns of the table show the rates at which firms added establishments to their related core businesses (measured as the largest 2-digit SIC business of the firm) and to their unrelated periphery (non-core businesses). The largest firms had the lowest core business addition rates and the highest peripheral business addition rates. Differences in establishment addition rates between the largest and smallest firms are substantial. The median rate of addition to related core businesses among the largest firms (10.3%) is 38% lower than that among firms in the smallest size decile (16.7%). Similarly, the rate of addition to peripheral businesses among the largest firms (43.8%) is 89% higher than among the smallest firms (23.1%). Remarkably, the largest surviving firms almost doubled their number of establishments in peripheral businesses during the 1980s. Table 3 also shows that divestiture rates are generally lower than addition rates. Small firms divested more from core businesses areas than did large firms but did not divest peripheral assets at a substantially different rate. In all, the evidence presented in Table 3 suggests that the key factor underlying the differential refocusing of small and large firms in the 1980s was the asset investment rate and not the asset divestiture rate: larger firms invested more in peripheral businesses while small firms invested more in core businesses.

¹³ Such as the buyout of RJR-Nabisco, the takeover of General Foods by Philip Morris and the takeover of Getty Oil by Texaco.

4.3 Firm focus and refocusing in surviving firms

A second factor which may have caused refocusing in surviving firms during the 1980s is over-diversification. Some firms may have become too diversified to efficiently exploit economies of scope or information asymmetries, or to avoid agency costs, capital misallocation, and misvaluation [Jensen (1986), Bhagat, Shleifer and Vishny (1990) and Markides (1992)]. On the other hand, widely diversified firms may own valuable assets which can be exploited in a variety of markets. We investigate this issue in Figure 2 which shows changes in specialization and relatedness between 1981 and 1989 by firm focus decile in 1981. The figure shows clearly that firms which were highly diversified in 1981 refocused during the 1980s, while more focused firms diversified, indicating an overall trend of mean reversion in diversification. Mean-reversion is consistent with a number of explanations for refocusing. Highly diversified firms may have refocused to reduce agency costs, to reduce the scope of internal capital markets, to concentrate on horizontal expansion in core markets, or to overcome misvaluation.

Figure 3 investigates whether or not refocusing has reduced the overall importance of the internal capital markets of highly diversified firms in the economy. The figure shows the proportion of aggregate revenues of all surviving public firms in both 1981 and 1989 which was earned by firms which had above median focus in 1981. According to the internal capital market inefficiency argument the aggregate revenue share of firms which were more diversified in 1981 should have decreased relative to the aggregate revenue share of more focused firms. The figure shows that the aggregate revenue shares of more specialized firms did increase between 1981 and 1989, but only by 0.8%; the revenue shares of more related firms increased by 3%. Therefore, the aggregate scope of the internal capital markets of more focused firms increased only very slightly during the 1980s. In light of these results, it would be difficult to argue that refocusing can be largely understood as the result of increased inefficiency of internal capital market allocation.

4.4 Differences in refocusing in public and private firms

According to the agency theory explanation for corporate refocusing, managerial incentive alignment with shareholders is weakest in public firms where managers typically own little equity relative to private firms. Consequently, private firms should have had lower levels of inefficient diversification in 1981, giving them less reason to refocus. However, Table 4 shows that more refocusing took place among private firms than among public firms during the 1980s.

Specialization increased by 10.2% in private firms and by only 0.4% in public firms; relatedness also increased more in private firms. These results appear to be inconsistent with agency arguments for refocusing. However, since private firms were smaller and more focused than public firms in 1981, it is possible that other factors led private firms to refocus more during the 1980s. For example, private firms may have held weaker market positions than public firms in 1981, and so may have been forced to exit more markets. Consistent with agency theory arguments, Table 4 shows that refocusing was higher in firms which changed from public to private ownership than in firms which remained public.

With regard to changes in focus among surviving public firms, Table 4 shows that the specialization ratio remained essentially unchanged, but that the relatedness ratio increased significantly, by 7%. In contrast, 4-digit span increased by 25% in surviving public firms between 1981 and 1989. This latter finding is inconsistent with the findings of Lichtenberg (1992) and Comment and Jarrell (1991) who find that the 4-digit span of public firms declined during the 1980s. One potential explanation for this difference in results is that both Lichtenberg and Comment and Jarrell use the COMPUSTAT industry segment data to measure span, which is collected at a higher level of aggregation than the TRINET data, and so ignores smaller lines of business. In fact, we see no increase in span at the 2-digit SIC level. Some of the previously discussed differences between the COMPUSTAT and Trinet databases may explain the difference in results.

