

Full Length Research Paper

The relationship between executive compensation and firm performance in the Kenyan banking sector

Josiah Aduda

Department of Finance and Accounting, School of Business, University of Nairobi, Kenya and Leonard Musyoka, Kenya. E-mail: jaduda@uonbi.ac.ke.

Accepted 19 August, 2011

Economic theory of executive pay has focused on the design of optimal compensation schemes to align the interests of managers and shareholders. Agency theory has identified several factors by which these interests may differ; including the level of effort exerted by the manager and problems resulting from the unobservability of the agent's relevant skills. The design of optimal compensation contracts essentially trades-off between different incentive problems and risk-sharing considerations. This study examined the relationship between executive compensation and firm performance among the commercial banks listed at the Nairobi Stock Exchange. The study considered functional form relationship between the level of executive remuneration and accounting performance measures by using a regression model that relates pay and performance. The findings of the study suggest that accounting measures of performance are not key considerations in determining executive compensation among the large commercial banks in Kenya and that size is a key criteria in determining executive compensation as it was significantly but negatively related to compensation. The negative correlation suggests the capping of executive compensation to ensure maximization of returns to shareholders.

Key words: Executive compensation, firm performance, agency theory.

INTRODUCTION

The relative importance of various factors used to measure the performance of agents should be related to how well each measure informs the principal about the agent's actual performance (Banker and Datar, 1989). For decades, accounting measures have been used as primary indicators of managerial performance with prior research documenting a significant relationship between accounting based performance and executive compensation (Iltner, 1997). Moreover, the annual cash bonus based compensation has been linked to accounting based performance as well as numerous other attributes of the firm's governance structure (Core et al., 1999).

The studies on compensation suggest that most annual cash bonus plans for key executive officers are based in large part on accounting performance measures. There is also some relationship between accounting performance and stock based compensation in many firms since the pool of stock options or stock awards to be distributed

each year is often based on annual accounting performance measures. The studies have also documented a high correlation in the total annual incentive pay amongst the top executives in each firm, and it is commonly assumed that what is observed for the CEO is representative of the incentive pay for the entire top management team for most entities (Gore et al., 2003; Iltner et al., 1997).

The relative importance of various factors used to measure the performance of agents should be related to how well each measure informs the principal about the agent's actual performance (Lambert and Larcker, 1987; Banker and Datar, 1989). Murphy (1999) provides a general overview of the literature, methodology and issues in executive compensation, starting from the influential study of Jensen and Murphy (1990), who first identified the pay-performance puzzle: that there is little relationship between executive pay and company performance. Main et al. (1996), Izan et al. (1998), and

Benito and Conyon (1999) have confirmed these low pay performance sensitivities. In the Kenyan banking sector, executive remuneration has not come under massive spotlight perhaps due to the nature of executive compensation. As opposed to compensation in the more developed markets, executive compensation in Kenya appears to be limited to cash salary, allowances and cash bonuses as indicated in the various annual reports of listed banks. Share option issues have not come into play yet as stock options are not traded in the Kenyan stock market. Given that executive compensation is not tied to stock performance by way of stock options the motivation for executive performance is unlikely to emanate from the benefits of a rising stock price. Further, almost all listed banks apply return on assets and return on equity as performance measures. Hence, it is fair to conclude that some of the key benchmarks used to set the goals of the executive performance are accounting based and thus the relationship between compensation and accounting based performance measures is likely to be more meaningful.

Statement of the problem

Theory-based economic analyses, practice and evidence imply that CEO compensation is a function of accounting information. Many studies suggest that accounting measures are important in incentive contracts because, while stock price aggregates information about the firm efficiently, it aggregates the information about the manager's performance inefficiently (Lambert and Larcker, 1987; Banker and Datar, 1989). Other studies argued that accounting-based contracts reduce non-outcome-related noise (Kim and Suh, 1993), congruently aggregate information about the manager's efforts (Feltham and Xie, 1994), shield managers from market wide factors in stock prices and serve as a device to extract valuable information about the manager's efforts from stock price (Baiman and Verrechia, 1995). Empirical literature generally provides support to these studies that suggest that accounting measures are relevant for incentive purposes. Lambert and Larcker (1987) documented a statistically significant contemporaneous relationship between accounting earnings and CEO cash compensation. Moreover, firm proxy statements often state that accounting-based measures are used in determining the CEO's annual bonus (Sloan, 1993).

On the other hand, several studies fail to produce evidence of a compensation-performance relationship. According to O'Reilly et al. (1988), Fosberg (1999), Muriithi (2004) and Izan et al. (1998), there is no statistically significant, positive relationship between changes in pay and performance. These studies provide mixed conclusions and fail to offer a strong consensus regarding the relationship between executive compensation and corporate performance. This study

seeks to examine the relationship between executive compensation and performance of commercial banks in Kenya. The banking industry provides an excellent setting for the study of incentive compatible compensation since banks have few tangible assets and large off-balance sheet positions, easily smoothed accounting returns, a weak market for corporate control, comparatively high profits and highly paid executives; banks are institutions in which owner-manager agency problems may flourish. The study therefore, seeks to fill the gap by examining the sensitivity of any relationship between executive and measures of firm performance in Kenyan setting.

Objective of the study

The general objective of this study is to measure the relationship between executive compensation and firm performance among the commercial banks listed at the Nairobi Stock Exchange.

LITERATURE REVIEW

Pay-performance theories

From the employee's perspective, pay is the reward for labour, that is, the actual effort of producing goods or services. The precise nature of the payment varies greatly across companies, and may include not only monetary income paid shortly before or after the labour is supplied, but also deferred payments, such as pensions and holiday pay, together with non-monetary rewards such as health insurance and other fringe benefits which are often rated by employees as more valuable than their monetary equivalents (Dale-Olsen, 2006). Social norms also play an important role. For employees, one's social status is often bound up with one's wage and even how it is paid (hourly, weekly or as an annual salary). It may have a direct bearing on the worker's well-being, not only in terms of what she can wear and eat, but in terms of what she can borrow, and how she is perceived by work colleagues, friends and relatives. Above all else, workers' well-being is highly correlated with perceptions of their pay relative to their peers (Brown et al., 2003).

Component of earnings based agency theories

Natarajan (1996) investigates the role of components of earnings in CEO compensation contracts. He argues that shareholders will use components of earnings as additional performance measures whenever the components provide information, over and above earnings, about managerial decisions. Results indicate that earnings and cash flow measures together have a

better association with cash compensation paid to CEOs of U.S. companies than aggregate earnings alone. The evidence also suggests that current accruals and cash flows from operations are aggregated for performance evaluation. Stewardship value measures are able to explain some of the cross-sectional variation in the weights attached to earnings and working capital from operations.

