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Peter F. Kostiuk

ABSTRACT

Using several data sets, the relationship between executive income and firm size is shown to be relatively stable over time and in different countries. The elasticity of executive earnings to firm size is about the same today as it was in the 1930s, with evidence of a decline in the earnings of top executives, controlling for firm size. In addition to the effects of size and other firm and industry characteristics, there are returns to age and experience. There is also substantial variability in the level of compensation among firms of comparable size, indicating that there may be impediments to mobility.

I. Introduction

Recent theoretical work on the contractual relationship between managers and firms generally focuses on the role of incentives and risk-sharing in setting compensation policies. Although clearly important, this emphasis on the marginal effect of risk and effort has ignored the equally interesting, and perhaps more important question, of what deter-

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mines the *level* of executive incomes. The keen interest of both the public and economists in managerial earnings is due to their magnitudes, as well as their sensitivity to performance.

The objective of this paper is to estimate the determinants of executive incomes, with an emphasis on firm size. Establishment size effects have consistently been found in previous studies of earnings.[1] Previous analyses of executive compensation also estimated firm size effects, but typically focused on the relative importance of sales versus profitability.[2] More recent theoretical work by Rosen (1982) and Oi (1983) indicates that the supposed conflict between size and profitability is misplaced, since differences in executive ability may partially explain the presence of substantial firm size differentials.

In the Rosen model, heterogeneity in managerial talent results in positively skewed distributions of firm size and executive earnings. The key insight is that the market process of assigning managers to firms provides an explanation of the positive relationship between firm size and managerial earnings. The assignment process operates like the marriage market analyzed by Becker (1981), in which the most able manager is matched with the largest firm, the next most capable with the second largest, and so on. By examining the relationship between firm size and managerial compensation more closely, it is hoped that we can obtain some additional insight into the nature of this assignment process.

While a detailed theoretical treatment of the determinants of executive incomes is possible,[3] this paper has the more limited goal of examining the empirical importance of firm size on managerial earnings. Particular emphasis is placed on determining whether the relationship between size and earnings is stable over time and across countries. In particular, comparing executive earnings over time may provide some information about the importance of the assignment mechanism, and supply some interesting data on trends in executive incomes.

II. The Data

Three samples were constructed for the analysis. The principal data set consists of the salary plus bonus for the chief executive

1. See Mellow (1982), Personick and Barsky (1982), and Oi (1983) for some recent evidence.
2. See, for example, Lewellen and Huntsman (1970), Masson (1971), and McGuire, et al. (1962).
3. Models along these lines are developed in Rosen (1982), Oi (1983), and Kostiuk (1986). An earlier contribution is Lucas (1978). An early theoretical and empirical treatment of the size-income relationship for managers is sketched out in Roberts (1956).

officers of 83 U.S. manufacturing firms during 1969–1981. The compensation data are supplemented by detailed financial information on the companies and characteristics of the individual executives. The other samples are a cross-section for 1980 and historical data covering 135 firms during the years 1934–1939, both of which contain compensation and firm financial data.

1969–1981 Sample

The compensation data used in this study come primarily from corporate proxy statements filed with the Securities and Exchange Commission (SEC) and mailed to shareholders. Every publicly traded company is required by law to report the payments to its five most highly paid officers and directors if the compensation is above a specified minimum ($50,000 in 1981). Current cash payments are reported, along with deferred and contingent remuneration, grants of stock and stock options, and expected pension benefits. Also reported in the proxy are the stock holdings of each director and occasionally some information on the executive's working history and education.

The types of compensation analyzed in this study are salary and cash bonuses. The major varieties of compensation excluded are stock options, deferred stock, performance shares, and pensions. These components are more difficult to evaluate and provide little extra information. Lewellen (1968) found a high correlation between salary plus bonus and a more comprehensive earnings total, so the income estimates used in this study should be an accurate index of total income. Moreover, the error in estimating the value of contingent and deferred compensation is substantial. Concentrating on salaries and bonuses will give more accurate estimates of the major portion of the compensation package.

