IMPACT OF CEOs PAY DISPARITY ON STABILITY OF BANKS:
Evidence from Pakistan

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This study is carried out to investigate the nature of association between Banks' stability and the Chief Executive Officers (CEOs) pay difference as compared to other executives for a sample of 17 Pakistani commercial banks, over the period of 9 years (2005 to 2013). The study finds that as compared to other executives, CEO pay difference has a significant but negative association with stability of banks performance, i.e., higher pay difference between CEO and other executives induced greater risk practices in banks. Hence, banks with lower stability must try to reduce the compensation gap between the CEO and his executive team, so that safe policies could be implemented.

I. Introduction

Saving is the most important factor for growth and stability of any economy. Savings and economic growth are closely linked to each other as enormous savings enable an economy to walk towards self-sustained prosperity to elevate standards of living in any country. Commercial banks are considered as one of the biggest grids that channelize extra funds (savings) from general public in the form of deposits and provide these funds to those who may utilise the same. Therefore, banks work as a bridge between the customers who face capital deficit and those customers who have surplus capital. The high volume of deposits and equity on the balance sheet of banks reflect confidence between the general public and investor of a particular bank.

During the last three decades, all countries experienced financial meltdown that led to significant losses with the passage of time. The information asymmetries, assets-liability mismatches, excessive financial and operational leverages and less regulated stock markets contributed as a whole to distraction in the financial system [Kindleberger and Aliber (2005), Simkovic (2009)]. These substantial financial losses did hit the world economy badly, but in developing countries it was worst due to shortage of liquidity for financial development, poverty reduction and the economic growth. After gaining experience, all regulatory authorities made different

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kinds of regulations or measures to ensure the stability of financial system. These regulations are implemented to strengthen the overall capital and liquidity of a bank [Haq and Heaney (2012)] because it is morally unjust that government or financial authorities continue to help those who are imprudent or racked up with debt; at the expense of those who have been prudent and responsible.

The organizational structure of any commercial bank constitute a Board of Directors which is elected by its shareholders to supervise the management of Banks' business and affairs with a view to enhance the long-term shareholders value. The Board's responsibility is as one of stewardship. It nominates the CEO who works as a captain of the ship. CEO and his executive team are accountable to implement Board's decisions, to manage business of the bank and safeguard interest of shareholders, depositors and other stakeholders. It is pertinent to mention that the Board of Directors deal with policy making matters but the CEO and his team ensures right operational strategies to meet expectations of the BODs and stakeholders for stable and steady position of the bank.

Investment decisions taken by local or international investors are backed by governance practiced by the institutions. Good governance implants investors' confidence. Corporate governance in banking system is different from other industries because banking industry itself has problems of contagion across financial sector and the entire economy of the country. The degree of opaqueness and other regulatory restrictions imposed by the central banks or government agencies make traditional corporate governance practice and procedures flimsy. Therefore, there is a need to make relevant and industry related regulations for banks to safeguard interest of stakeholders [Levine (2005)].

The role of managerial compensation in banks received more importance after the recent financial meltdown which began in 2007. During the financial crisis (2008 to 2009) only the United States banks had an estimated loss of more than 40 billion dollars.[1] Many empirical studies established the fact that managerial compensation structure has desirable impact on overall stability of industrial firms [Fama and Jensen (1983) and Jensen and Mecling (1976)]. However, the results based on data of industrial firms cannot be used for banking industry, due to the degree of financial leverage, investment dimensions and regulatory restrictions. It is also evident from the existing literature that element of incentive is inherent in compensation structure of bank executives that induce them to take excessive risk [Bai and Elyasiani (2013)].

The impact of CEO compensation and its difference with other executives on stability of banks did not attract adequate consideration in the earlier literature. Most empirical studies focused on factors that influence the pay-inequality and pay-structure of CEO and other executives of the banks. The Bebchuk, et al. (2007) ex-

[1] Federal Deposits Insurance Corporation.

amined the relationship between CEO's pay difference with its key executives and stock return for industrial firms. The authors reported that large pay difference between CEO and his key executives decreased inconsistency in the stock return. Later, Bai and Elyasiani (2013) used CEO's pay inequality in terms of total compensation of the executive team, to measure the impact on stability of banks.

In the existing literature relation between CEO's pay-inequality as compared to other executives and the stability of banks is positive (negative). According to Lazear and Rosen (1981) CEO compensation is the prize money paid to the winner of tournament competition. This prize money is used to motivate participants of the competition, i.e., executives to work hard and become a CEO of the bank. Consequently, more risky policies will be adopted to increase profitability and subsequently there is a chance to win the tournament. Hence, to get prize money (which is not calculated) based on individual's marginal products the larger pay difference will induce them to take more risk and stability to get down in future [Hvide (2002)]. The tournament theory holds that the amount of compensation received by executives of an organization is similar to tournament winnings. Tournament participants are members of the organization and they may ultimately reach the top most position, i.e., the Chief Executive Officer. The prospect of this prized-post sends a powerful signal throughout the organization when someone wins the number one position by his hard work. The emphasis is not on whether an executive deserves this amount of compensation, rather than the focus is on the motivational properties that executive compensation levels brings to those at lower level of the organization.

