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RISK AND EXECUTIVES COMPENSATION: AN INDUSTRY-WISE ANALYSIS OF PAKISTAN NON-FINANCIAL SECTORS

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ABSTRACT

Large compensation packages, according to critics, pushed managers to take unwarranted risks, which ultimately contributed to the financial crisis. This study explores the relationship between systematic risk and executive remuneration. For investigation, this study uses the data of 170 non-financial listed firms of the Pakistan Stock Exchange. Further, this study divides the data into the 5 majors listed sectors and explores the relationship between investigated variables. The estimation method used in this study is OLS. Results suggest that executive remuneration effect differently on systematic risk in different sectors of Pakistan. Important determinants for systematic risk return on assets, firm size, firm age, and TbinQ. In the context of Pakistan, this study contributes to the literature. Policymakers can use this study's findings for decisions making.

KEYWORDS: Risk, executives Compensations, OLS, Non-Financial industries

1. INTRODUCTION

Developing countries, especially those in Southeast Asia, have experienced ineffective corporate governance practices in contrast to industrialized economies. During the Asian crisis, the weaknesses in corporate governance practices had a significant impact on the stock market declines (Al Farooque et al., 2019; Ghalib, 2018). For many Asian countries, adoption of great corporate governance laws has been a top concern in order to avoid financial crises, which are commonly caused by a lack of openness and disclosure in many firms (Connelly et al., 2017). However, because many other factors, such as corporate ownership patterns, the efficiency of institutions, legal and political action, and so on, generally escape contextualization, studies from industrialized nations may not be pertinent to developing nations (Waweru, 2020).

After the 2007–2009 slump in the economy, prominent financial corporations' executive compensation packages came under fire and became a hot issue of debate. Large compensation packages, in the opinion of detractors, pushed managers to take unwarranted risks, which in turn fueled the financial crisis. The validity of this claim is investigated in this study by examining the relationship between executive pay and firm risk in five listed non-financial sectors of Pakistan. We examine the CEO compensation practices in five different industries in relation to stock beta measures of business risk. In two key areas of economic literature, the relationship between CEO pay and organizations' risk-taking behaviors is examined. In the first line of research, corporate risk is emphasized as a remuneration motivator (Jensen and Meckling, 1976; Gaver and Gaver, 1993; Low, 2009). In other words, risk is the independent variable and compensation is the dependent variable when executive compensation = f (Risk). According to the second body of research, executive compensation encourages different risk-taking behaviors among businesses (Palia and Porter, 2004; Coles et al., 2006; Fortin et al., 2010; Guo et al., 2014), which is the opposite of the first. The study in this work adopts the latter school of thought, where Risk = f (Executive compensation).

This study assesses the relationship of risk and executive compensation by using the data of five different industries of Pakistani non-financial listed companies. Reminder of the paper follows as literature review is presented next followed by methodology and the results are discussed. Then, conclusion is drawn and at the end references are quoted.

2. LITERATURE REVIEW

The initial literature strand emerged from pivotal research conducted by Jensen and Meckling in 1976. This study employed agency theory to elucidate the rationale behind businesses crafting precise management incentives,

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considering the delicate balance between managers' self-interest and the best interests of shareholders. The topic of CEO compensation has therefore been of the utmost importance, especially considering business performance. Smith and Watts (1992) found that contractual theories provided more complete solutions than theories based on taxes or signals when they examined the factors influencing policy decisions on dividend, finance, and pay. In his examination of CEO compensation practices, Murphy (1999) primarily delved into three key areas: the amount and composition of CEO remuneration, the correlation between CEO pays and company performance, and the link between CEO compensation sensitivities and subsequent firm performance.

Guo et al. (2014) examined the connection between CEO salaries and risk-taking behavior within bank holding companies. They explored whether CEO compensation in larger banks encourages moral hazard behaviors and investigated the association between executive compensation in the banking sector and business risk-taking both before and after the 2007–2008 financial crisis. Furthermore, Fahlenbrach and Stulz's (2011) research indicated that during banking crises, riskier institutions tend to offer their CEOs more significant incentive compensation. Additionally, managers who receive long-term, equity-based incentives are inclined to steer clear of risky ventures.

Previous research suggests that the relationship between CEO salary and business risk may exhibit industry-specific differences, as different businesses adopt varying executive compensation structures. Early studies by John and John (1993) and John and Qian (2003) have demonstrated that alterations in executive compensation, in response to changes in shareholder value, are influenced by various business risk indicators. John and Qian also pointed out that variations exist in the connection between CEO pay and risk across industries, particularly in the banking and industrial sectors. Additionally, Aggarwal and Samwick (1999) argue that executive compensation packages vary according to the industry in which they are applied.