Ohlson (1999) employs a multi-period principal-agent model to show that residual income is an optimal performance measure in a pure moral hazard setting with symmetric information. Because it measures value creation, Ohlson (1999) argues that compensation functions depend on the history of residual income. Continuing with the same theme but including the issue of asset valuation, Dutta and Reichelstein (2000) argues that residual income, combined with fair value accounting for receivables, provides an optimal performance measure for incentive purposes.

Board capture based agency theories

Under this theory, the board of directors (and the remuneration committee of the board) is “captured” by the company’s CEO – with board dynamics and social dynamics discouraging non-executive directors from being overly demanding in formulating executive pay packages (Stapledon, 2004). Newman and Mozes (1999) examines whether compensation committee composition affects CEO compensation practices. They find that CEOs receive preferential treatment (at shareholders' expense) when insiders are members of the compensation committee. They do not find that CEO compensation is greater in firms that have insiders on the compensation committee than it is in firms that do not. However, they show that the relation between CEO compensation and performance is more favourable toward the CEO (that is, biased in the CEO's favor at shareholder expense) among the firms that have insiders on the compensation committee.

Management discretion based agency theories

Managerial discretion is defined as task complexity and the latitude of options top managers have in making strategic choices. *Ceteris paribus*, the larger the size of the company, the greater is the manager’s discretion to influence the absolute value of shareholders wealth (Lazear and Rosen, 1981). Finkelstein and Boyd (1998) refer to managerial discretion as the extent to which an organization’s form and fate sit within the control of its top managers. Central to this concept is the idea that the greater the level of discretion, the greater the potential impact of actions taken by the executive on the firm and, hence, on the ability to directly influence its performance. Thus, executive compensation is expected to be higher in

high discretion contexts, which is in accord with agency theory insights on the use of subjective measures. Lambert and Larcker (1987), using growth rate in sales as a proxy for investment opportunity sets (IOS), found that the weight placed on accounting returns relative to stock returns in cross-sectional models of cash compensation decreases with the relative abundance of IOS, which is subject to management discretion. Sloan (1993), and Kim and Suh (1993) investigate how corporate policies relate to investment opportunity sets of firms and find a relation between CEO compensation and proxies of IOS. Sloan (1993) postulates that all corporate policy choices (that is, financing, dividend and compensation policies) are endogenously determined. The variations in IOS impact the optimality of these corporate policies. While Sloan (1993) tested the relation between IOS and these policies using industry data, John and John (1993) examined the same issue using firm-level data and found that firms with higher investment opportunities pay significantly higher cash compensation to their CEOs.

Baber et al. (1996) extend this stream of research by examining the effect of IOS on the sensitivity of compensation to market-based and accounting-based performance measures. Thus, the incidence of IOS suggests a relatively high degree of information asymmetry between managers and shareholders and results in a higher dependence on incentive contracts. Further, the relative sensitivity of CEO compensation to stock returns versus accounting returns varies directly with the relative abundance of investment opportunities.

Social comparison based non-agency theories

O'Reilly et al. (1988) examined economic and psychological factors that influenced the setting of CEO compensation levels and tested both a tournament model and a social comparison model. Using data from 105 Fortune 500 firms, conventional economic determinants such as size and profitability were found to be only weakly related to CEO compensation. A test of a tournament model examined the difference in compensation between the top executive and those in the next hierarchical level. Controlling for other potential economic determinants, no support was found for this theory. Consistent with social comparison theory, however, strong associations were found between CEO compensation and the compensation level of outside members of the board of directors, especially those who serve on the compensation committee.

Effect of corporate governance

Governance structures have a strong influence on CEO compensation. They determine the company’s exposure to the market for corporate control through their policy

decisions (Jensen and Murphy, 1990) and therefore, how contracts influence CEO behavior. Internal governance bodies are also directly responsible for the design of CEO compensation contracts and this contracting process is one of company directors' main tasks.

Mululu (2005) indicates that governance structures are subject to more influence from the CEO and are correlated with higher levels of CEO compensation. Moreover, the boards' activity is positively related to the financial performance of firms suggesting that boards' activity is a value relevant to attribute in corporate governance. These findings are consistent with the presence of agency costs associated with weak governance, where the CEO exerts his bargaining power to extract rents at the expense of shareholders.

Muriithi (2004) argues that there is no significant relationship between corporate governance and firm performance. He performed both descriptive statistics analysis and cross sectional multiple regression analysis on 44 companies quoted on the Nairobi Stock Exchange in the period between 1999 and 2003 and concludes that firm performance measures have no significant relationship with the incentives of executive board members.

A "Governance Index" is built based on four different aspects of the company's governance structure: (1) CEO duality, (2) Size of the board of directors, (3) Managements' shareholdings and (4) Block shareholders' holding. This index is used as a proxy measure of the effectiveness of corporate governance mechanism (Fosberg, 1999). The firms classified by the governance index as under sound governance outperform those under poor governance. The results indicate that the corporate governance index built is a valid measure in evaluating the effectiveness of corporate governance of firms in Taiwan (Fosberg, 1999). He further demonstrates one additional application of the governance index constructed in this dissertation by showing that firms (identified by the governance index) with strong corporate governance mechanism effectively constrain the propensity of managers to engage in earnings management and improve the quality of reported earnings. Corporate governance is an effective monitoring device of the quality of financial reporting. Firms with poor governance structure are more likely to avoid reporting small losses by reporting small positive earnings. Furthermore, the magnitude of abnormal accruals is significantly related to governance level. Firms with weak corporate governance structures are more likely to use discretionary accruals to raise reported earnings.

Effects of managerial ownership

The relationship between compensation, managerial ownership and firm performance is vital. Morck et al. (1988) suggest that managerial ownership (including

stock options) is generally too low and that performance improves as a result of increased equity ownership. In contrast, Demsetz (1995) predict that there is no relationship between equilibrium levels of managerial ownership and firm performance. While Core et al. (2003) propose that there is a positive relationship between option grants and future operating performance; Larcker (2003) contends that this relationship is sensitive to the alternative econometric approaches. These mixed results indicate the lack of a sufficiently powerful setting in which to observe a relationship between managerial ownership/option-based compensation and firm performance. In contrast, an off-equilibrium setting is likely to be sufficiently powerful to observe this relationship (Core et al., 2003). Core and Larcker (2002) identify such a setting, one in which managerial ownership appears to be too low and states that the adoption of mandatory managerial stock ownership plans results in an increase in operating performance and stock market returns.