5 The Determinants of Change in Corporate Focus

Regressions analyzing the determinants of change in corporate focus during the 1980s are shown in Tables 5 and 6. The sample of 1,215 firms analyzed in these regression represents all surviving public firms from the largest 2,500 firms in 1981.¹⁴ Entering and exiting firms are excluded as are private firms and firms which changed their corporate status from private to public or vice-versa between 1981 and 1989. The explanatory variables in the regressions are intended to test each of the four explanations for corporate refocusing which are discussed in detail in Section 2.1. However, some caution is advised in interpreting these analyses: Since we lack a fully specified model of the causes of corporate diversification [Rumelt (1986)], the results can only be interpreted as part of a more comprehensive but unspecified causal model of the determinants of refocusing.

Three models are presented for each of the four dependent variables considered below. To control for possible non-linearity in the relationships between independent and dependent variables, we use reduced rank regressions in the analyses [Iman and Conover (1979)]. This technique uses the ranks of dependent and all ordinal independent variables in an OLS regression. An important advantage of this regression method is that it is robust in the presence of the large outliers which naturally arise when measuring the percentage change in focus over a decade.¹⁵

5.1 The determinants of increases in specialization and relatedness

Table 5 shows the six regressions analyzing the determinants of increases in specialization and relatedness. The level of firm focus in 1981 is entered in all equations as a control variable since all explanations for refocusing in the 1980s which we test are conditioned on the prior extent of corporate diversification. This coefficient of this variable is negative and significant in all the regressions, showing a trend of mean-reversion of diversification, consistent with the prior univariate analysis. Gort, Grabowski and McGuckin (1985) also find a trend in mean reversion in

¹⁴ With the exception of 20 public firms listed in TRINET for which COMPUSTAT data were not available.

¹⁵ The distribution of measures of growth in focus are skewed and highly leptokurtotic.

diversification in their sample of 191 firms examined in the 1967-71 period, showing that mean-reversion in diversification was not confined to the 1980s.

The agency explanation for corporate refocusing is tested using Tobin's q in 1981: firms with low Tobin's q are expected to refocus more than other firms. To our surprise, the regressions show no significant relationship between Tobin's q in 1981 and subsequent corporate refocusing.¹⁶ This casts doubt on the argument that refocusing took place to reduce agency costs.¹⁷

The internal capital market inefficiency explanation for refocusing is tested by relating the book value of a firm's assets in 1981 to subsequent refocusing using the logic that firms with high historical investment rates are more vulnerable to problems of capital misallocation [Bhide (1990)]. The regressions show a significant and economically important negative relationship between asset size in 1981 and refocusing; large firms were less likely to refocus than smaller firms. This is consistent with the prior univariate analysis of the relationship between firm size and refocusing reported in Figure 1. The finding is inconsistent with the internal capital market inefficiency explanation for refocusing.

The antitrust argument for corporate refocusing is tested using core business market share in 1981 as a proxy for the potential gains available to firms from the relaxation in enforcement of anti-trust legislation during the 1980s. The regression results show a significant negative relationship between core business market share in 1981 and subsequent refocusing—a result inconsistent with the argument that firms previously constrained from horizontal market expansion in their core business focused most in the 1980s. To the contrary, firms with large market shares were less likely to refocus during the 1980s than firms with smaller shares. One explanation may be that the firms with higher core market shares had such a high share that even the relaxation of antitrust regulation would not enable them to expand these businesses any further. We examine this

¹⁶ In an unreported regression we also find that another measure of performance, profitability in 1981, does not predict the extent of refocusing in the 1980s.

¹⁷ Interactions of q with cash flow and prior diversification as in Lang, Stulz and Walkling (1991) and Opler and Titman (1992) were also not statistically significant in unreported regressions.

possibility in the Model II regressions which include a dummy variable for those firms with the highest quartile core business market shares in 1981. This variable is not important in either regression. Overall, these results suggest that firms with high core market shares in 1981 possessed valuable assets that they exploited by increased diversification, and not by refocusing through core market expansion. Moreover, the results suggest that firms with smaller market shares retrenched by refocusing, rather than escaping from undesirable core market positions through diversification. This implies that firms which failed to build assets which conferred them a competitive advantage in their core markets were most under pressure to refocus in the 1980s.

