

Executive Compensation and Managerial Ability: Large-Sample Evidence

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We examine a measure of managerial ability, based on managers’ efficiency in generating revenues, to explain variations in executive compensation. Although we find managerial ability to be positively associated with compensation after controlling for standard determinants of pay, our measure of managerial ability explains a negligible amount of the variation in executive compensation. We find that the traditional determinants of executive compensation, such as firm and executive level characteristics, remain the dominant contributors to executive compensation.

INTRODUCTION

Executive compensation has been a topic of heated discussions. Proponents of the compensation structures claim that executives deserve the pay for their exceptional ability to lead the firm. High pay is a must to attract and retain managerial talent in a competitive market. Yet critics argue that the executive compensations are outrageous and higher pay does not necessarily translate into better firm performance.

Whether executive compensation is truly well-justified by their superior managerial ability is of great interest to the academic and business communities. The typical pay-for-performance approach is to link the executive pay to the company’s stock market performance. Even though executive compensations are associated with higher company stock price, it does not necessarily mean that the performance is driven by managerial ability. Perhaps the higher stock prices are simply driven by a bullish market.

The contribution of this paper is to examine whether there is an association between the level of executive compensation and manager’s real ability to lead using a clear-cut measure of managerial ability.

Our preliminary tests show that after controlling for the standard variables that affect executive compensation, managerial ability measure does not contribute much to the improvement of the model. Although we find managerial ability to be positively associated with compensation, managerial ability measure explains a negligible amount of the variation in executive compensation. In other words, higher executive compensations are barely associated with the executives’ managerial ability. There is not direct link between executive pay with the managers’ real performance.

We find that the traditional determinants of executive compensation, which are the firm-level characteristics (firm size, growth, stock returns and volatility, and accounting returns), and executive-level characteristics (whether the manager is CEO, tenure and gender), remain the dominant contributors to executive compensation.

The remainder of this paper is organized as follows. Section 2 conducts the literature review & hypothesis development. Section 3 describes the data sources. In Section 4, we report and our major preliminary findings.

LITERATURE REVIEW & RESEARCH DESIGN

It is widely recognized that company executives are handsomely paid, whose compensations packages are worth millions or even hundreds of millions dollars. Lots of studies have been performed to investigate the determinants of executive compensations.

Classic agency models suggest that the level of pay is positively associated with firm performance. Firm performance is normally measured using the return on assets and common stock returns. Besides, the existing literature documents that firm characteristics such as firm size and managerial characteristics such as job tenure also partially explain the variation in executive pay.

Fee and Hadlock (2003) discover that prior firm performance is used by the job market in assessing managerial ability. The compensation package used to attract an executive is positively related to the prior firm's stock returns. However, stock performance is not necessarily a clear measure of the managerial ability. A few studies have attempted to quantify managerial ability and its economic outcomes.

Some theories demonstrates that both firm and managerial characteristics play an important role in compensation contract structure (e.g., Harris and Holmstrom, 1982; Rosen, 1982; Gabaix and Landier, 2008).

A few studies show that individual managers have a measurable impact on their firms by examining manager fixed effects (e.g., Bamber et al., 2010, Ge et al., 2011). For example, Bertrand and Schoar (2003) document that managers' styles affect the choices made by their firms (e.g., R&D and merger and acquisition activity), and that manager fixed effects are correlated with the performance of the firm.

Carter et al. (2010) measure talent of the executive as outcomes of their position and professional profiles and the performance in their prior firms. They find that their proxies for executive talent are related to higher compensation, which is consistent with capable executives receiving a pay premium.

Using a fixed effects model, Graham et al. (2012) find that differences in human capital among executives have a great impact on compensation. Yet they do not identify which executive-specific characteristics.

Demerjian et al. (2012) develop a new measure of managerial ability (hereafter, the MA-Score). They perform various tests and demonstrate that their measure is superior compared to other ability measures in prior research, as it clearly outperforms existing ability measures.

Core et. al (1999) find that CEO compensation is associated with firm size, investment opportunities, prior performance, and firm risk. Larger firms and firms with higher investment opportunities (as proxied by the market-to-book ratio) pay higher CEO compensation. The stock returns are positively and significantly associated with compensation. The standard deviation for return on assets is negative, which is also statistically significant.

Fee and Hadlock (2003) find that the positive stock price performance of an executive's current employer greatly improves his/her chance of securing a much higher-paid job. However, the paper only investigates the wealth effects of the CEOs who take a better job.

