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Executive compensation: A justified reward or a mis-fortune, an empirical analysis of banks in Pakistan

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ABSTRACT

The relationship between compensation, performance, and risk in a sample of Pakistani banks, using panel data for 20 banks from 2011 to 2021 has been examined in this research. To the best of researcher's knowledge, this is one of the first study examining the relationship between performance, risk and employee compensation using panel data approach in the context of Pakistan and using data for longer period. To examine the influence of employee compensation on the performance and risk of banks, we employed three performance measures: return on assets, return on equity, and operating profits. Risk assessment was conducted using non-performing loans and risk-weighted assets. Findings of study suggest that employee compensation has no significant impact on performance and risk of banks in Pakistan; this means in Pakistan higher employee's compensation does not enable banks to improve their performance or enable banks to take more risk.

Introduction

Historically, the topic of executive compensation has received significant attention from researchers and practitioners. Owing to the wide-ranging impact of decisions related to executive compensation, the issue has been explored from various perspectives and multiple measures have been used by researchers (Talmor and Wallace, 2001). Specifically, whether executives earn their pay has been asked numerous times; however, results have been somewhat inconclusive. Jensen, Murphy (1990b) highlighted a positive linkage between compensation of executives and organizational performance. Husni et al. (2020), also shows the positive linkage between executive compensation and bank performance. The roots of this linkage between pay and performance can be found in the agency theory, which argues that the payment of executives should be aligned and linked with the entity's performance (Gray, 1997). However, empirical explorations have shown diverse and sometimes contradictory results. Some researchers found a significant link between compensation and performance (Mehran, 1995; Hall and Liebman,1997; Kartadjumena and Rodgers, 2019; Thomas et al., 2019), while others reported an insignificant or nonexistent linkage(Finkelstein and Boyd, 1998). Most of these studies used non-financial organizations as there sample.

The context of the banking sector differs from that of traditional organizations (Bhattacharya and Thakor, 1993). This characteristics of banks creates a classic moral hazard problem in the banking sector because the creditors are indifferent to the Bank's risky behavior, unlike traditional organizations, resulting in tendencies of high risk-taking in banks (Houston and James, 1995).

Barro and Barro (1990) was one of the earliest studies about executive compensation in the banking sector. Subsequent studies found positive associations between executive payment and performance (Hubbard and Palia, 1995; Houston and James, 1995). Bliss and Rosen (2000); Matousek and Tzeremes (2016) reported a lack of such positive relationship. It is possible that the structure and manner in which compensation is provided to executives have implications for bank performance and the level of risk executives tend to take.

Saunders et al. (1990) found a positive relationship between the stock ownership of executives and the riskiness of the Bank. A study

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conducted by Boateng et al. (2022) also reports the positive relationship between executive compensation and risk taking behavior of a bank. However, Houston and James (1995) reported that due to the difference in the compensation structure, smaller portion of equity-based compensation, the low probability of taking part in option plans, compensation in the banking sector does not encourage risk-taking. Like pay and performance, the evidence for the association between risk and compensation has also depicted inconsistent results. Studies by Rajgopal and Shevlin (2002) and Tufano (1996) have reported that using equity-based compensation is a vital catalyst in encouraging risk-taking behavior among executives. But Athanasoglou et al. (2008) have found a negative linkage between risk taking behavior of executives and compensation received by executives. Thus, higher risk-taking behavior can be witnessed in the banking sector due to deregulation of industry. Therefore, it is important to structure compensation in such a way that safeguards the interests of all involved parties, minimizes risk, and maximizes performance.

Fortin, Roth, and Goldberg (2010) found that stock options and bonuses encouraged executives' risk-taking behavior. However, executives who received more fixed salaries showed lower levels of risk taking. The inconsistent results evidenced in the literature require clarifications and further in-depth explorations. Moreover, it is also essential to consider difference in cultures because the level of risk-taking behavior changes with cultural and regulatory characteristics of a country(Stathopoulos, Mourouzidou-damtsa, Milidonis, and Stathopoulos, 2017).

Purpose of the study

The main objective of the present study was to conduct empirical research on Pakistani banks to figure out whether executive compensation has an impact on the risk of the banks, and also to investigate whether executive compensation has an impact on the performance of the banks in Pakistan. For this research study, data were collected for year 2011–2021 from 20 banks listed on Pakistan Stock Exchange. To ensure the validity of data; it was collected from banks' official websites and from the World Bank indicator.So far there is limited research to find out the relationship between employee compensation, performance and risk. Filling this gap and adding value to the current body of research the study aims to explore the influence of employee compensation on the bank's performance and risk within banking industry in Pakistani context.The study used secondary panel data for 20 banks from (2011–2021). For bank performance three models were used with various bank performance proxies, including return on assets, return on equity, and operating profits, along with two models were used for risk using different proxies of bank risk, including non-performing loans and risk-weighted assets. To examine the impact of executive compensation on bank performance and risk random effect model was used. The results from all the three performance models, and two risk models, showed consistent results that employee compensation has no significant impact on performance and risk of banks in Pakistan; this means in Pakistan higher employee's compensation does not enable banks to improve their performance or enable banks to take more risk. This study aims to contribute in literature on emerging markets which is under-researched. It unveils the fact that specifies a bank's performance and risk-taking behavior are not particularly affected by the employee compensation. Moreover it also reveals that cash-based compensation for executives might not be the best proxy for compensation that translates into bank performance. Along with that it divulges that executive compensation may take some time to translate into better performance of banks, and the effect might not be visible immediately, thus in future it can be test with 2–3 years lagged variables.