Executive compensation in Kenya

In the Kenyan environment, the executive remuneration has not come under massive spotlight perhaps due to the nature of CEO compensation. The Kenyan Companies Act sets the general framework for financial accounting and reporting by all registered companies in Kenya, and stipulates the basic minimum requirements with regard to financial reporting. Due to the limited details of the Act, financial reporting and regulation are supplemented by pronouncements of the Institute of Certified Public Accountants Kenya (Barako et al., 2006).

Unlike in the US, where publicly listed firms are required to disclose information on top five executives' compensation, Kenyan listed firms have typically publicly disclosed only aggregated total compensation of a firm's board of directors. This compensation is limited to cash compensation as share option issues have not come into play yet as such the NSE disclosure on shares is limited to bonus and rights issues to the general investing public (Muriuki, 2005). According to disclosures on the annual reports of listed companies, CEO compensation in the Kenyan banking industry can be divided into salaries, allowances, cash bonuses and fees for services as directors. Another key benefit obtained by directors is the ease of access to loans with all the listed banks having advanced loans to their directors.

In view of the absence of stock option advancements to the executive as a major incentive, the relationship between stock performance and CEO compensation may be weak as the stock market performance is not a determinant of the level of executive pay. This is more so given that for most listed companies the payment of executives may not be material in amount and is insignificant in its impact on price and as such it is not subjected to the materiality rule as stated in the (Muriuki, 2005). Thus, as per the NSE handbook, specific details

of executive compensation are not required.

Empirical studies

Lewellen and Huntsman (1970) analysed 50 US firms at three-year intervals beginning from 1942 to 1963 and found strong evidence that top executives' compensation is heavily dependent upon generation of profits. Their results also indicate that firm profits and stock market values are substantially more important in the determination of executive compensation than are firm sales. Jensen and Murphy (1990) used CEO compensation data on a sample of 1,295 firms from 1974 to 1986. They estimated pay for performance models in first-differences to account how change in CEO compensation is related to change in shareholders' wealth. As a CEO compensation measure they used a broad measure of eight different components. They found that CEO pay-for-performance sensitivity has been modest and it has fallen in real terms from the 1930s.

Rosen (1990) surveys several independent empirical studies on CEO pay-for-performance. He concludes that the evidence from these studies suggests that the effect of stock returns on log compensation is in the 0.10 to 0.15 range. Rosen (1990) also summarises a variety of academic pay-for-firm size elasticity works for different time periods in the U.S. and the UK. He finds some variation in CEO pay-for-firm size elasticities, but : "...the relative uniformity of estimates across firms, industries, countries, and periods of time is notable and puzzling because the technology that sustains control and scale should vary across these disparate units of comparison. The estimated elasticities for all companies are not significantly different from $\beta = 0.3$."

Conyon and Leech (1994) examine the determinants of a top director salary and bonus with a sample of 294 large UK listed firms between 1983 and 1986. They find a positive but very small pay elasticity estimate with respect to firm performance. For the median top director, a 10% increase in shareholder wealth corresponds to an increase in compensation of 375 pounds. Perhaps more importantly, they find evidence that firm sales are important factors in explaining the top directors pay: an estimated elasticity is approximately 7%. Another key finding is that ownership control and concentration decrease the level of a top director's pay, but these variables do not affect the growth of his pay.

Main et al. (1996) utilise the UK panel data for 60 firms from 1981 to 1989. They find evidence that due to executives' stock options there is a statistically significant relationship between a highest paid executive and firm performance. For example, a 10% increase in shareholder wealth increases top paid director's compensation about 9%. The key finding, however, is a greater sensitivity of top executive compensation on firm performance than the previous UK studies have suggested due to accounting for information on stock

options in empirical analysis. Hall and Liebman (1998) use 15-year panel data on the large U.S. firms that contain detailed information on CEO compensation. With the data from 1980 to 1994 they find that CEO compensation is highly responsive to firm performance, if the value changes of CEO stock and option holdings are accounted for in empirical analysis: the elasticity of CEO compensation with respect to firm value is 3.9 for 1994, which is about 30 times larger than the previous elasticity estimates.

Kato (1997) examine the link between CEO compensation and firm performance in Japan by utilising panel data on individual CEO's salary and bonus of Japanese firms from 1986 to 1995. They find that CEO's cash compensation is sensitive to firm performance, especially on accounting measures. However, stock market performance seems to be less important factor in the determination of CEO's compensation. One reason for an extremely modest link between CEO compensation and firm stock market performance in the period can be the fact that until 1997 executives' stock options were banned in Japan, except at small venture companies.

Askary and Doucouliagos (2005) argue that the Australian banking sector, boards are not captured by CEOs. They argue that directors' pay in the Australian banking sector is driven mainly by the size of the bank, board composition and lags in pay. Specifically, larger banks provide a higher pay, on average, to directors, while those banks with a larger proportion of outside directors pay less.

RESEARCH METHODOLOGY

Research design

The study adopted a causal research design by examining the relationship between executive compensation and financial performance among the commercial listed at the Nairobi stock exchange.

Population and sample

The target population comprised of the nine commercial banks listed at the Nairobi stock exchange as at December 2008. A census survey was conducted of the listed commercial banks, namely, Barclays Bank of Kenya, CFC Stanbic Bank, Co-operative Bank, Diamond Trust Bank, Equity Bank, Kenya Commercial Bank, National Bank, NIC Bank, Standard Chartered Bank – while the Investment and Mortgages Bank was not listed. These banks were categorized by Central Bank of Kenya as large banks and in 2008 they comprised 71.8% of the total industry deposit base and net asset value base.

Data collection methods

The study employed secondary data which was obtained from the financial statements of the commercial banks.

Table 1. Annual averages of key bank statistics.

Year	Core capital	Profit before tax	Gross assets	Return on assets (%)	S/holders' equity	Return on equity (%)	Customer deposits	Directors' emoluments
2004	3,750,371	1,179	46,026	2.27	4,037	23.50	31,296	43,684,600
2005	4,550,601	1,455	58,087	2.30	5,044	25.20	34,833	51,435,800
2006	5,025,980	1,970	66,585	2.82	5,867	31.35	39,882	58,131,800
2007	7,521,600	2,623	69,064	3.64	8,453	29.93	48,327	61,305,900
2008	9,746,800	3,372	87,624	3.86	11,488	28.04	62,009	75,201,700

Table 2. Descriptive statistics of key variables for the entire sector.