Since any consideration of the supply of executive ability focuses on the returns to the manager, the relevant measure of income is after-tax earnings. For the statistical analysis, after-tax incomes were computed from the average tax rate tables published by the Internal Revenue Service in its annual *Statistics of Income*. Although not as accurate as individual tax return data would be, the imputed after-tax incomes should provide some correction for changes in marginal tax rates over time and within years. As will be shown, this is particularly important in comparing compensation from the 1930s with the 1970s. After-tax incomes were deflated by the Consumer Price Index.

Financial data on firms were obtained from the Standard and Poor's Compustat tape. In addition to sales, the rate of return on invested capital is used to control for cyclical factors. In addition to firm characteristics, data on individual traits are also included. Data on the age and work

experience of the manager were obtained from two sources. The primary source was the proxy statement. If it did not have the necessary data, the information was obtained from the executive's biography in *Who's Who in Finance and Industry*.

1980 Cross-Section

The construction of the 1980 cross section is similar to that of the 1969–1981 data. Proxy statements were requested from several hundred corporations and the responses merged with financial data from the Compustat tape. The main benefit of this sample is the broader industry coverage at a single point in time, and will be used to test for inter-industry differences in compensation.

1934–1939 Sample

The data for 1934–1939 are from the Survey of American Corporations, a Works Projects Administration report sponsored by the SEC.[4] The survey includes financial and compensation data on hundreds of firms during 1934–1939. The executive income data are not very detailed and the individuals are not reported by name, but only as "Highest Remuneration Reported," "Second Highest Remuneration," and "Third Highest Remuneration." In a few instances, grants of stock or stock options were reported in footnotes. However, those occurrences were rare and those income components are excluded. The compensation data used in this study are only for the highest paid managers.

The financial variables used in the analysis were also obtained from the WPA survey. Firm sales, as well as compensation, are in 1981 dollars, for ease of comparison with the more recent data. The rate of return variable used is net profits divided by invested capital, and is virtually identical to the definition used for the 1969–1981 sample.

Table 1 lists the summary statistics for the three samples. As found in previous studies by Roberts (1956) and Lewellen (1968), these executives have been employed by their current firm for most of their careers. The demographic profile of the three samples is remarkably similar, with an average age of 57 and mean tenure of 24 for all three samples. The more recent data set, as expected, consists of much larger firms. The differences in average income, however, are not nearly as great. Of particular interest is the effect of taxes on the dispersion of incomes, reducing the standard deviation by about one-half in each sample.

4. The analysis by Stigler and Friedland (1983) uses a sample constructed from this survey.

Table 1
Summary Statistics

Variable	1969–1981	1980	1934–1939
Before-tax salary	483	403	371
plus bonus ($1000)	(244)	(201)	(375)
After-tax salary	285	232	268
plus bonus ($1000)	(129)	(104)	(184)
Sales	7,224	4,049	347
($ millions)	(17,458)	(9,815)	(996)
Assets	4,339	3,227	347
($ millions)	(8,421)	(5,901)	(1,188)
Return on	0.159	0.062	0.087
capital	(0.101)	(0.040)	(0.114)
Age	56.9	56.7	57.4
	(6.0)	(6.1)	(8.5)
Years as CEO	7.6	7.4	14.6
	(7.4)	(7.0)	(9.4)
Tenure	24.4	23.9	23.9
	(11.5)	(11.2)	(11.3)
Observations	1,079	258	810

Note: All compensation and financial variables were deflated by the CPI and are in 1981 dollars, except for the 1980 sample, which is in nominal dollars. The age and Years as CEO for the 1934–1939 sample are from samples of 452 and 346, respectively. Standard deviations in parentheses.