Research questions

Considering the research objectives, this study seeks to answer two key questions: first, whether executive compensation impacts the performance of banks within Pakistan? Second, whether executive compensation has an impact on the risk behavior of banks within Pakistan?

This study aims to empirically test the aforementioned relationships so that the direction and strength of the relationship between executive compensation, performance, and bank risk can be reported with their statistical significance. Unfortunately, in Pakistan, no such study exists that examines executive compensation and its link with performance and bank risk. The closest exploration is by Xiang et al. (2022) and Sheikh, Shah, and Akbar (2017), who analyzed the impact of firm performance and corporate governance on CEO compensation. Thus considering the fact that there is a limited research in the context of compensation, risk and performance, the paper shed light on how the executive compensation will impact the risk and performance of a bank in the Pakistani context. Therefore, the present study would contribute to the existing literature and aim to resolve the inconsistent results reported by the past studies done in other countries.

Literature review

Over the course of previous decades, there has been an ongoing debate among academicians and practitioners about the issue of executive compensation. While the press and the public have raised concerns about the mammoth size of the compensation given to CEO's and other executives, academicians such as Jensen and Murphy (1990a) have argued that it is not about the amount that is paid but rather the structure and manner in which it is paid, that is more important. To truly understand this academic debate, it is essential to recognize the roots of executive compensation and explore its significance for an organization. This can be done by utilizing the lens of agency theory.

Agency theory

The emphasis of the agency theory is on indicating and resolving issues that result from the conflict of interest between shareholders and the executives of an organization. Particularly, it is focused on the techniques and tools that can be used to minimize the adverse effects of these conflicts (Kosnik and Shapiro, 1997).

The theory states that there is a principal-agent relationship between the shareholders (principal) and the executives (agent) of an organization, whereby the executives are entrusted to act in the best interests of the shareholders. It is important to highlight that the agency theory assumes that the interests of the executives might differ from the interest of the shareholders, thus creating a conflict of interest between the agent and principal (Tosi et al., 2000). Executives normally prefer their own interests if they have to choose in-between their interest and shareholders interest. The negative outcome or the losses that are being created resultantly are defined as the agency cost (Kroll et al., 1990; Tuan et al., 2019).

There are numerous reasons why the shareholders of an organization face difficulty in reducing these agency costs, such as information asymmetry, which favors executives, and lack of close supervision because of physical absence of shareholders. In such a case, it is important to ensure, through some tool or technique that the executives do not act against the interest of the shareholders. This is done through a contract between the two parties, which outlines the main outcomes to be achieved, and the compensation that will be provided for the achievement of these principal desired objectives, thus providing a much-needed monitoring and compensation mechanism (Jensen and Meckling, 1979; Rojikinnor et al., 2022).

Considering the information asymmetry and the lack of direct control on the agents, this type of compensation arrangement becomes the next best alternative for reducing agency costs and improving performance because it encourages self-monitoring by the agents (Henderson and Fredrickson, 1996). Therefore, Bloom and Milkovich (1998) argued that incentive-based compensation is an appropriate solution to issues

created by the agency problem. Furthermore, this quest for an optimal contract between the executives and shareholders is important because the actions of executives not only affect organizational stakeholders but also can impact the stability of the overall economy as depicted by the 2008 financial crises (Luo, 2015).

Agency theory has been widely used by researchers to explore the notion of executive compensation and its link with performance (Khursheed and Sheikh, 2022; Olaniyi et al., 2022). Nevertheless, the existence of pay for performance contract is rooted in the agency theory, which also suggests that such contracts should result in enhanced performance levels of an organization (Gerhart et al., 2009).

Executive compensation and performance

The compensation of its employees is one of the highest costs that are incurred by an organization, and executive compensation is a hefty part of its (Gerhart et al., 2009). However, it is what the organization gets in return from the employees and executives who help to make it successful and escalate its financial and non-financial performance. The question of whether the executives earn their compensation has been explored by previous researchers; however, the results are still mixed and inconclusive, Rodrigo Guerrero (2022) also studied it.

The relationship between compensation and performance was first explored in the context of industrial organizations and later extended to financial institutions (Matousekand Tzeremes, 2016). It is important to consider financial institutions, more specifically banks, in this analysis because of their systemic significance for the economy and the usage of public money to bail them out if they fail(Yu and Luo, 2015; Marshall and Rochon, 2019). Due to the wide-ranging impact of decisions related to executive compensation, the issue has been explored by different authors from diverse branches of management. Consequently, this has resulted in the use of numerous different perspectives and performance metrics, which was also studied by Adu et al. (2022).

Coughlan and Schmidt (1985)found that changes in the compensation of executives affected sales growth and stock market performance. Moreover, Jensen and Murphy (1990a) further explained that the focus should not be on the amount that is paid but rather on the structure of compensation. Taking into account these arguments, Kaplan (1994) conducted a regression analysis to analyze the impact of changes in yearly compensation on various performance measures in the context of Japanese organizations. It was found that there is a positive association between executive compensation and performance. Similarly, Mehran (1995) found that executive compensation considerably explains the changes in the performance of organizations. This study considered the return on assets and Tobin's Q as the dependent variables, and the analysis was conducted in the context of manufacturing firms. Mehran (1995) further explained that the structure of executive compensation is a vital determinant of financial performance of firms.

Considering these results, researchers subsequently explored the relationship in diverse contexts. One of such study was conducted by Brunello et al. (2001), who took Italian companies as their sample. The results of the study signified a positive association between executive compensation and the profit level of the company. Study conducted by Omotola (2023) and Ahamad F (2022) also supports the fact that CEO compensation has a positive and significant influence on bank performance. Similarly, Mitsudone et al. (2008) conducted their analysis in the context of the Japanese and US organizations and found executive compensation to positively influence immediate performance.