2.1. HYPOTHESES

H1: Initially, prior studies focused their attention on examining the correlation between compensation and risk within the banking sector. Although the financial sector has certain unique qualities, our hypothesis investigates whether this connection also exists in other industries: examination spanning industries.

H2: The associations between executive compensation and a company's propensity for risk-taking will exhibit variations depending on the specific industry. Subsequent analysis further substantiates the validity of these hypotheses.

3. DATA, VARIABLES AND METHODOLOGY

3.1. DATA

Data from annual reports published by the non-financial listed corporations were gathered for this study in order to evaluate the relationship between business risk and executive salary. Companies that were listed on the PSX between 2011 and 2020 made up the study data sample. We removed financial institutions from our data sample based on past studies. The firms with incomplete annual reports, stock price data, negative equity, and outlier & missing values of variables were eliminated using the stratified random sampling technique, leaving the panel data from the remaining sample of 170 firms for the final analysis. Information on share market prices was also gathered from Pakistan Stock Exchange publications in order to determine a company's market value.

3.2. VARIABLES

3.2.1. DEPENDENT VARIABLE

Systemic risk or business risk (Beta)

Market and revenue stream risk was seen by us as a two-sided corporate risk. Since it can show how sensitive the return on a company's shares is to broad market movements, the systematic risk component of the capital asset pricing model (CAPM) is a tool for measuring market risk. We get information on business stock prices and the KSE-100 market index every day from kscstocks.com, and we also get rates for three months' worth of risk-free T-bills from a State Bank of Pakistan publication. To calculate CAPM, we use the following formula:

$$\mathrm{CAPM} = \mathrm{RF} + \beta(\mathrm{RM} - \mathrm{RF})$$

Where RM denotes the market return for the year (i.e., the KSE-100 index) and RF denotes Pakistan's 3-month risk-free rate, and where CAPM denotes the cost of equity:

$$\beta = \mathrm{COV}\,(\mathrm{RM}, \mathrm{S_i})/\mathrm{VAR}\,(\mathrm{RM})$$

Where VAR(RM) is the market index return's variance, COV(RM,Si) is the market index return's covariance, and is the annual beta between the market index return and the individual stock return. For calculating the return, we used the following formula:

$$\mathrm{R} = (\mathrm{P_t} - \mathrm{P_{t-1}})/\mathrm{P_{t-1}}$$

Where, R is return, P_t is latest value and P_{t-1} is last value.

3.2.2. EXPLANATORY VARIABLE

Compensation *(EX)*

Defined as the natural log of managers pay expressed in thousands of Pakistani rupees

3.2.3. CONTROL VARIABLES

Firm Size (size)
Natural log of total assets expressed in Pakistani rupees, thousands
Market value proxy (TbinQ)
Defined as Total liabilities plus Market value of equity / total assets.
Return on equity (ROE)
Defined as Earing after tax/ total stock holder's equity
Return on assets (ROA)
Defined as Earing before intest and taxes / total assets
Firm age (Fage)
Defined as Log of numbers of years since established
Sales growth (SALG)
Defined as Ratio of sales growth compare with previous year

3.3. METHODOLOGY

This study followed the work of Luo *et al.,* (2022) and Abrokwah *et al,.* (2018). The ordinary least square (OLS) approach was utilized in this study to estimate the variables under investigation. The current study made use of panel data. A well-known statistical method for handling econometric data is panel data estimation. Panel data analysis has become well known among social scientists since it permits the data to include T time periods and N cross-sections. A time series of data from each cross-section is included with panel data, along with a number of different estimation techniques. The number of observations that are now accessible in this situation also takes into account changes over time. If there are the same amount of time observations for each variable in each cross-section of a panel, the panel is said to be balanced.

$$\text{Beta}_{it} = \alpha + \beta_1 \text{EX}_{it} + \beta_2 \text{Fage}_{it} + \beta_3 \text{SALG} + \beta_4 \text{size} + \beta_5 \text{TbinQ} + \beta_6 \text{ROA} + \beta_7 \text{ROE} + \mu_{it} \text{ .....1}$$

4. RESULTS AND DISCUSSIONS

Table 1 shows the descriptive statistics of the study. The oil and gas sector has a maximum mean value of beta 0.28 and also has a maximum mean value of executive remuneration of 13.36 compared with other sectors in the study. The mean of beta and executive remuneration have a variation in different industries. There is also variation in the mean value of other control variables included in the study related to specific sectors. These descriptive statistics prove that different sectors have different structures, so there is a need to investigate them contrarily.