Year	CEO remuneration		Size (Deposit base)		ROA mean	Std Dev	Core capital to deposits	
	Mean	Std Dev	Mean	Std Dev			Mean	Std Dev
2004	43,684,600	32,308,207	31,296	26,015	0.0227	0.0126	0.0572	0.0528
2005	51,435,800	36,100,607	34,833	25,925	0.0230	0.0114	0.0489	0.0273
2006	58,131,800	37,764,245	39,882	28,024	0.0282	0.0115	0.0488	0.0171
2007	61,305,900	35,284,492	48,327	31,157	0.0364	0.0082	0.0910	0.0949
2008	75,201,700	49,597,258	62,009	33,863	0.0386	0.0124	0.0791	0.0529
CAGR*	14.54%		18.64%		14.16%		8.43%	

*CAGR- Compounded annual growth rate

Data analysis

A multiple regression model was used to analyse the data using statistical package for the social sciences (SPSS) version 15. In analyzing the effect of compensation structure on firm performance, only realized compensation is considered (Mehran, 1995). The regression model adopted for the study is as follows:

$$\text{Ceorem} = a + \beta_1 \ln(\text{Deposits}) + \beta_2 \text{ROA} + \beta_3 \text{C-Adequacy} + \beta_4 \text{IND-ROE}$$

Where: Ceorem = Executive remuneration. In this case, board remuneration is used as a proxy for executive remuneration given that most of the Board remuneration is taken up by executive directors and also due to the fact that the annual reports do not give a specific breakdown of amounts due to executive directors and non-executive directors, LN (Deposits) = the natural log of customer deposits, ROA = Return on assets, C-Adequacy = Capital adequacy ratio based on core capital to deposits, IND-ROE

= is a dummy variable that compares the returns of individual banks to those of the industry. The variable is 1 if the ROE of the bank is higher than that of the industry for a given year and 0 if the ROE is below the industry average. The Coefficients β_1 , β_2 , β_3 and β_4 were used to measure the sensitivity of the dependent variable (Ceorem) to unit changes in the four explanatory variables.

DATA ANALYSIS AND FINDINGS

Descriptive statistics

The annual averages shown in Table 1 indicate that executive compensation (Directors' Emoluments) increased in tandem with return on assets and bank size as indicated by customer deposits. Executive compensation also appeared to move in tandem with core capital implying a

relationship between compensation and opportunity. Consequently, year-on-year averages are indicative of a positive relationship between executive compensation and performance, size and opportunity.

The descriptive statistics shown in Table 2 indicate that the average executive remuneration was generally on the rise for the five year period to 2008 accompanied by a similar rise in pay volatility as reflected by the increasing standard deviation. The same can be said of the explanatory variables with the exception of core capital to deposits which witnessed a three year dip before leveling out at generally higher levels in 2008. It can therefore be concluded that executive

Table 3. Descriptive statistics of key variables for the top-tier banks.

Year	CEO remuneration		Size (Deposit base)		ROA mean	Std Dev	Core capital to deposits	
	Mean	Std Dev	Mean	Std Dev			Mean	Std Dev
2004	56,383,400	40,642,131	51,814	21,371	0.0233	0.0180	0.0242	0.0302
2005	69,258,200	41,049,261	55,303	21,313	0.0234	0.0137	0.0436	0.0317
2006	71,638,000	34,705,655	61,410	24,565	0.0264	0.0127	0.0394	0.0171
2007	77,627,400	38,112,967	71,615	28,510	0.0374	0.0100	0.0460	0.0183
2008	78,613,000	19,486,625	88,110	28,575	0.0352	0.0134	0.0630	0.0361
CAGR*	8.66%		14.19%		10.91%		27.03%	

*CAGR- Compounded annual growth rate

Table 4. Descriptive statistics of key variables for the bottom-tier banks.

Year	CEO remuneration		Size (Deposit base)		ROA mean	Std Dev	Core capital to deposits	
	Mean	Std Dev	Mean	Std Dev			Mean	Std Dev
2004	30,985,800	17,136,625	10,777	3,687	0.0222	0.0053	0.0902	0.0513
2005	33,613,400	21,288,128	14,364	3,233	0.0225	0.0103	0.0543	0.0246
2006	44,625,600	39,348,251	18,354	2,230	0.0300	0.0113	0.0583	0.0120
2007	44,984,400	26,127,819	25,039	3,952	0.0354	0.0071	0.1360	0.1218
2008	71,790,400	71,595,579	35,907	7,767	0.0420	0.0118	0.0952	0.0660
CAGR*	23.37%		35.10%		17.28%		1.34%	

*CAGR- Compounded annual growth rate

remuneration rose in tandem with a rising deposit base and increasing profitability as measured by return on assets.

The mean remuneration for the top-tier banks with the largest deposit base, witnessed a gradual incline over the five year period to 2008 along with the marked increase in deposit base, asset returns and capital adequacy. Mean remuneration only grew by 8.66% while mean deposit base grew by 14.2% on a compounded annual growth basis as shown in Table 3.

The mean remuneration for the bottom-tier banks rose considerably over the five year period to 2008 with an equally considerable increase in deposit base and asset returns. The executive remuneration grew at a much faster rate compared to top-tier banks of 23.37% while the growth in deposits was also high at 35.1% as indicated in Table 4.

From the descriptive statistics it can generally be deduced that for the bigger banks, executive remuneration appears to have grown in tandem with returns and future opportunity, as measured by capital adequacy, whereas for the relatively smaller banks executive remuneration growth outpaced growth in bank returns and future growth prospects.

Correlation analysis

The Pearson's coefficient was used to verify the extent of linear correlation among the key variables of the model

as indicated in Table 5. Emolument and size appear to exhibit a somewhat strong link. However, there is little evidence of multi-collinearity among the explanatory variables since the correlations among them are not very strong and therefore all the variables can be incorporated into the subsequent regression analysis.

Regression analysis

Regression results for the whole banking sector reveal that size is negatively and significantly related to the determination of executive pay as shown in Table 6. This is contrary to the findings of Rosen (1990) that found pay-for-firm size elasticity to be positive and the estimated elasticity was not significantly different from 0.3 that is, $\beta = 0.3$. In this study, the overall sensitivity of executive compensation to bank size was -0.0238, that is, $\beta = -0.0238$.

With regard to firm performance, two explanatory variables were tested namely return on assets (ROA) and relative performance to industry ROE which was essentially used to identify the firms that were able to register above industry average returns on equity. In both cases although, the coefficients did not yield significant results they were found to be inversely related to executive compensation contrary to the expectations of a positive relationship. This was contrary to the findings of Main et al. (1996) who found a strong positive relationship between increasing shareholder wealth and

Table 5. Correlation matrix table.