The misvaluation explanation for refocusing is tested using the variance of analysts' earnings forecasts in 1981. The results for this variable are reported separately in regression Model III, since data for this variable were available for only 771 of the total sample of 1,215 firms. The results show that this variable is not significantly correlated with increases in specialization, and is negatively correlated with increases in relatedness.

We test the economies of scope explanation for diversification using the ratio of R&D expenditures to total sales in 1981 as a proxy for the level of firm-specific assets. R&D expenditures are significantly negatively correlated with increases in focus in all the regressions. This result is consistent with our earlier conjecture that firms with valuable idiosyncratic assets were not subjected to pressures to refocus in the 1980s. It is also consistent with the prior findings of Gort (1962) that diversification is concentrated in technology-intensive industries.

5.2 The determinants of increases in span

Table 6 repeats the analyses presented in Table 5 using growth in 4-digit and 2-digit span as dependent variables. Recall that increases in firm span represent increases in diversification, not increases in focus. The evidence we presented in Section 4 showed that 4-digit span increased among sample firms in the 1980s. Table 6 shows that lack of agency costs was a factor in this expansion. Tobin's q is positively correlated with increases in span, indicating

that firms which had low agency costs in 1981 entered more new businesses during the 1980s. Because change in span is highly correlated with asset growth, this coefficient may also reflect the market's ability to anticipate future growth of high q firms. Consistent with the results presented in Table 5, the regressions in also show that larger firms also increased their span more in the 1980s, as did more focused firms. Finally, the regressions in Table 6 show that firms with higher core market shares in 1981 diversified more than other firms, also consistent with the findings presented in Table 5.

6 Conclusions

This paper has studied the extent of change in corporate focus in the 1980s among the largest firms in the U.S. economy and has examined some of its possible causes. The median surviving firm in our sample refocused by becoming more specialized and more related in the 1980s. However, at the same time, involvement in related lines of business increased, suggesting that firms continued to search for economies of scope in the 1980s.

The results of this study give little support to any of the four explanations for refocusing investigated. In a test of the agency explanation for corporate refocusing, we find that Tobin's q was not a determinant of refocusing during the 1980s. We also find that refocusing was more extensive among private firms than public firms, suggesting weak managerial incentives in public firms were not a predominant cause of subsequent pressures to refocus. This finding is also inconsistent with the story that equity market misvaluation led firms to focus. Other tests cast considerable doubt on the misvaluation, antitrust and internal capital market inefficiency explanations for corporate refocusing.

Overall, the results of this study suggest that changes in corporate focus among surviving firms were a response to changes in the competitive environment. First, we find that the largest firms in the economy diversified during the 1980s, while smaller firms refocused. This suggests that large firms benefitted from economies of scope (such as cost advantages in joint production) not available to smaller firms. Such advantages may have become an important condition for

successful diversification in the 1980s as global competition intensified. Second, we find that firms with high levels of investment in R&D diversified during the 1980s. This is consistent with arguments that R&D investments are an important source of competitive advantage—especially in global markets [Kravis and Lipsey (1992)]. Finally, we find that firms with higher core market shares diversified during the 1980s. High core market share may indicate that firms possess cost or product advantages not available to rivals which can then be transferred to other markets. Once again, these advantages may have become a condition for competing successfully in an increasingly global and technologically advanced marketplace. For smaller firms with low core market shares and low levels of R&D investment, our evidence tells a different story. These firms retrenched during the 1980s by refocusing, divesting assets from both peripheral and core businesses. Their refocusing appears to have been a permanent response to their reduced competitive strength in an economy increasingly dominated by large, successful and innovative firms.

Appendix A.