Table 2 shows the correlation analysis of the study. Correlation analysis is performed to test the possibility of multicollinearity of the investigated variables. The criteria for indication of multicollinearity is +/- 0.70. all the value are below the+/- 0.70 criteria. As correlation analysis shows, there is no possibility of multicollinearity between the investigated variables. Based on correlation analysis, this study can use all variables in a single regression equation.

Table 3 shows the regression analysis of the study. Panel 1 shows the regression results of the all sample of the study. Executive remuneration, return on assets, and firm size have positive & significant while firm age & Tbinq have negative and significant impacts on the systematic risk of the non-financial firms listed on the Pakistan Stock Exchange. A positive relationship between executives' remuneration and systematic risk suggests that the more the remuneration of the executives, the firm takes more risk. Also, the positive relationship between firm size and return on assets with systematic risk suggest that firm with more return on assets and big size also take more risk. The negative relationship of firm age with systematic risk suggests that older firms take less risk. The negative relationship of TbinQ with systematic risk indicates that firms with high TbinQ take less risk.

Panel 2 shows the regression results of the oil and gas sectors. Return on assets and firm size have positive & significant while executives' remuneration has a negative effect on the systematic risk of the firm. The positive relationship between firm size and return on assets with systematic risk suggest that firm with more return on assets and big size also take more risk in the oil and gas sector. The negative relationship of executives' remuneration suggests managers with more remuneration take less risk.

Panel 3 shows the regression results of the textile sector. In the textile sector, executive remuneration, return on assets, firm size, and TbinQ have positive & significant while firm age has a negative and significant impact on systematic risk. A positive relationship between executives' remuneration and systematic risk suggests that the more the remuneration of the executives, the firm takes more risk. Also, the positive relationship between firm size and return on assets with systematic risk suggest that firm with more return on assets and big size also take more risk. The negative relationship of firm age with systematic risk suggest that older firms take less risk.

Panel 4 of the regression results displays the food & beverage sector estimation. Firm size has positive & significant while sales growth has a negative impact on systematic risk. The positive relationship between firm size with systematic risk suggests that large-size firms also take more risks. The negative relationship between sales growth and systematic risk indicates that firms with more sales growth take less risk.

Table 1: Study Descriptive Statistics

Sector	All sample					Construction				
Variable	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
Beta	0.09	0.06	0.64	-0.32	0.11	0.12	0.10	0.41	-0.10	0.10
EX	10.01	10.48	16.35	0.00	3.31	10.38	11.12	13.93	0.00	3.10
ROA	0.11	0.10	1.14	-0.60	0.12	0.11	0.08	0.37	-0.07	0.10
ROE	0.03	0.11	7.47	-86.69	2.38	0.08	0.07	0.89	-0.95	0.19
size	15.46	15.25	20.26	12.10	1.45	15.98	16.04	18.50	13.00	1.22
Fage	3.27	3.26	4.22	0.69	0.52	3.09	3.04	4.04	0.69	0.59
TbinQ	1.32	0.92	25.42	0.23	1.45	1.09	0.92	2.97	0.44	0.49
SALG	0.15	0.09	12.58	-1.00	0.65	0.21	0.09	7.98	-1.00	0.72
Sector	oil and gas					Chemical				
Variable	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
Beta	0.28	0.27	0.64	0.01	0.14	0.17	0.13	0.50	-0.05	0.13
EX	13.36	13.47	16.35	9.88	1.71	11.07	11.82	15.65	0.00	3.32
ROA	0.16	0.13	0.51	-0.09	0.12	0.15	0.12	0.70	-0.14	0.14
ROE	0.12	0.21	0.61	-2.10	0.43	0.18	0.14	0.97	-1.28	0.27
SIZE	17.69	17.70	20.26	13.47	1.62	15.75	16.37	18.50	12.16	1.80
AGE	3.14	3.47	4.04	1.39	0.76	3.20	3.22	4.09	1.79	0.54
TbinQ	1.53	1.41	2.97	0.76	0.54	1.45	1.19	4.22	0.60	0.74
SALG	0.08	0.09	0.84	-0.37	0.22	0.21	0.08	10.54	-1.00	1.06
Sector	Personal goods					Food & Beverage				
Variable	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
Beta	0.07	0.03	0.64	-0.12	0.12	0.05	0.04	0.20	-0.32	0.06
EX	9.23	9.83	16.35	0.00	3.81	10.07	10.39	15.39	0.00	2.74
ROA	0.10	0.09	1.14	-0.60	0.11	0.14	0.12	0.63	-0.18	0.13
ROE	0.01	0.09	3.36	-31.37	1.27	0.26	0.14	7.47	-1.38	0.69
SIZE	15.32	15.00	20.26	12.27	1.55	15.20	15.14	17.88	12.10	1.05
AGE	3.24	3.22	4.16	0.69	0.52	3.48	3.43	4.22	2.40	0.40
TbinQ	1.06	0.81	8.97	0.27	0.95	2.12	1.01	25.42	0.23	2.89
SALG	0.12	0.08	12.58	-1.00	0.68	0.16	0.12	5.52	-0.98	0.49