	Emoluments/PBT (%)	Log of deposits	ROA	Net core capital to deposits	Relative performance to industry ROE
Emoluments/ PBT (%)	1				
Size (Deposit base)	-0.5933	1			
ROA	-0.4377	0.3322	1		
Net core capital to deposits	0.1089	-0.1374	0.4125	1	
Relative performance to industry ROE	-0.5045	0.3719	0.5081	-0.2552	1

Table 6. Regression results for the banking sector.

	Regression analysis					
	Total sector		Top-tier banks		Bottom-tier banks	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
Intercept	0.3221	0.00002	0.0477	0.5621	0.5412	0.0080
Size (deposit base)	-0.0238	0.0010*	0.0019	0.8149	-0.0456	0.0332*
ROA	-0.7507	0.1924	-0.4508	0.1671	-1.1941	0.3414
Relative performance to industry ROE	-0.0170	0.1979	-0.0160	0.0229*	-0.0216	0.3943
Net core capital to deposits	0.0685	0.5472	-0.2933	0.0078*	0.1601	0.3709
R^2	0.4680		0.7540		0.4616	
DW	2.0313		1.7796		1.9157	

*Significance at the 5% level ($p < 0.05$).

executive compensation. On the other hand, the measure of firm opportunity, net core capital to deposits, yielded a positive non-significant relationship to executive pay. The weak relationship between performance and pay generally points at the possibility of prevalent CEO capture of the boards throughout the industry.

The study also broke down the bank sample into two segments based on their size to assess whether there were any differences in the response of executive compensation to the

explanatory variables between the largest banks (Top-tier) and their relatively smaller counter parts (bottom-tier) in terms of customer deposit base. In the case of the top-tier banks, relative performance to industry ROE and net core capital to deposits were found to be negatively and significantly related to executive compensation. This implies that performance and opportunity are key variables in explaining executive pay although in this case they are inversely related to compensation. This is similar to the findings of Gibbons and Murphy (1990) who established a

similar significant negative relationship between industry relative performance and executive pay.

The bottom-tier banks exhibited trends similar to those of the entire sector with size being negatively and significantly related to executive pay. Given that there is a weak link, as indicated by higher p-values, between performance and executive remuneration, the results appear to suggest that for the small banks boards are susceptible to CEO capture. For the bigger banks, size has been growing much faster than remuneration whereas for the smaller banks

remuneration is growing at a much faster pace, consequently the inverse relationship between size and compensation.

CONCLUSIONS AND RECOMMENDATIONS

The study finds a negative non-significant relationship between executive compensation and performance of commercial banks in Kenya. In the large commercial banks, size is a key criteria in determining executive compensation as it is significantly but negatively related to compensation. This can be attributed to the diminishing influence of key owners in the management as the banks grow in size. The negative correlation appears to suggest the capping of executive compensation to ensure maximization of returns to shareholders. As such, the interests of the executive directors are subordinated to those of the shareholders in keeping with the agency theory. Consequently, there is need to reign in the executive compensation tendencies in smaller banks to favor bigger shareholders who double up as bank directors to the detriment of returns and smaller owners of the bank. Further, there is need to sensitize executives among the Kenyan banking fraternity on the need to align their payment to accounting performance measures as these measures are directly linked to shareholder wealth maximization.

