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Much of the vast research on corporate control over the past 30 years as well as many of the policy recommendations that have found their way into the securities law over the past 60 years are premised on the separation of ownership from control in public corporations. Thorstein Veblen first raised this issue in 1923 when he wrote of “absentee ownership.”<sup>1</sup> It was also the central concern of Adolf Berle and Gardner Means in their hugely influential book *The Modern Corporation and Private Property* written in 1932. They warned that the separation of ownership and control “destroys the very foundation on which the economic order of the past three centuries has rested” and asserted 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”<sup>2</sup> of the modern corporate system. More recently, academics such as Michael Jensen and Mark Roe have argued 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 calls “strong managers and weak owners.”<sup>3</sup>

Although the premise of the separation of ownership from management plays such a central

role, little, if any, evidence has been presented to support the proposition that managerial ownership has declined over time. We recently conducted a study that uses the earliest data available on ownership (published by the Securities and Exchange Commission in 1936) to investigate how the level of managerial ownership has changed since 1935. We compared a comprehensive cross-section of roughly 1,500 publicly traded U.S. firms in 1935 with a modern benchmark of more than 4,200 exchange-listed firms for 1995.

Contrary to the received wisdom, we found that managerial stock ownership is higher now than in 1935. The average percentage of common stock held by a firm’s officers and directors as a group rose from 13% in 1935 to 21% in 1995. Median holdings doubled from 7% to 14%. Although the very largest firms had similar ownership percentages in both periods, a firm-size-weighted average was also higher in 1995 than 1935. In terms of real 1995 dollars, insider holdings were on average four times higher in 1995, rising from \$18 million to \$73 million, and this increase occurred across all firm sizes.

We examined two possible causes of this increase in managerial ownership. First, we explored whether managerial ownership has increased

\*This is a shorter and less technical version of our paper entitled “Were the Good Old Days That Good? Changes in Managerial Stock Ownership Since the Great Depression,” *Journal of Finance* 54, 1999, pp. 435-69. That paper won the Brattle Prize for the best paper in corporate finance published in the *Journal of Finance* in 1999.

1. Thorstein Veblen, *Absentee Ownership and Business Enterprise in Recent Times: The Case of America* (New York: B.W. Huebsch, reprinted by Augustus M. Kelly, 1964).

2. Adolf Berle, Jr. and Gardner Means, *The Modern Corporation and Private Property* (New York: Macmillan, 1932).

3. See, for example, Michael Jensen, “Eclipse of the public corporation,” *Harvard Business Review* 67, 1989, pp. 61-74; idem, “The modern industrial revolution, exit and the failure of internal control systems,” *Journal of Finance* 48, 1993, pp. 831-880; Mark Roe, *Strong Managers, Weak Owners: The Political Roots of American Corporate Finance* (Princeton, NJ: Princeton University Press, 1994).

because, as some finance scholars have suggested, other mechanisms to control agency costs may have decreased. We found 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 are all now in force with similar if not greater intensity as in 1935. This finding supports the view that alternative incentive devices must be balanced and will tend to increase or decrease in use simultaneously.<sup>4</sup>

The second hypothesis we investigated concerns how firm-specific characteristics associated with the costs and benefits of monitoring affect the level of managerial ownership. We found that most factors, such as firm size and regulation, had 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 firms operated, however, had markedly different effects in the two periods. A general decline in volatility, coupled with innovations in financial markets and financial theory that have created greater hedging and diversification possibilities for both managers and firms,<sup>5</sup> have lowered the costs to managers of holding large equity stakes in their firms. Finance theory suggests that when risks outside the control of managers are reduced, firm performance becomes a less “noisy” measure of managers’ quality and hence stock ownership becomes more cost-effective for solving the agency problem between managers and shareholders. This reduction in costs and increase in benefits of managerial ownership seems to offer at least a partial explanation of the increase in managerial ownership since 1935.

## THE DATA

To document the patterns of corporate ownership in the early part of this century, we used a rich but neglected data source from the Securities and Exchange Commission (SEC). 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 these reports for shareholdings as of December 31, 1935.

