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## Were the Good Old Days That Good? The Evolution of Managerial Stock Ownership Since the Great Depression

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**Working Paper No. 131**

**WERE THE GOOD OLD DAYS THAT GOOD? THE  
EVOLUTION OF MANAGERIAL STOCK  
OWNERSHIP SINCE THE GREAT DEPRESSION**

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**The Evolution of Managerial Stock Ownership Since the Great Depression**

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## **Were the Good Old Days That Good?**

### **The Evolution of Managerial Stock Ownership Since the Great Depression**

#### **Abstract**

Despite the widespread view from Berle and Means (1932) onward that ownership of firms is increasingly separated from managerial control of those firms, almost no time series research exists to address this issue. Using the earliest available source on ownership for a large cross-section of U.S. firms, we compare managerial ownership and other firm characteristics for nearly the universe of 1,500 exchange-listed firms in 1935 with 4,200 exchange-listed firms today. Contrary to the conventional view, we find that ownership by officers and directors has risen from 13 percent to 21 percent between 1935 and 1995. After investigating the comparability of the data over such a long horizon, we examine how changes in the costs and benefits of managerial ownership may account for its increase. Alternative control devices are used as least as intensively today as earlier in the century, so managerial ownership is not simply acting as a substitute for other methods of mitigating agency problems. The relation between ownership and performance appears little changed over time. Lower volatility and the development of financial markets, however, appear to be important factors contributing to the rise in managerial ownership.

JEL Codes: G32, L20, N62.

Keywords: Ownership Structure, Agency Problem, Theory of the Firm.

**Were the Good Old Days That Good?  
The Evolution of Managerial Stock Ownership Since the Great Depression**

by

Clifford G. Holderness, Randall S. Kroszner, and Dennis P. Sheehan

**I. Introduction**

Following the publication of Berle and Means' *The Modern Corporation and Private Property* in 1932, economists and policy makers have been struggling with the transformation of capitalist enterprises that they described. Berle and Means argued that since the dawn of capitalism, most production had taken place in organizations in which the owners were also the managers. Beginning late in the nineteenth century, however, technological innovation was causing efficient firm scale to increase to the point that no individual, family, or group of managers would have sufficient wealth to own a controlling interest in major firms. As a consequence, enterprises faced "the dissolution of the old atom of ownership into its component parts, control and beneficial ownership" (Berle and Means 1932, p. 8).

One of the key challenges of this new stage of capitalism was to determine how to reign in managers whose interests and actions were presumably beyond the control of the firms' owners. Berle and Means (1932, pp. 8 and 9) warned that the separation of ownership and control "destroys the very foundation on which the economic order of the past three centuries has rested" because top managers and directors "own so insignificant a fraction of the company's stock that the returns from running the corporation profitably accrue to them in only a very minor degree." Their influential analysis continues (1932, p. 47): "Dispersion in the ownership of separate enterprises...has already proceeded far, it is rapidly

increasing, and appears to be an inevitable development.”<sup>1</sup>

Many contemporary scholars, such as Jensen (1989 and 1993) and Roe (1990 and 1994), have echoed these concerns about low managerial stock ownership. They argue that a wide variety of tax incentives, antitrust policies, regulations, and political pressures, rather than anything inherent in capitalism, has led to the rise of what Roe (1994) calls “strong managers and weak owners.”<sup>2</sup>

Little, if any, systematic time-series evidence, however, has been used to investigate the proposition that managerial ownership of firms has declined and that its low level is an inherent feature of the modern public corporation.<sup>3</sup> This paper attempts to fill the gap in our knowledge by comparing the level of managerial ownership in 1935 with its level in 1995 and then by investigating possible explanations for the change in insider ownership over time. Using the earliest reliable source on ownership (SEC 1936), as described in Section II, we create a data base on ownership, performance, and other firm characteristics for a comprehensive cross-section of roughly 1,500 publicly traded United States firms in the 1930s. To create a modern benchmark for comparison, we gather data from a CD-ROM data base on more than 4,200 exchange-listed firms.

Contrary to the received wisdom, we find that managerial ownership of publicly traded firms has increased since 1935. As we detail in Section III, the average

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<sup>1</sup> As soon as the book was published, commentators were noting its potential importance. Professor Charles Beard (1933), for example, wrote: “In the time to come this volume may be proclaimed as the most important work bearing on American statecraft between the publication of the immortal ‘Federalist’ by Hamilton, Madison and Jay and the opening of the year 1933.” For an overview of the enduring influence of Berle and Means (1932), including its role in leading to the establishment of the SEC, see the 1983 *Journal of Law and Economics* symposium celebrating the 50th anniversary of the book's publication.

<sup>2</sup> An oft-cited regulation is the Glass-Steagall Act which forced the separation of commercial banking from investment banking and equity ownership, causing the United States to develop a much more fragmented financial system and system of corporate governance than in “universal” banking countries such as Germany (Kroszner 1996 and Kroszner and Rajan 1994).

<sup>3</sup> Berle and Means (1932) examined the largest 200 nonfinancial firms in 1929 and classified most as effectively under the control of management; however, they did not study firms over time.

percentage of shares held by a firm's officers and directors as a group rose from 13 percent in 1935 to 21 percent in 1995. Median holdings doubled from 7 percent to 14 percent. In terms of real 1995 dollars, insiders' holdings increased from \$18 million to \$73 million.

In Section IV we investigate and reject the possibility that the increase in managerial ownership simply reflects problems in making sixty-year comparisons. Ownership data from 1935 and 1995 appear to be accurate and similarly calculated. Furthermore, the nature and composition of exchange-listed corporations in the two periods appear to be similar. What differences do emerge, such as a decrease in managerial tenure over time, only serve to strengthen our basic finding of an increase in managerial ownership.

Section V focuses on alternative explanations for the increase in managerial ownership by analyzing how the costs and benefits of such ownership may have changed over time. Because managerial ownership is only one of several mechanisms that can mitigate agency problems, we first examine whether greater managerial ownership has been accompanied by less reliance on other methods of corporate control. We find no evidence of a substitution over time from these alternative mechanisms, such as incentive-based pay, monitoring by the board, the market for corporate control or product-market competition, to insider ownership. Interestingly, all of the methods appear to be used at least as intensively, if not more so, today as 60 years ago.

We then turn to the relation between firm performance (as measured by Q) and the level of managerial ownership. We find that this relation is remarkably similar for 1935 and 1995; we thus rule out changes in this relation as a source of the increase in insider ownership.

Finally, we investigate how firm-specific characteristics associated with the costs of monitoring affect the level of managerial ownership. Although factors such as firm size and regulation have similar effects on managerial ownership in 1935 and 1995, we find that the volatility of the environment in which the firm operates

has contrasting effects in the two periods. More specifically, it appears that the lower volatility of financial markets now compared with earlier in the century may be an important factor contributing to the growth in managerial ownership. This result is consistent with Merton's (1995, p. 466) suggestion that a key consequence of innovations in financial markets and the theory of finance have been to reduce the costs of hedging over time. Risk-averse individuals, thus, now face lower costs of holding a given fraction of their wealth in a particular firm. We conclude with a brief summary.

## II. Data Sources and Definitions

To document the patterns of corporate ownership in the early part of this century, we use a rich but neglected data source from the Securities and Exchange Commission. Concerns about supposedly abusive trading by officers and directors motivated the insider reporting requirements in the Securities and Exchange Act of 1934. Section 16 of the Act mandates that any firm with equity listed and registered on national securities exchanges must report the equity holdings of officers and directors to the SEC. The SEC (1936) collected and published the Section 16 reports for share holdings as of December 31, 1935.<sup>4</sup>

This source, which is the earliest systematic evidence available on stock ownership, provides a comprehensive cross-section of the ownership structure for more than 1,500 publicly traded United States corporations for the 1930s. For each firm, the SEC lists the number of shares owned by each board member and officer, even if the officer's or director's ownership stake was zero. The SEC required the reporting of both direct holdings and indirect holdings. Direct ownership means

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<sup>4</sup> With two exceptions, these data have been ignored since the 1930s. R.A. Gordon (1936 and 1938) tabulated small sub-samples to investigate corporate ownership. Stigler and Friedland (1983) used this source to reclassify the control structures of the large firms in the Berle and Means (1932) sample but did not investigate it further. Recently, Hadlock and Lumer (1995) have used some of these data in their historical investigation of managerial compensation and turnover.



that the individual holds title to the shares, has the voting rights associated with them, and receives any pecuniary benefits of share ownership, such as dividends and capital gains. Indirect ownership means that the individual does not personally hold title to the shares but exercises some control over the voting rights associated with those shares and may receive pecuniary benefits of the shares, albeit not directly. If a director of one company also is a partner in an organization with an ownership interest in that company, for example, the SEC (1936) would list shares personally owned by the individual as the director's "direct" ownership and the shares owned by the partnership as "indirectly" owned by the individual. Shares held in trust for a family member or an organization also would be reported as indirect ownership. We define total managerial ownership as the sum of the direct and the indirect holdings.

We supplement this ownership data with information from the *Moody's Manuals* on each firm's long-term debt, total assets, income, year of incorporation, industry, and number of shares outstanding. The *Commercial and Financial Chronicle*, *Bank Quotation Record*, CRSP provide the share prices as of the end of 1935. Firms which were not listed in these sources have been dropped; our full 1935 sample contains 1,419 firms.<sup>5</sup> The average firm has slightly more than 10 officers and directors reporting their ownership stakes, so there are roughly 15,000 individual share holding records in our 1935 data base.

