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Working Paper **6550**

NBER WORKING PAPER SERIES

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Working Paper 6550
http://www.nber.org/papers/w6550

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 1998

We would like to thank Cynthia Alexander, Harold Demsetz, Franklin Edwards, Laura Field, Wayne Gray, Charles Hadlock, Gordon Hanka, Kenneth Lehn, Claudio Loderer, Hamid Mehran, Peter Tufano, René Stulz, Robert Vishny, Sunil Wahal, Mark Zenner, Luigi Zingales, three anonymous referees and participants at seminars at the American Finance Association, European Finance Association, Western Finance Association, American Law and Economics Association, Cliometrics Society and Economic History Association annual meetings, NBER Summer Institute, Boston College, University of Chicago, UCLA, Washington University (St. Louis), and the Stockholm School of Economics for helpful comments. Holderness acknowledges support from The Wallace E. Carroll School of Management, Boston College, Kroszner from the George J. Stigler Center for the Study of the Economy and the State, Graduate School of Business, University of Chicago, and Sheehan from the Benzak Professorship at the Smeal College of Business, Pennsylvania State University. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

Were the Good Old Days That Good? Changes in Managerial Stock Ownership Since the Great Depression

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NBER Working Paper No. 6550
May 1998
JEL Nos. G32, G34, N82, N22

ABSTRACT

We document that ownership by officers and directors of publicly-traded firms is on average higher today than earlier in the century. Managerial ownership rises from 13 percent for the universe of exchange-listed corporations in 1935, the earliest year for which such data exist, to 21 percent in 1995. We examine in detail the robustness of the increase and explore hypotheses to explain it. Higher managerial ownership has not substituted for alternative corporate governance mechanisms. Lower volatility and greater hedging opportunities associated with the development of financial markets appear to be important factors explaining the increase in managerial ownership.

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The separation of ownership and control of the firm has generated an enormous literature since the publication of Berle and Means' *The Modern Corporation and Private Property* (1932). In both academic and public policy circles, there has been much debate about the consequences of "absentee ownership" (Veblen (1923)) and what policies should be undertaken to remedy the situation. Berle and Means (1932) warn that the separation of ownership and control "destroys the very foundation on which the economic order of the past three centuries has rested" and assert that the "[d]ispersion in the ownership of separate enterprises...has already proceeded far, it is rapidly increasing, and appears to be an inevitable development" of the modern corporate system.[1] Many contemporary scholars, such as Jensen (1989 and 1993) and Roe (1990 and 1994), have voiced similar concerns. 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."[2]

Little, if any, systematic time-series evidence, however, has been used to investigate the proposition that managerial ownership has declined over time and that its low level is a feature of the modern public corporation.[3] Using the earliest reliable source available on ownership (Securities and Exchange Commision 1936),

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[1] For an overview of the immediate and enduring influence of Berle and Means (1932), see the 1983 *Journal of Law and Economics* symposium celebrating the 50th anniversary of the book's publication.

[2] An often 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 (1997)).

[3] Berle and Means (1932) examine the largest 200 nonfinancial firms in 1929 and classify most as effectively under the control of management. They do not study firms over time, although they argue that the change wrought by the corporate system is so important that "it demands that we examine both its conditions and its trends, for an understanding of the structure upon which will rest the economic order of the future" (1932).

we investigate how the level of managerial ownership has changed during the last 60 years and explore alternative explanations for the change. We compare a comprehensive cross-section of roughly 1,500 publicly traded United States firms in 1935 with a modern benchmark of more than 4,200 exchange-listed firms for the 1995. Contrary to the received wisdom, managerial ownership of publicly traded firms is higher now than in 1935. The mean percentage of common stock 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. While the very largest firms have similar ownership percentages in both periods, a firm-size-weighted average is also higher in 1995 than 1935. In terms of real 1995 dollars, insiders' holdings are on average four times higher today, rising from $18 million to $73 million, and this increase holds across all firm sizes.

Since little is known about how governance structures have changed over time and what forces drive the changes (see Kole and Lehn (1997a)), this long term comparison allows us to address a number of important issues. First, we can document how the characteristics of firms and managers have changed as the economy, the financial system, and regulation have changed. This also allows us to determine whether the increase in ownership we report is due to difficulties in making sixty-year comparisons. Ownership data appears to be accurate and similarly reported in 1935 and 1995, as we describe in detail below. Although the real average size of publicly-traded firms is much larger today, the average size of the top management team and, hence, the number of individuals reporting ownership data, changed little. In addition, the increase in ownership is not restricted to specific industries but occurs across all industry categories.