This report, 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 U.S. corporations. We supplemented these data with information from *Moody’s*, the *Commercial and Financial Chronicle*, *Bank Quotation Record*, and the Center for Research in Securities Prices (CRSP). Firms that were not listed in these sources were dropped; our full 1935 sample consisted of 1,419 firms. The average firm had slightly more than ten officers and directors reporting their ownership stakes, so there were roughly 15,000 individual shareholding records in our 1935 database.

To understand how ownership has evolved, we compared our 1935 sample to a modern benchmark of 4,202 publicly traded firms in 1995. The data for these firms are from Compact Disclosure, a comprehensive and accurate database that contains information from proxy statements and annual reports on more than 5,600 U.S. companies traded on the NYSE, AMEX, and NASDAQ’s National Market System (NMS). We supplemented these ownership data with information from *Moody’s*, COMPUSTAT, and CRSP.

Table 1 compares some basic features of our 1935 and 1995 samples. Panel A describes the full sample, and Panel B describes the subsample of firms listed on the NYSE (651 firms in 1935 and 1,464 firms in 1995). In these and all subsequent tables, the 1935 data are expressed in constant 1995 dollars using the GDP deflator, which rose roughly elevenfold during the 60-year period. On average, publicly traded firms were about four times larger in real terms in 1995 than in 1935, with the distribution being highly skewed in both periods. The mean ratio of debt to total value, where total value is long-term debt plus the market value of equity, has changed little since 1935. The mean and median market-to-book ratios were somewhat lower in 1935 than in 1995, reflecting the different states of the equity markets and investment opportunities during the two periods.

4. Paul Milgrom and John Roberts, “The economics of modern manufacturing: Technology, strategy, and organization,” *American Economic Review* 80, 1990, pp. 511-28; Bengt Holmstrom and Paul Milgrom, “The firm as an incentive system,” *American Economic Review* 84, 1994, pp. 972-91.

5. Robert Merton, “Financial innovation and the management and regulation of financial institutions,” *Journal of Banking and Finance* 19, 1995, pp. 461-81; René Stulz, “Rethinking risk management,” *Journal of Applied Corporate Finance* 9, 1996, pp. 8-24.

**Contrary to the received wisdom, we found that managerial stock ownership is higher now than in 1935. The average percentage of common stock held by a firm's officers and directors as a group rose from 13% in 1935 to 21% in 1995. Median holdings doubled from 7% to 14%.**

**TABLE 1**  
SUMMARY STATISTICS FOR  
EXCHANGE-LISTED FIRMS  
IN 1935 AND 1995\*

		First Quartile	Median	Mean	Third Quartile
PANEL A: FULL SAMPLE OF PUBLICLY TRADED FIRMS					
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

\*Data are for the end of 1935 and the beginning of 1995. Total assets are reported on a book value basis. Equity value is the market value of common stock. Long-term debt is the reported book value of the firm's long-term debt. The debt ratio is the ratio of long-term debt to long-term debt plus equity. In the market-to-book ratio, the numerator is long-term debt plus equity and the denominator is total assets. Dollar values are in millions of 1995 dollars.

**TABLE 2**  
PERCENTAGE AND REAL  
DOLLAR VALUE OF  
MANAGERIAL EQUITY  
OWNERSHIP IN 1935 AND  
1995\*

		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

\*This table compares 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. In Panel A, the percentage ownership is the sum of the common shares held (directly or indirectly) 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, in millions of 1995 dollars.

## HOW HAS MANAGERIAL OWNERSHIP CHANGED SINCE 1935?

Contrary to the predictions of many scholars over the years, managerial stock ownership is higher now than when Berle and Means published their famous book. Table 2 compares the distribution of managerial ownership across publicly traded firms in 1935 and 1995. Stock ownership for officers and directors is defined as all common shares owned directly or indirectly, including stock options exercisable within 60 days. In the full sample of publicly traded firms, average equity ownership of officers and directors was 12.9% in 1935 and 21.1% in 1995. Median managerial holdings more than doubled from 6.5% to 14.4% between 1935 and 1995. If we restrict our comparison to firms listed on the NYSE, the average and median managerial ownership likewise increased from 8.6% to 12.2% for the mean and from 3.7% to 4.7% for the median. The differences between the 1935 and 1995 means and medians for both the full samples and the NYSE samples are all highly statistically significant.