Contrary, some empirical studies state that there is a positive relationship between CEO's pay inequality and firm's stability because CEO being a winner of tournament applies more safe policy to lock his gain which is unduly higher than other executives in the firm. Resultantly higher pay difference leads to implementation of safe policies and in the end stability goes up. Hence, there is a need to study the relation between CEO's pay difference as compared to other executives and stability of the bank.

In Pakistan, the first major effort was made on March 28, 2002, when the Code of Corporate Governance (the Code) was issued by the SECP.[2] It was subsequently made part of the listing regulations of the three stock exchanges and became applicable to all public listed companies including all banks, except the foreign banks. The commercial banks are integral part of financial sector of Pakistan. The total contribution towards total assets of banks was almost 75 per cent of the financial sector in 2013. At this stage, there are 38 banks including 5 public commercial banks, 4 specialized banks, 7 foreign banks and 22 local private banks from which

[2] Securities and Exchange Commission of Pakistan (SECP) set up in pursuance of the Securities and Exchange Commission of Pakistan Act, 1997 for supervision and regulation of corporate sector, capital markets, insurance companies, non-banking finance companies and private pensions.

5 are fully Islamic banks. The total assets of banking sector, as on 31st December 2013, were Rs.10,486 billion.[3]

The banking sector of Pakistan faced major reforms in the last decade which include the minimum capital requirement, de-regulating interest rates, implementation of prudential regulations and allowing more private direct investment in the banking industry. Resultantly since 2004, the banking industry of Pakistan is continuously growing at a higher pace. There are around 40 transactions of mergers and acquisitions which took place in the last decade. The number of branches is increasing and alternative distribution channels including branchless banking have made this sector more lucrative for private investors. However, higher gains continuously highlights the stability concerns for regulatory authorities.

Although, the code of cooperate governance has been implemented since 2002 but no significance work was undertaken. Reviewing compensation structure of CEO in a bank, it reveals that based on their performance, CEOs get high incentives in shape of bonus, etc., but there is no specific criteria to ascertain the value. The current study intends to establish an empirical evidence for policy makers as CEO's pay inequality does or does not impact the overall stability of banks. A policy statement for regulatory authorities based on findings of this study is recommended. The main objectives of the study are as follows:

a) To examine the impact of CEO's pay inequality/difference as compared to an average pay of other executives on bank's stability.

b) To investigate the influence of capital ratio, total assets and assets concentration on bank's stability.

The rest of the paper is organized as follows: After the introduction in Section, Section II presents the literature review. Methodology and data source is presented in Section III while estimation of results are described in Section IV. Finally, Section V develops the conclusion and results of the study.

II.   Literature Review

This section, briefly covers the past literature, finding relationship between CEO's pays inequality and stability of banks; and then explains contribution of the present study towards the existing published literature. Peter and Wanger (2014) worked on CEOs who are exposed to higher job risk and are paid more than the CEOs enjoying more secure jobs. CEOs experience uneven conditions in the industry and are sometime dismissed, due to their poor performance. Simultaneously, CEOs compensation incorporate the risk of dismissal associated with their job due to overall risk associated with the industry. This finding is certainly important because in the competitive labor markets, job-risk-compensating wage difference occurs, unsurpris-

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[3] The breakup of total assets of different banking groups as on December 2013 is mentioned in Appendix–A.

ingly. This study also rejects that CEOs with low job risk would secure high compensation. The study used hand-collected classification of CEOs turnovers in the Execucomp database of all S&P1500 companies.

Bai and Elyasiani (2013) investigated the relationship between CEO's pay inequality and the risk of banks. The study used Y9C reports database and extracted information of 733 bank holding companies (BHCs) from 1992 to 2008, by employing 2SLS technique for estimation. Findings of the study endorsed that if CEO is paid at par to his position or rank in the bank, the larger contribution in the top executive team makes him more reluctant to take risk. They will implement safe investment policies, and resultantly, the BHCs stability will go up. Contrary, if some variables portion(s) are added to CEO's pay structure, based on his marginal output; CEO with larger pay inequality will follow more risky policies to increase his income and overall the bank's stability will go down. The authors suggested that banks with lower stability scale should apply fixed pay model where CEO's pay would be based on his position and not on his marginal productivity. It will encourage CEOs to implement safe investment policies.

Bebchuk, et al. (2007) studied the importance of CEO amongst the top executives of industrial firms in relation to his ability, degree of power and contribution towards profitability. For the first time, this study used a proxy 'CEO centrality' as a percentage of total compensation received by top 5 executives in an industrial firm by using data from the Compustat's Execu-Comp database for the period 1993 to 2004. The results showed that CEO had a centrality negative and significant relationship with overall stability of particular industrial firms and their accounting profitability.

Ang, et al. (2002) studied as to how the banks compensate their top executives, in relation to the CEOs. The author made two layers of compensation, CEOs of banks and rest of the top executives of the same banks, and concluded that CEO's pay is higher than other executives, due to his level of responsibility, higher qualification, more competency and more impact on firm's value. The higher level of responsibility, capability and credentials require more pay-off than others. Following the conventional model of compensation and a set of 166 US banks during 1993 to 1996, the study found that increase in CEO's pay inequality will reduce the stability of banks and vice a versa.