To understand how ownership has evolved over the last 60 years, we need a modern benchmark for comparison. The 1935 sample includes nearly the universe of firms on national exchanges, so we turn to the modern source with the most comprehensive and accurate coverage, Compact Disclosure.<sup>6</sup> This CD-ROM data

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<sup>5</sup> Our ownership results do not change if we use the 1,588 firms for which we have the ownership information but not all of the other data.

<sup>6</sup> Anderson and Lee (1996) compare Compact Disclosure, as well as the Spectrum and Value Line ownership data bases, with actual proxy statements and conclude that Compact Disclosure is the best ownership data base currently available because it has "superior coverage, the capacity to rapidly download data, and a high degree of accuracy."

base contains information from proxy statements and annual reports on more than 5,600 United States companies traded on the NYSE, AMEX, and NASDAQ's National Market System (NMS).<sup>7</sup> We use the March 1995 disks which contain end-of-1994 and some beginning-of-1995 data. For 4,202 of these firms, this source provides complete data on total ownership by the officers and directors, the number of shares outstanding, market price of equity, standard industrial classifications, and debt. To determine the age of the firms, we collect the year of incorporation from current *Moody's Manuals*. As additional modern benchmarks, we compare our results to those of other recent studies of corporate ownership, as described below.

Table 1 compares some basic features of the samples of publicly traded firms we have collected for 1935 and 1995. Panel A describes the full sample, and Panel B describes the sub-sample of firms listed on the NYSE in each of those years. In these and all subsequent tables, the 1935 data are expressed in constant 1995 dollars using the GDP deflator, which has risen roughly 11-fold during this 60 year period. On average, publicly traded firms are about four times larger in real terms today than in 1935, with the distribution being highly skewed in both periods. The mean ratio of debt-to-total value, defined as market value of equity plus long-term debt, has hardly changed over the last 60 years. The mean and median market-to-book ratios are somewhat lower in 1935 than in 1995, perhaps reflecting the different states of the equity markets and investment opportunities during the two periods. We discuss these and other firm characteristics in more detail after presenting the ownership results.

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<sup>7</sup> The equivalents of the non-NMS "over-the-counter" firms and firms traded on the "pink sheets" would not have been included in the SEC's 1935 sample, and we do not include them in our modern sample.

### III. Changes in Managerial Ownership Since 1935

Contrary to the predictions of many scholars over the years, managerial stock ownership has increased since Berle and Means (1932) published their famous book. Table 2 compares the distribution of managerial ownership across publicly traded firms in 1935 and 1995. In the full sample of publicly traded firms, average equity ownership of officers and directors has grown from 12.9 percent in 1935 to 21.1 percent in 1995. Median managerial holding has more than doubled from 6.5 percent to 14.4 percent between 1935 and 1995.<sup>8</sup> If we restrict the comparison to the firms listed on the NYSE, the average and median managerial ownership likewise increase: from 8.6 percent to 12.2 percent for the mean and from 3.7 percent to 4.7 percent for the median. The differences between the 1935 and 1995 means and medians for both the full samples and the NYSE samples are statistically significant, with *p*-values of less than 0.01. The first and third quartiles of the distribution of managerial ownership also are higher in 1995 than in 1935.

In the managerial ownership statistics reported in Table 2, each firm receives equal weight. An alternative way to measure managerial ownership is with a weighted average, with the total market value of each firm (equity plus debt) as the weight. Such a value-weighted average of managerial stock ownership for the full sample shows an increase from 4.2 percent in 1935 to 5.9 percent in 1995, and this difference has a *p*-value of 0.08. Because inside ownership tends to be inversely related to firm size (Demsetz and Lehn 1985, Holderness and Sheehan 1988) and is bounded by zero, a value-weighting scheme tends to shrink ownership levels and hence diminish differences between the two periods.

Panel B of Table 2 shows that the (1995 real) dollar value of managers' stock

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<sup>8</sup> In addition, we calculated the ratio of the value of equity owned by officers and directors to total market value of the firm, that is, market value of equity plus long-term debt. The mean (median) rises from 10.6 percent (5.0 percent) in 1935 to 16.6 percent (10.6 percent) in 1995.

ownership has increased since 1935.<sup>9</sup> After adjusting for inflation, we find that the average value of insiders' aggregate holdings has roughly quadrupled from \$17.9 million to \$73.0 million. The median value has risen from \$3.0 million to \$16.2 million. The mean and median real dollar values have grown by even larger amounts for the NYSE firms. Once again, the difference between the 1935 and 1995 means, as well as the difference between the medians, have *p*-values of less than 0.01.

Table 3 and Figure 1 demonstrate that ownership declines as firm size increases in both 1935 and 1995. The first two columns of Table 3 report the (real) market value of the firm at the midpoint of each firm size decile for 1935 and 1995 and the subsequent columns compare the mean and median ownership in each firm size decile. The growth in managerial ownership is most pronounced for the nine smallest size deciles of firms. For the largest 10 percent of firms, managerial ownership in both periods becomes a small fraction of total equity, and the growth between 1935 and 1995 largely disappears. Figure 1 plots the relation between firm size (measured in log of 1995 dollars) and managerial ownership for the two periods. For any given firm size, managerial ownership is higher in 1995 than it is in 1935.

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<sup>9</sup> The dollar value of holdings may provide a better indication of a manager's incentives and willingness to bear risk than does percentage value of holdings. Holthausen and Larcker (1991) argue that "if it is equally difficult to affect firm value by a given percentage, say 5 percent of equity value, then dollar value of holdings is the appropriate measure, not percentage ownership. However, if it is equally difficult to get a given dollar magnitude change in the value of the equity, say \$1,000, then the manager's percentage ownership is the appropriate measure of incentive." Hanka (1994), in one of the few studies to consider both measures, finds that both the percentage stock holdings of management and the dollar value of those holdings affect the magnitude of corporate donations to charity.

#### **IV. Comparability of Insider Ownership in 1935 and 1995: The Evolution of Reporting Practices, Firms, and Executives**

To understand better the increase in managerial ownership from 1935 to 1995, we now consider factors that might affect the comparability of data over such a long horizon. Investigating these factors will help to determine whether our results on increasing insider ownership arise due to problems of comparison over a sixty year period or whether they reflect something more fundamental about how agency problems in public corporations have been addressed over time. More specifically, we want to ensure that the ownership data are accurate and similarly calculated for the two periods. We also want to ensure that the firms and the managers in our 1935 sample are comparable with those in our 1995 sample. First, however, we investigate whether data from 1935 and 1995 are representative of the levels of insider ownership for their respective eras.

##### **A. Are 1935 and 1995 Representative Years?**

As noted previously, 1935 is the earliest year for which reliable data on managerial ownership are available for a large cross-section of United States firms. By choosing 1935 and 1995, we are thus able to construct the longest possible time-series on insider ownership of public corporations in the United States. A potential concern, however, is that 1935 and 1995 could be anomalous years for insider ownership.

To determine whether our results are sensitive to the particular years chosen, we compare our ownership data with that from other studies that address similar years. The only systematic study of managerial ownership prior to 1935 was conducted in 1922 by the Federal Trade Commission (FTC). The FTC surveyed a large number of corporations (both public and private) that were considered "representative" of the 43 industrial groups established by the Bureau of Internal Revenue, predecessor of the Internal Revenue Service. One of the requested items was the common stock ownership of the firm's officers and directors. The FTC

(1926) reports that the average insider ownership of the respondents was 10.7 percent, close to the 12.9 percent we find in 1935. Although the FTC (1926) study must be treated with caution due to potential sampling problems,<sup>10</sup> it suggests that the level of insider ownership in the 1920s may have been similar to what we document for 1935.<sup>11</sup>

It also appears that that insider ownership remained stable for at least several years after 1935. In 1939 the Temporary National Economic Committee (TNEC) used data from proxy statements, SEC documents, and direct correspondence with firms to compile a data base of insider ownership of the 200 largest firms, both private and public. TNEC (1940) found that officers and directors owned an average (median) of 4.6 percent (1.5 percent) of the common stock of these large firms. By comparison, average (median) ownership by officers and directors of the largest 200 firms in our 1935 sample was 4.1 percent (2.1 percent).

The 1995 data likewise appear to be representative of their era. Mikkelson and Partch (1989), for example, collect officer and director ownership data from proxy statements for 240 randomly chosen NYSE- and AMEX-listed firms in three years. They report average insider ownership of 19.8 percent in 1973, 20.5 percent in 1978, and 18.5 percent in 1983. The average ownership for the three years pooled is 19.6 percent, and the median is 13.9 percent. These numbers are similar to our

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<sup>10</sup> The FTC, for example, does not describe the criteria used to select the surveyed firms. Moreover, there was no penalty for not responding or for not responding truthfully, and only 4,367 of more than 10,000 firms returned the surveys. The FTC reports little information about the nonresponding firms, so it is not possible to determine the extent or direction of any selection biases.

<sup>11</sup> In the 1920s, Taussig and Barker (1926) requested a variety of information from firms for the period 1904 to 1914. They (1926, p.3) surveyed an unspecified number of "manufacturing concerns, and among them to those producing staple goods under free competition. Cases of known or suspected monopoly were excluded." They received approximately 400 responses and reported that "about one quarter of the total capital stock was owned by the executives." Selection problems and the fact that they did not ask for information on current ownership but for data which was at least a decade old raise serious questions about the reliability of their results.