While all these studies considered manufacturing or industrial companies as their sample, Barro and Barro (1990) were first to study executive compensation in the context of the banking sector. The study considered American commercial banks, and the analysis revealed that growth in the compensation of executives positively associated with bank earnings and returns on the bank's shares; therefore, an increase in the performance of the bank would result in an increase in the compensation of the executives. However, they further revealed that, the size of the financial institution also has a considerable impact on the level of compensation that is received by the executives. On the other hand, Crawford et al. (1995) focused on studying the sensitivity of the performance to executives compensation during the period of deregulation. The authors found that during that period, the sensitivity of the link between compensation and performance was increasing.

Most of these initial studies about the banking sector were focused on discerning the linkage between compensation and performance. However, some authors focused on exploring the structure of compensation, which was articulated to be more important by Barro and Barro (1990). Consequently, Houston and James (1995) focused on examining the main determinants of the compensation paid to executives by exploring the elements of cash compensation as well as shareholdings given to executives. The results of the study highlighted that executive compensation, both cash and share-based, has a positive association with performance. However, in this case, shareholder's wealth was taken as the performance metric. Houston and James (1995) further revealed that the cash compensation that is disbursed to bank executives is significantly sensitive to the performance of the bank on the stock market, therefore providing evidence about the linkage of individual components of executive compensation with bank performance. This analysis was conducted on the data of over 2000 executives from 1295 companies. The analysis further revealed that compensation payments of executives did not change much from one year to the other, thus exhibiting low variability. The authors argue that the incentive for increasing performance comes from the ownership of shares; therefore, the structure of compensation ties the level of compensation with `the levels of performance (Jensen and Murphy, 1990b).

In a study conducted by Barro and Barro (1990), it was discovered that if the context is slightly altered, say in time of mergers and acquisitions, the compensation of executives increased even though the value for shareholders was falling. Bliss and Rosen (2000) explained that as banks acquire or merge with other banks, the size of the entity increases, which has a positive influence on the compensation of executives, even if the performance metrics are not at the desired level.

Building on the work of Crawford et al. (1995) about the sensitivity of the relationship between compensation and performance, John and Qian (2003) reported that the compensation for performance sensitivity is high when the regulations are low, and as regulations increase, the sensitivity of the relationship decreases. This corroborates the findings of Crawford et al. (1995), who found that the sensitivity increased in the period of bank deregulation in the US. However, John and Qian (2003) further add that as the size and the debt ratio increased, the compensation and performance sensitivity decreased. Furthermore, due to the fact that they included both banks and manufacturing companies in their sample, they were able to conclude that the sensitivity is lower for banks as compared to industrial organizations. A similar study was also conducted by John et al. (2010), who analyzed a sample of holding companies and discovered that as the leverage ratio increases, it results in a decrease in the sensitivity of executive compensation to performance. Furthermore, the results also showed that as the intensity of monitoring in banks increases, the sensitivity of the executive compensation to performance also increases.

In a more recent exploration into the relationship between executive compensation and performance in financial institutions, Cuñat and Guadalupe (2009) found that there is a positive linkage between executive compensation and performance if shareholder value is taken as the measure of performance. Another study conducted by Umar and Gan (2022), particularly in Asia specific region figures out that the firm's performance is positively associated to the compensation paid to the CEO of the firm. Similarly, Matousek and Tzeremes (2016) found that high levels of compensation and bonuses are not strongly linked with higher bank efficiency levels, thereby suggesting weakness in the observed relationship between executive compensation and performance.

The overall evidence for this relationship between compensation and performance is quite conflicting. For instance, while Crespí et al.

(2003) found a positive association between the two, Ergun and Russel (2002) failed to find a statistically significant relationship. Likewise Aslam et al. (2019) also failed to find the positive association between compensation and performance of a bank. Furthermore, Kato and Long (2006) and Kubo (2005) tested whether CEO compensation had an impact on company performance in the context of Japan. The results revealed that the cash compensation of executives was significantly affected by the accounting performance of an organization. Based on the above stated research finding H1 was developed as:

H_1. : There is a significant impact of executive compensation on bank performance.

Executive compensation and risk

The concern for excessive risk-taking by managers has emerged as a point of debate in recent years, especially after the subprime-mortgage crises. Consequently, it is important to explore the relationship between executive compensation and the level of risk undertaken by them.

Executive compensation is one of the tools that can be used to manage principal-agent relationships in banks (Walsh and Seward, 1990), however, the composition and structure of compensation have the potential to create problems concerning risk taking behavior of executives. At the most basic level, the compensation of executives can be divided into fixed and performance-based components, both of which have vital functions. The fixed part of the compensation helps to safeguard the executives against the factors that are not in their control, while the performance-based component helps to motivate the executives to achieve the targets desired by the shareholders (Gray and Cannella, 1997), if the compensation is based purely on performance, it increases the risk that is borne by the executives (Sloan, 1993; Ahmed et al., 2022).

Therefore, it is deemed necessary to structure compensation in a way, which safeguards both the rights of the enterprise as well as the executives. One of the most common tools for performance-based components, used by financial and non-financial organizations alike, is equity-based compensation through options and shares. However, Rajgopal and Shevlin (2002) suggest that aligning the interests of the executives with the objectives of the shareholders through equity-based compensation encourages risk-taking behavior of executives. While these explorations have largely focused on non-financial organizations (Pathan et al., 2022), it can be argued that this risk-taking behavior might cause more problems in the financial industry.