In the managerial ownership statistics reported in Table 2, each firm received equal weight. On a value-weighted basis, with the total market value of each firm (equity plus long-term debt) as the weight, managerial stock ownership for the full sample increased from 4.2% in 1935 to 5.9% in 1995. This increase is statistically significant ( $p$ -value of 0.08) but is less pronounced because inside ownership tends to be inversely related to firm size.<sup>6</sup>

Some scholars have suggested that the dollar value of holdings provides a better indication of a manager's incentives and willingness to bear risk than does the percentage value of holdings.<sup>7</sup> Panel B of Table 2 shows that the average (inflation-adjusted) value of insiders' aggregate holdings roughly quadrupled from \$17.9 million in 1935 to \$73.0 million in 1995. The median value rose from \$3.0 million to \$16.2 million. The mean and median real dollar values grew by even larger amounts for NYSE firms. Once again, the difference between the 1935 and 1995 means and the difference between the medians are highly statistically significant.

6. Harold Demsetz and Kenneth Lehn, "The structure of corporate ownership: Causes and consequences," *Journal of Political Economy* 93, 1985, pp. 1155-1177; Clifford Holderness and Dennis Sheehan, "The role of majority shareholders in publicly held corporations," *Journal of Financial Economics* 20, 1988, pp. 317-46.

7. Robert Holthausen and David Larcker, "Financial performance and organizational structure," Wharton School Working Paper, 1991; Gordon Hanka, "The empirical relation between managers' stock ownership and their consumption of leisure and perquisites," Pennsylvania State University Working Paper, 1994.

## Ownership and Firm Size

Table 3 shows how ownership percentages and the real dollar value of ownership varied with real firm size in 1935 and 1995. The first two columns of Table 3 report the real market value of the firm at the midpoint of each firm size decile for 1935 and 1995. The subsequent columns compare the mean and median ownership percentages (Panel A) and dollar values (Panel B) by size decile. For the nine smallest firm size deciles, both the mean and median managerial ownership percentages were higher in 1995 (Panel A of Table 3); each of these differences is, once again, highly statistically significant.

Measured in terms of real dollar values rather than percentages, mean and median managerial holdings were sharply and statistically significantly higher in 1995 for every size decile (Panel B of Table 3). The differences were greatest in the largest size deciles, suggesting that firm size increases faster than the percentage of managerial ownership falls across the deciles.

## The Largest Firms

For firms in the largest size decile, however, the differences in the *percentage* of managerial ownership were no longer statistically significant. The mean percentage ownership for these firms was slightly higher and the median slightly lower in 1995 than in 1935. For the top size decile, the percentage ownership was the smallest fraction of total equity in both periods, illustrating the inverse relationship between firm size and percentage ownership (see Figure 1).

To explore the change in ownership for the largest firms in more detail, we examined ownership by the top officer rather than the managers as a group. We found that average ownership by the top officer was constant at 1.25% and that the median dropped slightly from 0.09% in 1935 to 0.06% in 1995.<sup>8</sup> Since we are looking at the largest firms, this parallels our finding reported in Table 3 in which the mean percentage of total managerial holdings for the

8. A much-cited study by Michael Jensen and Kevin Murphy reported a mean and median for 1938 ownership (1.7% and 0.30%) that were somewhat larger than our 1935 figures and a mean and median for 1984 (1.0% and 0.03%) that were somewhat smaller than our 1995 results. The small differences between our findings and theirs are likely due to differences in how we define top officers as well as the difference in the years chosen for study. See Michael Jensen and Kevin Murphy, "Performance pay and top-management incentives," *Journal of Political Economy* 98, 1990, pp. 225-64.