Second, the long term comparison provides a unique opportunity to examine three alternative hypotheses about how the costs and benefits of managerial ownership have changed. Since managerial ownership is only one of many mechanisms that can be used to mitigate agency problems, we first examine the substitution hypothesis that greater managerial ownership has been accompanied

by less reliance on other methods of corporate control. We find no evidence that insider ownership is substituting for alternative mechanisms, such as incentive-based pay, monitoring by the board, the market for corporate control or product-market competition. These mechanisms all appear to be used at similar or greater levels of intensity today as 60 years ago. This evidence supports the view of the firm, emphasized in the multi-task principal-agent literature, that alternative incentive devices must be balanced and will tend to increase or decrease in intensity simultaneously (Milgrom and Roberts (1990), Holmstrom and Milgrom (1994), and Brickley, Smith, and Zimmerman (1997)).

The next hypothesis we consider links firm performance, as measured by Tobin's Q, to the level of managerial ownership (e.g., Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990)). The shape of the performance-ownership relation in 1935 is similar to the piece-wise linear pattern that Morck, Shleifer, and Vishny (1988) documented using 1980 data. While this pattern is weaker in our 1995 sample, changes in the performance-ownership relation do not appear to provide an explanation for the increase in insider ownership over time.

We investigate a third hypothesis which concerns how firm-specific characteristics associated with the costs and benefits of monitoring affect the level of managerial ownership (e.g., Demsetz and Lehn (1985)). We find that most factors, such as firm size and regulation, have similar effects on managerial ownership in 1935 and 1995, so the monitoring costs and benefits for these factors do not appear to have changed over time.

Characteristics related to the volatility of the environment in which the firm operates, however, have contrasting effects in the two periods. Innovations in financial markets and financial theory during the last 60 years have created greater hedging and diversification possibilities for both managers and firms (see Merton (1995) and Stulz (1996)). These developments coupled with a general decline in volatility have lowered the costs to managers of holding large equity stakes in their firms. By reducing risks that are outside the control of managers, modern risk

management also can make firm performance a less noisy measure of managers' quality and hence make ownership more useful for solving the agency problem between managers and shareholders (Stulz (1996)). This reduction in costs and increase in benefits of managerial ownership provide an explanation of the increase in managerial ownership we document.

Our long time horizon thus allows us to relate the reduction in transactions costs that accompanies the development of markets to the internal structure of the firm, a linkage that has largely been overlooked in the corporate governance literature (see North (1981)). This linkage and our finding of an increase in insider ownership over time in the U.S. has implications for the debates on corporate governance reforms in both developed and emerging markets (e.g., National Association of Corporate Directors (1995) and Broadman (1996)).

Section I describes the construction of the data set, and Section II presents the basic results on managerial ownership. Section III examines the comparability of firms, managers, and reporting practices in 1935 and 1995. Section IV contains the results for the alternative hypotheses about why ownership has changed over time. Section V concludes with a brief summary and implications for corporate governance reforms.

I. 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 (SEC). Section 16 of the Securities and Exchange Act of 1934 mandates that any firm with equity registered on national securities exchanges must report the equity holdings of officers and directors to the SEC. The SEC collected and published the Section 16 reports for share holdings as of December 31, 1935.[4]

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[4] With two exceptions, these data have been ignored since the 1930s. Gordon (1936 and 1938) tabulates small sub-samples to investigate corporate ownership. Stigler and Friedland (1983) use this source to reclassify the control structures of the large firms in the

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 ownership stake is zero. The SEC required the reporting of both direct holdings and indirect holdings. Direct ownership means 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 direct and 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*, and 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.[5] The average firm has slightly more than 10

Berle and Means (1932) sample but do not investigate it further. Recently, Hadlock and Lumer (1995) use some of these data in their historical investigation of managerial compensation and turnover.

[5] 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.

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 (see Anderson and Lee (1997)). This data 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). We use the March 1995 disks which contain end-of-1994 and 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.

Table I 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 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, where total value is the 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, 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.

II. Changes in Managerial Ownership Since 1935

Contrary to the predictions of many scholars over the years, managerial stock ownership is higher now than when Berle and Means (1932) published their famous book. Table II 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 is 12.9 percent in 1935 and 21.1 percent in 1995. Median managerial holding more than doubled from 6.5 percent to 14.4 percent between 1935 and 1995.[6] 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 II, each firm receives equal weight. An alternative way to measure managerial ownership is with a weighted average, using the total market value of each firm (equity plus debt) as the weight. This value-weighted average of managerial stock ownership for the full sample increases from 4.2 percent in 1935 to 5.9 percent in 1995; 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, such a value-weighting scheme tends to shrink ownership levels and hence diminishes differences between the two periods.

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

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[6] We also calculate the ratio of the value of equity owned by officers and directors to total 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 is higher than in 1935.[7] 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 III shows how ownership percentages and the real dollar value of ownership vary with real firm size in 1935 and 1995. The first two columns of Table III report the real market value of the firm at the midpoint of each firm size decile for 1935 and 1995. The subsequent columns in Panel A compare the mean and median ownership percentages in each firm size decile and in Panel B compare the mean and median dollar values. For the nine smallest firm size deciles, both the mean and median managerial ownership percentages are higher in 1995 and each of the differences is statistically significant with *p*-values less than 0.01.