Lazear and Rosen (1981) examined the CEO's pay inequality as compared to other key executives and introduced a compensation model called the 'tournament model' which is based on individual rank in the firm. The study described that if pay-off to CEOs and executives is based on their marginal contribution toward success then they will certainly adopt more risky polices to increase their share in the overall success and resultantly the overall stability will get down. Further, if pay is based on individual's' rank in the organization rather than their marginal production, then they are risk neutral. This is the reason why risk-averse workers prefer to be paid on the basis of their rank rather than their marginal production.

O'Reilly III, et al. (1988) discussed different psychological and economic factors that can influence the CEO compensation. The study tested both the social and tournament models and using data set of 500 firms concluded that profit and firms' size has least impact on CEOs compensation. Findings of the study rejected the tournament model and found no association between it and the CEOs compensation structure.

Hvide (2002) examined relationship between the reward under tournament model and the risk-taking. The study endorsed that relative performance evaluation (RPE) must be made part of the executive compensation model. The reason behind this theory is that if firms face some common factors that prevail in the whole market (like decrease in demand or increase in import price) the CEO with RPE option will not select more risky policies to increase the marginal output. Further, in optimal compensation model, CEO compensation is linked with firm's relative performance with industry and increase in the profit of other firms. This industry reflects that if CEO is not working efficiently, resultantly, the firm generates less profit as compared to other firms in similar industry. Hence, increase in profit of other firms decrease the earning of CEO that leads to more risk averse polices for banks.

Brown, et al. (1996) explored the managerial incentives data-set of more than 330 growth oriented mutual funds, during the period 1980 to 1991. The study recommended that risk taking preference depends on individual's rank in the organization. If reward of individuals is relatively linked to their performance, then they take some risk to increase their performance. Moreover, it also describes that staff at lower level has more chances to gain as compared to loose from their risky policies and they adopt more risk policies to improve their performance graph. However, the top executive, i.e., CEOs has more chance to loose from risky policies hence they adopt safe policies to increase stability of the firm. CEO is a key person in corporate decision-making than the other executives in the firm therefore, an increase in share of CEO's pay in the top management makes him more risk averse - the result is that, the stability improves.

Coles, et al. (2006) conducted the research on association between CEO's pay performance and the firm risk. The study used the Standard and Poor's Exec-comp database for the period 1992 to 2002. According to its findings, if CEO's pay sensitivity is high then more risky policies will be implemented in the firm, else CEO's pay would be more sensitive in risky firms. CEO will choose more risky investment policies if pay sensitivity is high and accordingly it leads to more investment in research and development but there will be less investment in property, plant, and equipment. As a result, firms construct high financial and operational leverages. For this reason, with more option to increase his (CEO) pay based on his marginal output; this increase would lead to more insolvency risk in banks.

Chen, et al. (2006) explored the impact of option based compensation model and risk level of banks. By using the dataset of 68 commercial banks (1995 to 1998),

the study found an increase in CEO option based wealth and encouraged them to take more risk. The extracted results are inconsistent with risk aversion theory and it validated more incentives to increase the current compensation level to induce banks' executives for taking excessive risk.

Houston and James (1995) studied the CEO compensation in banking industry to promote risk taking? The authors used the Forbes annual survey of executive compensation in their sample which covered the period from 1980 to 1990. The study found that in the banking industry, CEO gets less equity based compensation as compared to the other firms, which results less sensitivity in the pay. CEOs with less sensitivity in compensation due to change in value of shares/options will lead to safe policies. It was further certified that stability of banks is the prime objective of corporate governance to achieve optimal results. Therefore, CEOs must have less equity based compensation structure.

Ehrenberg and Bognanno (1990) explored the tournament compensation model and reported a strong and significant relation between the level and structure of prize and player's performance. The study used the data set of golf digest almanac (1984) and the official 1985 PGA tour media guide (1984), available in 1985. In each case, the data included the 1984 men's information, their rank and their prize money in the tournament. The findings reported that tournament compensation model is more suitable for executives or sales persons whose compensation depends on their output. The study, further suggested that share of total prize money is more elastic in the top rank players, as compared to the lower rank players. Therefore, players at the top level play safe game to gain high prize. Likewise, in any organization persons at higher ranks (like CEO) in the organization, will prefer to get less pay/incentive by following risk averse polices, rather than losing more by opting risk intensive policies. Thus, the organization stability goes up resultantly, by implementing the defensive policies.

After going in detail, through the past empirical work, it can be observed that many efforts were taken to explore relationship between the executive compensation structure and the solvency risk in the industrial firms, but very few research studies were conducted in the banking sector on these parameters. The results extracted from the research work on industrial firms cannot be considered for banks because of divergent growth determinants and the financial leverage. The latest study by Bai and Elyasiani (2013) used two measures of the executive compensation: one is the CEO compensation sensitivity to stock return volatility which is named as 'vega', the second is the percentage of CEO compensation in total compensation of the top executives which is named as 'pay inequality'. However, to the best knowledge of the authors of this work, there is no study available on Pakistan to measure the impact of executives' compensation structure of the banks. Hence, this study has used one measure, (i.e., CEO compensation) in the total compensation of the top executives (pay inequality), to measure the impact of CEO's

pay inequality on stability of banks. Similarly, many studies have used the market beta or standard deviation of share return as primary source to measure the firm's insolvency risk but the studies by Bai and Elyasiani (2013) and Laeven and Levine (2009) used the Z-Score to measure probability of default or distance from insolvency, which is a major concern of depositors, regulatory authorities, and the the government. Again, the authors could not find any previous study on Pakistan that considers the yearly Z-Score as a measure of insolvency risk for banks.