It would be reasonable to think that managers will have a strong incentive to make decisions that affect the firm's stock price positively, because in the hiring market superior stock returns are nearly equal to superior managerial ability, and thus better job offer and higher salaries.

However, stock return can be a noisy measure of firm performance, because the rise of the stock price could be either triggered by the specific firm's managerial talent, or simply the bullish market. It is thus more meaningful to single out the executive's ability from any other variables that may affect the firm performance. The manger performance measure developed by (Demerjian et al., 2012) makes this task a lot easier.

Specifically, MA-score measures the efficiency of the CEO in generating revenues from a given set of inputs such as capital and labor etc. Firm efficiency is influenced by both the manager and the firm. They further extract the component that is attributed to the individual manager.

In this study, we estimate the determinants of the executive compensations by following a two-step study. First, we estimate the standard executive compensation models without a MA-score. Second we include the MA score in the model and see if the inclusion of the new variable improves the performance of the overall model.

DATA

We obtain financial statement data from Compustat and stock return data from CRSP (Center for Research in Security Prices). Executive compensation data and data on executive characteristics are from ExecuComp. The MA-Score, the measure of managerial ability developed in Demerjian et. al (2012) is freely available to researchers at: <http://faculty.washington.edu/smcvay/abilitydata.html>

The data in our study covers the years from 1980 to 2012. The sample size is large, with nearly 200,000 observations.

MULTIVARIATE ANALYSIS & RESULTS

To provide evidence on the extent to which our managerial ability index is predictor for executive compensation, we estimate the following model for each of the three forms of compensation (COMP, SALARY and TOT CASH):

$$\ln(\text{COMP}_{it}) = \beta_0 + \beta_1 \text{MA_Score_2012} + \sum_{z=1,n} \beta_z \text{Other Executive Characteristics}_{it} + \sum_{k=1,n} \beta_k \text{Firm Characteristics}_{jt} + \varepsilon_{ijt}$$

TABLE 1
DESCRIPTIVE STATISTICS

Variable	N	Mean	Std Dev
lnsalary	1946278	5.71786	0.73931
Intotcash	1947483	6.05152	0.82962
Intotcomp	623877	7.31398	1.06587
MA_SCORE	1951665	0.01486	0.13785
logassetst_1	1951545	6.95819	1.65223
mbt_1	1314021	3.98478	60.62187
returnt	1938205	0.26590	609.08805
returnt_1	1915445	0.51358	612.68858
roat	1951515	0.03326	0.17309
roat_1	1951443	0.03473	0.19899
volatility	1946979	0.12369	0.07531
lntenure	1951665	0.71415	1.11943
CEO	1951665	0.15602	0.36287
female	1951665	0.05734	0.23250

where COMP measures SALARY, TOT CASH (sum of the salary, bonus and LTIPs), and TOT PAY (sum of salary, bonus, LTIPs, value of restricted stock grants, value of options granted during the year, and any other annual pay) executive *i* receives in year *t*. We also include firm-level characteristics of the employer, such as firm size $\ln(\text{Assets}_{it-1})$, growth opportunities (MB_{jt-1}), current and past performance

(RET_{it}, RET_{it-1}, ROA_{it}, ROA_{it-1}). As is standard in compensation research, we include other executive-level characteristics such as gender (Gender_{it}), tenure (LnTenure_{it}), and job position (CEO_{it} and CFO_{it}). Table 1 provides summary statistics of the variables in the regressions.

Table 2 reports our analysis of the determinants of each of the three compensation variables (salary, cash, and total compensation). The R-square values are 0.324, 0.340, and .550 respectively.

Regardless of the form of compensation, we find a positive and statistically significant coefficient on MA_Score, the proxy for managerial ability that measures managers' efficiency in generating revenues. After controlling for economic determinants of pay, it appears that executives with better managerial ability receive higher pay. When total cash and total compensation are the dependent variables, the coefficients for managerial ability are much larger and are highly significant.

Other determinants of pay generally have coefficients of the predicted direction. Executives of larger firms and executives of firms with better performance (higher ROA) receive higher pay. CEOs are compensated more compared with other executives. So do those with longer tenure. Males receive more pay than their female counterparts.