For firms in the largest size decile, however, the differences in the percentage of managerial ownership are no longer statistically significant. The mean percentage ownership for these firms is slightly higher (*p*-value for the difference is 0.88) and the median is slightly lower (*p*-value for the difference is 0.87) in 1995 than in 1935. For the top size decile, the percentage ownership is the smallest fraction of total equity in both periods, illustrating the inverse relation between firm size and percentage ownership. Figure 1 plots the relation between firm size (measured in log of 1995 dollars) and percentage of managerial ownership for the two periods. For any given firm size, managerial ownership is higher in 1995 than it is in 1935. Since the largest firms in 1995 are much larger in real terms than the

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[7] 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 (see Holthausen and Larcker (1991) and Hanka (1994)).

largest firms that existed in 1935, we cannot make a direct size comparison for them.

If we measure ownership in terms of real dollar values rather than percentages, as in Panel B of Table III, the mean and median real dollar values of managerial holdings are sharply and statistically significantly higher in 1995 for all of the size deciles. The differences are the greatest in the largest size deciles, suggesting that firm size increases faster than the percentage of managerial ownership falls across the deciles.

To explore the change in ownership for the largest firms in more detail, we examine ownership by the top officer rather than the managers as a group. This allows us to compare our results with those of Jensen and Murphy (1990) who examine a sample of the largest firms ranked by market value in 1938, 1974, and 1984. We use Moody's Manuals to identify the chairman or president (as Jensen and Murphy note, the CEO title was rarely used then) for our top 120 firms in 1935 and obtain ownership data from SEC (1936). Each firm had a president, 53 had a chairman, and 10 had the same person holding both titles; we use the president as the top officer in 1935. For 1995, we use the ExecuComp database to obtain CEO ownership for the largest 120 firms because Compact Disclosure does not break out CEO ownership separately.

We find that average ownership by the top officer is constant at 1.25 percent and that the median drops slightly from 0.09 percent in 1935 to 0.06 percent in 1995. Since we are looking at the largest firms, this parallels our finding reported in Table III in which the mean percentage of total managerial holdings for the largest decile of firms is almost identical in 1935 and 1995 and the median percentage is slightly lower. Jensen and Murphy report a mean (median) of 1.7 percent (0.30 percent) in 1938 and 1.0 percent (0.03 percent) for 1984. Their somewhat higher numbers for the 1930s could be due to a different top officer definition and the different sample they use for 1938. For 1938, they use ownership for the highest-paid executive rather than choosing top officer by title. They are

able to locate proxies for 53 of the 120 largest firms and supplement this with 16 proxies from 1939 and 1940. For 1974 and 1984, they have CEO ownership for the 120 largest firms. Their 1984 numbers are similar to ours for 1995.

In terms of real dollar values of the holdings, however, we find that both the mean and median are much higher in 1995 than 1935: the mean (median) in 1935 is $23.6 million ($1.5 million) and $386.5 million ($11.9 million) in 1995. Jensen and Murphy do not report mean dollar values. Our median dollar value is somewhat lower than their figure of $3.2 million for the 1930s but much larger than their figure of $2.5 million for 1984.[8] Again, differences in samples and definitions could account for the difference in the 1930s. The sharp rise in the stock market between 1984 and 1995 could account for our higher median dollar values in the modern era. For the very largest firms, thus, we find little difference in percentage ownership but much higher dollar value of ownership for 1995 versus 1935 for both CEOs and top managers as a group.

III. Comparability of Insider Ownership in 1935 and 1995: Changes in Reporting Practices, Firms, and Executives

To understand better the increase in managerial ownership from 1935 to 1995, we consider factors that might affect the comparability of data over such a long horizon. 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.

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[8] Jensen and Murphy (1990) report values in terms of 1986 dollars which we translate into 1995 dollars for comparison with our numbers. The CPI has increased by 39 percent from 1986 to 1995.

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, it suggests that the level of insider ownership in percentage terms during the 1920s may have been similar to what we document for 1935.[9]

It also appears that insider ownership remained stable for at least several years

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[9] 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. For the pre-WWI period, Taussig and Barker (1926) asked companies to provide data on managerial ownership between 1904 to 1914. 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.

after 1935. In 1939 the Temporary National Economic Committee (TNEC) uses 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) finds 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 200 largest 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 1995 average of 21.1 percent and median of 14.4 percent. 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 1997), 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 thus occurred between 1939 and 1973.

B. Comparability of 1935 and 1995 Reporting and Data

B.1. 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 widely discussed in the financial press in the 1930s (for example, *Commercial and Financial Chronicle*, December 26, 1935). Furthermore, scholars who used the data in the 1930s, in particular 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.