It is claimed that for the first time in Pakistan, this study attempts to fill the aforesaid gaps in literature by intensely exploring the impact of CEO's pay inequality on stability of banks. Further, the study also attempts to use the yearly Z-Score as a primary index to measure and review the stability of Pakistani banking sector by considering 17 major banks which contribute approximately 90 per cent of the total banking sector, over the period of 2005 to 2013.

III. Methodology and Data Sources

1. *Methodology*

In the current study, panel data is used to estimate the degree of association among variables. This kind of data is often considered the best way to handle the complex financial situation. First, the 'common constant method' is used. It is also called the pooled 'OLS method'. In this method all observations are pooled together and OLS regression model is run, neglecting the cross section and time series nature of data implicitly. This study assumes that all coefficients including intercepts are same for all cross sections. The major problem with this model is that it does not distinguish the various cross sections which are in the model. In simple words, by combining all cross sections, this study denies the heterogeneity or individuality that may exist among the cross sections.

For handling this problem, fixed effect method which is also named the 'least square dummy variables (LSDV) estimator', is considered. This method allows the control of unobserved heterogeneity when it is constant over time and correlated with explanatory variables. F-Test is proposed to test whether fixed effects are present in the data or not. For this purpose, OLS is applied by using the above mentioned test and decision is be taken between the fixed effects and the OLS method of estimation. This has the hypothesis that there is no country having fixed effects in the model specification. Similarly, to see the presence of random effects, Breusch-Pagan Lagrange multiplier (LM) test is proposed with null hypothesis where random effects model is more preferred as compared to simple OLS technique. Further, the choice of appropriate model is made on the diagnosis of residuals. If these diagnostics reports the presence of heteroscadastiity, autocorrelation, and cross sectional dependency in the model, then the literature sug-

gest the selection of FGLS model as one of the most suitable remedy to handle these problems. This model helps to control the heteroscadasticity in residuals of the model by reducing standard errors. These reduced standard errors improve reliability of the estimates.

a)   Feasible Generalized Least Square (FGLS)

The FGLS proposed by Parks (1967) is an extension of generalized least square (GLS) to estimate the unknown parameters in a linear regression model. Later, this method was applied when the Heteroscedasticity was present or there was a serial correlation. Due to presence of these econometric diseases, the OLS estimation technique sometimes gives statistical consistency and is unbiased, but it gives inefficient and misleading results. The GLS model was introduced by Alexander Aitken in 1935 where in, all assumption remain intact except the assumption for residuals as assumed in the OLS. GLS estimates are designed to calculate unbiased optimal estimator β in a situation where Heteroscedasticity or serial correlation persists. GLS equation is the same, as in the OLS way of estimation,

$$Y = X\beta + \varepsilon,$$

but with the following exception of

$$\varepsilon \sim N\,(0,\Omega).$$

This assumption of GLS permits heterogeneous variance between the residuals that further extend to allow non-zero co-variance within the residuals terms. Consequently, it can be used to handle both the auto and serial correlation in panel data. However, variance covariance matrix remains constant and cannot be changed through lapse of time. The main issue with GLS way of estimation is that variance, co-variance matrix for GLS (Ω) is unknown. This adopts to use the Feasible Generalized Least Square (FGLS). The process is the same for this method, except that an estimated variance covariance matrix for the residuals ($\hat{\Omega}$) is used in place of unknown Ω. In order to generate $\hat{\Omega}$, OLS is applied first to the model and it provides consistence estimates of β. The residuals are then estimated as:

$$\hat{\varepsilon} = y - X\hat{\beta}$$

Residual values are also consistence and are used to estimate the variance covariance matrix Ω:

$$\hat{\Omega} = \hat{\varepsilon}\,\hat{\varepsilon}'$$

The estimated variance covariance matrix ($\hat{\Omega}$) is then subsituated into the GLS equation to give FGLS estimate:

$$\hat{\beta} = (X' \hat{\Omega}^{-1} X)^{-1} X' \hat{\Omega}^{-1} Y$$

and, $$\text{Var} (\hat{\beta}) = (X' \hat{\Omega}^{-1} X)^{-1}$$

FGLS allows for practical application of GLS which is equivalent to maximum likelihood estimator in its limit. It also possess the asymptotic properties of maximum likelihood. FGLS is preferred over OLS under HAPC (Heteroscedasticity, Autocorrelation, and Panel correlation). However, in a model where classical assumptions of OLS about residuals are met, the least squares shall be more efficient than the FGLS.

2.   The Econometric Model

The current study looks forward to a connection between CEO's pay-difference and stability of banks as measured by Z-score index. Therefore, following Bai and Elyasiani (2013) the proposed model is as follows:

$$BS_{i,t} = \alpha_0 + \alpha_1 \bullet CP_{i,t} + \alpha_2 \bullet TA_{i,t} + \alpha_3 \bullet CR_{i,t} +$$
$$\alpha_4 \bullet LL_{i,t} + \alpha_5 \bullet HHI_{i,t} + \mu_t + \varepsilon_{i,t}$$

3.   Description of Variables

In the present study, insolvency risk is an independent variable while CEO's pay-inequality is used as dependent variable. However, other variables like total assets, capital ratio, assets concentration index (HHI) have been taken as control variables. Details of variables, procedure to measure their values and the expected results are given in Appendix-B.