REFERENCES

- Askary S, Doucouliagos H (2005). "Directors' Remuneration and Performance in the Australian Banking Sector," Working paper, Deakin Univ. Sch. Acc., Econ. Finance.
- Baber WR, Janakirnam SN, Kang SH (1996). "Investment Opportunities and the Structure of Executive Compensation", *J. Acc. Econ.*, 21: 297-318.
- Barako DG, Hancock P, Izan HY (2006). "Relationship between Corporate Governance Attributes and Voluntary Disclosures in Annual Reports: The Kenyan Experience," Working Paper, Graduate School of Management, University of Western Australia.
- Baiman, S. and Verrecchia, R.E. (1995), "Earnings and Price-based Compensation Contracts in the Presence of Discretionary Trading and Incomplete Contracting". *J. Acc. Econ.*, 20: 93-121.
- Banker R , Datar SM (1989). "Sensitivity, Precision, and Linear Aggregation of Signals for Performance Evaluation", *J. Acc. Res.*, 27: 21-39.
- Benito A, Conyon M (1999). "The Governance of Directors' Pay from UK Companies", *J. Manage. Governance*, 3: 117-136.
- Brown MP, Sturman MC , Simmers MJ (2003). "Compensation Policy and Organizational Performance: The Efficiency, Operational and Financial Implications of Pay Levels and Pay Structure". *Acad. Manage. J.*, 46: 752-762
- Conyon MJ , Leech D (1994). "Top Pay, Company Performance and Corporate Governance", *Oxford Bulletin of Economics and Statistics*, 56(3): 229-247.
- Core J, Larcker D (1999). "Corporate Governance, Chief Executive Officer Compensation, and Firm Performance", *J. Financial Econ.*, 51(3): 371-406.
- Core J, Larcker D (2002). "Performance Consequences of Mandatory Increases in Executive Stock Ownership". *J. Financial Econ.*, 64: 317-340.
- Core JG, Larcker D (2003). "Executive Equity Compensation and Incentives: A Survey", *Federal Reserve Bank of New York Economic Policy Review*, April, pp: 27-50.
- Dale-Olsen H (2006). "Wages, Fringe Benefits and Worker Turnover", *Labour Economics*, 13 (1): 87-105.
- Demsetz H (1995). "Management Compensation and Tournament Theory," in *The Economics of the Business Firm*, Cambridge University Press.
- Dutta S, Reichelstein S (1999). "Asset Valuation and Performance Measurement in a Dynamic Agency Setting", *Rev. Acc. Stud.*, 11: 258-9
- Dutta S, Reichelstein S (2000). "Controlling Investment Decisions: Hurdle Rates and Intertemporal Cost Allocation", Working paper, University of California at Berkeley.
- Feltham GS, Xie J (1994). "Performance Measure Congruity and Diversity in Multi-task Principal/Agent Relations", *Acc. Rev.*, 69 (July): 429-453.
- Finkelstein S , Boyd BK (1998). "How Much Does the CEO Matter? The Role of Managerial Discretion in the Setting of CEO Compensation", *Acad. Manage. J.*, 41: 179-199.
- Fosberg RH (1999). "Leadership Structure and CEO Compensation", *Am. Bus. Rev.*, 17(1): 50-56.
- Gibbons R, Murphy KJ (1990). "Relative Performance Evaluation for Chief Executive Officers", *Industrial and Labour Relations Review*, 43 (3): 30-51.
- Gore A, Matsunaga S, Yeung E (2003). "Does the Financial Expertise of Monitors Matter? Evidence from the Cash Compensation of Chief Financial Officers". Working paper, University of Oregon.
- Hall B , Liebman J (1998). "Are CEO's Really Paid Like Bureaucrats?", *Quarterly J. Econ.*, 113 (30): 653-691.
- Ittner CD (1997). "The Choice of Performance Measures in Annual Bonus Contracts", *Acc. Rev.*, 72: 231-255.
- Izan HY, Sidhu B, Taylor S (1998). "Does CEO Pay Reflect Performance?" *J. Corporate Governance*, 6: 39-47.
- Jensen M, Murphy K (1990). "Performance Pay and Top Management Incentives". *J. Pol. Econ.*, 98: 225-264.
- John TA, John K (1993). "Top Management Compensation and Capital Structure", *J. Finance*, 48(3): 949-74.
- Kato T (1997). Chief Executive Compensation and Corporate Groups in Japan: New Evidence from Micro Data. *Int. J. Industrial Organ.*, 15: 455-467
- Kim O , Suh Y (1993). "Incentive Efficiency of Compensation Based on Accounting and Market Performance", *J. Acc. Econ.*, 16: 25-54.
- Lambert RA, Larcker DF (1987). "Analysis of the Use of Accounting and Market Measures in Executive Compensation Contracts", *J. Acc. Res.*, 25 (Supplement): 85-129.
- Larcker D (2003). "Are Executive Stock Options Associated with Future Earnings?", *J. Acc. Econ.*, 36: 91-103.
- Lazear E, Rosen S (1981). "Rank-Order Tournaments as Optimum Labor Contracts," *J. Pol. Econ.*, 89(5): 841-864.
- Lewellen W, Huntsman B (1970). "Managerial Pay and Corporate Performance," *Am. Econ. Rev.*, 60(4): 710-20.
- Main BGM, Bruce A, Buck T (1996). "Total Board Remuneration and Company Performance", *Econ. J.*, 106: 1627-1644.
- Mehran H (1995). "Executive Compensation Structure, Ownership, and Firm Performance", *J. Financial Econ.*, 38 (2): 163-184.
- Morck R, Schleifer A, Vishney R (1988). "Management Ownership and Market Valuation: An Empirical Analysis". *J. Financial Econ.*, 20: 293-315.
- Mululu AK (2005). "The Relationship Between Board Activity and Firm Performance: A Study of Firms Quoted on the Nairobi Stock Exchange" [unpublished]
- Muriithi AK (2004). "The Relationship Between Corporate Governance Mechanism and Performance of Firms Quoted at the Nairobi Stock Exchange" [unpublished]
- Murphy KJ (1999). "Executive Compensation," in *Handbook of labor economics*. Volume3B. Amsterdam; New York and Oxford: Elsevier Science, North-Holland, pp: 2485-563.
- Natarajan R (1996). "Stewardship Value of Earnings Components: Additional Evidence on the Determinants of Executive Compensation", *Acc. Rev.*, 71(1): 1-22.
- Newman HA, Mozes HA (1999). "Does the Composition of the Compensation Committee Influence CEO Compensation Practices?"

- Financial Manage., 28(3): 41-53.
- Ohlson J (1999). "Earnings, Book Values and Dividends in a Stewardship Setting with Moral Hazard", Working Paper, Graduate School of Business, Columbia University.
- O'Reilly CA, Main BG, Crystal GS (1988). "CEO Compensation as Tournament and Social Comparison: A Tale of two Theories". *Admin. Sci. Q.*, 33(2): 257-274.
- Rosen S (1990). "Contracts and the Market for Executives", National Bureau of Economic Research, Working Paper, p. 3542.
- Sloan R (1993). "Accounting Earnings and Top Executive Compensation", *J. Acc. Econ.*, 16: 55-100.
- Stapledon G (2004). "The Pay for Performance Dilemma", University of Melbourne Legal Studies Research Paper No. 83.

Appendix 1. Key operating statistics.

2004Size	Bank name	Core capital Kshs '000	Profit before tax Kshs 'mn	Gross assets Kshs 'mn	Return on assets (%)	S/holders' Equity Kshs 'mn	Return on equity (%)	Customer deposits Kshs 'mn	Director's emoluments Kshs
TOP	Barclays Bank of Kenya Ltd	10,862,884	5,413	115,800	4.67	12,485	43.36	82,583	47,000,000
	Kenya Commercial Bank Ltd	5,191,373	2,691	70,310	3.83	5,419	49.66	56,971	124,819,000
	Standard Chartered Bank Ltd	7,716,691	1,076	81,797	1.32	7,978	13.49	54,560	57,529,000
Top tier R	Co-operative Bank of Kenya Ltd	2,973,363	354	62,088	0.57	3,299	10.72	39,486	29,635,000
	National Bank of Kenya Ltd	2,077,745	743	59,727	1.24	2,625	28.32	25,470	22,934,000
	National Industrial Credit Bank Ltd	2,192,587	354	18,474	1.91	1,702	20.77	14,268	45,781,000
	CFC Bank Ltd	2,349,601	373	17,549	2.12	2,644	14.09	12,788	42,496,000
Bottom tier	Investment & Mortgages Bank Ltd	1,709,983	372	15,664	2.37	1,721	21.61	12,554	5,781,000
	Diamond Trust Bank Kenya Ltd	1,146,525	193	11,691	1.65	1,223	15.77	9,203	20,756,000
	Equity Bank Ltd	1,282,954	218	7,161	3.05	1,271	17.17	5,074	40,115,000
	Industry Average						22.86		