Another 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.[10] In contrast, the total managerial ownership figures we use for 1995 do not always include all indirect holdings.[11] These reporting differences would tend to bias the ownership percentages for 1995 downward relative to 1935, thereby leading us to understate the increase in managerial ownership over time.

B.2. How to Account for Executive Stock Options?

One change in reporting that has occurred since 1935 concerns the treatment of executive stock options. Only since the late 1970s has the SEC required that 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 changes in the tax code 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. Consequently, option grants fell to a low level in the 1970s (Lewellen (1975) and Yermack (1993)). Option grants have become

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[10] 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.

[11] 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.

increasingly frequent since the late 1980s and now constitute a significant fraction of managerial compensation (Hall and Liebman (1997)).

The use of options, however, does not appear to have affected the overall level of insider ownership during the last quarter century. As reported in Mikkelson and Partch (1989) and McConnell and Servaes (1990), average percentage managerial ownership from 1973 to 1986 is stable and similar to what we document for 1995. In other words, insider ownership increased to its current level before the recent growth of executive stock options grants and does not appear to have fluctuated with their popularity.

In our empirical work, we follow the standard procedure of counting options as equal to stock in calculating managerial ownership. Most executive options are granted at-the-money with ten-year lives and become exercisable in three to four years following the initial grant (Guay (1997) and Ofek and Yermack (1997)). Given the bull market of the 1990s, few options exercisable in 1995 would have expired out of the money and been left unexercised. Furthermore, executives tend to exercise their options long before they expire (Hemmer, Matsunaga, and Shevlin (1996)). Even in the extreme case where an executive immediately sells the shares acquired by exercising options[12], the options still play an incentive alignment role parallel to stock ownership because the manager's wealth is directly affected by stock price performance. Managers also have the potential to enjoy the benefits of additional voting power, if they choose to exercise their options.

Moreover, our ownership calculations do not include options that have been

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[12] Ofek and Yermack (1997) show that options are more likely to be awarded to executives with ownership that is below the median for the executives at the firm, and such "low-ownership" executives tend to keep most of the shares acquired through exercising the options. For "high-ownership" executives, Ofek and Yermack find that they sell roughly 220 actual shares for every 1,000 option-shares granted and tend not to retain shares they acquire through exercising options. The compensation committees appear to understand this phenomenon, however, and tend to grant more options as old ones are exercised and cashed-out.

granted but whose earliest exercise date is more than 60 days from the date of the proxy. Guay (1997), for example, finds that such "unexercisable" options constitute 40 percent of all options held by chief executive officers of 278 large corporations in 1993. Our 1995 ownership figures thus may understate managerial ownership.

Although following the convention of including options exercisable within 60 days in our ownership calculations appears reasonable, we explore the sensitivity of our results to the inclusion of options. Since Compact Disclosure does not distinguish options from shares-owned, we examine the proxies of a random sample of 150 firms in our 1995 sample.[13] On average, options constitute 25.2 percent of total managerial equity ownership. Even if we completely exclude options from our 1995 sample, comparisons like those in Table II would still show that ownership is higher in 1995 than in 1935.

A less extreme adjustment would be to multiply the number of options by the ratio of the change in the value of the options to a unit change in the firm's stock price (see Guay (1997)). Guay (1997) finds that both the mean and median of this ratio in his 1993 sample is 0.7. Since our ownership numbers include only options exercisable within 60 days but Guay (1997) includes both the exercisable and unexercisable options, 0.7 is lower bound for our valuation of options relative to the value of the stock. Applying this adjustment to the 25.2 percent of ownership in the form of options implies that we would reduce our 1995 ownership figures by only 7.5 percent, which translates into less than two percentage points for the mean of the 1995 full sample. Again, our results would be unchanged.

B.3. 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

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[13] Interestingly, we find a negative correlation between share of insider ownership through options and the total fraction of insider ownership (including the options). Greater use of options thus appears to be associated with a lower level of total managerial ownership.

number of officers and directors reporting for each firm in 1935, Compact Disclosure lacks this information for 1995. Accordingly, we gather 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 is 2.3 in 1935 and 2.8 in 1995. The total number of persons reporting per firm is thus almost identical in the two periods, 10.6 in 1935 and 11.0 in 1995.[14] Changes in the number of people reporting, therefore, cannot account for the increase in insider ownership we document.

B.4. 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 preferred stock was more widely used in the 1920s and 1930s, it is possible that our finding of an increase in common stock ownership by managers is simply the result of a substitution of common for preferred over time.

Earlier in the century, however, managers did not hold significant amounts of preferred relative to common stock. First, the size of preferred issues relative to common issues was normally quite small (Dewing (1941)). The FTC (1926), for 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 its 1922 survey, the FTC (1926) finds 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

[14] 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.