1995 average of 21.1 percent and median of 14.4 percent.<sup>12</sup> McConnell and Servaes (1990) examine insider ownership in roughly 1,000 *Value Line* firms in 1976 and 1986. They report average (median) insider ownership of 13.9 percent (6 percent) in 1976 and 11.8 percent (5 percent) in 1986. Since *Value Line* tends to include only the largest firms (Anderson and Lee 1996), the McConnell and Servaes (1990) sample is most directly comparable to our NYSE sample. Their findings are similar to our finding of an average (median) ownership of 12.2 percent (4.7 percent) for NYSE firms.

The years we have chosen thus appear to be representative of the level of insider ownership for their respective eras, with insider ownership stable in the periods 1922 to 1939 and 1973 to 1995. The increase in managerial ownership occurred sometime between 1939 and 1973.

## **B. Comparability of 1935 and 1995 Reporting and Data**

### *Have Insider Ownership Reporting Practices Changed?*

If insider ownership were reported and calculated differently in 1935 and 1995, the comparisons we make above would not be valid. These practices, however, do not appear to have changed. The data from both periods result from Section 16 of the Securities and Exchange Act of 1934. That provision and the SEC's interpretation of it are similar in both periods. Furthermore, insiders and firms were subject to similar punishments for misreporting in 1935 as today.

Under-reporting in 1935 could possibly have occurred due to the novelty of corporations being forced to reveal what had been confidential information. The reporting requirements, however, are relatively simple and clear and had been

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<sup>12</sup> In 1987, the Office of the Chief Economist of the SEC conducted an (unpublished) study of the insider ownership of 100 randomly chosen public corporations and found an average insider ownership of 21.2 percent. The inclusion of NASDAQ's NMS firms in our 1995 sample and the SEC's sample but not in Mikkelson and Partch's (1989) may explain why we and the SEC find somewhat higher ownership levels than do Mikkelson and Partch.

widely discussed in the financial press in the 1930s (for example, *Commercial and Financial Chronicle*, December 26, 1935). Furthermore, scholars who used the data contemporaneous with its release, in particular R. A. Gordon (1936 and 1938), thought that any errors or omissions in the 1935 data were likely to be minor.

We nevertheless check for under-reporting in 1935 by comparing insider ownership figures for the 169 firms in our sample that also are in the TNEC (1940) sample of large firms in 1939. For these firms, the mean (median) officer and director ownership is 5.0 percent (1.7 percent) in 1935 and 4.2 percent (1.3 percent) in 1939. Because the reported insider ownership for the firms appearing in both samples is similar but somewhat lower in 1939, there is no evidence of under-reporting in 1935.

One change in reporting that has occurred concerns the treatment of executive stock options. Only since the late 1970s has the SEC required stock options exercisable within 60 days be included in the ownership totals of officers and directors. The exclusion of options from our 1935 sample is unimportant because prior to 1950 stock options were strongly tax-disfavored and were virtually non-existent (Lewellen 1968). Although the 1950 change in the tax law initially led to a large increase in the granting of stock options, a series of legislative changes during the 1960s and early 1970s significantly reduced the preferential tax treatment of executive stock options, and they once again largely disappeared during the 1970s (Lewellen 1975 and Yermack 1993). In the 1990s, options have once again become widespread (Yermack 1995). The use of options, however, apparently has not substantially affected the level of insider ownership because Mikkelson and Partch (1989) found that average insider ownership was approximately constant between 1973 and 1983 and similar to what we document for 1995. In other words, insider ownership increased to its current level before the growth of executive stock options grants in the 1990s and does not appear to have fluctuated with the popularity of



stock option grants in recent years.<sup>13</sup>

A final reporting practice issue concerns indirect ownership. In 1935 the SEC appears to have been careful to require reporting of indirect ownership through family trusts, partnerships, corporations, or other institutions with which the officer or director was affiliated. The SEC (1936) describes whether an officer or director made any disclaimer about beneficial ownership of indirect holdings. We have included all of these shares, regardless of disclaimer, as part of the 1935 total managerial ownership. Including all indirect holdings can lead to double-counting of shares, for example, when more than one trustee of the same trust sits on the board and so could impart an upward bias to our 1935 figures.<sup>14</sup> In contrast, the total managerial ownership figures we use for 1995 do not always include all indirect holdings.<sup>15</sup> Because we include all indirect holdings in 1935, the inconsistency should bias the ownership percentages downward for 1995 relative to

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<sup>13</sup> To determine the relative magnitude of options in our 1995 data, we examined the proxies of a random sample of 150 firms in our 1995 sample and found that on average one-quarter of the total managerial equity ownership reported was in the form of options. Managers tend to exercise their options (given the strong market performance of the 1990s, most options are deeply in the money), typically, long before expiration (Hemmer, Matsunaga, and Shevline 1996). It thus seems reasonable to include options exercisable within 60 days as effectively part of managerial ownership. Interestingly, we find a negative correlation between share of insider ownership through options and the total fraction of insider ownership (including the options), so greater use of options is associated with a lower level of total managerial ownership.

<sup>14</sup> The *Commercial and Financial Chronicle* (December 26, 1936) discusses such an example at General Motors. Typically, the amount of indirect ownership would reflect the proportionate ownership stake by the individual in the corporation or partnership. If a director was a 50 percent partner in a firm that owned 2,000 shares of the reporting firm, for example, indirect ownership for the director would be 1,000. Total number of shares in trusts and familial holdings typically were attributed in full as indirect ownership. Including all of the indirect holdings in our calculations did not lead to total ownership for any firm to exceed 100 percent.

<sup>15</sup> This inconsistency can be illustrated by comparing Hershey Foods Company to St. Joe Paper Company. The CEO of Hershey is a trustee of the Hershey Trust, which owns a majority of the common stock of Hershey. Although a footnote in the proxy clearly describes this relationship, the Hershey Trust's block is not included in the total beneficial ownership of officers and directors. The CEO of St. Joe Paper Company is a trustee of the Alfred duPont Charitable Trust, which owns a majority of St. Joe. In this case, however, the block held by the Trust is included in the total beneficial ownership of officers and directors.

1935, thereby leading us to understate the increase in managerial ownership over time.

*Has the Number of Persons Reporting Increased?*

Another possible explanation for the increase in managerial ownership is that there are more persons per firm reporting today than in 1935. Although we have the number of officers and directors reporting for each firm in 1935, the CD-ROM data base we use for 1995 lacks this information. Accordingly, we gathered this information from individual proxies for 150 firms randomly chosen from our 1995 sample. The average board size is 8.3 in our (full) 1935 sample and 8.2 in our (random) 1995 sample. The average number of non-director officers reporting was 2.3 in 1935 and 2.8 in 1995. The total number of persons reporting per firm was thus almost identical in the two periods, 10.6 in 1935 and 11.0 in 1995.<sup>16</sup> Changes in the number of people reporting, therefore, cannot account for the increase in insider ownership we document.

*Is Common Stock the Appropriate Focus?*

To investigate the separation of ownership from control with modern data, researchers have focused on the ownership of common stock by management and ignored preferred stock because the latter is of little importance today. Because more companies had preferred stock outstanding in the 1920s and 1930s than today, it is possible that our finding of an increase in common ownership by managers is simply the result of a substitution of common for preferred shares over time.

Earlier in the century, however, managers did not hold significant amounts of preferred relative to common stock. First, the size of the preferred issues relative to common issues was normally quite small (Dewing 1941). The FTC (1926), for

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<sup>16</sup> When we compare the 56 firms in our 1995 random sample that were listed on the NYSE with the 1935 NYSE sample, we find similar results. The 1935 (1995) NYSE firms have an average of 9.7 (9.9) board members and 3.2 (3.5) non-director officers reporting.

example, reports that in 1922 for the average firm with preferred outstanding, the number of preferred shares was only 21 percent of the number of common shares. Second, managers held a much smaller fraction of the preferred shares outstanding than of the common. In their 1922 survey, the FTC (1926) found that officers and directors held 5.8 percent of the preferred shares, only about half of their percentage ownership of common. Thus, if we multiply the mean preferred ownership percentage by the mean proportion of preferred relative to common stock, on average this would increase the percentage of stock (both common and preferred) held by insiders in 1935 by only 1.2 percent.<sup>17</sup>

There is a related concern that preferred stock might have had superior voting rights relative to common; managers accordingly could have exercised control with relatively low levels of ownership. In fact, the opposite was the case. During the 1930s the vast majority of preferred stock had no voting rights except when the firm fell into financial distress.<sup>18</sup> Given the relatively small number of preferred shares outstanding and the restrictions on voting, except in financial distress, it was virtually impossible to exercise control through the preferred stock.<sup>19</sup>

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<sup>17</sup> Similarly, in a 1939 survey TNEC (1940) found that 95 percent of the value of officers' and directors holdings was in common stock.

<sup>18</sup> In a comprehensive study of 844 preferred stocks outstanding between 1925 and 1930, Dewing (1934, pp. 193-194) reports that only 29 percent had the same voting rights as common shares. In 7 percent of the cases, the preferred issues had no voting rights under any circumstances. The remaining 64 percent of the preferred stocks would acquire voting rights only when the firm violated a covenant, such as missing a dividend on preferred, being in arrears on sinking fund payments, or experiencing a decline in "net current assets" below a specified level.