III. Empirical Analysis

Firm and Industry Effects

In addition to firm size effects, there is reason to expect differences in compensation across industries and firms. In addition to production characteristics, reasons for inter-industry differences may be the difficulty of managing in different environments. For example, a more dynamic industry, such as computers or electronics, may require greater skill than one that is more stable. Some industries require more capital and labor for similar sales levels, resulting in different pay scales. There may also be individual firm effects. One company may have a strong organization that virtually runs itself and will not require a manager of great ability. Another firm may undergo changes in management due to a series of set-

Table 2
1980 Cross-Section Estimates

Dependent Variable: Log(Salary + Bonus)			
Intercept	3.887	3.730	3.516
	(4.32)	(4.81)	(4.53)
Log(sales)	0.233	0.237	0.248
	(16.27)	(19.28)	(18.01)
Age	−0.008	0.002	0.013
	(0.09)	(0.07)	(0.71)
Age	0.000	−0.0001	−0.0002
squared	(0.09)	(0.29)	(0.71)
Years as	0.030	0.016	0.015
CEO	(4.14)	(2.44)	(2.32)
Years	−0.0008	−0.0004	−0.0004
squared	(3.06)	(1.85)	(1.78)
Food			−0.060
Paper			−0.146
Chemicals			−0.136
Petroleum			−0.234*
Rubber			−0.279*
Glass			−0.151
Primary metals			−0.178*
Fabricated metals			−0.071
Machinery			−0.110
Electrical			−0.056
Instruments			−0.193*
Utilities		−0.533*	−0.681*
R^2	0.5446	0.6638	0.6874

Note: Absolute value of t-statistic in parentheses. A * indicates a t-statistic greater than 2.00. The number of observations is 258. The intercept consists of mining firms.

backs; its new manager will likely receive more compensation than would be predicted by a low level of sales or profits.

Table 2 gives the results for the 1980 cross-section using only dummy variables to capture inter-industry differences. The most surprising result is the irrelevance of age, although experience as CEO is significant. The industry dummies have little effect on the sales coefficient and, with one exception, add little explanatory power to the equation. The exception is the electric utility industry. Executives of public utilities receive much

less than their peers in manufacturing firms of the same size. Although this may be a result of regulation, an alternative explanation is that operating these firms is not as complicated as it is in other industries. Most utilities are in one, or at most two, product markets with no direct competition. Regulatory agencies also limit the manager's decision making power more than in manufacturing, so that the returns to ability are not as great. An added effect of regulation may be implicit caps placed on executive salaries for political reasons.

Considering the strong effect of the utilities, estimates were compared for a regression with all industry dummies versus just a single dummy for the utilities. The F-statistic for the joint significance of the non-utility dummies is 1.64, which is insignificant at the 5-percent level. Although some of the individual industry dummies are sizeable and statistically significant, the lack of overall industry effects raises doubts about them. For example, the rapid increase in oil prices during the 1970s makes firm sales in the petroleum industry a possibly misleading indicator of size or ability, which may explain the large negative coefficient. Based on this sample, as least, there is little convincing evidence of industry differences in executive compensation.

Given these considerations, the analysis is now extended to include firm and industry characteristics. This aspect of the problem is approached in two ways. First, firm and industry traits are entered into the regression to get estimates of the effects of each variable. Second, individual firm effects are controlled for by including a dummy variable for each firm in the sample. The dummy variable is constant for each firm, and represents a fixed firm effect throughout the sample period. The specification is

$$(1) \quad Y_{it} = \alpha_i + \Sigma\beta_k X_{kit} + \epsilon_{it}$$

where $i = 1, \ldots, N$ refers to the firm and $t = 1, \ldots, T$ is the year. Despite the presence of firm and year effects, preliminary estimates showed that the residuals still demonstrated some autocorrelation. The estimates were corrected for this using the method outlined in Bhargava, et al. (1982).

Table 3 reports estimates using the 1969–1981 data set. Both OLS and fixed effect regressions are listed, and a "between firms" regression on variable means is included in the last column. Cyclical effects are controlled for by including the rate of return and dummy variables for each year. The primary firm characteristics used are the capital-labor ratio and firm sales. Industry traits (at the 2-digit SIC level) analyzed are the percentage of non-production workers and the average industry wage.