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 percentage points. Similarly, in a 1939 survey TNEC (1940) finds that 95 percent of the value of officers' and directors holdings was in common stock.

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.[15] Given the relatively small number of preferred shares outstanding and the restrictions on voting, it was virtually impossible to exercise control through preferred stock.

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

C.1. 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 is higher today. Ideally, to investigate this possibility, we would need data on the ownership of firms that are

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[15] In a comprehensive study of 844 preferred stocks outstanding between 1925 and 1930, Dewing (1934) 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.

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.[16] 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 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 ratio 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.

C.2. Has the Composition of Industries Changed?

Firms in different industries often have different levels of insider ownership

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[16] If relatively fewer enterprises filed tax returns in 1935 than in 1995, these numbers might overstate the growth in the total number of enterprises.

(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 IV 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.[17] Table IV therefore shows a broad-based, not a sectoral-specific, increase in managerial ownership over time.

C.3. Has the Age of Publicly Traded Firms Changed?

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

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[17] The two exceptions are "Services" (SIC 70-89) and "Financial, Insurance, and Real Estate & 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 IV, 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 Compact Disclosure 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.

than in 1995 (25 years versus 32 years), and the median ages are very close in the two periods (20 years versus 19 years). 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)). 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 V 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.

C.4. 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 individuals to diversify their portfolios. A decrease in firm size, thus, would provide a possible explanation for the increase in the percentage of inside ownership we document.

As Table I 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 each level of firm size, measured in

real 1995 dollars, average percentage of inside ownership is greater in 1995 than in 1935.

C.5. 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 were to become relatively wealthier, they might choose to hold a larger percentage of all publicly traded corporations. Unfortunately, systematic data do not exist on individual executives' 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 I) 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 distributions have 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 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.

Another approach is to examine the change in executives' income. If executive compensation is closely correlated with executives' net worth, we can address the wealth issue by comparing the dollar value of their shareholdings to executive compensation in the two periods. Although our sources do not provide compensation data for the 1930s, Hadlock and Lumer (1997) collect data on a broad sample firms between 1934 and 1940 and find that mean (median) compensation, defined as salary plus bonus, of the highest paid executive is $894,000 ($755,000) in 1995 dollars. For 1995, we use Standard and Poor's ExecuComp database which provides information on the five highest paid executives in firms included in the S&P 500, S&P MidCap 400, and S&P SmallCap 500. For this sample, the mean (median) CEO total compensation, which includes the value of stock option grants, in 1995 is $2.25 million ($1.31 million). As Table II shows, however, the real mean (median) value of managerial ownership has risen much more rapidly, from $17.9 million ($3.0 million) to $73 million ($16.2 million). The ratio of the mean (median) dollar value of managerial ownership to mean (median) compensation thus is 20 (4) in 1935 and 32 (12) in 1995. These comparisons imply that dollar value of ownership has increased by more than the income and wealth of executives during the last 60 years.

C.6. 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 II.

IV. 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 sixty-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 by focusing on how the costs and benefits of managerial ownership have changed since the Great Depression.

We examine three distinct but related sets of hypotheses to explain the increase. The first approach considers managerial ownership as but one among many alternative mechanisms that can be used to mitigate agency problems in the firm (e.g., Agrawal and Knoeber (1996) and Holmstrom and Milgrom (1994)). We inquire whether managerial ownership has substituted for other methods of corporate control, reflecting a change in the relative costs of using the different 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. Changes in the Use of 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 costs of these different mechanisms have changed over time, the less costly ones should be

substituted for the more costly ones. We examine whether the increase in insider ownership has been accompanied by the decreasing use of any of these alternative control devices.

A.1. 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.[18] These results imply that since the 1930s managerial ownership has not substituted for pay-performance compensation.[19]

A.2. Board Composition and Size

The board of directors can directly monitor the actions of managers and, if effective, can minimize shirking by managers. Two factors that appear to influence the effectiveness of monitoring by directors are the proportion of outside directors (Weisbach (1988), Kroszner and Rajan (1997)) and board size (Yermack (1996)).

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[18] In contrast, Jensen and Murphy (1990) argue that on average top management compensation was more sensitive to firm performance during the 1930s than today. Hadlock and Lumer (1996) show that once firm size is controlled for in the Jensen and Murphy sample, pay-for-performance sensitivity increases substantially during the past 60 years.

[19] 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.

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. Changes in board composition or size consequently do not appear to account for the changes in managerial ownership.

A.3. Leverage

Debt also can constrain managers because they must meet the fixed interest obligations or chance triggering bankruptcy and face the likelihood of losing their 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 I 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 larger fraction of publicly traded firms had no debt outstanding in 1935. Thus, there is no evidence of a general substitution between debt and 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.

A.4. 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.

A.5. 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 not survive (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)). 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 for the increase in managerial ownership during the period.