<sup>19</sup> Dewing (1941, pp. 163-164) writes: "The theoretical right of preferred shareholders to vote for directors, and thus exert a positive influence in the management of the corporation is of little practical moment because their voice is lost in that of the multitude of common shareholders. The Securities and Exchange Commission has aptly said: '...such distribution of voting power falls short of being fair and equitable.'"

### C. Comparability of Firms and their Executives in 1935 and 1995

#### *Have the Number and Relative Importance of Listed Firms Changed?*

Our data bases encompass firms listed on national exchanges; the total number of such firms has risen from roughly 1,500 in 1935 to more than 6,000 today. This raises the concern that the set of publicly traded firms is different today than it was 60 years ago. In particular, if the type of enterprise that in 1935 was private and, hence, had a high degree of insider ownership, would now be more likely to be public, then our data comparing publicly traded firms in the two periods may be overestimating the degree to which insider ownership has increased. Ideally, to investigate this possibility, we would need data on the ownership of firms that are not publicly traded; such information, of course, is not available.

We do have the data, however, to examine how the universe of publicly traded firms has changed relative to the total number of enterprises and relative to GDP. The *Statistics of Income* reports that between 1935 and 1993 (the most recent data available) the number of partnerships filing tax returns increased almost seven-fold and the number of corporations (public and private) filing tax returns increased more than nine-fold.<sup>20</sup> Because the number of public firms has risen roughly four-fold over this period, our 1995 sample arguably contains a smaller proportion of the universe of all corporations and partnerships than does our 1935 sample. The *Statistics of Income* also reports that the total assets of corporations (public and private) filing tax returns in the two periods have grown in real terms by approximately 6.5 times. The assets of our sample firms have grown seven-fold. Thus, relative to the total number of enterprises in the economy, our 1935 sample appears to be more, not less, inclusive than our 1995 sample; relative to total corporate assets, the two samples appear to be roughly equivalent.

An alternative measure of whether publicly traded firms today represent a

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<sup>20</sup> If relatively fewer enterprises filed tax returns in 1935 than in 1995, these numbers might overstate the growth in the total number of enterprises.

larger or smaller proportion of productive enterprise is to measure their size relative to GDP. For the publicly traded firms in our samples, the ratios of total assets, market value of equity, and total market value (equity plus debt) to GDP have remained remarkably stable over the last 60 years. In 1935 (1995), the assets to GDP ratio was 1.33 (1.34); the market value of equity to GDP ratio was 0.62 (0.60); and the total market value to GDP was 0.95 (0.95). Given these figures, it is plausible to consider the set of publicly traded firms in 1935 and 1995 as representing comparable populations.

*Has the Composition of Industries Changed?*

Firms in different industries often have different levels of insider ownership (Demsetz and Lehn 1985). Changes in the mix of industries among publicly traded firms could account for our results if the representation of industries with relatively high managerial ownership is greater today than in the 1930s.

Table 4 checks for such a composition effect by describing the frequency distribution of our sample firms across 13 industries (based on groupings by two-digit SIC classifications) and the average managerial ownership for each industry. Each industry grouping has higher managerial ownership in 1995 than in 1935. Moreover, the industries that have shown the greatest increase in average managerial ownership from 1935 to 1995 generally have declined as a percentage of all publicly traded firms.<sup>21</sup> Table 4 therefore shows a broad-based, not a sectoral-specific, increase in managerial ownership over time.

*Has the Age of Publicly Traded Firms Changed?*

Capital markets may have developed during the last 60 years to permit firms to

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<sup>21</sup> The two exceptions are "Services" (SIC 70-89) and "FIRE & Holding Companies" (SIC 60-67). The service sector of the economy has grown considerably since the 1930s. The growth of the finance, insurance, real estate and holding companies in Table 4, however, is overstated. In 1935, we classified firms into the two-digit SIC code that accounted for the largest segment of their operations, whereas the 1995 SIC data from the CD-ROM data base classifies many firms as holding companies that would have been classified in a particular two-digit code using our method for the 1930s data collection.

enter the public equity markets earlier in their life-cycles. Exchange-listed firms today, thus, could be younger than listed-firms during the 1930s. If there is a life-cycle of insider ownership whereby founders and original managers gradually reduce their stakes through time, the relatively low insider ownership in 1935 could be simply due to a difference in the age-profiles of our sample firms.

To test for this effect, we compare the age, defined as years since incorporation, and insider ownership for our firms in Table 5. In three respects the data show that differences in the age-ownership profiles cannot account for the rise in managerial ownership. First, the average publicly traded firm is younger, not older, in 1935 than in 1995 (25 years versus 32 years), and the median ages are very close in the two periods (20 years versus 19 years).<sup>22</sup> Second, in each of the age categories, measured at 10-year intervals until 50 years of age and 25-year intervals from 50 until 100 years, the mean and median insider ownership are higher in 1995 than 1935. Third, Table 5 provides mixed evidence of a general life-cycle effect for insider ownership. For firms less than 50 years old, there does not appear to be a clear relation between inside ownership and firm age. For firms more than a half century old, both mean and median inside ownership do appear lower, although this could be due to the large size of firms that survive so long. Later in the paper we test for (and again find mixed evidence for) an ownership life-cycle effect by regressing insider ownership on firm age controlling for a variety of factors including firm size.

#### *How Has the Size of Listed Firms Changed?*

There is a well documented inverse relation between firm size and ownership concentration (for example with modern data, Demsetz and Lehn 1985, Holderness and Sheehan 1988). This cross-sectional relation reflects the limited wealth of individual officers and directors, who presumably are chosen more for their managerial abilities than for their financial wealth, and a desire by risk-averse

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<sup>22</sup> Both the 1920s and 1980s witnessed dramatic increases in the number of firms going public, thereby accounting for the skewness in the age distribution of firms in both periods (Kroszner 1996).

individuals to diversify their portfolios. A decrease in firm size, thus, would provide a possible explanation for the increase in insider ownership we document.

As Table 1 shows, however, the average publicly traded firm is four times larger in 1995 than in 1935. NYSE firms, which tend to be the largest, have grown about five-fold. The substantial increase in average firm size confirms Berle and Means' (1932) prediction that scale economies would lead the size of the "modern corporation" to grow over time, but this growth did not lead to a fall in managerial ownership. Moreover, Figure 1 shows that at every level of firm size, measured in real 1995 dollars, average inside ownership is greater in 1995 than in 1935.

#### *How Have the Income and Wealth of Insiders Changed?*

The change in firm size over time should be put into the context of how the insiders' income and wealth have changed over time. If managers became relatively wealthier, for example, they may be able to hold a larger percentage of all publicly traded corporations. Unfortunately, systematic data do not exist on individual executive's net worth, either for 1935 or for today.

To try to address this issue, however, we can compare changes in firm size and managerial stock holdings to broad changes in the patterns of the level and distribution of wealth and income since the 1930s. Real GNP per capita is 4.5 times higher today than it was in 1935. The Commerce Department's measure of "fixed reproducible tangible non-residential private wealth" per capita is approximately 3.5 times higher today than it was in 1935 (*Survey of Current Business*, August 1994, p. 61). The increase in average firm size since 1935 (Table 1) is similar to the roughly four-fold increase in per capita income and wealth over this period. With individual wealth and firm size rising in nearly the same proportion, increases in wealth alone can not explain the increase in insider ownership.

Because the executives whose holdings we are examining would tend to be in the uppermost tails of the income and wealth distributions, it is also important to understand how the distribution has changed over time. Williamson and Lindert (1980) and Fogel (1996) document a dramatic decline in the concentration of income

and wealth in the United States since the 1920s. While on average everyone has become richer, the most affluent appear to be relatively less rich than they once were. The greater equality, *ceteris paribus*, would tend to reduce the executives' ability to hold large stakes in larger (in real value) firms. The changes in the wealth of the top managers, thus, would tend to work against our finding of an increase in managerial ownership.

#### *Has Managerial Tenure Increased?*

Managerial stock ownership tends to increase with a manager's tenure with a firm (Mehran 1995). If managerial tenure has risen over the last 60 years, this might account for our finding of an increase in insider ownership. Managerial tenure, however, appears to have declined over the past 60 years. Hadlock and Lumer (1996) report an annual rate of non-death CEO changes for the 1930s of 3.8 percent. Kaplan (1994), in contrast, reports a comparable figure for the 1980s of 10.4 percent. Consequently, if we were to adjust for length of service, the increase in insider ownership since 1935 would be greater than portrayed in Table 2.

### **V. Investigating Reasons for the Increase in Managerial Ownership**

As we have just documented, the rise in managerial ownership does not seem to reflect problems in making 60-year comparisons. Ownership data from 1935 and 1995 appear to be accurate and similarly calculated. Furthermore, exchange-listed corporations in the two periods appear to be similar. What differences do emerge, such as the decrease in managerial tenure, only serve to strengthen our basic finding of an increase in managerial ownership. We now investigate reasons for the increase in managerial ownership since the Great Depression by focusing on how the costs and benefits of managerial ownership have changed over time.