The context of the banking sector differs from that of traditional organizations (Bhattacharya and Thakor, 1993). Financial institutions perform services that convert liabilities into assets and are restricted by a reserve requirement that puts brakes on growth. These liabilities are deposits they receive from their clients, and assets are loans they provide. Thus credit and leverage are extremely important for banks (Diamond and Dybvig, 1983). Secondly, banks enjoy guarantees from the state either through deposit insurance, emergency capital, or even bailouts in the case of bank runs (Bhattacharya and Thakor, 1993).

Consider a manufacturing organization, which is not highly leveraged and has agreed upon dates for the return of its debts. Even in this case, a conflict would exist between the shareholders and lenders of the company because of diverging preferences (Smith and Warner, 1979). Due to the presence of relatively high leverage in financial institutions, this conflict of interest is potentially exacerbated(Tung, 2011). Unlike traditional organizations, lenders to financial institutions(depositors) do not bargain for constraints on risky behavior because they are safeguarded through deposit insurance (Tung, 2009).

Therefore, the overall value of this guarantee by the state increases when leveraging increases banks (Bebchuk and Spamann, 2009). In such a case, executives are geared towards actions and strategies which are highly risky so that high returns can be earned at the expense of the taxpayers and creditors (Bhattacharya and Thakor, 1993). This creates a classic moral hazard problem in the banking sector because the creditors are indifferent to the bank's risky behavior, unlike creditors of traditional organizations, thereby resulting in relatively high risk-taking initiatives by managers of banks (Houston and James, 1995). In the presence of such moral hazard, the design and structure of executive compensation became more important in banks to prevent crises such as the sub-prime mortgage crisis in 2007.

Earlier literature on the phenomenon has focused on the exploration of the extent to which some compensation structures promote excessive risk-taking behavior. Like Zelenyuk and Faff (2022) figured out that differentiation between types of CEO pay incentives proposes that bonus and option awards plays a major role in contribution to systemtic risk. Agrawal and Mandelker (1987), in their study, found that managers who had large options and shareholdings were more likely to undertake risk-increasing strategies. Saunder et al. (1990)analyzed the link between bank riskiness and individual elements of executive compensation. They measured risk as the variance in share returns or leverage of the bank. Results of the study highlighted a significantly positive relationship between executive stock ownership and bank risk. Similarly, DeFusco et al. (1990) highlight that as soon as executive stock option plans are publicized, the variance in share returns starts to increase, and thereby suggesting a positive relationship between equity-based compensation and risk. Moreover, it was discovered that executives who have a higher sensitivity of wealth to stock volatility took on more risk-taking behavior. This risk-taking behavior had a positive impact on compensation structures which have higher levels of sensitivity related to stock volatility. This is corroborated by Fahlevi et al. (2022), who found a negative relationship between the risk of the bank and the level of salary and compensation received by the executives.

However, Mullins (1991) explained that it is essential to control for potential factors which might influence this relationship, such as the size of the bank, which Saunder et al. (1990)failed to do, thereby casting doubts about the accuracy of their findings. It is important to note that these studies focused on one particular tool of compensation; thereby, the inferences made about the overall relationship of compensation with risk might not be generalizable (Kole, 1991).

The authors also highlight that compensation in the form of stock and options has a positive relationship with bank risk (Saunders et al., 1990). Chen et al. (2006), in their examination, found that after the deregulation in the banking sector, the usage of equity-based compensation increased, which simultaneously induced greater risk-taking behavior during the latter part of the 90 s. In their study, Chen et al. (2006), did not limit themselves to one measure of risk but rather considered multiple operationalizations, i.e., standard deviation of share returns, systematic risk, interest rate risk, and idiosyncratic risk.

Sierra et al. (2006) applied a simultaneous equation model to explore association between compensation, performance, and risk. The authors found that a higher level of compensation is linked with a higher return on assets; however, a higher level of executive compensation is also linked with a high standard deviation of return on assets. In more recent years, the sub-prime mortgage crisis of 2007 has re-ignited the interest in this phenomenon. The authors are subsequently exploring the links between executive compensation of banks executives and the financial crisis. In this context, Fortin et al. (2010)found that the executives of holding companies who were awarded greater bonuses and stock options displayed greater risk-taking behavior prior to the financial crisis of 2007. Fortin et al. (2010)further add that the executives who received more fixed salaries their banks experienced lower levels of risk.

However, Cheng et al. (2010) found that prior to the crisis, specifically from 1992 to 2008, the financial institutions which had the most residual compensation also displayed a higher level of beta and higher variation in returns. In this context, the authors define residual compensation as the average remuneration for top five executives controlled for the size of the institution and dynamics of the industry. On the other hand, Fahlenbrach and Stulz (2011)attempted to understand

the link between bank performance during crisis, risk, and different components of the executive compensation prior to the crisis. These authors did not find significant linkage between equity incentives given to managers in 2006 and subsequent bank performance in 2007. However, Fahlenbrach and Stulz (2011) also found that banks that had a higher ratio of compensation to salary did not perform badly in 2006. The findings of the study are conflicting because bank executives were not found to reduce equity investments of their banks prior to the crisis, which is against the mainstream belief that executives choose to focus on short-term performance.

Overall, the literature on the subject depicts mixed and inconsistent results, which require further clarifications and in-depth explorations. Previous authors have not distinguished between normal risk and excessive risk; and have based their analyses on somewhat limited samples in the context of mainstream countries such as the US. Therefore, there is a need for in-depth studies which aim to figure out the association between executive compensation and risk of banks. In this case, explorations that consider altered contexts such as changing national and regulatory environments would enrich the already available information on the phenomenon. Based on the aforementioned research finding H2 was proposed as:

H_2. : There is a significant impact of executive compensation on bank risk.