A.6. 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 ownership for other mechanism used to solve the agency problem. The complementary use of these instruments is consistent with the multi-task principal-agent view of the firm that the intensity of alternative incentive devices should move in parallel (Milgrom and Roberts (1990), Holmstrom and Milgrom (1994)). Since any particular device may reward one type of activity more than others, heavy reliance on one mechanism could lead a manager to focus on one task to the neglect of others. To maintain a balance among managers' responsibilities, an increase in the intensity of one incentive mechanism should be offset by an increase in another. The growth of managerial ownership is thus part of a general rise in the intensity of many types of

incentive-alignment devices in the modern corporation. We must turn to other explanations to understand why managerial ownership is higher today.

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 (1988) and McConnell and Servaes (1990)). We now investigate whether this relation has changed in such a way 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 and 1995. For ownership, we use total ownership by officers and directors.[20] Table VI presents the results of estimating piecewise-linear specifications of the performance-ownership relation for 1935 and 1995.[21] This type of 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. Columns (1) and (3) include no other control variables. Columns (2) and (4) include the book value of assets, the debt to asset ratio, and one-digit SIC industry indicators (not reported) as controls for other factors besides

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[20] Note that Morck, Shleifer, and Vishny (1988) use ownership by the board of directors only. For 1995, Compact Disclosure does not report ownership by the board alone. To maintain comparability between our 1935 and 1995 results, we use total managerial ownership. Our 1935 results are almost identical if we use ownership of directors only.

[21] We also estimate the relation for NYSE firms and find similar results. In addition, we investigate an alternative curvilinear relation between Q and board ownership proposed by McConnell and Servaes (1990) but a piecewise linear specification appears to be a better representation of the 1935 data.

ownership influencing performance and as robustness checks. The first two columns use 1935 data and the next two columns use 1995 data.

The results for 1935, in terms of both signs and magnitudes, are strikingly similar to those found in Morck, Shleifer, and Vishny (1988) for their 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 3 and 6. 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 –1.2. 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, but it is not statistically significant.[22]

The last two columns of Table VI estimate the performance-ownership relations for our 1995 data. In the specification without the controls, the ownership greater than 25 percent is positive and statistically significant but the other parts of ownership are not statistically significant. When the controls are included, the sign pattern of the coefficients is similar to those in Morck, Shleifer, and Vishny and our 1935 data, but only ownership below 5 percent is statistically significant. The

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[22] 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.

performance-ownership relation thus appears to be weaker in our 1995 sample than in earlier periods.

We estimated a variety of piece-wise linear specifications for both 1935 and 1995, using the alternative break-points explored in Morck, Shleifer, and Vishny (1988, Table 3). For both our 1935 and 1995 samples, none of the other specifications provides a better fit of the data, in terms of R^2. Although the relationship between performance and ownership is not as strong in 1995, there is no evidence that the break-points have changed in a way that would predict an increase in managerial stock holdings. Shareholders today, consequently, have no greater incentive than did their counterparts in the 1930s to induce managers to change the amount of stock they hold based on the performance-ownership relation.[23]

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 (1997b), Himmelberg, Hubbard, and Palia (1997)). 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

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[23] Even if shareholders have no greater incentive to induce managers to hold stock, managers may capture more private benefits of their stock ownership. Barclay and Holderness (1989) and Barclay, Holderness, and Pontiff (1993) estimate that private benefits accruing to managers are on the order of 4 percent of firm value.

percentage of ownership by the officers and directors, that is, log[ownership/(1-ownership)].[24] 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.[25] We also include the square of the standard error to allow for a non-linear relationship. The volatility measures allow 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 (Demsetz and Lehn (1985)). 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 (1997b)). In addition, the managers of regulated firms typically have less discretion precisely because regulation limits the firms' activities and opportunities. We try to capture these effects by including three zero/one indicator variables which take the value

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[24] None of our results change if we use log(ownership) as the dependent variable. Note that 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.

[25] The estimation periods are 1931 to 1935 and 1990 to 1994. We also use 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 do not change.

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 affect the level of managerial ownership. Stulz (1988) argues that higher leverage allows managers to have more voting control for a given dollar value of their investment in the firm. Also, 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)).[26]

Because equity returns data are available from CRSP for only the NYSE firms during the 1930s, we restrict our samples to firms listed on the NYSE.[27] 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 separate estimates in Table VII for 1935 (Panel A) and for 1995 (Panel B). 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.