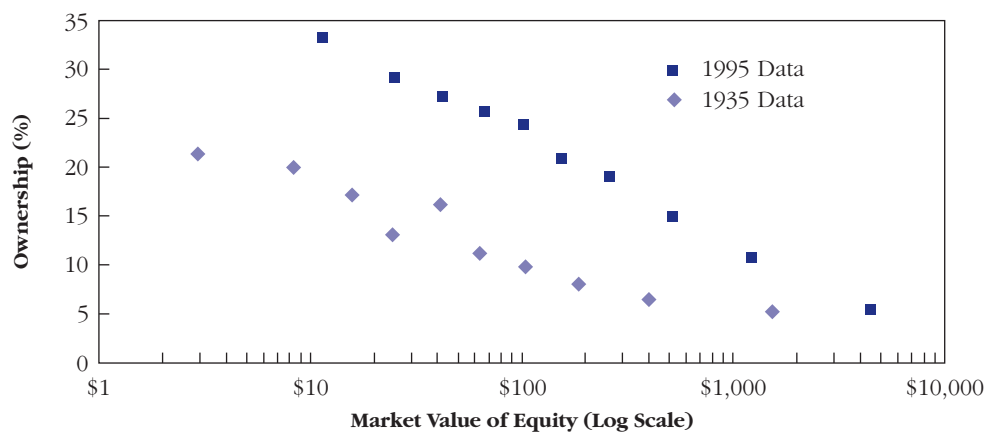
**Some scholars have suggested that the dollar value of holdings provides a better indication of a manager's incentives and willingness to bear risk than does the percentage value of holdings. We found that the average (inflation-adjusted) value of insiders' aggregate holdings roughly quadrupled from \$17.9 million in 1935 to \$73.0 million in 1995.**

**TABLE 3**  
PERCENTAGE AND REAL DOLLAR VALUE OF MANAGERIAL EQUITY OWNERSHIP ACROSS DECILES OF THE MARKET VALUE OF THE FIRM'S EQUITY FOR 1935 AND 1995\*

Midpoint of Size Decile		Mean		Median	
1935	1995	1935	1995	1935	1995
PANEL A: PERCENTAGE OWNERSHIP					
\$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					
\$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

\*This table compares 1935 and 1995 mean and median managerial stock ownership percentages and dollar values for the full sample of exchange-listed firms broken out by deciles of the market value of equity, calculated at end-of-year 1935 and beginning-of-year 1995. Dollar values are in millions of 1995 dollars.

**FIGURE 1**  
RELATIONSHIP BETWEEN FIRM SIZE AND PERCENTAGE MANAGERIAL OWNERSHIP FOR 1935 AND 1995\*



\*This figure compares the mean percentage of managerial stock ownership for each size decile of the market value of equity of the firm in 1935 and 1995 (see Table 3.) For any given firm size, managerial ownership was higher in 1995 than in 1935. Since the largest firms in 1995 were much larger in real terms than the largest firms that existed in 1935, we cannot make a direct size comparison for them. (Firm size is measured in log of 1995 dollars.)

largest firms was almost identical in 1935 and 1995 and the median percentage was slightly lower in 1995.

In terms of the real dollar value of the holdings, however, we found that both the mean and median for the largest firms were much higher in 1995 than in 1935: the mean (median) in 1935 was \$23.6 million (\$1.5 million) and \$386.5 million (\$11.9 million) in 1995. 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 also account for our higher median dollar values in the modern era. Thus, for the very largest firms, we found little difference in percentage ownership but much higher dollar values of ownership for 1995 versus 1935 for both CEOs and top managers as a group.

## ROBUSTNESS CHECKS

To ensure that the increase in inside ownership we report in fact exists, we conducted a number of robustness checks. We found that 1935 and 1995 appear to be representative years for their respective periods as far as insider ownership is concerned. The publicly traded firms in our sample represent roughly the same fraction of all enterprises as well as the same size relative to GDP in the two sample periods. Insider reporting practices and requirements did not change between 1934 and 1995, nor did the number of persons reporting per firm. Common stock is the appropriate focus for both periods; preferred stock and debt were not a significant component of executive portfolios.

Stock ownership by insiders has increased in virtually every sector of the economy, so changes in the mix of industries between 1935 and 1995 did not appear to cause the increase in inside ownership. Differences in the ages of our firms also did not appear to be influencing our results. Finally, if we adjust for the length of managerial tenure (insiders' holdings tend to increase with their tenure), the increase in insider ownership since 1935 would be even greater than what is reflected in the summary statistics.

## Stock Options

One robustness check that warrants a longer discussion is executive stock options. Until 1950, stock options were strongly tax-disfavored and so were virtually nonexistent in the 1935 sample period.<sup>9</sup> Since the late 1980s, options grants have become increasingly frequent and now constitute a significant fraction of managerial compensation.<sup>10</sup>

The use of options, however, does not appear to have affected the overall level of insider ownership during the last quarter-century. Several researchers have documented that average percentage managerial ownership from 1973 to 1986 was stable and similar to what we documented for 1995, approximately 20% for a random public corporation.<sup>11</sup> In other words, insider ownership increased to its current level before the recent growth of executive stock option grants and does not appear to have fluctuated with their popularity.