2005 size	Bank name	Core capital Kshs '000	Profit before tax Kshs 'mn	Gross assets Kshs 'mn	Return on assets (%)	S/holders' equity Kshs 'mn	Return on equity (%)	Customer deposits Kshs 'mn	Director's emoluments Kshs
Top tier	Barclays Bank of Kenya Ltd	11,377,000	5,401.50	129,237	4.18	13,177	40.99	84,275	56,000,000
	Kenya Commercial Bank Ltd	9,801,739	1,908.60	104,487	1.83	9,969	19.15	61,062	75,082,000
	Standard Chartered Bank Ltd	8,388,022	3,500.30	104,274	3.36	9,508	36.81	59,996	136,512,000
	Co-operative Bank of Kenya Ltd	3,604,662	705.6	71,532	0.99	4,057	17.39	44,110	49,794,000
	National Bank of Kenya Ltd	2,731,907	859.1	65,211	1.32	3,223	26.66	27,071	28,903,000
	National Industrial Credit Bank Ltd	2,385,338	403.3	23,349	1.73	2,722	14.81	16,988	56,444,000
	CFC Bank Ltd	2,574,695	417.6	27,171	1.54	2,718	15.36	16,696	52,421,000
Bottom tier	Investment & Mortgages Bank Ltd	1,892,904	489.4	24,515	2.00	2,057	23.79	15,307	8,200,000
TIER	Diamond Trust Bank Kenya Ltd	1,336,784	363.5	18,749	1.94	1,416	25.67	13,779	16,548,000
	Equity Bank Ltd	1,412,957	500.5	12,341	4.06	1,594	31.40	9,048	34,454,000
	Industry Average						23.97		

2006 size	Bank name	Core capital Kshs '000	Profit before tax Kshs 'mn	Gross assets Kshs 'mn	Return on assets (%)	S/holders' equity Kshs 'mn	Return on equity (%)	Customer deposits Kshs 'mn	Director's emoluments Kshs
Top tier	Barclays bank of kenya Ltd	12,375,000	6,624	149,039	4.40	14,862	44.57	93,837	52,000,000
	Kenya commercial bank Ltd	9,168,805	3,035	115,592	2.60	11,481	26.44	71,495	92,920,000
	Standard chartered bank Ltd	8,367,299	3,798	114,162	3.30	10,039	37.83	64,879	121,331,000
	Co-operative bank of Kenya Ltd	4,360,556	1,233	77,227	1.60	4,810	25.64	48,201	55,773,000
	National bank of kenya Ltd	3,367,504	934	70,125	1.30	3,848	24.28	28,639	36,166,000
Bottom tier	National industrial credit bank Ltd	2,699,536	675	29,240	2.30	3,035	22.24	21,978	44,425,000
	CFC Bank Ltd	2,765,391	679	31,869	2.10	2,990	22.70	18,507	109,805,000
	Investment and mortgages bank Ltd	2,424,097	936	30,054	3.10	2,795	33.50	18,220	8,750,000
	Diamond trust bank Kenya Ltd	2,530,617	685	26,153	2.60	2,609	26.26	16,726	19,253,000
	Equity bank Ltd	2,200,993	1,100	22,391	4.90	2,201	49.99	16,337	40,895,000
Industry average							28.31		

2007size	bank name	Core capital Kshs '000	Profit before Tax Kshs 'mn	Gross assets Kshs 'mn	Return on assets (%)	S/holders' equity Kshs 'mn	Return on equity (%)	Customer's eposits Kshs 'mn	Director's emoluments Kshs
Top tier	Barclays Bank of Kenya Ltd	17,019,000	7,079	167,475	4.20	17,564	40.30	109,097	50,000,000
	Kenya Commercial Bank Ltd	10,046,000	3,863	124,527	3.10	12,846	30.07	85,638	113,769,000
	Standard Chartered Bank Ltd	8,967,000	4,897	92,966	5.30	10,816	45.27	73,841	124,150,000
	Co-operative Bank of Kenya Ltd	5,882,000	2,288	75,278	3.00	6,807	33.61	54,775	55,678,000
	National Bank of Kenya Ltd	4,442,000	1,610	52,098	3.10	4,967	32.41	34,722	44,540,000
Bottom tier	National Industrial Credit Bank Ltd	13,666,000	2,364	54,640	4.30	14,917	15.85	31,536	73,000,000
	CFC Bank Ltd	4,058,000	1,048	32,673	3.20	4,735	22.13	24,806	52,042,000
	Investment and Mortgages Bank Ltd	3,750,000	1,294	30,389	4.30	3,867	33.47	23,626	12,380,000
	Diamond Trust Bank Kenya Ltd	4,279,000	869	31,130	2.80	4,670	18.61	24,409	23,380,000
	Equity Bank Ltd	3,107,000	921	29,467	3.10	3,339	27.59	20,820	64,120,000
Industry Average							28.04		

2008Size	Bank name	Capital Kshs '000	Profit Before Tax Kshs 'mn	Gross Assets Kshs 'mn	Return on Assets (%)	S/holders' Equity Kshs 'mn	Return on equity (%)	Deposits Kshs 'mn	Director's Emoluments Kshs
Top tier	Barclays bank of Kenya Ltd	980,000	8,016	172,113	4.70	20,463	39.20	126,408	59,000,000
	Kenya Commercial Bank Ltd	187,000	5,394	181,974	3.00	20,058	26.90	109,845	108,227,000
	Standard chartered bank Ltd	32,000	4,709	100,392	4.70	11,390	41.30	76,898	87,365,000
	Co-operative bank of KenyaLtd	613,000	3,337	91,022	3.70	13,933	23.90	65,869	70,789,000

	National bank of Kenya Ltd	52,000	1,313	85,450	1.50	7,118	18.40	61,529	67,684,000
Bottom tier	National industrial credit bank Ltd	272,000	4,757	78,001	6.10	19,660	24.20	48,977	194,000,000
	CFC Bank Ltd	72,000	1,797	44,588	4.00	6,208	28.90	34,278	49,797,000
	Investment and mortgages bank Ltd	70,000	1,474	43,609	3.40	5,529	26.70	35,238	71,225,000
	Diamond trust bank Kenya Ltd	57,000	1,305	42,073	3.10	5,334	24.50	32,689	29,690,000
	Equity Bank Ltd	33,000	1,620	37,022	4.40	5,188	31.20	28,355	14,240,000
	Industry average						26.50		

Appendix 2. Dependent and explanatory variables stats.