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[26] Another hypothesis is that the costs of shareholder monitoring are higher in firms with greater investment opportunities, so managerial ownership should be higher in such firms (Smith and Watts (1992)). If so, greater overall investment opportunities in the 1990s compared with the 1930s might explain the rise in managerial ownership. The data, however, do not support this hypothesis. First, the average level of Q for the early 1970s is similar to what we report in Table I for 1935, but managerial ownership was already much higher by then (Mikkelson and Partch (1989)). Second, if we include Q as an independent variable in the ownership regressions, we find (a) none of the coefficients or the standard errors for the other variables in our regressions reported below are affected and (b) Q has a small and statistically insignificant negative coefficient in 1935 but a statistically significant positive coefficient in 1995. Since ownership and Q are likely to be determined simultaneously, however, we would have to develop a two-stage estimation technique to adjust for the endogeneity. Loderer and Martin (1998) do so and find that Q and ownership are negatively related, thereby rejecting this alternative explanation.

[27] When we include all of the 1995 firms, our 1995 results change little.

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 find 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.

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. By increasing leverage, Stulz (1988) argues, managers can maintain a given level of voting rights without having to invest more in their firms. As Table I shows, firms are much larger today than in 1935. Our results thus are consistent with some degree of substitution between the use of managerial ownership and leverage in each cross section, with a much larger effect 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 VII, Panel A), the standard error of the market model has a negative and statistically significant effect on ownership. In 1995 (columns (1) and (2), Table VII, Panel B), however, the coefficient is positive and statistically significant.[28] When we

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[28] In the 56 firms in 1995 for which we collect data from the proxies and have CRSP data, we find no correlation between the percentage of managerial ownership in the form of options and volatility. This result is consistent with the mixed findings in the accounting literature of the effects of stock option plans on volatility (see Hemmer et al. (1996)).

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.[29]

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 deviation of stock returns for the 1935 sample is roughly double that for 1995 sample (0.17 versus 0.09). The high variability would apply not only to financial wealth invested in the stock of the firm but also to 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.

In addition, financial innovations have reduced the costs of hedging. The ability to diversify risks in both human and financial capital is much greater today than in the 1930s (Merton (1995)). Modern risk management techniques also can be used to reduce firm risks outside of managers' control. This permits performance to be a more precise signal of managerial competence and may enhance the willingness of managers to hold equity in their own firms (Stulz (1996)). Tufano (1996), for example, finds a positive correlation between the extent of hedging at gold mining firms and managerial ownership. The optimal response to lower volatility and more sophisticated hedging opportunities is for insiders to hold greater ownership stakes as the century has progressed. Advances in financial theory and markets thus

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[29] Demsetz and Lehn (1985) find 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.

appear to have played a key role in the rise in managerial ownership since the Great Depression.

The lower costs of holding larger stakes, however, may be a double edged-sword for management discipline. High managerial stock ownership could be used to entrench managers and reduce the probability of a takeover (Stulz 1988). With a more active corporate control market today than 60 years ago, managers may have an incentive to raise their ownership stakes to achieve the same level of protection they once had. Innovations such as executive stock swaps (Bolster, Chance, and Rich 1996) allow managers to maintain voting rights but hedge against movements in their own stock price, thereby reducing the cost to the managers of controlling a large voting block. In addition, if the corporate control market provides less discipline for the largest firms (because they are more difficult to take over), then this motivation for insiders to hold large equity stakes is attenuated. This could be part of the explanation for why we find similar low levels of percentage ownership in the largest firms across time.

V. 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 4,200 firms in 1995 and find that the percentage of managerial ownership of publicly traded firms is higher today, increasing from an average of 13 percent in 1935 to 21 percent in 1995. The very largest firms in both periods have similar managerial ownership percentages, but a size-weighted average of ownership is also higher in 1995 than 1935. In terms of real dollar value, managerial ownership is higher today across all firm sizes. To examine the comparability of data 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 hypotheses to understand what factors are driving the long-term change in managerial ownership. 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 over time. Incentive-alignment devices for top managers of public corporation thus are used more intensively today than 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. We find that the shape of this relation in 1935 is similar to what Morck, Shleifer, and Vishny (1988) have find with 1980 data. While the relationship is weaker in our 1995 sample, changes in this relation do not explain the rise in managerial ownership.

Finally, we estimate the effects of firm characteristics that are associated with the costs and benefits of using 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 shareholders might prefer that managers devote a larger fraction of their financial wealth to equity ownership in the firm. The reduction in transactions

costs associated with financial market innovations thus appears to have an important impact on the internal organization of the firm.

Our results are also relevant to policy issues concerning corporate governance. The effects 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. Taking this relation into account is particularly important in emerging and transition economies, where volatility and financial market development may be closer to that of the U.S. in the early part of the century than of the U.S. today. In addition, our finding that managerial ownership is higher now than 60 years ago should help provide guidance in the implementation of "best practices" of corporate governance, such as those promulgated by the National Association of Corporate Directors (1995) which call for boards to "set a substantial target for stock ownership by each director."

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 during the last 60 years. Nonetheless, the increase in managerial ownership has to be considered an important development in U.S. corporate governance since the Great Depression.