The first conclusion to be drawn is the importance of firm variables on the level of earnings. The first column of Table 3 lists only the individual characteristics of age and experience; including firm and industry vari-

Table 3
Effects of Firm and Industry Characteristics

Variable		OLS		Fixed Effects		Means Regression
Log(sales)		0.233	0.384	0.247	0.215	0.371
		(48.24)	(16.79)	(11.15)	(7.02)	(5.85)
Age	0.158	0.086	0.090	0.049	0.041	0.144
	(6.72)	(6.50)	(6.92)	(3.33)	(2.75)	(2.75)
Age	−0.0012	−0.0007	−0.0007	−0.0004	−0.0003	−0.0012
squared	(5.75)	(6.03)	(6.44)	(2.92)	(2.36)	(2.59)
Years as	−0.006	0.014	0.012	0.008	0.008	0.020
CEO	(1.15)	(4.78)	(4.16)	(2.64)	(2.64)	(1.55)
Years	−0.0003	−0.0005	−0.004	−0.0003	−0.0003	−0.0008
squared	(1.70)	(4.75)	(4.21)	(2.25)	(2.25)	(1.76)
Return on		0.854	0.927	1.047	1.047	0.778
capital		(12.00)	(12.40)	(12.94)	(12.58)	(2.59)
Log (K/L)			0.246		0.007	0.239
			(6.04)		(2.34)	(2.04)
Log(K/L) ×			−0.034		0.002	−0.033
Log(sales)			(6.71)		(0.43)	(2.30)
Percent			−0.001		−0.015	0.0001
non-prod			(0.46)		(2.68)	(0.04)
Average			0.003		−0.072	0.008
wage			(0.46)		(2.34)	(0.38)
R^2	0.1543	0.7439	0.7554	0.9322	0.9330	0.8600

Note: A dummy variable for each year is included in each regression. Absolute value of t-statistics in parentheses.

ables raises the R^2 from 0.15 to 0.76. Including individual firm effects further increases the explanatory power of the specification, and we can easily reject the hypothesis of no firm effects with an F-test. Note that the effects of firm characteristics on earnings are much more important than in other studies of earnings (Mellow(1982)). The estimated effects of firm size are not directly comparable to those of previous studies since the size variable in this sample is continuous rather than categorical, and all of the firms in the sample are in the largest size category used in most studies (more than 1,000 workers). Nonetheless, the importance of size is still much greater for the incomes of executives than for other workers.

Some of the firm and industry coefficients vary with the specification used, with the capital-labor ratio and industry wage variables most strongly affected. A possible reason for the unstable coefficients between the OLS and fixed effect regressions is that the industry traits, which do not vary greatly from year to year, are picking up some of the firm effects. Including the dummy variables allows for more accurate estimation of the

industry variables. When the dummy variables are included, the average wage has a strong negative effect and the percentage of non-production workers also tends to decrease incomes slightly.

The estimated sales elasticity is virtually the same in both specifications, except when interacted with the capital/labor ratio, and, as in the 1980 cross section, the sales coefficients are not much affected by the inclusion of the industry variables. The similarity in the sales coefficients in the OLS and fixed effect models is surprising, since it implies that the effects of size are the same within and among firms. This conclusion is confirmed by the results of the "between" estimates generated by a regression on firm means shown in the last column of table 3, which indicates a net effect of sales of 0.23 after accounting for the interaction effect of K/L. The rate of return coefficient is also larger when firm effects are included, indicating greater cyclical variation in earnings when firm effects are controlled for.

The capital intensity variables are sensitive to the inclusion of fixed effects, with evidence of interaction with the sales variable in the OLS equation. There is a small negative net effect of the capital-labor ratio in the OLS regression (calculated at the sample means for Log(K/L) and Log(Sales) of 4.33 and 7.46, respectively), and this includes some inter-firm effects, whereas the fixed effect model analyzes only intra-firm variation. Even controlling for firm effects, the impact of capitalization cancels out when interactions with sales are allowed, so that it is unclear what mechanism is operating here. It does seem to indicate that the factors affecting compensation interact in some complex way.