Research and development (R&D) expense, book value of assets, market value of equity, debt, and revenues data were obtained from the *Industrial COMPUSTAT II tapes*. Tobin's q was defined as the ratio of the market value of the firm's equity plus the book value of its total debt (long and short term) to the book value of its total assets, following Wiles (1990). Data on diversification, specialization, relatedness, asset addition and divestiture rates and the number of establishments per firm were computed using the 1981 and 1989 TRINET Inc.'s *Large Establishment Data Base* research tapes issued in these years. The specialization ratio was computed by dividing the number of employees in the firm's largest 4-digit SIC code (that is, the 4-digit SIC code with the largest number of employees for that firm), by the number of employees for all firms in that 4-digit SIC code. The relatedness ratio was estimated using the same procedure at the 2-digit SIC code level. Establishment drop or divestiture rates were computed as the sum of employees in all establishments listed as being owned by a firm in 1981 which it was not listed as owning in 1989, divided by the total number of employees of that firm in 1981. Conversely, plant addition or acquisition rates were computed as the sum of employees in all establishments listed as being owned by a firm in 1989 which it was not listed as owning in 1981, divided by the total number of employees of that firm in 1989. Analysts' disagreement was computed as the five year mean of the monthly coefficient of variation of analysts' forecasts for earnings one year in advance.

Table 1

Median levels of firm focus, firm size and fraction of private firms in a sample of 3,609 firms which includes the largest 2500 employers in 1981 and 1989. Sales are denominated in millions of 1981 dollars. Change from 1981 to 1989 is measured as the percentage change in the medians. Statistical significance of changes is measured using a one-tailed Wilcoxon signed rank test.

Variable	1981	1989	Change from 1981 to 1989
Number of firms	2,787	2,719	NA
Sales	\$296.7	\$338.9	14.2% ^a
Employees	3,227	2,460	-23.8% ^a
Specialization Ratio	59.6%	65.8%	10.6% ^a
Relatedness Ratio	69.1%	80.7%	16.8% ^a
Span (4-digit level)	6	7	16.7%
Span (2-digit level)	3	3	0.0%
Percent Private	27.8%	39.2%	41.0% ^a

^aStatistically significant at the 1 percent level.

^bStatistically significant at the 5 percent level.

Table 2

Median levels of focus and size and the percent of private firms among the subsample of survivor firms, entering firms and exiting firms in the 1981-89 period. Sales are denominated in millions of 1981 dollars. Change from 1981 to 1989 is measured as the percentage change in the medians. Statistical significance of changes is measured using a one-tailed Wilcoxon signed rank test.

Variable	Year	Survivor Firm Sample	Entering Firm Sample	Exiting Firm Sample
Sample Size		1,906	814	882
Sales	1981	\$301.1	-----	\$288.1
	1989	\$414.2	\$256.2	-----
	Change among survivors	37.6% ^a	-----	-----
	Difference relative to survivors	-----	-38.1% ^a	-4.3%
Employees	1981	3,458	-----	2,828
	1989	2,995	1,500	-----
	Change among survivors	-13.4% ^a	-----	-----
	Difference relative to survivors	-----	-49.9% ^a	-18.2% ^a
Specialization Ratio	1981	58.4%	-----	61.7%
	1989	60.4%	82.4%	-----
	Change among survivors	3.4 ^a	-----	-----
	Difference relative to survivors	-----	36.4% ^a	5.7% ^a
Relatedness Ratio	1981	69.1%	-----	69.1%
	1989	76.2%	91.7%	-----
	Change among survivors	10.3% ^a	-----	-----
	Difference relative to survivors	-----	20.3% ^a	0.0%
Span (4-digit)	1981	6	-----	5
	1989	8	4	-----
	Change among survivors	33.3% ^a	-----	-----
	Difference relative to survivors	-----	-50.0% ^a	-16.7% ^a
Span (2-digit)	1981	3	-----	3
	1989	3	2	-----
	Change among survivors	0.0%	-----	-----
	Difference relative to survivors	-----	-33.3% ^a	0.0%
Percent Private	1981	24.6%	-----	34.6%
	1989	32.2%	55.8%	-----
	Change among survivors	30.9% ^a	-----	-----
	Difference relative to survivors	-----	73.3% ^a	40.7% ^a

^aStatistically significant at the 1 percent level.

^bStatistically significant at the 5 percent level.

Table 3

The median rates of core and periphery establishment addition and divestiture among 1,906 surviving members of the cohort of the 2,500 largest firms in 1981 by size decile. The largest firms in 1981 have the lowest decile number. The core addition (divestiture) rate is the number of establishments added (dropped) to the firm's largest 2-digit SIC industry divided by the total number of establishments in 1981. The periphery addition rate is the number of establishments added outside of the firm's largest 2-digit SIC industry divided by the total number of establishments in 1981.