4.   Criteria for Sample Selection and Data Sources

The Pakistan banking industry comprises of 38 banks with total assets of 10,486 billion (December 2013). From these 38 banks, this study has selected the data set of 17 commercial banks that represents almost 90 per cent of the total assets of banking industry of Pakistan. Thus, to make a homogenous group for estimation and bring robustness in results, final sample of the study includes 17 commercial banks. The data was extracted from the audited financial statements (balance sheets, profit and loss, and accounts detailed supporting notes available in the financial statements) of banks. Further, to make a consistent data series for all variables, this study considers the annual accounting data from the audited reports published at the end of each calendar year.

IV. Estimation of Results

This section describes the estimated results and descriptive statistics, along with the correlation analysis of all variables. Thereafter, findings of regression model and the post estimation of each model were discussed.

1. Descriptive Statistics

Descriptive statistics of all variables indicate that data is strongly balanced with 153 observations for each variable. Further, there is a high variation, especially in banks stability and CEO's pay-difference. The highest variation is in CEO's pay-difference variable which is 15.46 while banks' stability is the second with variation value of 11.96. Total assets and HHI variables are normally distributed as their variations are less as compared to other variables. The lowest standard deviation is in HHI variables with value of 0.19, while total assets are the second lowest with value of 0.42. Similarly, mean value of CEO's pay-difference variable is at top, i.e., 20.43 and banks stability is second with value of 16.39. The mean value of HHI variable is at lowest with value of 3.15. Details of the descriptive statistics of all variables are given in Table 1.

2. Correlation Analysis

Correlation analysis is performed to check the degree of association or uniformity between variables. This analysis further helps to determine the level of multi-collinearity between the independent variables. Further, the correlation analysis is considered as an essential part of primary analysis in the empirical studies. The correlation matrix of this study is given in Table 2.

TABLE 1

Descriptive Statistics of all Variables

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum
BS	153	16.39	11.96	-1.65	43.46
CP	153	20.43	15.46	1.50	96.12
CR	153	9.21	4.00	1.58	21.66
LL	153	4.15	3.00	0.16	15.26
HHI	153	3.15	0.19	2.81	3.74
TA	153	8.37	0.42	7.31	9.23

TABLE 2

Correlation Matrix of all Regression Variables

	BS	CP	CR	LL	HHI	TA
BS	1	-	-	-	-	-
CP	-0.11	1	-	-	-	-
CR	0.11	0.06	1	-	-	-
LL	-0.47	0.21	0.05	1	-	-
HHI	0.06	0.03	-0.04	-0.23	1	-
TA	0.43	0.23	-0.04	0.01	-0.35	1

According to the aforementioned correlation matrix, it is evident that CEO's pay-difference and loan losses have negative association with while total assets, HHI and capital ratio have positive association between banks stability. Contrary, it is also an interesting fact that all variables except the bank stability have positive association with CEO's pay-difference. The loan losses have the highest negative association while total assets have highest positive correlation with banks' stability. The association of capital ratio is negatively related to HHI and total assets; while on the other hand capital ratio has positive association with loan losses, CEO's pay inequality and banks stability. It means that higher value of capital ensures that stability of banks is rising and banks have more equity to bear the loan losses. Moreover, the correlation between loan losses and HHI is negatively related to endorse that increase in diversification leads to reduction in loan losses quantum, while total assets are highly associated, but are negative with HHI. Total assets have positive association with banks stability and the CEO's pay-inequality; which means that increase in total assets ensures increase in banks stability and also leads to high CEO's pay-difference. The aforesaid correlation is taken into account, with regression analysis and further, evaluation is performed to confirm the degree of association among variables.

3. Regression Analysis

The estimation process started from the simple ordinary least square model where most of the results were in line with the theory; but however, when post estimation of the model was performed the results confirmed the validity of heteroscadasticity, autocorrelation of the first order, and cross sectional dependency in this model. Thus, it was concluded that these estimates are biased and inefficient; and to remove these issues from the estimation, fixed effect model was applied. To make the right choice between the OLS and Fixed Effect model, F-Test supported

the Fixed Effect model over OLS, rejecting the null hypothesis showing that there are no fixed effects in the model. Similarly, presence of random effects was also tested, and again, to choose between the OLS and random effect, LM test was used. Findings of the test confirmed that random effect model is more reliable than the OLS test. After these diagnostics, the next step was taken to make selection between the fixed effect and random effect models. For this purpose Hausman Test with null hypothesis was applied, where the random effect was more preferable than the fixed effect model. The test rejected the null hypothesis and favored the fixed effect model where the diagnostics of which confirmed the presence of heteroscadasticity. This led to move towards the remedy being suggested via use of FGLS. In the estimation of FGLS model, it can be written manually that the command using STATA software would remove the HAPC problem in the panel estimation. It is clear that these results do not have the above mentioned problems. Therefore, no post-estimation is required after this estimation technique. Results of regression are analysed using OLS, Fixed effect and FGLS models (Table 3).