In our empirical work, we explored a number of ways to account for the often-substantial options held by executives in 1995. Our basic finding of an increase in managerial ownership, however, remained unchanged no matter how we accounted for stock options. Indeed, if we completely excluded options from our 1995 sample, comparisons like those in Table 2 would still show that ownership was higher in 1995 than in 1935, as on average options constituted only 25% of total managerial equity ownership in 1995.

## WHY HAS MANAGERIAL STOCK OWNERSHIP INCREASED?

A variety of mechanisms other than 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 examined whether the increase in insider own-

9. Wilbur Lewellen, *Executive Compensation in Large Industrial Corporations* (New York: Columbia University Press for the NBER, 1968); idem, *The Ownership Income of Management* (New York: Columbia University Press for the NBER, 1975).

10. Brian Hall and Jeffrey Liebman, "Are CEOs really paid like bureaucrats?" Harvard Business School Working Paper, 1997.

11. See, for example, Wayne Mikkelsen and Megan Parth, "Managers' voting rights and corporate control," *Journal of Financial Economics* 25, 1989, pp. 263–290; John McConnell and Henri Servaes, "Additional evidence on equity ownership and corporate value," *Journal of Financial Economics* 27, 1990, pp. 595–612.

**For the very largest firms, we found little difference in percentage ownership  
but much higher dollar values of ownership for 1995 versus 1935  
for both CEOs and top managers as a group.**

ership was accompanied by the decreasing use of any of these alternative control devices.

*Incentive-based Compensation.* Linking the pay of top managers to firm performance provides a substitute for managerial stock holdings as a way to align the incentives of managers with owners. Previous research, however, has found lower performance sensitivity for a sample of large industrial firms from 1933 to 1941 than in the 1980s and 1990s.<sup>12</sup> This finding persisted even after controlling for factors thought to affect management turnover, such as the composition of the board of directors and whether the top executive was a founder of the firm. These results imply that since the 1930s managerial ownership has not substituted for performance-based compensation.

*Board Composition and Size.* The board of directors can directly monitor the actions of managers and, if effective, can minimize inefficiency on the part of managers. Two factors that appear to influence the effectiveness of monitoring by directors are the proportion of outside directors<sup>13</sup> and board size.<sup>14</sup> Two previous studies, one for the 1930s<sup>15</sup> and one for the 1980s,<sup>16</sup> found that the median percentage of outsiders on the boards of large publicly traded firms has remained stable at approximately 50%. We found that the average board had about eight members in both 1935 and 1995. Changes in board composition or size, consequently, do not appear to account for the changes in managerial ownership.

*Leverage.* Debt also can constrain managers because they must meet fixed interest obligations or risk triggering bankruptcy and losing their jobs.<sup>17</sup> If managerial ownership were substituting for leverage as a control device, we should observe a decline in firm indebtedness over time. As Table 1 shows, this was not the case. The mean ratio of debt to debt-plus-equity was 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 of debt for insider ownership since 1935.

*The 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.<sup>18</sup> The market for corporate control was at an all-time high during the 1980s and continued to be more active in the 1990s than in the 1930s. The increase in insider ownership was thus not in response to any sort of weakness in the market for corporate control.

*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.<sup>19</sup> 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, were both roughly stable over this period.<sup>20</sup> Furthermore, U.S. 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, rose from 2.8% to 10.3% between 1935 and 1995.<sup>21</sup> Since product market competition was at least as intense in 1995 as in 1935, this factor cannot account for the increase in managerial ownership during the period.

*Summary.* Incentive-alignment devices are used at least as much as, if not more than, in 1935. The rise in managerial ownership over time thus cannot

12. Charles Hadlock and Gerald Lumer, "Compensation, turnover, and top management incentives: Historical evidence," *Journal of Business* 70, 1997, pp. 153-88.