We examine three distinct but related sets of hypotheses to explain the increase. The first approach considers managerial ownership as but one among several substitutable mechanisms that can be used to mitigate agency problems in



the firm (Agrawal and Knoeber 1996, for example). We inquire whether a rise in managerial ownership reflects a reduction in the use of other methods of corporate control and, hence, a change in the relative cost of using these mechanisms. The second approach examines the relation between managerial ownership and firm performance (Morck, Shleifer, and Vishny 1988, for example); we investigate whether this relation is stable over time. The third approach considers a firm's ownership structure as the outcome of a process that maximizes firm value and predicts that managerial ownership should vary systematically with costs of monitoring different types of firms (Demsetz and Lehn 1985, for example). We then analyze whether these cost-benefit trade-offs have changed over time.

#### **A. Substitution among Alternative Control Mechanisms**

A variety of alternatives to insider ownership can perform the function of aligning managers' incentives with those of shareholders, including pay-for-performance contracts, an independent board of directors, debt, the market for corporate control, and competition in the product markets. If the relative cost of these different mechanisms has changed over time, the relatively less costly ones should be substituted for the others. We now examine whether the increase in insider ownership has been accompanied by the decreasing use of any of these alternative control devices.

##### *Incentive-based Compensation*

Linking the pay of top managers to firm performance provides a substitute for managerial stock holdings as a way to align the incentives of managers with owners. Hadlock and Lumer (1996) find a lower pay-performance sensitivity for a sample of large industrial firms from 1933 to 1941 than in the 1980s and 1990s. This finding persists even after they control for factors thought to affect management turnover, including whether the top executive was a founder of the

firm and the composition of the board of directors.<sup>23</sup> These results imply that since the 1930s managerial ownership has not substituted for pay-performance compensation.<sup>24</sup>

### *Board Composition and Size*

The board of directors can directly monitor the actions of the managers and, if effective, can minimize shirking by the managers. Two factors that appear to influence the effectiveness of monitoring by directors are the proportion of outside directors (Weisbach 1988, Kroszner and Rajan 1995) and board size (Yermack 1996). Hadlock and Lumer (1995) for the 1930s and Weisbach (1988) for the 1980s find that the median percentage of outsiders on the boards of large publicly traded firms is unchanged at approximately 50 percent. We find that the average board size has remained constant at about eight between 1935 and 1995.<sup>25</sup> Changes in board composition or size consequently do not appear to account for the changes in managerial ownership.

### *Leverage*

Debt can constrain managers because they must meet the fixed interest obligations or chance triggering bankruptcy and face the likelihood of losing their

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<sup>23</sup> In contrast, Jensen and Murphy (1990) argue that on average top management compensation was more sensitive to firm performance during the 1930s than today. Jensen and Murphy, however, do not control for firm size. Once size is controlled for, as Hadlock and Lumer (1996) show, the pay-for-performance relation shows a substantial increase over the past 60 years.

<sup>24</sup> Changes in the effective tax rate on capital gains relative to ordinary income could affect the general desirability of using equity versus salary and bonus to compensate managers. The higher is the tax rate on ordinary income relative to capital gains, the greater is the incentive to compensate executives through stock rather than salary and bonus. Tax reforms since the 1930s, however, have reduced the tax wedge and thereby mitigated the desire to compensate through equity relative to ordinary income. Changes in the tax laws alone would predict a shift towards compensating managers through salary and bonus and away from stock. Taxes, thus, cannot explain the increase in managerial ownership we document.

<sup>25</sup> Interestingly, this is consistent with Yermack's (1996) finding that the "optimal" board of a public company has fewer than ten members.

jobs (Jensen 1986). If managerial ownership is substituting for leverage as a control device, we should observe a decline in firm indebtedness over time. As Table 1 shows, this is not the case. The mean debt to debt-plus-equity ratio is virtually unchanged between 1935 and 1995. The median debt ratio, however, has risen sharply since the 1930s because a much higher fraction of publicly traded firms had no debt outstanding in 1935. Thus, there is no evidence of a general substitution of debt for insider ownership during the last 60 years. Below, we investigate whether there is a cross-sectional relation between insider ownership and debt in both periods.

#### *Market for Corporate Control*

The market for corporate control is far more active today than it was in the mid-1930s. Between 1933 and 1940, for example, the annual number of mergers was less than one-fifth of the yearly number in the late 1920s and the 1960s (Nelson 1959 and Golbe and White 1988 and 1993). The market for corporate control was at an all-time high during the 1980s and continues to be more active in the 1990s compared with the 1930s. The greater activity of the market for corporate control thus does not appear to have caused a substitution away from using insider ownership as a control device in the 1990s.

#### *Product Market Competition*

Competition in a firm's output market can substitute for equity ownership as a disciplinary device on managers because inefficiently run firms will be forced out of business (Hart 1983). To explain the increase in managerial ownership by this means, product market competition would have to be falling over time. The aggregate concentration of production (measured by value added) as well as the proportion of income in the manufacturing sector that originated in industries in which the largest four enterprises accounted for more than half of the output in that industry are both roughly stable over this period (Nutter 1951, Scherer and Ross 1990, chapter 3). Furthermore, United States firms today face much greater international competition than during the era of the Smoot-Hawley Tariff and the

Great Depression. Imports as a share of GDP, for example, have risen from 2.8 percent to 10.3 percent between 1935 and 1995 (Irwin and Kroszner 1996). Since product market competition is at least as intense now as 60 years ago, this factor cannot account the increase in managerial ownership during the period.

### *Summary*

All of the alternative incentive-alignment devices considered are used at least as much, if not more, than 60 years ago. The rise in managerial ownership over time thus cannot be explained as the result of a substitution of this mechanism for other solutions of the agency problem. Because usage of many of these devices has risen at the same time that managerial ownership has increased, the cost of a number of these devices appears to be declining over time. These methods of addressing agency problems appear to be used more as complements rather than substitutes.

## **B. Changes in the Relation Between Insider Ownership and Firm Performance**

Much theoretical and empirical research has attempted to understand the costs and benefits of insider ownership by examining the cross-sectional relation between insider ownership and firm performance, which in turn is viewed as a proxy for managerial effectiveness (for example, Morck, Shleifer and Vishny 1986 and McConnell and Servaes 1990). We now investigate whether this relation has changed in such a way during the last 60 years to contribute to the increase in insider ownership.

We use a simple “Q” measure of market value to book value of assets as our measure of firm performance. Market value is the sum of the market value of equity and the book value of long-term debt at the end of 1935. For ownership, we use total ownership by directors.<sup>26</sup> Table 6 presents the results of estimating piecewise-

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<sup>26</sup> The results are similar if we use the combined ownership of directors and officers..

linear specifications of the performance-ownership relation.<sup>27</sup> The specification permits different effects when board ownership is (a) below 5 percent, (b) between 5 percent and 25 percent, and (c) greater than 25 percent. Column (1) includes no other control variables. Column (2) includes the book value of assets, the debt to asset ratio, and one-digit SIC industry indicators (not reported) as controls for other factors besides ownership influencing performance and as robustness checks.

The results, in terms of both signs and magnitudes, are strikingly similar to those found in Morck, Shleifer, and Vishny (1988) for a sample of 371 of the Fortune 500 firms in 1980. We find a positive and statistically significant relation between performance and board ownership for the first 5 percent of insider ownership and a negative and statistically significant relation for board ownership between 5 and 25 percent. The size of the Morck, Shleifer, and Vishny (1988, Table 2) coefficient on ownership below 5 percent is roughly between 5 and 6, depending upon the specification; in our 1935 regressions, it is between 2.5 and 5.2. For ownership between 5 percent and 25 percent, the Morck, Shleifer, and Vishny coefficient is roughly  $-1.5$ , and in our regressions it is about  $-1.1$ . For ownership greater than 25 percent, the Morck, Shleifer, and Vishny coefficient is approximately 0.8 but only marginally statistically significant (and negative and statistically insignificant in some specifications). We find a small negative coefficient for the full sample, but it is not statistically significant.<sup>28</sup>

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<sup>27</sup> We also estimated the relationship for NYSE firms and found similar results.

<sup>28</sup> Given the lower mean and median levels of share ownership during the 1930s, we have relatively few observations in the greater than 25 percent ownership category. The paucity of observations might account, at least in part, for the less precise estimates in our samples compared to Morck, Shleifer, and Vishny (1988). In addition, when Kole (1995) re-estimates the piecewise linear relation, the coefficient on the greater than 25 percent category is statistically significant in only two of six specifications.

Figure 2 compares the relation between board ownership and  $Q$  for our full sample and for Morck, Shleifer, and Vishny (1988).<sup>29</sup> It illustrates how little has changed in the relation between the benefits enjoyed by shareholders and the level of managerial ownership since 1935.<sup>30</sup> Shareholders in the 1990s, consequently, have no greater incentive than did their counterparts in the 1930s to induce managers to change the amount of stock they hold. A change in this relation, thus, does not appear to explain the rise in managerial ownership.

### C. Changes in the Determinants of Insider Ownership

Our final approach views ownership structure not as an exogenous factor, as in the previous approach using  $Q$ , but as the outcome of an optimization process that determines the most effective uses of control devices to maximize firm value (for example, Demsetz 1983, Demsetz and Lehn 1985, Kole and Lehn 1995, Himmelberg, Hubbard, and Palia 1996). Insider ownership, under this approach, varies systematically across firms depending on characteristics of each firm that are related to the costs and benefits of insider ownership.