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Table I
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
1935					
	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
1995					
	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

1935					
	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
1995					
	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 II
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 1,464 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 value is the end-of-year stock price times the number of shares held and is in millions of 1995 dollars. Sources: For 1935, SEC (1936), *Moody's Manuals*, *Commercial and Financial Chronicle*, and for 1995, Compact Disclosure.

		First Quartile	Median	Mean	Third Quartile
Panel A: Percentage Ownership					
Full sample:					
	1935	1.3	6.5	12.9	18.5
	1995	4.7	14.4	21.1	32.1
NYSE sample:					
	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					
Full sample:					
	1935	0.5	3.0	17.9	10.7
	1995	5.7	16.2	73.0	46.1
NYSE sample:					
	1935	0.8	5.4	32.0	21.2
	1995	9.4	30.7	131.2	92.1

Table III

Percentage and Dollar Value of Managerial Equity Ownership across Deciles of the Market Value of the Firm's Equity, 1935 and 1995

Comparison of 1935 and 1995 mean and median managerial stock ownership percentages and dollar values broken out by deciles of the market value of firm equity, calculated at end-of-year 1935 and beginning-of-year 1995. 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

Midpoint of Size Decile		Mean		Median	
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

Panel B: Real Dollar Value of Ownership

Midpoint of Size Decile		Mean		Median	
1935	1995	1935	1995	1935	1995
$3	$11	$0.6	$3.6	$0.4	$3.1
$8	$25	$1.7	$7.4	$0.9	$6.4
$16	$42	$2.6	$11.6	$1.6	$8.8
$24	$66	$3.2	$17.2	$1.9	$12.8
$41	$101	$6.6	$24.6	$4.4	$19.6
$63	$155	$7.0	$32.9	$4.9	$23.5
$104	$260	$10.6	$51.1	$5.8	$34.3
$186	$517	$15.0	$81.1	$6.4	$35.8
$399	$1,211	$26.4	$136.1	$13.7	$52.5
$1,538	$4,428	$104.9	$364.8	$29.9	$83.0

Table IV
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.

		Mean Ownership		*Frequency*	
	Industry[1]	**1935**	**1995**	**1935**	**1995**
1)	Agriculture, 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)	Railroads, 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)	Finance, Insurance, Real Estate, Holding Cos.	8.4	17.4	2.4	17.2
13)	Services	14.4	26.5	2.1	13.6

[1] 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 V
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*.

	Mean Ownership		***Median Ownership***		***Frequency***	
Age of Firm	**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 VI
Performance-Ownership Relation, 1935 and 1995

Piecewise linear OLS regressions of the market-to-book ratio on managerial ownership and control variables for the full sample of 1,236 exchange-listed firms in 1935 (columns 1 and 2) and 3,759 exchange-listed firms in 1935 (columns 3 and 4). *p*-values are in parentheses under each coefficient estimate. Ownership is the fraction of total shares owned by officers and directors (O&D). O&D 0 to 5 equals O&D ownership if O&D ownership < 0.05 and equals 0.05 if O&D ownership > 0.05. O&D 5 to 25 equals zero if O&D ownership < 0.05, equals O&D ownership minus 0.05 if 0.05 < O&D ownership < 0.25, and equals 0.20 if O&D ownership > 0.25. O&D over 25 equals zero if O&D ownership < 0.25 and equals O&D ownership minus 0.25 if O&D 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.

	1935		**1995**	
	(1)	(2)	(3)	(4)
Intercept	0.74 (<0.01)	0.70 (<0.01)	0.99 (<0.01)	1.45 (<0.01)
O&D 0 to 5 Percent Ownership	5.95 (<0.01)	3.10 (0.03)	1.01 (0.26)	2.39 (<0.01)
O&D 5 to 25 Percent Ownership	–1.22 (<0.01)	–1.14 (<0.01)	0.28 (0.15)	-0.14 (0.43)
O&D Over 25 Percent Ownership	–0.05 (0.80)	–0.05 (0.79)	0.29 (0.01)	0.13 (0.15)
Total Assets		–0.01 (0.21)		-0.002 (<0.01)
Debt to Assets Ratio		–0.05 (0.62)		-0.07 (0.16)
Industry Indicators for one-digit SIC codes	No	Yes	No	Yes
Adjusted-R^2	0.02	0.06	0.01	0.25
p-value of F-statistic for the regression	<0.01	<0.01	<0.01	<0.01

Table VII

Relation between Managerial Ownership and Firm Characteristics in 1935 and 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 571 NYSE-listed firms in 1935 in Panel A and 1,370 NYSE-listed firms in 1995 in Panel B. *p*-values are 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 in Panel A and from January 1990 to December 1994 in Panel B. 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.

Panel A: 1935

	(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^2	0.21	0.22	0.21	0.21
p-value of F-statistic for the regression	<0.01	<0.01	<0.01	<0.01

Panel B: 1995

	(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^2	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.