13. Michael Weisbach, "Outside directors and CEO turnover," *Journal of Financial Economics* 20, 1988, pp. 431-460; Randall Kroszner and Raghuram Rajan, "Organization structure and credibility: Evidence from commercial bank securities activities before the Glass-Steagall Act," *Journal of Monetary Economics* 39, 1997, pp. 475-516.

14. David Yermack, "Higher market valuation of companies with a small board of directors," *Journal of Financial Economics* 40, 1996, pp. 185-213.

15. Hadlock and Lumer (1997), cited earlier.

16. Weisbach (1988), cited earlier.

17. Michael Jensen, "Agency costs of free cash flow, corporate finance, and takeovers," *American Economic Review* 76, 1986, pp. 323-29.

18. R. Nelson, *Merger Movements in American Industry, 1895-1956* (Princeton, NJ: Princeton University Press, 1959); Devra Golbe and Lawrence White, "Mergers and acquisitions in the United States economy: An aggregate and historical overview," in *Mergers and Acquisitions*, Alan Auerbach, ed. (Chicago: University of Chicago Press for the NBER, 1988); idem, "Catch a wave: The time series behavior of mergers," *Review of Economics and Statistics* 75, 1993, pp. 493-99.

19. Oliver Hart, "The market mechanism as an incentive scheme," *Bell Journal of Economics* 14, 1983, pp. 366-82.

20. Warren Nutter, *The Extent of Enterprise Monopoly in the United States, 1899-1939* (Chicago: University of Chicago Press, 1951); F. Scherer and David Ross, *Industrial Market Structure and Economic Performance* (Boston: Houghton Mifflin Company, 1990).

21. Douglas Irwin and Randall Kroszner, "Log-rolling and economic interests in the passage of the Smoot-Hawley Tariff," *Carnegie-Rochester Conference on Public Policy* 45, 1996, pp. 173-200.

be explained as the result of a substitution of ownership for other mechanisms used to solve the agency problem.

The complementary use of these instruments is consistent with the view of the firm that the use of alternative incentive devices should move in parallel.<sup>22</sup> Because 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, i.e., to prevent "gaming" by managers, an increase in the intensity of one incentive mechanism should be accompanied by an increase in another. The growth of managerial ownership is thus part of a general rise in the use of many types of incentive-alignment devices in the modern corporation. Life has become more intense over the past several decades for those who lead American corporations.

## CHANGES IN THE DETERMINANTS OF INSIDER OWNERSHIP

An alternative approach for understanding why managers' stock ownership has increased over time views ownership structure as the outcome of an optimization process that determines the most effective uses of control devices to maximize firm value.<sup>23</sup> 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.<sup>24</sup>

To explore how these factors affected managerial ownership in 1935 and 1995, we regressed managerial stock ownership on five different firm characteristics.<sup>25</sup> First, because individual wealth constraints may affect the costs to managers of acquiring significant percentage holdings in large

firms, we included firm size as an independent variable, measured as the log of the total market value of the firm (long-term debt plus market value of equity).

Next we included 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; we also included the square of the standard error to allow for a nonlinear relationship). Including volatility allows us to investigate the trade-off between the diversification costs to managers of holding a large fraction of their wealth in a risky security and the benefits to shareholders of incentive alignment when the costs of external monitoring presumably are high.<sup>26</sup> Third, we included the age of the firm (measured as the number of years since incorporation) to explore any life-cycle effect.

The fourth firm characteristic that might affect the costs and benefits of insider ownership is regulation.<sup>27</sup> A regulated firm has both shareholders and regulators to monitor management, so a regulatory agency may partially substitute for shareholders as a monitor.<sup>28</sup> In addition, the managers of regulated firms typically have less discretion precisely because regulation limits the firms' activities and opportunities. We tried to capture these effects by including three dummy variables that take the value of one if the firm is (i) a railroad, (ii) an electric or gas public utility, or (iii) in another regulated transportation or communications industry. One-digit SIC industry indicator variables were also included in all of the regressions.