Table 2: Correlation analysis

Probability	BETA	LOGEX	ROA	ROE	SIZE	AGE	TBINQ	SALGR
BETA	1							
LOGEX	0.43***	1.00						
ROA	0.23***	0.15***	1.00					
ROE	0.02	-0.01	0.15***	1.00				
SIZE	0.61***	0.60***	0.19***	-0.02	1.00			
AGE	-0.13***	0.07**	-0.11***	-0.04*	-0.01	1.00		
TBINQ	0.08***	0.19***	0.44***	0.08***	0.13***	0.01	1.00	
SALGR	0.02	0.00	0.13***	0.01	0.01	-0.05*	0.00	1.00

Table 3: Regression analysis

Sector	All sample	Oil & gas	Textile	Food & Beverage	Construction	Chemical
EX	0.004***	-0.034**	0.002**	0.001	0.006**	-0.008**
	(0.000)	(0.013)	(0.001)	(0.001)	(0.002)	(0.004)
ROA	0.118***	0.684***	0.087***	-0.026	0.185	0.036
	(0.021)	(0.167)	(0.031)	(0.037)	(0.140)	(0.105)
ROE	0.000	-0.031	-0.002	-0.006	-0.018	0.013
	(0.000)	(0.029)	(0.002)	(0.006)	(0.057)	(0.054)
size	0.0385***	0.064***	0.047***	0.007*	0.021***	0.057***
	(0.001)	(0.014)	(0.002)	(0.003)	(0.007)	(0.007)
Fage	-0.025***	0.006	-0.020***	0.007	-0.032**	0.030**
	(0.004)	(0.019)	(0.006)	(0.009)	(0.012)	(0.015)
TbinQ	-0.004***	-0.021	0.008**	0.002	0.008	0.017
	(0.001)	(0.027)	(0.00)	(0.001)	(0.020)	(0.013)
SALG	-0.000	0.054	0.000	-0.013*	-0.001	0.004
	(0.003)	(0.050)	(0.004)	(0.007)	(0.009)	(0.007)
C	-0.471***	-0.493***	-0.630***	-0.107*	-0.222*	-0.780***
	(0.028)	(0.163)	(0.040)	(0.058)	(0.114)	(0.097)
R-squared	0.41	0.55	0.53	0.06	0.32	0.53
Adj. R-sq	0.41	0.51	0.53	0.03	0.30	0.50
F-statistic	152.44***	14.25***	106.02***	2.26***	11.17***	19.96***
Dur-Watson	0.64	1.56	0.65	1.03	0.49	1.27

Panel 5 of regression results show the results of the construction industry. Executive remuneration, return on assets, and firm size have positive & significant while firm age has negative and significant impacts on the systematic risk in the construction industry. A positive relationship between executives' remuneration and systematic risk suggests that the more the remuneration of the executives, the firm takes more risk. Also, the positive relationship between firm size and return on assets with systematic risk suggest that firm with more return on assets and big size also take more risk. The negative relationship of firm age with systematic risk suggests that older firms take less risk.

Panel 6 shows the regression results of presents the regression results of the chemical sectors. Firm size and firm age have positive & significant while executives' remuneration has a negative effect on the systematic risk of the firm. The positive relationship between firm size & firm age with systematic risk suggest that old and big firm take more risk in the chemical sector. The negative relationship of executives' remuneration suggests managers with more remuneration take less risk.

5. CONCLUSION

This study investigates the relationship between systematic risk and executive remuneration. For investigation, this study uses the data of 170 non-financial listed firms of the Pakistan Stock Exchange. Further, this study divides the data into the 5 majors listed sectors and explores the relationship between investigated variables. The estimation method used in this study is OLS. Results suggest that executive remuneration effect differently on systematic risk in different sectors of Pakistan. This is because different sectors have different features, so there is a need to investigate them separately. Regression results suggest executive remuneration has a positive & significant effect on systematic risk in the textile and construction sectors, On the other hand,

a negative impact is observed in the oil & gas and chemical sector between executive remuneration and systematic risk. However, an insignificant relationship was observed in the food and beverage sector. Important determinants for systematic risk return on assets, firm size, firm age, and TbinQ.

In the context of Pakistan, this study contributes to the literature. Policymakers can use this study's findings for decisions making.

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