To explore how these factors affect managerial ownership in 1935 and 1995, we regress managerial stock ownership on five sets of firm characteristics. The dependent variable in our OLS regressions is the logistic transform of the percentage of ownership by the officers and directors, that is,  $\log\{\text{ownership}/(1-$

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<sup>29</sup> We also investigated an alternative curvilinear relation between  $Q$  and board ownership proposed by McConnell and Servaes (1990). A piecewise linear specification appears to be a better representation of the 1935 data.

<sup>30</sup> Barclay and Holderness (1989) and Barclay, Holderness, and Pontiff (1993) have explored the private benefits of managerial ownership accruing to the managers in addition to the benefits shared with all equity holders. By examining evidence from the premiums on negotiated trades of large block transactions, they estimate that the private benefits are on the order of 4 percent of firm value. Unfortunately, we do not have data on large block transactions for the 1930s, so we cannot estimate private benefits.

ownership)].<sup>31</sup> Because individual wealth constraints may affect the costs to managers of acquiring large percentage holdings in large firms, we include as an independent variable firm size, measured as the log of the total market value of the firm (debt plus equity).

Next we include a measure of the volatility of the firm's operating environment, defined as the standard error from the market model estimated using monthly returns from the previous 60 months from CRSP.<sup>32</sup> We also include the square of the standard error to allow for a non-linear relationship. The volatility measures allows us to investigate the trade-off between the diversification costs to managers of holding a large fraction of their wealth in a risky security and the benefits to shareholders of incentive-alignment where the costs of external monitoring presumably are high. Third, we include the age of the firm to explore any life-cycle effect.

The fourth firm characteristic that might affect the costs and benefits of insider ownership is regulation (Demsetz and Lehn 1985). A regulated firm has both shareholders and regulators to monitor management, so a regulatory agency may partially substitute for shareholders as a monitor (Kole and Lehn 1995). In addition, the managers of regulated firms typically have less discretion precisely because the regulation limits firm activities and opportunities.<sup>33</sup> We try to capture these effects by including three zero/one indicator variables which take the value

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<sup>31</sup> None of our results change if we use  $\log(\text{ownership})$  as the dependent variable. In contrast, Demsetz and Lehn (1985) use a logistic transform of a concentration index for the five largest and 20 largest shareholders regardless of whether the shareholders are officers or directors. We cannot obtain this data for the 1930s, so instead we use managerial ownership.

<sup>32</sup> The estimation periods are 1931 to 1935 and 1990 to 1994. We also used the standard deviation of the firm's monthly stock price return over the previous 60 months and the standard error and standard deviation over shorter horizons and the results did not change.

<sup>33</sup> An offsetting effect, however, may be the benefits of concentrating ownership in a regulated firm to overcome free-rider problems in lobbying the government for preferential regulation and in attempting to "capture" the regulatory agency (Stigler 1971, Peltzman 1976, Kroszner and Stratmann 1996).

one if the firm is (i) a railroad, (ii) an electric or gas public utility, and (iii) in another regulated transportation or communications industry. One-digit SIC industry indicator variables are included in all of the regressions (although we do not report the coefficient estimates).

We include leverage as a final factor that might be used as a substitute for managerial ownership. High leverage may be used to reduce managerial discretion by constraining the free cash flow that managers might spend on perquisites for themselves (Jensen 1986).

Because equity returns data is available from CRSP for only the NYSE firms during the 1930s, we restrict our samples to firms listed on the NYSE.<sup>34</sup> The  $F$ -statistic testing the null hypothesis that the 1935 and 1995 data can be pooled rejects pooling with a  $p$ -value less than 0.01. We thus present the estimates for 1935 in Table 7A and for 1995 in Table 7B. In the first column, we include only the size and linear volatility variables (and the SIC dummies); the second column uses the full set of firm characteristic variables. The third and fourth columns also include the square of the volatility variable.

The estimated coefficients on firm size and regulation indicators have the same sign in 1935 and 1995 and are statistically significant. In both samples, there is an inverse relationship between firm size and insider ownership, and the coefficient is statistically significant in all specifications. The slope is steeper in 1995 than in 1935, much as we found in the unconditional size-ownership relationship plotted in Figure 1. The regulation indicator variables (except for railroads in 1995) also have negative effects on insider ownership in both periods, and the coefficients are statistically significant.<sup>35</sup>

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<sup>34</sup> When we include all of the 1995 firms, our 1995 results change little.

<sup>35</sup> The paucity of railroads (10) in the 1995 sample may account for the small and imprecisely measured coefficient in 1995 relative to 1935.



Two of the firm characteristics have similar signs in both periods but contrasting levels of statistical significance. Firm age has a small, negative effect of similar magnitude in both 1935 and 1995. Its coefficient, however, is statistically significant in 1995 but not in 1935. This provides evidence in favor of the ownership life-cycle hypothesis in 1995 and weak evidence of it in 1935. The debt ratio also has a negative coefficient in both periods. In 1995, however, the coefficient is roughly double that in 1935 and is statistically significant. Thus, there is evidence of a substitution between the use of managerial ownership and leverage as control devices in each cross section, although the evidence is much stronger in 1995.

In contrast to the other four factors, the effect of volatility on managerial ownership is starkly different in 1935 and 1995. In 1935 (columns 1 and 2, Table 7A), the standard error of the market model has a negative and statistically significant effect on ownership. In contrast, in 1995 (Table 7B) the coefficient is positive and statistically significant.<sup>36</sup> When we include the square of the volatility measure (columns 3 and 4), we find little evidence of a non-linear relationship in 1935 but strong evidence for such a relationship in 1995, both in terms of the size and statistical significance of the coefficients.<sup>37</sup>

The greater volatility of the markets 60 years ago might account for the contrasting relation between volatility and ownership and may help to explain the lower insider ownership during the 1930s. The average monthly standard error of stock returns for the 1935 sample is roughly than double that for 1995 sample (0.17

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<sup>36</sup> In the 56 firms in 1995 for which we collected data from the proxies and had CRSP data, we found no correlation between the percentage of managerial ownership in the form of options and volatility. This results is consistent with the mixed findings in the accounting literature of the effects of stock option plans on volatility (see Hemmer et al. 1996).

<sup>37</sup> Demsetz and Lehn (1985) found a similar non-linear effect of volatility on their measure of ownership concentration in the modern data. A possible reason we are estimating a negative coefficient on the linear part of volatility in 1935 is that we are observing only high levels of volatility in this period. The non-linear relationship we see in 1995 has ownership rising for low levels of volatility and falling for high levels of volatility. Thus, it is possible that the underlying relationship between volatility and ownership is the same in both periods.

versus 0.09). The high variability would apply not only to financial wealth invested in the stock of the firm but also to the managers' firm-specific human capital. Given the low managerial turnover during the 1930s (Hadlock and Lumer 1996), a relatively larger component of managers' human capital may have been firm-specific then than today.<sup>38</sup>

In addition, financial markets are more "complete" and involve lower transactions costs today than 60 years ago. Financial innovations have reduced the costs of hedging risks, so it is less costly to diversify both human-capital and financial wealth today than in the 1930s (Merton 1995). The optimal response to higher volatility and less developed financial markets, *ceteris paribus*, would be for insiders to hold lower ownership stakes in the 1930s than today. Both the managers, who wish to diversify, and the shareholders, who wish the firm to act risk neutrally, might prefer lower rather than higher managerial ownership when volatility is high. Advances in the markets for financial and human capital thus appear to have played a key role in the rise in managerial ownership since the Great Depression.

## VI. Summary and Conclusion

Despite the widespread view from Berle and Means (1932) onward that ownership of firms is increasingly separated from managerial control of those firms, no time-series research has investigated this issue. We construct a comprehensive sample of 1,500 publicly traded companies in 1935 and a comparable sample of more than 4,000 firms in 1995 and find that the percentage of managerial ownership of publicly traded firms has risen sharply since the Great Depression, from 13 percent in 1935 to 21 percent in 1995. To examine the comparability of data

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<sup>38</sup> Also, high unemployment rates persisting throughout much of the 1930s may have made managers concerned that the labor markets were not working effectively.

over such a long horizon, we explore whether changes in reporting practices, the nature and composition of firms that are public, and underlying economic conditions, such as the level and distribution of wealth, can account for the increase and find that they cannot.

We then investigate three sets of hypotheses related to the costs and benefits of managerial ownership to explain why it has increased. First, rather than greater reliance on managerial ownership being associated with less reliance on other corporate governance mechanisms, we find that usage of these alternative devices, such as pay-for-performance compensation and the market for corporate control, has either stayed roughly the same or increased. Simply stated, there is more intense use of incentive-alignment devices for top managers of public corporations today than there was 60 years ago.

Second, we explore whether changes in the relation between firm performance and the level of managerial ownership can explain the increase in managerial ownership over time. This relation, however, is remarkably similar for 1935 and 1995 and thus does not offer an explanation for the rise in managerial ownership.

Finally, we estimate the effects of firm characteristics that are associated with the costs and benefits of using of managerial ownership as a control device on the observed levels of insider ownership in 1935 and 1995. In both periods, large firms and regulated firms tend to have low insider ownership. Although insider ownership declines with firm age and leverage acts as a substitute for insider ownership in both periods, these relations are stronger in 1995 than in 1935.