Size Decile	Periphery Addition Rate (%)	Core Addition Rate (%)	Periphery Divestiture Rate (%)	Core Divestiture Rate (%)
1	43.8	10.3	15.6	4.0
2	35.4	11.9	15.6	4.4
3	28.1	19.0	18.7	6.3
4	20.8	16.7	15.9	6.6
5	23.0	14.3	17.9	8.3
6	17.1	18.5	23.0	10.0
7	17.6	18.6	17.4	8.5
8	20.4	16.7	20.9	8.5
9	20.7	17.4	25.5	10.1
10	23.1	16.7	16.6	7.8

Table 4

Median levels of focus and size between groups which stayed public, stayed private and changed from public to private and vice-versa in the 1981-89 period.

	Median Sales (Millions)	Median Employees	Median Specialization Ratio	Median Relatedness Ratio	Median Span (4-digit)	Median Span (2-digit)
Stayed public (N=1,235)						
1981	\$375	4,433	54.9%	67.6%	8	3
1989	\$579	4,146	55.1%	72.4%	10	3
Growth	54.4% ^a	-6.5%	0.4%	7.1% ^a	25.0% ^a	0.0%
Stayed private (N=411)						
1981	\$184	1,763	65.6%	76.3%	4	2
1989	\$213	1,635	72.3%	85.2%	5	2
Growth	15.8% ^b	-7.3%	10.2% ^a	11.7% ^a	25.0% ^a	0.0%
Public to private (N=202)						
1981	\$297	3,981	55.9%	65.2%	8	3
1989	\$296	2,712	61.2%	73.2%	7	3
Growth	-0.3%	-31.9% ^a	9.5% ^b	12.3% ^a	-12.5%	0.0%
Private to public (N=57)						
1981	\$241	1,942	83.8%	84.7%	4	2
1989	\$384	2,340	79.1%	84.8%	6	2
Growth	59.3% ^a	20.5%	-5.6%	0.1%	50.0% ^a	0.0%

^aStatistically significant at the 1 percent level.

^bStatistically significant at the 5 percent level.

Table 5

Reduced rank regressions showing the determinants of growth in the specialization and relatedness ratios among 1215 surviving publicly traded firms between 1981 and 1989. Coefficients are elasticities showing percentage impact of a unitary shift in an independent variable on the dependent variable. t-statistics are given in parentheses.

	Specialization Ratio			Relatedness Ratio		
	I	II	III	I	II	III
Tobin's q in 1981	-0.016 (0.55)	-0.017 (0.58)	-0.015 (0.37)	-7.3E-4 (0.03)	0.0013 (0.05)	-0.044 (1.10)
Specialization/relatedness in in 1981	-0.44 (16.1) ^a	-0.44 (16.1) ^a	-0.41 (11.5) ^a	-0.45 (17.0) ^a	-0.45 (17.0) ^a	-0.44 (12.9) ^a
Total book value of assets in 1981	-0.10 (3.73) ^a	-0.10 (3.73) ^a	-0.10 (2.34) ^b	-0.076 (2.75) ^a	-0.076 (2.74) ^a	-0.15 (3.46) ^a
Core market share in 1981	-0.10 (3.75) ^a	-0.09 (2.30) ^b	-0.12 (3.29) ^a	-0.083 (2.99) ^a	-0.11 (2.63) ^a	-0.06 (1.70) ^c
Upper quartile market share in 1981	----	-10.6 (0.34)	----	----	25.6 (0.81)	----
Variability in analysts' earnings forecasts in 1981	----	----	-0.013 (0.24)	----	----	-0.12 (2.14) ^b
R&D expenses/sales in 1981	-0.087 (2.75) ^a	-0.087 (2.75) ^a	-0.081 (2.05) ^b	-0.14 (4.49) ^a	-0.14 (4.50) ^a	-0.13 (3.54) ^a
Intercept	1066 (27.5) ^a	1063 (26.8) ^a	1055 (15.4) ^a	1064 (28.9) ^a	1070 (28.3) ^a	1161 (17.9) ^a
Sample size	1215	1215	771	1215	1215	771
Adjusted R ²	0.19	0.19	0.17	0.21	0.21	0.20

^aStatistically significant at the 1 percent level.