Methodology

This study used panel data of 20 listed commercial banks for 11 years from 2011 to 2021 to analyze the impact of executive compensation on bank performance and bank risk for Pakistan. We estimated the three models for bank performance using various bank performance proxies, including return on assets, return on equity, and operating profits. While we estimated two additional models for risk using different proxies of bank risk, including non-performing loans and risk-weighted assets.

Outcome variables

To investigate the impact of executive compensation on performance and risk, different measures have been used. To measure the performance of banks, accounting-based measures used are namely, return on assets, return on equity, and operating profit.

Return on assets measures the net income produced by total assets to capture how efficiently a bank manages its assets to produce profits during a particular time (Mehran, 2005). We measure return on assets using the following:

$$ROA_{it} = \frac{Net\ profits_{it}}{Total\ assets_{it}} * 100$$

Return on equity (ROE) measures the net income produced by total equity to capture how efficiently a bank manages its equity to produce profits during a particular time (Sibel Yilmaz and Turkmen, 2012). We measure return on equity using the following:

$$ROE_{it} = \frac{Net\ profits_{it}}{Total\ equity_{it}} * 100$$

Operating profit is a profitability ratio that reflects the percentage of profit a company produces from its operations before tax and interest expense(Sibel Yilmaz and Turkmen, 2012). We measure operating profit as a ratio of total assets using the following:

$$Operating\ profits_{it} = \frac{Net\ profits_{it} + \text{Interest expenses}_{it} + \text{Taxes}_{it}}{Total\ assets_{it}} * 100$$

To measure banks' risk, measures that have been used are non-performing loans and risk-weighted assets (Williams, 2016). Risk-weighted assets are the capital that a bank should hold to cover unexpected losses arising out of inherent risk. In contrast, the non-performing loans are the loans on which the borrower is in default because they have not made the scheduled payments for a specified period. The risk-weighted assets are an essential measure of risk because not only do they provide a standard measure of risk, but they also allow us to determine whether the capital that is allocated to different assets classes resonates with the associated risk or not. We measure risk weighted assets as a ratio of total assets.

$$Riskweightedasset_{it} = \frac{\frac{Tier1capital_{it} + Tier2capital_{it}}{Capitaladequcyratio_{it}}}{Totalassets_{it}} * 100$$

A non-performing loan (NPL) is when borrower either does not pay interest or principal for a set amount of days. The amount of non-performing loans to banks is measure of assets quality, which differs from bank to bank. Non-performing loans are another important measure that may have an adverse impact on the bank's efficiency because the entity will invest effort and funding into the recovery of these loans (Abd Karim et al., 2010). We calculated the non-performing loan as a ratio of total assets.

$$NPL_{it} = \frac{\text{Non} - \text{performing loans}_{it}}{Totalassets_{it}}$$

Variable of interest

The primary variable of interest in our independent variables is the executive compensations as a ratio total asset. The total compensation of executives is normally divided into two main categories, i.e., cash-based and non-cash-based compensation. Cash-based compensation consists of salary, payment for utilities, medical benefits, pension, and other bonuses. On the other hand, the non-cash-based category consists of compensation such as equity options, insurance, subscriptions, funds, rent, and other incentives, given to executives(Raithatha and Komera, 2016). In the case of this study, we are extracting information from the annual reports of banks, which provides a ratio of a lump sum figure of executive compensation in comparison to total assets.

$$Compen\ sation_{it} = \frac{\text{Cash bonus rewards}_{it} + Benefitplanscontribution_{it} + Rentandhousemaintenance_{it} + \text{Utilities}_{it} + \text{medical}_{it} + \text{travel}_{it}}{Totalassets_{it}}$$

Control variables

We control for other independent variables at a bank level and macroeconomic level as they may have a direct or indirect impact on the link between executive compensation, performance, and risk. These control variables are divided into two main categories, i.e., macro and micro variables. The micro-level bank-specific variables included the experience of the chief executive officer, total bank branches, board independence, and total assets. In addition, the Karachi stock exchange index, GDP growth rate, and Kibor (Karachi Inter Bank offer Rate) rate are the macro level variables.

Empirical estimation

To estimate the impact of compensation on banks' performance and risk, we estimated three models for bank's performance using various proxies of performance and two models for risk with various proxies. The following models have been estimated using the fixed-effect model, which are:

$$\begin{aligned}(ROA)_{it} = {} & \beta_0 + \beta_1(compensationratio)_{it} + \beta_2(bankbranches)_{it} \\ & + \beta_3(\text{CEOexperience})_{it} + \beta_4(\text{totalassets})_{it} \\ & + \beta_5(\text{boardindependence})_{it} + \beta_6(\text{Kiborrate})_t \\ & + \beta_7(\text{GDPgrowthrate})_t + \beta_8(KSEindex)_t + \mu_{it}\end{aligned} \quad (1)$$

Equation 1 estimated the relationship between return on assets$(ROA)_{it}$ for bank i and time t with total compensation paid to

executives as a ratio of total assets for bank i and time t, the total number of bank branches for bank i and time t, chief executive officer's years of experience for bank i and time t, total assets of bank i and time t, board independence of bank i and time t, Kibor rate at time t, GDP growth rate at time t and Karachi stock exchange index at time t. β_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8 are coefficients to be estimated and μ_{it} is the independently identically distributed error term.

$$(ROE)_{it} = \alpha_0 + \alpha_1(compensationratio)_{it} + \alpha_2(bankbranches)_{it} + \alpha_3(\text{CEOexperience})_{it} + \alpha_4(\text{totalassets})_{it} + \alpha_5(\text{boardindependence})_{it} + \alpha_6(\text{Kiborrate})_t + \alpha_7(\text{GDPgrowthrate})_t + \alpha_8(KSEindex)_t + \mu_{it} \quad (2)$$