The most striking difference between the two periods, however, concerns volatility. In 1935 managerial ownership is inversely related to firm volatility. In 1995, managerial ownership is non-linearly increasing-then-decreasing in firm volatility. Given the lower overall level of volatility today and advances in capital markets and financial theory that have reduced the cost of hedging, both managers and owners might prefer that managers devote a larger fraction of their financial wealth to equity ownership in the firm. The impact of volatility and financial

market development on the costs of insider ownership have largely been overlooked in the debates on financial system and corporate governance reforms, and taking this relation into account is particularly important in emerging and transition economies, where volatility tends to be high and financial market development low.

Although ownership structure appears to have evolved in ways consistent with the changing costs and benefits to shareholders and managers of insider ownership, more research will be needed to elaborate further how these groups have responded to the "separation of ownership and control" problem and the precise timing of these changes. Nonetheless, the increase in managerial ownership has to be considered one of the major developments in the American public corporations during the last 60 years.

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**Table 1: Summary Statistics for Exchange-Listed Firms in 1935 and 1995.**

Data are for end of 1935 and beginning of 1995. The full samples contain 1,419 publicly-traded firms in 1935 and 4,202 publicly-traded firms in 1995. The NYSE samples contain all firms listed on the NYSE, with 651 firms in 1935 and 1,464 firms in 1995. Total Assets is the book value of total assets. Equity Value is market value of the common stock. Long-term Debt is the book value of the firm's long-term debt. Debt Ratio is ratio of debt to debt plus equity value. Market-to-Book is the market-to-book ratio, where the numerator is long-term debt plus equity value and the denominator is Total Assets. Dollar values are in millions of 1995 dollars. Sources: For 1935, SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*, and for 1995, Compact Disclosure.

**Panel A: Full Sample of Publicly-Traded Firms**

	First quartile	Median	Mean	Third quartile
<b>1935</b>				
Total Assets	33	98	728	407
Equity Value	16	50	343	186
Long-term Debt	0	1	182	35
Debt Ratio	0.00	0.03	0.23	0.40
Market-to-Book	0.45	0.71	0.95	1.14
<b>1995</b>				
Total Assets	48	172	2,669	777
Equity Value	43	123	1,132	517
Long-term Debt	2	22	660	150
Debt Ratio	0.03	0.17	0.23	0.38
Market-to-Book	0.66	1.03	1.48	1.79

**Panel B: NYSE-Listed Firms**

<b>1935</b>				
Total Assets	102	262	1,293	923
Equity Value	46	152	647	499
Long-term Debt	0	4	313	115
Debt Ratio	0.00	0.04	0.24	0.47
Market-to-Book	0.47	0.74	1.06	1.28
<b>1995</b>				
Total Assets	302	918	6,747	8,416
Equity Value	215	688	2,791	2,196
Long-term Debt	44	194	1,724	821
Debt Ratio	0.10	0.26	0.29	0.43
Market-to-Book	0.73	0.97	1.28	1.49

**Table 2: Percent and Real Dollar Value of Managerial Equity Ownership  
in 1935 and 1995.**

Comparison of the mean, median, first quartile, and third quartile percentages (Panel A) and real dollar values (Panel B) of the total equity ownership of officers and directors for exchange-listed firms in 1935 and 1995. The number of observations is 1,419 for the 1935 full sample and 651 for the 1935 NYSE sample. The number of observations is 4,202 for the full 1995 sample and 1,419 for the 1995 NYSE sample. The percentage ownership is the sum of the common shares held by officers' and directors' divided by the number of common shares outstanding. In Panel B, dollar values are in millions of 1995 dollars. Sources: For 1935, SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*, and for 1995, Compact Disclosure.

**Panel A: Percentage Ownership**

		First Quartile	Median	Mean	Third Quartile
<b>Full sample:</b>					
	1935	1.3	6.5	12.9	18.5
	1995	4.7	14.4	21.1	32.1
<b>NYSE sample:</b>					
	1935	0.8	3.7	8.6	11.7
	1995	1.4	4.7	12.2	16.2

**Panel B: Real Dollar Value of Ownership**

<b>Full sample:</b>					
	1935	0.5	3.0	17.9	10.7
	1995	5.7	16.2	73.0	46.1
<b>NYSE sample:</b>					
	1935	0.8	5.4	32.0	21.2
	1995	9.4	30.7	131.2	92.1

**Table 3: Percent of Managerial Equity Ownership across Deciles of the Market Value of the Firm's Equity for 1935 and 1995.**

Comparison of 1935 and 1995 mean and median managerial stock ownership percentages broken out by deciles of the market value of the firm's equity. Dollar values are in millions of 1995 dollars. Sources: For 1935, SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*, and for 1995, Compact Disclosure.

<u>Midpoint of Size Decile</u>		<u>Mean Ownership</u>		<u>Median Ownership</u>	
1935	1995	1935	1995	1935	1995
\$3	\$11	21.4	33.3	16.2	30.6
\$8	\$25	20.0	29.2	11.1	25.3
\$16	\$42	17.2	27.3	11.5	20.5
\$24	\$66	13.1	25.8	7.3	20.2
\$41	\$101	16.2	24.4	10.2	19.8
\$63	\$155	11.2	20.9	7.2	14.7
\$104	\$260	9.9	19.1	5.1	13.1
\$186	\$517	8.1	14.9	3.5	7.6
\$399	\$1,211	6.5	10.8	3.3	4.3
\$1,538	\$4,428	5.3	5.4	2.1	1.5

**Table 4: Mean Managerial Equity Ownership Percent by Industry Grouping and Frequency Distribution of Firms across Industries, 1935 and 1995.**

Comparison by industry grouping of mean percentage managerial ownership and frequency of the full samples of exchange-listed firms across these industry groupings. Industry groupings are based on two-digit SIC codes. Sources: For 1935, SEC (1936), *Moody's Manuals, Commercial and Financial Chronicle*, and for 1995, Compact Disclosure.

Industry <sup>1</sup>	Mean Ownership		Frequency	
	1935	1995	1935	1995
1) Ag., Mines, Construct.	10.8	19.1	13.4	5.4
2) Food, Textiles, Clothes	17.4	26.3	17.1	4.3
3) Lumber, Paper, Printing	20.5	23.4	4.0	3.8
4) Chemical, Oil, Plastic	11.8	19.6	6.4	7.4
5) Stone, Clay, Metals	14.7	20.1	11.9	4.3
6) Machines, Elect. Equip.	16.1	20.7	12.4	20.2
7) Auto, Transport Equip.	12.9	23.4	7.0	2.6
8) RR, Other Transport	4.5	25.0	9.8	2.5
9) Communications	0.9	21.7	0.7	2.4
10) Public Utilities	1.0	9.9	5.5	5.1
11) Retail/Wholesale Trade	25.9	26.8	7.4	11.3
12) FIRE, Holding Cos.	8.4	17.4	2.4	17.2
13) Services	14.4	26.5	2.1	13.6

<sup>1</sup> Industries are groupings of two-digit SIC codes: 1) SIC 01-17; 2) SIC 20-23, 31; 3) SIC 24-27; 4) SIC 28-30; 5) SIC 32-34; 6) SIC 35-36, 38-39; 7) SIC 37; 8) SIC 40-47; 9) SIC 48; 10) SIC 49; 11) SIC 50-59; 12) SIC 60-67; and 13) SIC 70-89.

**Table 5: Age-Ownership Profile of Firms, 1935 and 1995.**

Mean and median percentages of managerial stock ownership broken out by age of the firm in years and the frequency of firms in each age category. Age of the firm is measured as the number of years since incorporation. The mean (median) age of firms in 1935 is 25 (20) years and in 1995 is 32 (19) years. Sources: For 1935, SEC (1936), *Moody's Manuals, Commercial and Financial Chronicle*, and for 1995, Compact Disclosure and *Moody's Manuals*.

Age of Firm	Mean Ownership		Median Ownership		Frequency	
	1935	1995	1935	1995	1935	1995
Age < 10	13.0	23.2	6.9	16.9	21.1	20.4
10 < Age < 20	14.5	22.8	8.2	17.1	28.7	30.6
20 < Age < 30	14.4	23.4	7.6	15.1	18.0	14.5
30 < Age < 40	12.0	23.5	6.3	18.1	15.6	7.5
40 < Age < 50	12.4	22.3	4.4	16.6	6.6	5.7
50 < Age < 75	8.7	16.5	3.1	9.1	6.5	9.6
75 < Age < 100	3.7	11.8	1.1	4.2	2.6	7.0
Age > 100	2.9	9.9	0.4	3.0	0.9	4.7

**Table 6: Performance-Ownership Relation for 1935.**

Piecewise linear OLS regressions of the market-to-book ratio on the board of directors' ownership and control variables for the full sample of 1,236 exchange-listed firms in 1935 (p-value in parentheses under each coefficient estimate). Ownership is the fraction of shares owned by members of the board. Board 0 to 5 equals board ownership if board ownership < 0.05 and equals 0.05 if board ownership > 0.05. Board 5 to 25 equals zero if board ownership < 0.05, equals board ownership minus 0.05 if 0.05 < board ownership < 0.25, and equals 0.20 if board ownership > 0.25. Board over 25 equals zero if board ownership < 0.25 and equals board ownership minus 0.25 if board ownership > 0.25. Total Assets is total assets of the firm in billions of dollars. Debt to Assets Ratio is the ratio of long-term debt to total assets. Industry indicators are dummy variables for one-digit SIC industries. Sources: SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*.