2004 Size	BANK NAME	Emoluments/ PBT (%) Y_t	Natural Log of Deposits β_1	ROA β_2 (%)	Net Core Capital to Deposits β_3 (%)	Relative Performance to Industry ROE β_4
Top tier	Barclays Bank of Kenya Ltd	0.87	11.321559	4.67	5.15	1
	Kenya Commercial Bank Ltd	4.64	10.950298	3.83	1.11	1
	Standard Chartered Bank Ltd	5.35	10.907056	1.32	6.14	0
	Co-operative Bank of Kenya Ltd	8.37	10.583701	0.57	-0.47	0
	National Bank of Kenya Ltd	3.09	10.145257	1.24	0.16	1
Bottom tier	National Industrial Credit Bank Ltd	12.93	9.5657745	1.91	7.37	0
	CFC Bank Ltd	11.39	9.4562625	2.12	10.37	0
	Investment and Mortgages Bank Ltd	1.55	9.4377946	2.37	5.62	0
	Diamond Trust Bank Kenya Ltd	10.75	9.1272848	1.65	4.46	0
	Equity Bank Ltd	18.40	8.5318847	3.05	17.28	0

2005 Size	Bank name	Emoluments/ PBT (%) Y_t	Natural log of deposits β_1	ROA β_2 (%)	Net core capital to deposits β_3 (%)	Relative performance to industry ROE β_4
Top tier	Barclays Bank of Kenya Ltd	1.04	11.341841	4.18	5.50	1
	Kenya Commercial Bank Ltd	3.93	11.019645	1.83	8.05	0
	Standard Chartered Bank Ltd	3.90	11.002033	3.36	5.98	1
	Co-operative Bank of Kenya Ltd	7.06	10.694442	0.99	0.17	0
	National Bank of Kenya Ltd	3.36	10.206218	1.32	2.09	1
Bottom tier	National Industrial Credit Bank Ltd	14.00	9.7402625	1.73	6.04	0
	CFC Bank Ltd	12.55	9.7229244	1.54	7.42	0
	Investment and Mortgages Bank Ltd	1.68	9.6360655	2.00	4.37	0
	Equity Bank Ltd	6.88	9.110299	4.06	7.62	1

2006 Size	Bank name	Emoluments/ PBT (%) Y_t	Natural Log of Deposits β_1	ROA β_2 (%)	Net core capital to deposits β_3 (%)	Relative performance to industry ROE β_4
Top tier	Barclays Bank of Kenya Ltd	0.79	11.449315	4.40	5.19	1
	Kenya Commercial Bank Ltd	3.06	11.177383	2.60	4.82	0
	Standard Chartered Bank Ltd	3.19	11.080279	3.30	4.90	1
	Co-operative Bank of Kenya	4.52	10.783135	1.60	1.05	0
	National Bank of Kenya Ltd	3.87	10.262525	1.30	3.76	0
Bottom tier	National Industrial Credit Bank	6.58	9.9977972	2.30	4.28	0
	CFC Bank Ltd	16.17	9.8259043	2.10	6.94	0
	Investment and Mortgages Bank	0.93	9.8102752	3.10	5.30	1
	Diamond Trust Bank Kenya	2.81	9.7247197	2.60	7.13	0
	Equity Bank Ltd	3.72	9.7011878	4.90	5.47	1

2007 Size	Bank name	Emoluments/ PBT (%) Y_t	Natural Log of deposits β_1	ROA β_2 (%)	Net core capital to deposits β_3 (%)	Relative performance to industry ROE β_4
Top tier	Barclays Bank of Kenya Ltd	0.71	11.599993	4.20	7.60	1
	Kenya Commercial Bank Ltd	2.95	11.357884	3.10	3.73	1
	Standard Chartered Bank Ltd	2.54	11.209669	5.30	4.14	1
	Co-operative Bank of Kenya Ltd	2.43	10.910989	3.00	2.74	1
	National Bank of Kenya Ltd	2.77	10.455129	3.10	4.79	1
Bottom tier	National Industrial Credit Bank Ltd	3.09	10.358885	4.30	35.33	0
	CFC Bank Ltd	4.97	10.118841	3.20	8.36	0
	Investment & Mortgages Bank Ltd	0.96	10.070103	4.30	7.87	1
	Diamond Trust Bank Kenya Ltd	2.69	10.102707	2.80	9.53	0
	Equity Bank Ltd	6.96	9.9436693	3.10	6.92	0

2008 Size	Bank name	Emoluments/PBT (%) Y_t	Natural log of deposits β_1	ROA β_2 (%)	Net core capital to deposits β_3 (%)	Relative performance to industry ROE β_4
Top tier	Barclays Bank of Kenya Ltd	0.74	11.74727	4.70	7.81	1
	Kenya Commercial Bank Ltd	2.01	11.606826	3.00	6.74	1
	Standard Chartered Bank Ltd	1.86	11.250235	4.70	4.14	1
	Co-operative Bank of Kenya Ltd	2.12	11.095423	3.70	11.15	0
	National Bank of Kenya Ltd	5.15	11.027264	1.50	1.67	0
Bottom tier	National Industrial Credit Bank Ltd	4.08	10.799106	6.10	21.14	0
	CFC Bank Ltd	2.77	10.442259	4.00	8.55	1
	Investment and Mortgages Bank Ltd	4.83	10.46988	3.40	6.39	1

Diamond Trust Bank Kenya Ltd	2.28	10.394794	3.10	5.63	0
Equity Bank Ltd	0.88	10.252559	4.40	5.87	1

Appendix 3. Regression analysis stats.

Sector regression statistics			Coefficients	Standard error	t Stat	P-value	Significance P-value
Multiple R	0.68410	Intercept	0.32210	0.06819	4.72339	0.00002	*
R Square	0.46799	$\beta 1$	-0.02382	0.00679	-3.50858	0.00104	*
Adjusted R Square	0.42070	$\beta 2$	-0.75072	0.56732	-1.32329	0.19242	
Standard Error	0.03184	$\beta 3$	0.06847	0.11289	0.60654	0.54720	
Observations	50	$\beta 4$	-0.01703	0.01303	-1.30677	0.19793	

Top-tier regression statistics			Coefficients	Standard error	t Stat	P-value	Significance P-value
Multiple R	0.86834	Intercept	0.04770	0.08090	0.58955	0.56209	
R Square	0.75402	$\beta 1$	0.00186	0.00783	0.23722	0.81490	
Adjusted R Square	0.70483	$\beta 2$	-0.45083	0.31444	-1.43375	0.16709	
Standard Error	0.01048	$\beta 3$	-0.29331	0.09927	-2.95462	0.00784	*
Observations	25	$\beta 4$	-0.01596	0.00648	-2.46395	0.02293	*

Bottom-tier regression statistics			Coefficients	Standard error	t Stat	P-value	Significance P-value
Multiple R	0.67945	Intercept	0.54120	0.18385	2.94372	0.00803	*
R Square	0.46165	$\beta 1$	-0.04560	0.01994	-2.28703	0.03323	*
Adjusted R Square	0.35398	$\beta 2$	-1.19413	1.22533	-0.97454	0.34143	
Standard Error	0.04171	$\beta 3$	0.16008	0.17486	0.91546	0.37086	
Observations	25	$\beta 4$	-0.02160	0.02481	-0.87057	0.39432	