Equation 2 estimated the relationship between return on equity $(ROE)_{it}$ for bank i and time t with total compensation paid to executives as a ratio of total assets for bank i and time t, the total number of bank branches for bank i and time t, chief executive officer's years of experience for bank i and time t, total assets of bank i and time t, board independence of bank i and time t, Kibor rate at time t, GDP growth rate at time t and Karachi stock exchange index at time t. "α_0, α_1, α_2, α_3, α_4, α_5, α_6, α_7, α_8" are coefficients to be estimated and $\mu_{it}$is the independently identically distributed error term.

$$(Operatingprofits)_{it} = \gamma_0 + \gamma_1(compensationratio)_{it} + \gamma_2(bankbranches)_{it} + \gamma_3(\text{CEOexperience})_{it} + \gamma_4(\text{totalassets})_{it} + \gamma_5(\text{boardindependence})_{it} + \gamma_6(\text{Kiborrate})_t + \gamma_7(\text{GDPgrowthrate})_t + \gamma_8(KSEindex)_t + \mu_{it} \quad (3)$$

Equation 3 estimated the relationship between operating profits as a ratio of total assets $(Operatingprofits)_{it}$ for bank i and time t with total compensation paid to executives as a ratio of total assets for bank i and time t, the total number of bank branches for bank i and time t, chief executive officer's years of experience for bank i and time t, total assets of bank i and time t, board independence of bank i and time t, Kibor rate at time t, GDP growth rate at time t and Karachi stock exchange index at time t. "γ_0, γ_1, γ_2, γ_3, γ_4, γ_5, γ_6, γ_7, γ_8" are coefficients to be estimated and $\mu_{it}$is the independently identically distributed error term.

$$(RWA)_{it} = \delta_0 + \delta_1(compensationratio)_{it} + \delta_2(bankbranches)_{it} + \delta_3(\text{CEOexperience})_{it} + \delta_4(\text{totalassets})_{it} + \delta_5(\text{boardindependence})_{it} + \delta_6(\text{Kiborrate})_t + \delta_7(\text{GDPgrowthrate})_t + \delta_8(KSEindex)_t + \mu_{it} \quad (4)$$

Equation 4 estimated the relationship between risk weighted assets as a ratio of total assets $(RWA)_{it}$ for bank i and time t with total compensation paid to executives as a ratio of total assets for bank i and time t, the total number of bank branches for bank i and time t, chief executive officer's years of experience for bank i and time t, total assets of bank i and time t, board independence of bank i and time t, Kibor rate at time t, GDP growth rate at time t and Karachi stock exchange index at time t. "δ_0, δ_1, δ_2, δ_3, δ_4, δ_5, δ_6, δ_7, δ_8" are coefficients to be estimated and $\mu_{it}$is the independently identically distributed error term.

$$(NPL)_{it} = \lambda_0 + \lambda_1(compensationratio)_{it} + \lambda_2(bankbranches)_{it} + \lambda_3(\text{CEOexperience})_{it} + \lambda_4(\text{totalassets})_{it} + \lambda_5(\text{boardindependence})_{it} + \lambda_6(\text{Kiborrate})_t + \lambda_7(\text{GDPgrowthrate})_t + \lambda_8(KSEindex)_t + \mu_{it} \quad (5)$$

Equation 5 estimated the relationship between non-performing loans as a ratio of total assets $(NPL)_{it}$ for bank i and time t with total compensation paid to executives as a ratio of total assets for bank i and time t, the total number of bank branches for bank i and time t, chief executive officer's years of experience for bank i and time t, total assets of bank i and time t, board independence of bank i and time t, Kibor rate at time t, GDP growth rate at time t and Karachi stock exchange index at time t. "λ_0, λ_1, λ_2, λ_3, λ_4, λ_5, λ_6, λ_7, λ_8" are coefficients to be estimated and $\mu_{it}$is the independently identically distributed error term.

Table 1
Banks listed on Pakistan Stock Exchange.

Banks listed on Pakistan Stock Exchange
Allied Bank Limited
Askari Bank Limited
Bank Al-Falah Limited
Bank Al-Habib Limited
Bank of Khyber Limited
Bank of Punjab Limited
Bank Islami Pakistan Limited
Faysal Bank Limited
Habib Bank Limited
Habib Metropolitan Bank Limited
JS Bank Limited
MCB Bank Limited
Meezan Bank Limited
National Bank of Pakistan
Samba Bank Limited
Silk bank Limited
Soneri Bank Limited
Standard Chartered Bank Limited
Summit Bank Limited
United Bank Limited

Note: The banks listed in the table above are banks which are listed at Pakistan Stock Exchange and are considered for analysis in this paper.

The equations have been estimated using the fixed effects model, which is an appropriate choice for panel data.[1] In the equations stated above, we used log values for the number of the bank branches, CEO experience years, total assets, and board independence to normalize the data.

Our robustness section of results also presents results using the OLS model as an estimation strategy. We also estimated models using the lagged values of the executive compensation.

Data

For our empirical analysis, we used secondary panel data for 20 banks from 2011 to 2021 by using two different datasets. First, we extracted the bank-level information from official annual bank statements listed on their official websites. These annual statements are used and verified by external auditors and could be relied on for the analysis. Moreover, banks' stock prices and performance was required; we only considered banks listed on the stock exchange. After gathering the information, we created a balanced panel of data for 20 banks for 11 years. Second, we complemented our data with World Development Indicator (https://databank.worldbank.org), the World Bank, which provides extensive information on macro-economic, financial, and other country-level indicators for many countries in the world. Table 1.