	(1)	(2)
Intercept	0.76 ( $<0.01$ )	0.81 ( $<0.01$ )
Board 0 to 5 Percent Ownership	5.19 ( $<0.01$ )	2.46 (0.03)
Board 5 to 25 Percent Ownership	-1.17 ( $<0.01$ )	-1.02 ( $<0.01$ )
Board Over 25 Percent Ownership	-0.034 (0.88)	-0.0002 (0.99)
Total Assets	-	-0.01 (0.21)
Debt to Assets Ratio	-	-0.052 (0.59)
Industry Indicators for one-digit SIC codes	No	Yes
Adjusted-R <sup>2</sup>	0.02	0.06
p-value of F-statistic for the regression	$<0.01$	$<0.01$

**Table 7A: Relation between Managerial Ownership and Firm Characteristics in 1935.**

OLS regressions of the logistic transformation of the percentage of total managerial ownership on firm size, volatility, firm age, industry indicators, and debt ratio for 571 NYSE-listed firms in 1935 (p-value in parentheses under each coefficient estimate). Firm size is measured as the log of the market value of equity. Volatility is measured as the standard error from the market model estimated from January 1931 to December 1935. Age of the firm is the number of years since incorporation. Public Utility Indicator is one for SIC code 49 and zero otherwise. Railroad Indicator is one for SIC code 40 and zero otherwise. Other Regulated Indicator is one for SIC codes 41 through 48 and zero otherwise. Debt Ratio is the ratio of long-term debt to total firm value (equity plus debt). All regressions include one-digit SIC industry indicator variables. Sources: SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*, and CRSP monthly stock returns files.

	(1)	(2)	(3)	(4)
Intercept	0.42 (0.65)	0.49 (0.60)	1.28 (0.26)	1.41 (0.22)
Log of Market Value	-0.16 ( $<0.01$ )	-0.16 (0.01)	-0.20 ( $<0.01$ )	-0.20 ( $<0.01$ )
Standard Error of Monthly Stock Returns	-2.96 (0.01)	-2.68 (0.03)	-7.18 (0.04)	-7.20 (0.04)
Standard Error of Returns Squared	-	-	7.46 (0.20)	8.00 (0.17)
Age of the Firm	-	-0.004 (0.43)	-	-0.004 (0.39)
Public Utility Indicator	-	-3.37 ( $<0.01$ )	-	-3.35 ( $<0.01$ )
Railroad Indicator	-	-2.87 ( $<0.01$ )	-	-2.82 ( $<0.01$ )
Other Regulated Indicator	-	-3.00 (0.01)	-	-2.98 (0.01)
Debt Ratio	-	-0.42 (0.29)	-	-0.43 (0.27)
Adjusted-R <sup>2</sup>	0.21	0.22	0.21	0.21
p-value of F-statistic for the regression	$<0.01$	$<0.01$	$<0.01$	$<0.01$



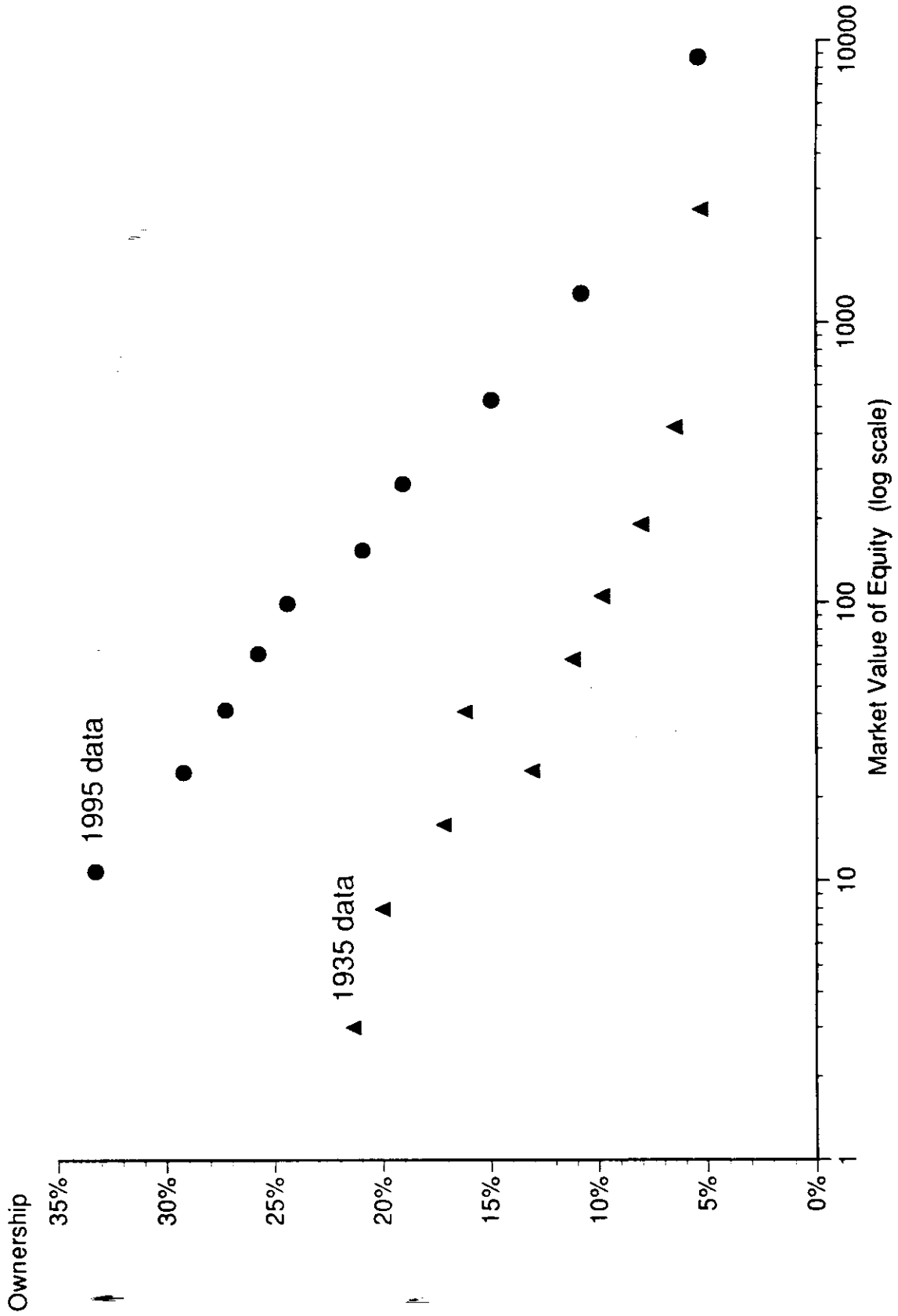
**Table 7B: Relation between Managerial Ownership and Firm Characteristics in 1995.**

OLS regressions of the logistic transformation of the percentage of total managerial ownership on firm size, volatility, firm age, industry indicators, and debt ratio for 1,370 NYSE-listed firms in 1995 (p-value in parentheses under each coefficient estimate). Firm size is measured as the log of the market value of equity. Volatility is measured as the standard error from the market model estimated from January 1990 to December 1994. Age of the firm is the number of years since incorporation. Public Utility Indicator is one for SIC code 49 and zero otherwise. Railroad Indicator is one for SIC code 40 and zero otherwise. Other Regulated Indicator is one for SIC codes 41 through 48 and zero otherwise. Debt Ratio is the ratio of long-term debt to total firm value (equity plus debt). All regressions include one-digit SIC industry indicator variables. Sources: Compact Disclosure, CRSP monthly stock returns files, and *Moody's Manuals*.

	(1)	(2)	(3)	(4)
Intercept	3.91 ( $<0.01$ )	4.95 ( $<0.01$ )	3.09 ( $<0.01$ )	4.32 ( $<0.01$ )
Log of Market Value	-0.49 ( $<0.01$ )	-0.54 (0.01)	-0.47 ( $<0.01$ )	-0.52 ( $<0.01$ )
Standard Error of Monthly Stock Returns	3.37 (0.01)	2.13 (0.08)	13.64 ( $<0.01$ )	9.89 ( $<0.01$ )
Standard Error of Returns Squared	-	-	-37.20 ( $<0.01$ )	-27.58 (0.01)
Age of the Firm	-	-0.003 (0.03)	-	-0.002 (0.06)
Public Utility Indicator	-	-2.19 ( $<0.01$ )	-	-2.09 ( $<0.01$ )
Railroad Indicator	-	0.12 (0.81)	-	0.17 (0.73)
Other Regulated Indicator	-	-0.71 (0.01)	-	-0.69 (0.01)
Debt Ratio	-	-0.98 ( $<0.01$ )	-	-1.00 ( $<0.01$ )
Adjusted-R <sup>2</sup>	0.33	0.37	0.35	0.38
p-value of F-statistic for the regression	$<0.01$	$<0.01$	$<0.01$	$<0.01$

**Figure 1: Average Percentage of Managerial Ownership by Market Value of Equity.**

This figure compares the mean percent of managerial stock ownership for each size decile of the market value of equity of the firm in 1935 and 1995. (See Table 3.) The market value of equity is in 1995 dollars and is plotted on a log scale.



**Figure 2: Piecewise Linear Regression of Market-to-book Ratio on Percentage Ownership of the Board of Directors, with Control Variables.**

This figure compares the performance-ownership relation estimated in Table 6 using the 1935 data and Morck, Shleifer, and Vishny [MSV] (1988).