TABLE 2
REGRESSION OF EXECUTIVE COMPENSATION ON ECONOMIC DETERMINANTS OF PAY, MANAGERIAL ABILITY, AND OTHER CONTROL VARIABLES

The table presents the regression results on the determinants of executive compensation, using the full universe of ExecuComp companies. The dependent variables are *log(Salary)*, *log(total cash compensation)* and *log(total compensation)*. The detailed definitions of all the variables are reported in Appendix A. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Ln(Salary)		Ln(Tot Cash)		Ln(Tot Comp)	
MA_Score	0.071	(17.88)	0.260	(59.36)	0.371	(54.42)
Ln(Assets) _{t-1}	0.195	(562.11)	0.234	(606.64)	0.410	(702.88)
MB _{t-1}	0.000	(1.08)	0.000	(6.87)	0.000	(12.79)
RET _t	0.000	(18.46)	0.000	(21.68)	0.000	(32.20)
RET _{t-1}	0.000	(15.39)	0.000	(18.27)	0.000	(27.43)
ROA _t	0.096	(30.24)	0.237	(67.52)	0.344	(54.82)
ROA _{t-1}	-0.039	(-14.8)	-0.069	(-23.41)	-0.137	(-21.01)
Volatility	-0.428	(-57.50)	-0.340	(-41.20)	-0.469	(-33.77)
Ln(tenure)	0.053	(99.53)	0.064	(107.63)	0.044	(47.02)
CEO	0.615	(383.48)	0.660	(371.00)	0.961	(353.24)
Female	-0.005	(-2.56)	-0.042	(-17.80)	-0.063	(-18.49)
R-square	0.324		0.342		0.550	

We further perform another test by omitting the managerial ability variable in the identical regressions. This allows us to assess the variation in executive compensation, explained by managerial ability. Table 3 reports the results of our analysis. The R-square values are 0.324, 0.340, and .547 respectively, which are relatively unchanged from Table 2.

The small changes in R-squares from Table 2 to Table 3 indicate that managerial ability explains a negligible amount of variation in executive compensation. We thus have to conclude that managerial ability, as measured by our index, actually has little impact on executive compensation.

The economic determinants, firm characteristics and executive characteristic variables all have coefficients in the expected positive direction. However, stock returns, and growth opportunity variables exhibit extremely small coefficients. Hence, these variables explain virtually no variation in executive compensation. We find that firm performance (return on assets) and firm size do figure prominently in determining executive compensation. Being CEO is the single largest contributor to executive compensation, with stock return volatility also a significant contributor.

TABLE 3
REGRESSION OF EXECUTIVE COMPENSATION ON ECONOMIC DETERMINANTS OF PAY AND OTHER CONTROL VARIABLES (NO MANAGERIAL ABILITY IN MODEL)

The table presents the regression results on the determinants of executive compensation, using the full universe of ExecuComp companies. The regression is identical to that described in Table 1 except that “managerial ability” was not included. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Ln(Salary)		Ln(Tot Cash)		Ln(Tot Comp)	
Ln(Assets) _{t-1}	0.195	(562.37)	0.232	(603.02)	0.408	(815.49)
MB _{t-1}	0.000	(1.23)	0.000	(7.34)	0.000	(14.17)
RET _t	0.000	(18.71)	0.000	(22.49)	0.000	(33.26)
RET _{t-1}	0.000	(15.65)	0.000	(19.10)	0.000	(28.43)
ROA _t	0.106	(34.01)	0.275	(79.38)	0.406	(65.53)
ROA _{t-1}	-0.035	(-13.21)	-0.053	(-17.99)	-0.100	(-15.36)
Volatility	-0.432	(-58.13)	-0.357	(-43.17)	-0.485	(-34.80)
Ln(tenure)	0.053	(99.88)	0.064	(108.64)	0.044	(47.13)
CEO	0.614	(383.31)	0.659	(370.06)	0.960	(352.33)
Female	-0.005	(-2.50)	-0.041	(-17.58)	-0.064	(-18.52)
R-square	0.324		0.340		0.547	

CONCLUSIONS

The purpose of this study is to assess the impact of managerial ability on executive compensation relative to standard determinants of executive compensation often cited in previous studies. We find that managerial ability is a negligible predictor of executive compensation. Such a result suggests that firms may not always pay off by paying a premium to attract capable managers.

It appears that firm size and executive rank characteristics (CEO) alone, play the most dominant roles in determining executive compensation with tenure and return on assets playing secondary roles. Further studies may investigate the distinct differences in executive compensation on specific corporate rank, rather than a simple separation of CEO versus non-CEO.

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