Data description

Table 2, below presents a data description of our main variables for 20 banks from 2011 to 2021.[2] On average, the return on assets is 0.73, which means banks have a return on assets of 0.73% with a standard deviation of 1.47. The lowest return value on assets is negative, 9%, while the maximum value of return on assets is 3.3%. We also observe that, on average, the return on equity is 7.3% and a standard deviation

[1] This was selected based on our Hausman test result which indicates that fixed effect is a preferred choice of model estimation.

[2] Due to missing values for some of the variables we have fewer observations for each variable. We expected it to be 220 but there are fewer values for some variables.

Table 2
Data Descriptive.

	N	Mean	Standard Deviation	Minimum value	Maximum value
	(1)	(1)	(3)	(4)	(5)
ROA	219	0.73	1.47	-9	3.3
ROE	219	7.39	32.59	-317.9	31.5
Operating profit as a ratio of total assets	219	0.02	0.12	-0.09	1.75
Total executive compensation as a ratio of total assets	219	0.46	0.27	0.02	1.46
NPLs as a ratio of total assets	219	5.48	5.18	0.05	35.7
RWAs as a ratio of total assets	219	51.85	11.63	28.18	86.6
Total compensation	219	2240	2260	77.6	12800
CEO experience years	204	30.83	7.52	9	50
Board independence	219	2.73	4.16	0	29.17
Total assets	219	615000	633000	23700	3230000
Number of bank branches	207	540.53	504.02	28	1751
Kibor rate	220	9.86	2.67	5.94	13.62
KSE index	220	27346.17	13603.85	7306	47806.97
GDP growth rate	220	3.85	1.57	1	5.8

Source: Authors' own calculations based retrieved from website of20 Pakistan's banks listed on the Pakistani stock exchange from 2011 to 2021. The data for macroeconomics variables is collected from World Bank (https://databank.worldbank.org).
Note: total compensation and total assets has been reported in millions.

of 32.59%. The lowest value for return on equity is − 317.9% and a maximum value of 31.50%. The mean for operating profit as a percentage of total assets is 0.02% indicating that banks have 0.02% operating profit as a percentage of total assets, with a standard deviation of 0.12%. The lowest value of operating profit as a percentage of total assets is − 0.09%, and the maximum value of 1.75%. The average total compensation as a percentage of total assets is 0.46%, which means on average compensation of executives within banks is 0.46% of total assets with a standard deviation of 0.27%. The lowest value of total compensation as a percentage of total assets is 0.02%, whereas the maximum is 1.46%. The mean of nonperforming loans as a percentage of total assets is 5.48%, which means on average nonperforming loans as a percentage of total assets for banks is 5.48%, with the standard deviation of 5.18%, the minimum value of nonperforming loans in comparison to total assets is 0.05%, and the maximum value is 35.70%. The mean value of risk-weighted assets as a percentage of total assets is 51.85%. Therefore, on average, the risk-weighted assets as a percentage of total assets for Pakistani banks listed on PSX are 51.85%, with a standard deviation of 11.63%. The mean value of total compensation for Pakistani banks listed on PSX is RS. 2,240millions; thus, on average, executives are being offered a compensation of Rs. 2,240millions yearly with the standard deviation of Rs. 2260 millions. The minimum value of compensation provided to executives is Rs. 77.6 millions, and the maximum is Rs. 12,800millions.

The mean value of CEO experience years is 30.83 years; thus, on average, the CEO in banks has an experience of 30 years with a standard deviation of 7.52 years and a minimum value of 9 years, and a maximum value of 50 years. The mean value of total assets for banks in Pakistan is worth Rs. 615,000millions with the standard deviation of Rs. 633,000millions. The minimum worth of assets is Rs. 23,700millions, and the maximum is worth Rs. 3230,000millions. The mean value of bank branches is 541, which means, on average, the number of branches of a particular bank is 541, with a standard deviation of 504 branches. The mean value of benchmark interest rate (KIBOR) is 9.86%,

Results

Findings for correlation between executive compensation and bank performance and risk-taking

Table 3 below presents the impact of executive compensation on bank performance in Pakistan using fixed-effect estimations. Column 1 presents the effect of executive compensation on return on assets; column 2 shows the impact of executive compensation on the bank's return on equity, and column 3 shows the impact of executive compensation on operating profit as a percentage of total assets. Table 4 below shows the effect of executive compensation on the bank's risk, i.e., column 1 shows the impact of executive compensation on risk-weighted assets as a percentage of total assets. Lastly, column 2 shows the effect of executive compensation on nonperforming loans within banks in Pakistan.

Total compensation as a ratio of total assets doesn't significantly impact the bank's performance. The results are statically insignificant (presented below in Table 3), with bank performance measured as return on assets, return of equity, and operating profit a ratio of total assets, thus we fail to reject the null hypothesis of no relationship within executive compensation and bank performance.[3] The results from our research are in divergence effect to the existing literature, that depicts the significant positive relationship between the compensation that is being offered to the executives and the performance of the bank (Murphy, 1985b; Doucouliagos et al., 2005; Barro and Barro, 1990; Cuñat and Guadalupe, 2009; Houston and James, 1995; Iqbal et al., 2017;Sheikh, Inam and Sultan, 2019; Dr, 2015, Kayani, Gan, 2022). However, the results of this research provide support to the studies that have found a weak or statistically insignificant relationship between performance and compensation (Jensen, Murphy, 1990b; Hall and Liebman, 1997; Makinen, 2005; Matousek and Tzeremes, 2016; Mitsudome, Weintrop, and Hwang, 2008).