Table 3 describe the impact and nature of relation between the dependent variable, i.e., banks stability and proposed independent and control variables-CEO's pay-difference, capital risk, loan losses, HHI and total assets. The results show that CEO's pay-difference has significant but negative relation with banks stability in all models. This finding is similar to, as being anticipated. It also supports the findings of some studies [Bebchuk, et al. (2007), and Lazear and Rosen (1981)]. All variables show approximately the same type of relationship as found in the previous literature. Moreover, it can be seen that as we reach towards the final selection of the model, the significance of variables improves, which shows that problem of heteroscadasticity is being perfectly dealt with the help of FGLS model through reducing standard errors of estimates. In case of Fixed Effect model, due to presence of group-wise heteroscadasity, signs of few variables seem to be inconsistent in their nature and do not support results of the baseline model, i.e., the OLS. However, when this problem is solved, along with the other two (i.e., serial correlation and cross sectional dependence) with the help of FGLS, it can be observed that in most cases, variables resume their (same) nature of relationship, as in the case of OLS.

The results of capital risk and total assets indicate that these variables have positive and significant relation with banks stability which means that an increase in these variables further strengthen the stability of banks. Loan losses have negative but significant relationship with banks stability-as expected, this finding is also uniform [Bai and Elyasiani (2013)]. However the impact of assets concentration (HHI) variable was found negative with insignificant relationship on stability of banks throughout the models which means that assets concentration does not have any prominent role to ensure the overall stability of banks. It is due to the reason that regulatory authority of banking sector in Pakistan (i.e., the State Bank of Pakistan) has clearly defined the exposed limits for all financing institutes that need to comply, before sanctioning any kind of finance to any

type of customer, regardless the industry in which the intending borrower is operating. These exposure limits include single obligor/group limit, related party exposure limit, and the exposure against contingent liabilities.[4] Thus, the asset concentration has no significant impact on stability of banks as financing is restricted to all kinds of borrowers, irrespective the industry in which the intending borrower is running business.

It is evident from the regression results that banks stability has both the negative and significant relation with CEO's pay inequality and loan losses, while it has sig-

TABLE 3

Summarized Results of Estimated Model
Bank Stability is Dependent Variable under all Methods of Estimation

Independent Variables	Pooled OLS	Fixed Effect	FGLS
CEO's pay difference	-0.126	-0.198	-0.076
	(0.013)**	(0.209)	(0.041)**
Capital ratio	0.505	0.589	0.459
	(0.006)***	(0.007)***	(0.000)***
Loan losses	-1.629	-0.356*	-0.724
	(0.000)***	(0.089)	(0.000)***
HHI	9.936	-1.985	0.903
	(0.018)**	(0.476)	(0.361)
Total assets	15.041	2.648	7.686
	(0.000)***	(0.074)**	(0.000)***
Constant	-136.093	-53.978	-46.060
	(0.000)***	(0.001)***	(0.000)***
Observations	153	153	153
R^2	0.4061	-	-
Wooldridge test	32.993	-	No
(Autocorrelation Test)	(0.000)	-	Autocorrelation
White Test	44.66	Modified	No
(Hetreoskadasticity Test)	(0.0012)	Wald Test 344.78, (0.000)	Hetreoskadasticity
Cross sectional correlation (pesaran)	1.872 (0.0612)	-	-
Breusch-Pagan LM	941.94 (0.0000)	Hausman Test (5.09, 0.07)	-
Multi-collinearity Test Mean VIF	1.16	-	-

Note: ***,** and * indicates significance at level 1 per cent, 5 per cent and 10 per cent respectively. p-value in parentheses.

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[4] Prudential Regulations for Corporate/Commercial Banking (Risk Management and Operations), State Bank of Pakistan, BPRD circular No. 6(2014).

nificantly positive relationship with capital risk and total assets. However, assets concentration (HHI) has negative but insignificant relation with the overall stability of banks in the final choice of model, i.e., the FGL.

4.   *Validity of Multivariate Regression Models*

This study plied different post-estimation tests to verify the results of each model and check presence of Multi-collinearity, Autocorrelation, Heteroscedasticity, and Cross Section Dependence in residuals of the applied models. Results of all these tests are presented in Table 1 (last row). In this regard, for multi-collinearity VIF (variance inflation factor) the test was applied, which showed that all variables are free from multi-collinearity and no independent variable in the model is strongly associated with other independent variables. Further the auto/serial correlation has been tested through Wooldridge test which clearly indicate that there is an existence of auto/serial correlation in the data. In addition to this, White Test has been applied to testify the presence of Heteroscedasticity in the panel data which confirm its presence in the residuals of the model. Hence, it proves that results through OLS way of estimation do not meet the assumption of OLS, and therefore, estimates are not reliable. In continuation to the above mentioned findings, this study applies the fixed effect method of estimation. First, the Modified Wald test for group-wise Heteroscedasticity in fixed effect regression model was applied. The results of this test shows that again residuals suffer from the problem of Heteroscedasticity. Similarly, to check the cross sectional independence, Pesaran Test was used which confirmed that Cross sections are not independent CD ⤳ N(0, 1). Hence, all these tests did not support the use of Fixed Effect model.

In this situation where OLS and fixed effect models were not appropriate, this study moved toward the FGLS model which has been proposed as a remedy for removal of the HAPC disease of estimated model. It assumes no auto/serial correlation existence as panels are homoskedastic. The FGLS results are certainly capable to predict the relation without any violation.