^bStatistically significant at the 5 percent level.

^cStatistically significant at the 10 percent level.

Table 6

Reduced rank regressions showing the determinants of growth in span among 1215 surviving publicly traded firms between 1981 and 1989. Coefficients are elasticities showing percentage impact of a unitary shift in an independent variable on the dependent variable. t-statistics are given in parentheses.

	4-digit span			2-digit span		
	I	II	III	I	II	III
Tobin's q in 1981	0.17 (5.83) ^a	0.17 (5.79) ^a	0.19 (4.47) ^a	0.047 (1.64) ^c	0.042 (1.47)	0.085 (2.10) ^b
Span in 1981	-0.29 (9.62) ^a	-0.29 (9.61) ^a	-0.21 (5.42) ^a	-0.39 (13.9) ^a	-0.39 (13.9) ^a	-0.40 (11.4) ^a
Total book value of assets in 1981	0.23 (7.76) ^a	0.23 (7.75) ^a	0.23 (4.99) ^a	0.18 (6.49) ^a	0.18 (6.46) ^a	0.24 (5.57) ^a
Core market share in 1981	0.18 (6.06) ^a	0.18 (4.23) ^a	0.18 (4.73) ^a	0.09 (3.22) ^a	0.14 (3.48) ^a	0.057 (1.56) ^c
Upper quartile market share in 1981	----	-5.02 (0.15)	----	----	-55.8 (1.76) ^c	----
Variability of analysts' earnings forecasts in 1981	----	----	-0.044 (0.79)	----	----	0.039 (0.70)
R&D expense/sales in 1981	0.052 (1.55)	0.052 (1.55)	0.037 (0.90)	0.10 (3.10) ^a	0.10 (3.10) ^a	0.14 (3.61) ^a
Intercept	401 (12.6) ^a	400 (12.1) ^a	352 (5.85) ^a	591 (18.3) ^a	575 (17.2) ^a	505 (8.62) ^a
Sample size	1215	1215	771	1215	1215	771
Adjusted R ²	0.13	0.13	0.10	0.18	0.18	0.18

^aStatistically significant at the 1 percent level.

^bStatistically significant at the 5 percent level.

^cStatistically significant at the 10 percent level.