The negative coefficient on the average industry hourly wage is of particular interest, and it is large and highly significant in the fixed effect specification. The estimate implies that a one dollar increase in the average wage reduces manager earnings by nearly seven percent. This may signify the effects of unionization and the deteriorating position of some U.S. manufacturing industries, frequently attributed to excessively high labor costs. The results show that executives may pay a price for labor peace.

In addition to the firm and industry effects, it is interesting to find that there are strong effects of both age and experience as CEO, even though the observations are at the top of the corporate hierarchy. Both variables exhibit the usual concavity found in earnings regressions, and even the magnitudes are similar.

One of the most interesting features of Table 3 is the importance of the individual firm effects. Including the firm dummies reduces both the age and experience coefficients appreciably. The fixed effects also add substantially to the explanatory power of the regression. This indicates that there is considerable variability in the level of compensation among firms,

and that the differentials persist over an extended period of time. The degree of variability is quite large, with an estimated standard deviation of the firm effects of 0.19. Therefore, firms with similar characteristics could easily differ in their compensation levels by large amounts. To maintain such differentials, there must be either substantial variations in unobserved managerial ability across firms of similar size, or impediments to mobility, such as the existence of firm-specific human capital. While firm size is certainly the dominant factor in setting the level of compensation, this is strong evidence that firms are idiosyncratic, with substantial differences among otherwise similar firms.

An alternative to estimating firm effects would be to use individual executive effects instead of (or in addition to) firm dummies. This is possible in our data set since there are 178 executives for the 83 firms, or about two managers per firm. Including executive fixed effects does not change the results with respect to the impact of firm size, but does complicate the estimation of some of the more time-trended variables such as the industry wage, since year dummies can no longer be included due to the collinearity with age and the individual executive effects. Although distinguishing between executive and firm effects would be valuable, a definitive treatment will require a much larger sample over a longer time period.[5]

Effects of Firm Size Across Samples

The effects of firm size on compensation estimated in Table 3 are similar to those found in other studies, but most analyses use data on large U.S. corporations during recent years. To see whether the results hold for other samples, the two U.S. samples were compared to the findings of the comprehensive study of British firms by Cosh (1975).

To make a direct comparison among the three samples, it was necessary to duplicate the procedure used by Cosh and apply it to the other two samples. Cosh estimates the relationship between size, profitability, and income with the equation

$$(2) \quad \log Y = \alpha_0 + \alpha_1 R + \alpha_2 \log A + \epsilon$$

where Y is the cash remuneration of the CEO,[6] R is the firm rate of return on assets, and A is net assets. Since he was not interested in studying the

5. Estimation results using executive fixed effects are available from the author. As discussed in the text, the effects of size are similar, and the only other important difference is the larger effect of age.

6. The income data used by Cosh are before-tax incomes, whereas the U.S. data are after taxes. The results are unchanged when before-tax earnings are used for all three samples.

Table 4
The Relationship of Income to Firm Size And Performance: Three Samples

Variable	U.S 1969–1971	U.S 1937–1939	Britain 1969–1971
Intercept	3.769	4.491	7.008
	(39.07)	(88.73)	(82.3)
Log(assets)	0.247	0.295	0.261
	(18.95)	(19.70)	(28.88)
Return on assets (%)	1.328	1.205	0.99
	(5.48)	(5.84)	(7.70)
Number of observations	83	192	807
R^2	0.8190	0.6831	0.5118

The results for the British sample are taken from Cosh (1975) and show his estimates for quoted companies. All variables are three-year averages. Absolute values of t-statistics are in parentheses.

effects of fluctuations in size and performance, Cosh used the mean of each variable during the years 1969–1971. Thus the results represent permanent rather than transitory effects. The result of running the same regression on the three samples is shown in Table 4. The estimates for all three samples are remarkably similar, despite the differences in time periods and country. Size and profitability are both significant and the rate of return coefficients for the U.S. samples are both larger than for the British sample.