We included leverage as a final factor that might affect the level of managerial ownership. Higher leverage, by allowing greater concentration of ownership, permits managers to have more voting control for a given dollar value of their investment in the

22. Milgrom and Roberts (1990), cited earlier; Holmstrom and Milgrom (1994), cited earlier.

23. See, for example, Harold Demsetz, "The structure of ownership and the theory of the firm," *Journal of Law and Economics* 26, 1983, pp. 375-90; Demsetz and Lehn (1985), cited earlier; Stacey Kole and Kenneth Lehn, "Deregulation and the adaptation of governance structure: The case of the U.S. airline industry," University of Pittsburgh Working Paper, 1997; Charles Himmelberg, R. Glenn Hubbard, and Darius Palia, "Understanding the determinants of managerial ownership and the link between ownership and performance," Columbia University Working Paper, 1997.

24. An alternative approach is to examine the impact of executive ownership on firm performance; see, for example, Randall Morck, Andrei Shleifer, and Robert Vishny, "Management ownership and market valuation: An empirical analysis," *Journal of Financial Economics* 20, 1988, pp. 293-315, and McConnell and Servaes (1990), cited earlier. We find a very similar relationship between the percentage of managerial ownership and performance, as measured by Tobin's Q, in 1935 to what Morck, Shleifer, and Vishny (1988) find in the modern data; see also the

original version of the current paper. Since this relationship does not appear to have changed over time, it does not help to explain the increase in managerial ownership since the 1930s.

25. The dependent variable in our ordinary least squares regressions is the logistic transform of the percentage of ownership by officers and directors, that is,  $\log(\text{ownership}/(1 - \text{ownership}))$ . None of our results change if we use  $\log(\text{ownership})$  as the dependent variable. Note that other researchers, notably Demsetz and Lehn (1985), cited earlier, have also used a logistic transform of ownership data.

26. Other researchers have explored the benefits to highly volatile firms of relying on high insider ownership to address agency problems. See Demsetz and Lehn (1985), cited earlier; and Clifford Smith and Ross Watts, "The investment opportunity set and corporate financing, dividend, and compensation policies," *Journal of Financial Economics* 32, 1992, pp. 263-92.

27. Demsetz and Lehn (1985), cited earlier.

28. Kole and Lehn (1997), cited earlier.

**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.**

**TABLE 4**  
RELATIONSHIP BETWEEN  
MANAGERIAL OWNERSHIP  
AND FIRM CHARACTERISTICS  
IN 1935 AND 1995\*

	1935	1995
Intercept	1.41 (0.22)	4.32 (<0.01)
Log of Market Value	-0.20 (<0.01)	-0.52 (<0.01)
Standard Error of Monthly Stock Returns	-7.20 (0.04)	9.89 (<0.01)
Standard Error of Returns Squared	8.00 (0.17)	-27.58 (0.01)
Age of the Firm	-0.004 (0.39)	-0.002 (0.06)
Public Utility Indicator	-3.35 (<0.01)	-2.09 (<0.01)
Railroad Indicator	-2.82 (<0.01)	0.17 (0.73)
Other Regulated Indicator	-2.98 (0.01)	-0.69 (0.01)
Debt Ratio	-0.43 (0.27)	-1.00 (<0.01)
Adjusted R2	0.21	0.38
p-value of F-statistic for the Regression	<0.01	<0.01

\*This table presents the results of the regressions described in the text for 571 NYSE-listed firms in 1935 and 1,370 NYSE-listed firms in 1995 (*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 for 1935 and from January 1990 to December 1994 for 1995. 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.

firm.<sup>29</sup> Also, high leverage may be used to reduce managerial discretion by constraining the free cash flow that managers might spend on perquisites for themselves.<sup>30</sup> Because equity returns data for the 1930s are available electronically only for NYSE firms, we restricted both our 1935 and 1995 samples to firms listed on the NYSE. Table 4 presents the regression results.

In both samples, insider ownership declines as firm size increases. The relationship was more pronounced in 1995 than in 1935, although it was statistically significant in both years. The presence of regulation (except for railroads in 1995) also lowers insider ownership in both periods, and the coefficients were statistically significant.

Firm age had a small, negative effect of similar magnitude in both 1935 and 1995, although the effect

was not statistically significant in 1935. This provides evidence in favor of the ownership life-cycle hypothesis (whereby managerial ownership of public companies starts out high and falls as the firm ages) in 1995 and weak evidence of it in 1935. The debt ratio also had a negative effect on insider ownership in both periods. In 1995, however, the effect was twice as strong as in 1935 and was statistically significant. As Table 1 shows, firms are much larger today than in 1935. Our results are thus 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.