V.   **Conclusion and Policy Recommendations**

This section of the study comprises of conclusion and policy recommendations which are based on results and discussion presented in the previous sections of this study. Lastly, the directions for future research are given.

1.   *Conclusion*

It is certainly acknowledged from findings of the study that in Pakistan, CEOs and other executives' pay-structure play a vital role to ensure the long-run stability

of banking institutes. This study involves CEO's pay-difference in terms of average pay of executives in a bank and attempts to find relationship with bank stability. The study also includes the capital ratio, loan loss, HHI and total assets, as control variables in the model.

Following the existing literature, the panel data of 17 commercial banks of Pakistan that contributes over 88 per cent towards the total assets of Pakistani banking sector, was used in December 2013. The core purpose of this study is to measure the overall stability of banking sector and how much it gets affected by CEO's pay inequality/difference, along-with the other control variables. The Feasible Generalized Least Square (FGLS) method of estimation was used to measure the nature of relationship and to quantify significance of all independent variables of the study.

On the basis of the results, the CEO's pay-difference in terms of average executive pay has significant and negative impact on banks stability. As the difference between the CEO's pay and average pay level of other executives of the bank increases, the stability of bank is lowered. The study also highlights that CEO withdraw a sizable amount as bonus which is based on performance of the bank. This factor may encourage the CEO to take excessive risk to magnify performance and in return it positively impacts an overall compensation of the bank; but the ambition to enlarge performance of banks brings higher risk to them. In addition to this it is also concluded that banks with lower stability scale must apply fixed pay model where CEO's pay would be based on his position and not on his marginal productivity. It will encourage CEO's to implement safe investment policies.

This study also describes that increase in capital and total assets have positive and significant impact on overall stability of banks, while increase in loan losses ratio decrease their overall stability. However, loan diversification has insignificant impact on overall stability scale of banks, due to exposure limits that are defined by the State Bank of Pakistan in its prudential regulations.

2.   *Policy Recommendations*

The State Bank of Pakistan is an autonomous body that ensures overall stability of the financial sector of Pakistan. However, the SECP is considered a supreme authority to ensure implementation of the code of corporate governance in all registered legal entities, but in the case of Pakistani banking sector it is almost dealt by the State Bank of Pakistan. Being custodian of the financial sector, the State Bank of Pakistan must exercise its power and introduce law under the code of corporate governance for compensation structure of CEOs and other executives. Hence, this study empirically proves that these factors have significant but negative stability to banks. The desired policy papers must certainly incorporate prerequisites for any bank to grant high amount, other than the fixed pay that merely encourage CEOs to take excessive risk. This study is also helpful for the international regulatory

bodies like Basel Committee which may incorporate the above mentioned variables and draw new guidelines to ensure stability of the financial sector.

3.   *Future Research Directions*

This study consider the lump-sum amount of CEO's pay in-terms of average pay of other executives and regress it with bank stability scale, but in future, the attributes of CEO's pay may be considered separately to investigate the relation between CEO's pay to attribute it with the stability of the bank.
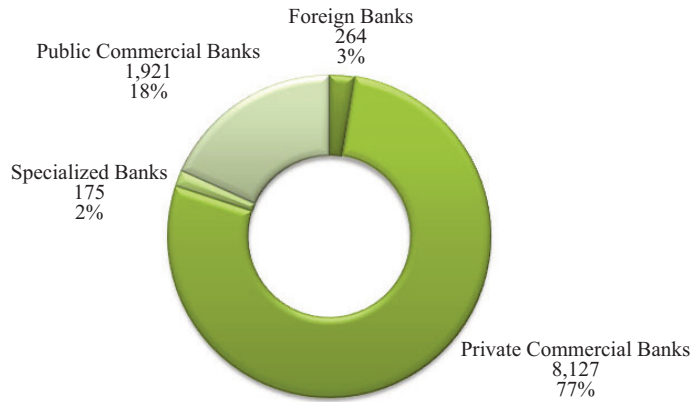
Further, the scope of study is limited to Pakistan only which may be extended to other countries and regions of the world, so that more conclusive results are extracted for regulatory authorities.

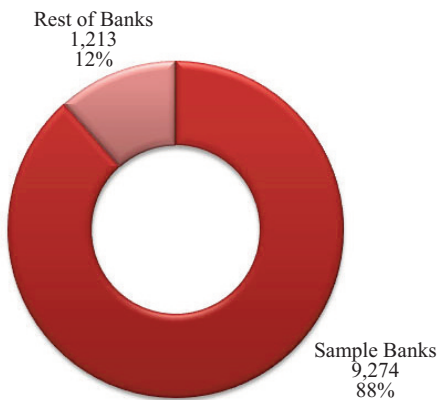*Department of Economics,*
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APPENDIX-A

Foreign Banks
264
3%

Public Commercial Banks
1,921
18%

Specialized Banks
175
2%

Private Commercial Banks
8,127
77%

Breakup Total Assets of Pakistani
Banking Sector (2013)
(amounts in billions)