To carry out the comparison of the two U.S. samples further, they were pooled and examined for differences in the determinants of compensation. A dummy variable to denote observations from the thirties was used to test for equality of intercepts and slopes. The results, shown in Table 5, show interesting changes in compensation over time. The sales elasticity has declined since the 1930s, with a small but insignificant decrease in the intercept as well (in the after tax regression). The rate of return coefficient shows no significant change over time. The implications for executive incomes are quite large, and the managers of identically sized firms in the thirties and seventies would earn different incomes. For example, if firm sales were $500 million, a manager in 1934 would make $389 thousand (in

1981 dollars), whereas his successor in 1981 would only earn $188 thousand (in after-tax dollars).[7]

One possible reason for this surprising result is that modern executives may receive more of their income from stock, stock options, and pensions, partly to avoid higher marginal tax rates. This cannot explain all of the difference, however, since the expected value of options averaged only $87,000 on a subset of the 1969–1981 sample.[8] No estimate of the value of the deferred stock is available, but it is unlikely that it is large enough to offset the remainder of the discrepancy. Another omission is pensions. However, Lewellen (1968) found that the importance of pensions in the compensation package actually declined from 1940 to 1963, so that the effect would tend to increase the differential.

Another possibility is that the results are attributable to a firm size effect, with small firms having larger sales elasticities. When we compare the largest firms in the 1934–1939 sample with the smallest firms in the later sample,[9] we find that there the sales elasticities are the same, but with a larger intercept for the older firms. Therefore, although the effect of size is the same within this group, executives from the thirties still earn much more than managers of comparably sized firms today. The most likely explanations for this finding is that firms of similar size (in constant dollars) but decades apart do not require the same level of managerial ability to manage. Firms with $1 billion in sales were extremely rare in the 1930's, but commonplace now. Improvements in management technology have made it easier to manage a billion dollar firm, so that the ability required of the executive is not as great. A manager capable of running a billion dollar corporation in the Depression should more appropriately be compared to the manager of a firm perhaps ten times larger today. Moreover, changes in the characteristics of the population, and in particular the increase in educational attainment, should have had the effect of shifting outward the supply curve of managerial ability. These considerations imply that the relative ranking of the firm in the size distribution,

7. Research by Lewellen (1968) on a sample of 50 industrial firms during 1940–1963 found low rates of growth in executive compensation. Roberts (1956) also presents some data supporting the hypothesis of a long term decline in manager earnings.

8. See Kostiuk (1986) for some data on the use of stock options.

9. To compare firms that were more similar in size across the two samples, only those firms in sizes that overlapped the distribution in the two samples were included. This means that firms during 1934–1939 that were smaller than the smallest firm in the 1969–1981 sample were dropped, as were firms from 1969–1981 that were larger than the largest firm in the 1930s sample. This left 390 observations in the 1934–1939 sample and 923 observations for 1969–1981. The coefficient on sales was 0.268 for the 1969–1981 sample and 0.287 for the 1930s data set, which are not statistically different.

Table 5
Secular Changes in Executive Compensation

Variable	After Tax	Before Tax
Intercept	3.668	4.010
	(78.42)	(75.33)
Log (sales)	0.237	0.253
	(41.00)	(39.11)
Return on	0.764	0.896
capital	(8.50)	(8.46)
1930s (=1 if	0.090	−0.463
1934–1939)	(1.50)	(6.72)
1930s ×	0.107	0.179
Log (sales)	(11.08)	(15.98)
1930s ×	−0.092	−0.096
return	(0.71)	(0.63)
R^2	0.6807	0.7158
tObservations		
	1,889	
	1,889	

Note: Absolute value of t-statistics in parentheses.

rather than its absolute size, is likely to be of greater importance in setting executive income.