The effect of volatility on managerial ownership, however, was starkly different in 1935 than in 1995. In 1935, an increase in volatility had a *negative* and statistically significant effect on ownership.

29. René Stulz, "Managerial control of voting rights: Financing policies and the market for corporate control," *Journal of Financial Economics* 20, 1988, pp. 25-54.

30. Jensen (1986), cited earlier.

In 1995, the effect of volatility on ownership was *positive* (although at a declining rate and becoming negative at higher levels of volatility) and statistically significant.

The greater volatility of the markets in the 1930s might account for the contrasting relationship between volatility and ownership and may also help to explain the lower levels of insider ownership during that period. The average monthly standard deviation of stock returns for the 1935 sample was 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,<sup>31</sup> a relatively larger component of managers' human capital may have been firm-specific then.

In addition, financial innovations have reduced the costs of hedging. A 1995 study suggested that the ability to diversify risks in both human and financial capital is much greater today than in the 1930s.<sup>32</sup> 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.<sup>33</sup> Previous research, for example, has found a positive correlation between the extent of hedging at gold mining firms and managerial ownership.<sup>34</sup> The optimal response to lower volatility and more sophisticated hedging opportunities is for insiders to hold greater ownership stakes. Advances in financial theory and markets thus appear to have played a 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.<sup>35</sup> With a more active corporate control market today than in 1935, 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<sup>36</sup> 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. On the other hand, 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 the similar low levels of percentage ownership in the largest firms across time.

## CONCLUSION

Despite the widespread view from Berle and Means onward that ownership of firms is increasingly separated from managerial control of those firms, we find that managerial ownership of public corporations is markedly higher today than in 1935. Using a comprehensive sample of the 1,500 publicly traded firms in 1935 and a comparable sample of 4,200 firms in 1995, we find that managerial ownership has increased from an average of 13 % in 1935 to 21 % in 1995. In terms of real (1995) dollar values, average managerial ownership has increased from \$18 million to \$73 million.

A potential explanation for this rise is that greater reliance on managerial ownership has substituted for less reliance on other incentive alignment devices to discipline management. We find, however, just the opposite. The use of other corporate governance mechanisms, such as pay-for-performance and the market for corporate control, has stayed the same or increased over time. The top management of publicly traded corporations thus faces more intensive pressure from incentive-alignment devices today than earlier in the century.

An alternative explanation is that the relationships between firm-specific characteristics and the costs and benefits of using managerial ownership as a control device have changed over time. While most of the characteristics we examine have the same relationship to managerial ownership in both periods, the role of volatility is different. In 1935, managerial ownership is inversely related to firm volatility. In 1995, however, managerial ownership has a nonlinear relationship with volatility: manage-

31. Hadlock and Lumer (1997), cited earlier.

32. Merton (1995), cited earlier.

33. Stulz (1996), cited earlier.

34. Peter Tufano, "Who manages risk? An empirical examination of risk management practices in the gold mining industry," *Journal of Finance* 51, 1996, pp. 1097-1138.

35. Stulz (1988), cited earlier.

36. Paul Bolster, Don Chance, and Don Rich, "Executive equity swaps and corporate insider holdings," *Financial Management* 25, 1996, pp. 14-24.

**The effect of volatility on managerial ownership was starkly different in 1935 than in 1995. In 1935, an increase in volatility had a *negative* and statistically significant effect on ownership. In 1995, the effect of volatility on ownership was *positive* (although at a declining rate and becoming negative at higher levels of volatility) and statistically significant.**

rial ownership is positively related to firm volatility at low and moderate levels of volatility but the relationship turns negative when firm volatility is high. The overall lower level of volatility today along with advances in capital markets and financial theory appear to have reduced the costs of managers holding large stakes in their firms. Changes in these external conditions that have reduced the cost of hedging, for example, have had an impact on the ownership structure of firms.

These results have implications for current 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 relationship into account is particularly important in the case of 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 in 1935 should help provide guidance in the implementation of “best practices” of corporate governance, such as those promulgated by the National Association of Corporate Directors, which call for boards to “set a substantial target for stock ownership by each director.”<sup>37</sup>

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37. National Association of Corporate Directors (1995).

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