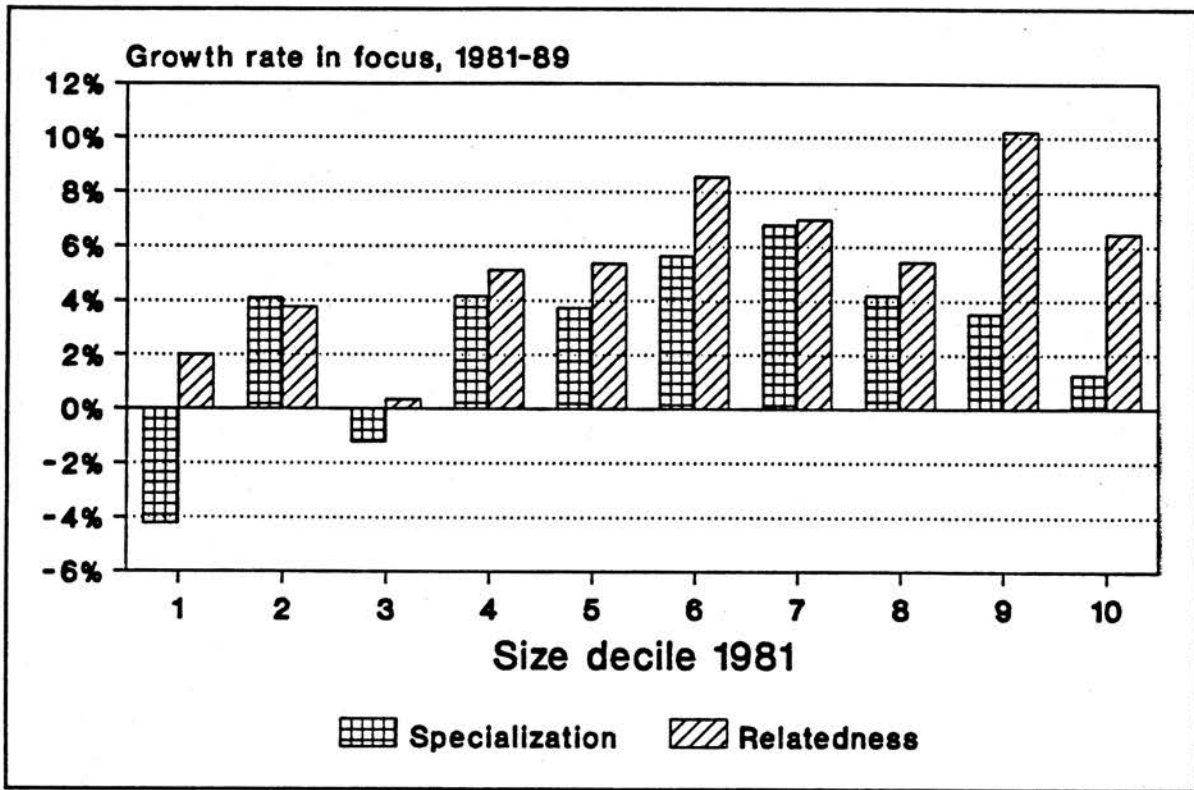


Fig. 1. Change in specialization and relatedness by 1981 size decile.

The figure shows percentage changes in the specialization ratio and the relatedness ratio between 1981 and 1989 among 1,906 surviving members of the cohort of the 2,500 largest firms in 1981. The largest firms in 1981 have the lowest decile number. Each decile represents 190 firms.

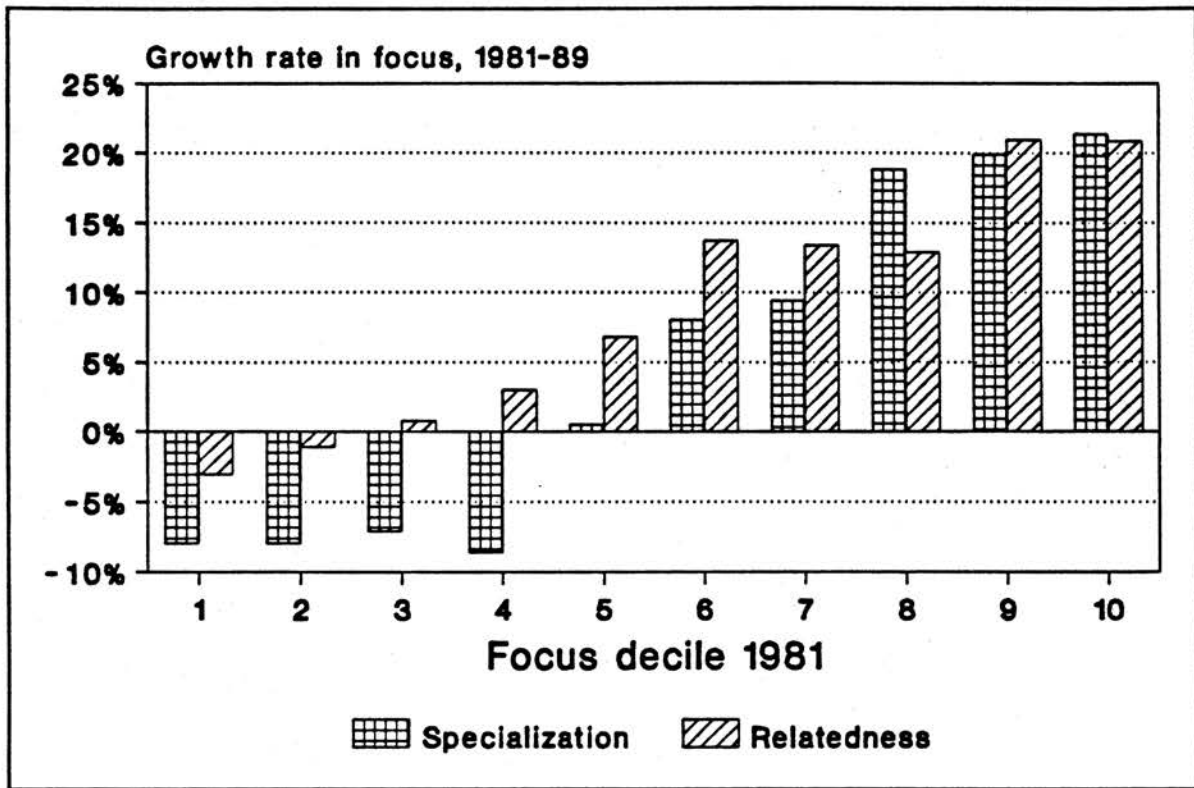


Fig. 2. Change in focus by 1981 focus decile.