One way to examine the importance of this rank-order assignment would be to use data on the percentile ranking of each firm during the two time periods studied, rather than absolute size. Unfortunately, such data are not available. An alternative approach is to compare each firm to the average firm size or largest firm in each year, and in that way approximate the contemporaneous size distribution of firms. A number of such specifications were tested but in all cases the results were the same: when the full sample was used, the sales elasticity for firms during the 1930s was larger by about 0.10, but there was no significant difference when firms of similar size in the two samples were compared. Therefore, the finding that the elasticity of executive income to firm size is constant for all but the smallest firms appears to be robust.

As is shown in Table 5, the exception to this conclusion is when before-tax incomes are used. Use of before-tax earnings magnifies the discrepancy in the sales elasticity between the 1930s and the 1970s, and the difference does not disappear when we look only at similarly sized firms.

Table 6
Age-Earnings Profiles For Two U.S. Samples

Variable	1934–1939	1969–1981
Age	0.085	0.080
	(3.89)	(6.01)
Age	−0.0008	−0.0006
squared	(4.26)	(5.59)
Years as	0.019	0.013
CEO	(2.91)	(4.49)
Years	−0.0003	−0.0005
squared	(2.18)	(4.54)
Observations	362	1079

Absolute value of t-statistics in parentheses. Other variables included were the logarithm of sales and the rate of return.

Since there is virtually no difference between the before-tax and after-tax results for the 1969–1981 sample, the different results for the earlier sample are probably due to the larger number of relatively low-paid executives in that sample. Taxes on these smaller incomes were fairly low, while average tax rates at the very top of the income scales (over $200,000) actually changed little over this time period.[10]

There are other similarities between the two samples. For some of the older sample, data on the age and experience of the executives were obtained from editions of *Who's Who in Commerce and Industry*. Estimates of the effects of age and experience for the two data sets are given in table 6. The age-earnings profiles are very similar, while the effect of years as CEO is stronger for the earlier sample. When combined with the similar effects of firm size found in table 5, it is apparent that whatever factors influence the returns to managerial ability today have been operating in a similar fashion for decades.

IV. Conclusions

This paper has estimated the effect of firm size on the compensation of corporate executives, controlling for firm, industry, and indi-

10. This would not necessarily be true if data from the 1950s and 1960s were used, since tax rates on earned income were reduced in 1969.

vidual characteristics. The relationship between firm size and earnings is similar both within and across firms, and has been remarkably stable over time, even when comparing U.S. firms to British companies.[11] While the elasticity of income to size is the same now as it was in the 1930s, the evidence suggests that managers of firms of the same size today earn less, but this can probably be explained by changes in management technology and the supply of managerial ability. Simply phrased, the manager of a billion-dollar company today is not as able as the manager of a billion-dollar company in 1939, when such firms were much more rare. This finding is consistent with recent analyses that emphasize the importance of rank ordering by ability.

Although we found that firm and industry characteristics have a statistically significant impact on manager incomes, individual firm effects are also large. This suggests that compensation policies are idiosyncratic, with substantial latitude among otherwise similar firms. As the difference in income can be large, there must be either some impediments to mobility among firms or large unobserved differences in ability. The average tenure with the firm of 24 years shows that there is little turnover among top executives, and further research on the reasons for this finding seems warranted. A likely explanation is that firm-specific human capital plays an important role in the top-level management of the corporation, and this role extends its influence into the compensation policies of the firms.

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11. The constancy of the size-compensation relationship raises the question of whether it is only an attribute of profit-making firms or is true for other organizations as well. Little work has been done in this area because of the lack of data. One piece of information, however, is intriguing. For a sample of 39 union leaders in 1984, the elasticity of income to size (measured by union membership) was 0.25, which is the same as the elasticity estimated for the 1980 cross section using the number of employees, and similar to the firm sales estimated in this paper. The intercepts, of course, differed substantially.

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