Rest of Banks
1,213
12%

Sample Banks
9,274
88%

Share of Sample Banks in Overall Total Assets of
Pakistani Banking Sector (2013)
(amounts in billions)
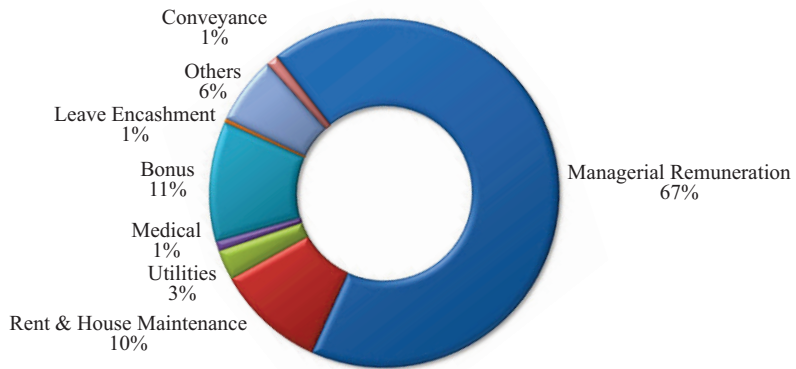
Compensation Breakup of Banks' CEO in Pakistan
(amounts in millions)

Source: Author's efforts. Data extracted from the State Bank of Pakistan, and the Annual reports of banks (2005 to 2013).

APPENDIX-B

Variable	Definition	Sources
Bank Stability /Distance to default–*Dependent variable.*	Bank Stability is stability score of bank i in year t, as measured by Z score. Here stability means as to how much a particular bank has distance to get default. Z score will be used as a proxy to measure the stability of a bank. It will be calculated by the following formula: $$BStability_{i,t} = \frac{(ROA+CAR)}{\sigma(ROA)}$$ whereas, ROA refers to return on assets and CAR refers to capital assets ratio. This formula will measure the probability of insolvency/default of a particular bank at a given time. The higher Z score value will indicate that a particular bank has higher profits to meet its debt obligations. Z score is better than simple standard deviation of stock return because it directly measure the distance from insolvency or in other words it measure the probability of default.	Bai and Elyasiani (2013), and Laeven and Levine (2009).
CEO's pay inequality–*Independent variable.*	CEO's pay inequality is the percentage of CEO annual pay as compared to average pay of an executive of particular bank is likely to be negatively related with stability of bank. The CEO's pay includes managerial compensation, utilities, bonus and other monetary benefits paid during the year. Similarly, this study has obtained average compensation of executives in any particular bank by dividing total compensation paid to the executives of bank with number of executives reported by the bank. Here 'executive' means an employee, other than the chief executive and directors, whose basic salary exceeds five hundred thousand rupees in a financial year. It is mandatory for all listed banks to report this information in their annual reports separately. $$CEOpayinequality_{i,t} = \frac{CEOannualpay}{Averageexecutivepay}$$	Bai and Elyasiani (2013), and Laeven and Levine (2009).

(Continued)

(Continued)

Variable	Definition	Sources
Total assets – *Control variable.*	Total Assets are a natural log of total assets of bank i in year t as declared in annual consolidated balance sheet. It is a proxy for bank size and likely to be positively related with stability of bank because large banks are more organized, well regulated and have expanded product line and features to mitigate risk factor. The large banks have better option & expertise to diversify their business to minimize the firm specific risk but leave the system risk unaffected. $Totalassets_{i,t} = ln(TotalAssets_{i,t})$	Bai and Elyasiani (2013), Chen, et al. (2006), and Demsetz and Strahan (1997).
Capital Ratio – *Control variable.*	Capital Ratio will measure the financial leverage of bank i in year t. It is likely to be positively related to stability of particular bank because high capital ratio means particular bank has sufficient funds to absorb its debt liabilities and losses due to non- performing loan. The high ratio ensures that the bank has less chance to get insolvent. Resultantly, bank stability will go up. $CapitalRatio_{i,t} = \dfrac{TotalEquity}{TotalAssets}$	Bai and Elyasiani (2013), and Chen, et al. (2006).
Loan Losses – *Control variable.*	Loan Losses will be used as a proxy to measure the credit portfolio riskiness of banks i in year t. The State Bank of Pakistan has made it mandatory for all banks to maintain some provision based on the outstanding advances portfolio performance to cover the credit risk. This ratio is likely to be negatively related with overall stability of a bank. A high loan provisions/losses means that advances portfolio is not generating income for the bank and bank is creating provision as per directions of regulatory authorities against non-performing loans. It will be calculated as below: $LoanLossess_{i,t} = \dfrac{LoanProvsions}{TotalAssets}$	Bai and Elyasiani (2013).

(Continued)

(Continued)

Variable	Definition	Sources
Assets concentration – *Control variable.*	Asset Concentration will indicate the degree of diversification and use a proxy for bank I loan concentration in year t. It will be measured through Herfindahl – Hirchman Index (HHI) of bank loans and likely be positively related to stability of bank. More diversification refers to less chance to default and resultantly more stability. Banks finance to different segments of the economy like agriculture, real estate, textile, financial sector and others according to their risk appetite. The regulatory body makes it mandatory for all banks to publish and disclose this information under 'segment by class' note in their annual reports. HHI index is constructed by taking a sum of square of each segment share percentage in single year. $$HHI_{i,t} = \frac{LoanProvsions}{TotalAssets}$$	Bai and Elyasiani (2013).