The figure shows changes in specialization and relatedness among 1,906 surviving members of the cohort of the 2,500 largest firms in 1981. The firms with the highest specialization ratio in 1981 have the lowest decile number.

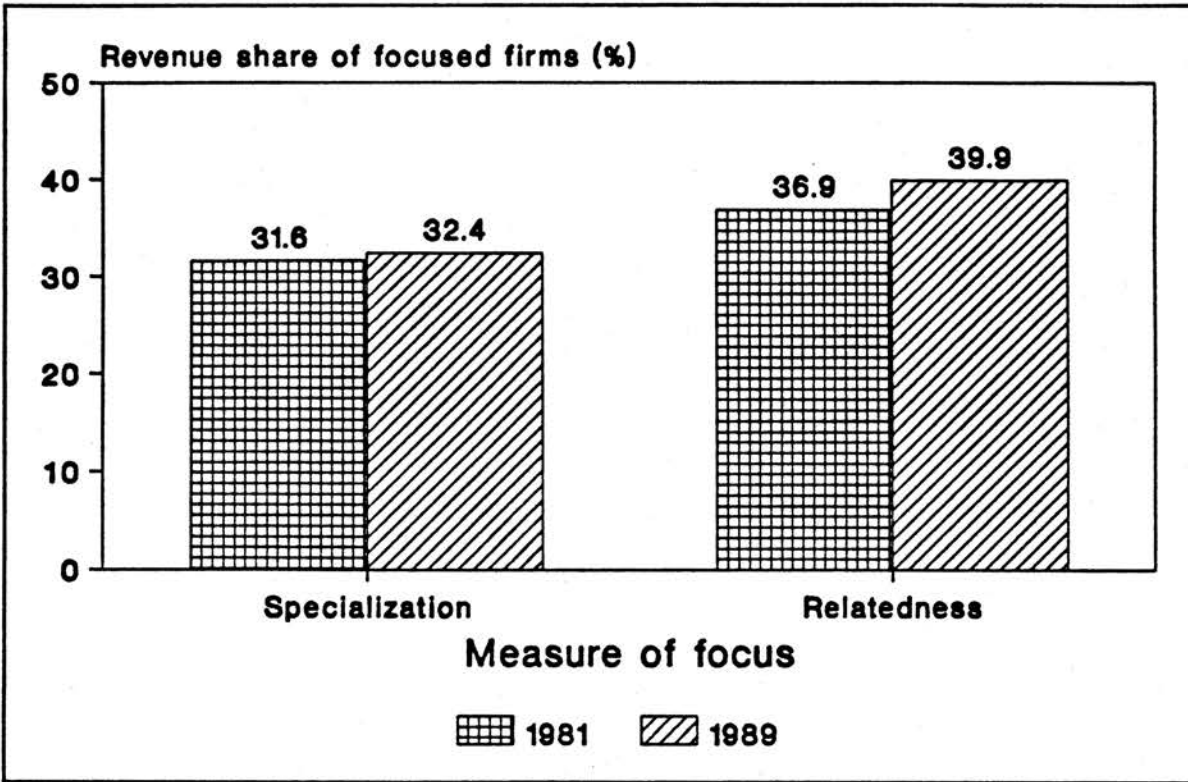


Fig. 3. Change in aggregate scope of internal capital markets.

The figure shows the share of aggregate revenues of all surviving firms with above median focus in 1981 and 1989. These firms had a relatedness ratio greater than 69.1% (the 1981 median value).

In 1981 952 firms had a relatedness ratio more than the median of 69.1% with total sales revenues of \$1.21 trillion. There were 953 firms with a relatedness ratio less than 69.1% with sales revenues of \$1.55 trillion. By 1989, 811 firms had a relatedness ratio less than 69.1% with total revenues of \$1.68 trillion, and 1,094 firms had a relatedness ratio greater than 69.1% with total revenues of \$1.12 trillion. Sales revenues are denominated in 1981 dollars.

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