In Table 4 presented below, we present the results of the relationship between executive compensation and bank risk. We find that the total executive compensation does not significantly impact the risk of a bank measured through risk-weighted assets as a percentage of total assets and as nonperforming loans as a percentage of total assets; hence, we fail to reject the null hypothesis of no relationship of executive compensation and bank risk. However, our results are contrary to those that found a positive association between compensation and bank's risk (Agrawal and Mandelker, 1987; Saunders et al., 1990; DeFusco et al., 1990; Sierra et al., 2006; Gao and Zhou, 2022). Our results align with some of the earlier research documenting the insignificant impact of compensation on risk (John et al., 2000).

We didn't find any significant impact of CEO experience, board independence, total assets, bank branches, KSE index, Kibor rate, and growth rate on bank performance measured through return on assets,

[3] We have considered two measures for the bank size, number of bank branches, and total number of assets, moreover the executive compensation has also been taken as a percentage of total assets, thus we expected there might be correlation-issues, to cater for that we have also run regression while excluding total assets from independent variables, however, results remain the same, presented in Table 13 and Table 14.

Table 3
Impact of executive compensation on bank performance in Pakistan (Fixed effect estimates).

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total executive compensation as a ratio of total assets	-0.616	30.42	-0.110
	(0.829)	(28.30)	(0.101)
CEO's experience	0.678	19.08	-0.00588
	(0.558)	(16.10)	(0.0222)
Board independence	-0.0223	-1.320	-0.00869
	(0.0304)	(1.079)	(0.00924)
Total assets	0.324	45.30	-0.0713
	(0.749)	(42.74)	(0.0866)
Bank branches	0.00263	-31.36	0.0290
	(0.496)	(21.92)	(0.0399)
KSE index	0.399	-13.88	0.0733
	(0.842)	(31.59)	(0.0746)
Kibor rate	-0.692	-30.67	0.0174
	(0.776)	(29.42)	(0.0293)
GDP growth rate	-0.169	-15.14	-0.0723
	(0.323)	(12.82)	(0.0726)
Constant	-12.74	-872.5	1.167
	(13.73)	(682.4)	(1.496)
N	203	203	203
R-sq.	0.290	0.189	0.096
Bank fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Note: standard errors in parentheses. Fixed effect includes bank and year fixed effects. ROA (net profit/total assets), ROE (net profit/total equity), operating profit as percentage of total assets (operating profit/total assets) are taken as dependent variable measuring performance. Total compensation as a ratio of total assets in our main explanatory variable measured through (lump sum amount of executives and CEO compensation/total assets). Control variables include CEO experience, total assets, and board independence number of branches, KSE index, Kibor rate and GDP growth rate.CEO experience, total assets; number of branches, Kibor rate and GDP growth rate are used in log form. N refers to the sample size. * p < 0.1, * * p < 0.05, *** p < 0.01.

return of equity, and operating profit a ratio of total assets (presented in Table 3). However, we find that board independence positively affects a bank's risk, which is statistically significant at 1%, and indicates that the more board independence is likely to result in more banks' risk taking (presented in Table 4). This is consistent with the literature, which suggests that increasing the board independence leads to more prudent bank-risk taking (Vallascas et al., 2017, Feng and Xiao, 2021). We also find that higher number of bank branches positively affects the bank's risk, which is statistically significant at 10%. The more branches the bank has, the more is the increase in its risk (presented in Table 4). This is consistent with the literature, which suggests that as the size of the bank increases, the risk of the bank, particularly liquidity risk, also increases side by side (Virginie Terraza, 2015).

Robustness checks

Relationship between executive compensation, bank performance and risk-taking using OLS model

We estimate our model using the OLS estimation also as a robustness check to identify if our results are consistent across various specifications. The results are presented in Table 5 and Table 6 presented below. In Table 5 column 1 presents the impact of executive compensation on return on assets, column 2 shows the result for the impact of executive compensation on the bank's return on equity, and column 3 shows the impact of executive compensation on operating profit as a percentage of total assets. Table 6 shows the impact of executive compensation on the risk of the banks within Pakistan, i.e., column 1 of Table 6 shows the impact of executive compensation on risk-weighted assets as a percentage of total

Table 4
Impact of executive compensation on bank risk taking in Pakistan (Fixed effect estimates).

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
Total executive compensation as a ratio of total assets	-7.129	-1.401
	(7.173)	(5.465)
CEO's experience	-3.758	-2.540
	(3.027)	(3.070)
Board independence	1.033	0.279
	(0.296)* **	(0.0785)* **
Total assets	-14.02	-3.296
	(7.027)*	(3.883)
Bank branches	12.83	5.149
	(6.327)*	(2.678)*
KSE index	-4.355	-1.791
	(4.350)	(2.868)
Kibor rate	-0.182	1.705
	(2.905)	(2.373)
GDP growth rate	3.986	1.164
	(1.234)* **	(1.404)
Constant	402.5	84.22
	(117.4)* **	(69.01)
N	203	203
R-sq.	0.522	0.299
Bank fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

assets within Pakistani banks. Lastly, column 2 shows the impact of executive compensation on nonperforming loans within banks in Pakistan. The results are the same as the fixed-effect model; however, the impact of compensation as a ratio of total assets comes out to have a statistically significant impact on a bank's risk-weighted assets.

Relationship between executive compensation, bank performance, and risk-taking using lagged executive compensation

Along with OLS technique, we also estimate our model using the fixed effect estimation technique with lag variable for executive

Table 5
Impact of executive compensation on bank performance within Pakistan (OLS estimates).

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total compensation as a ratio of total assets	0.666	16.06	-0.0544
	(0.669)	(12.88)	(0.0570)
CEO experience	-0.313	-9.112	0.00547
	(0.406)	(11.83)	(0.0134)
Board independence	0.0492	0.707	-0.00514
	(0.0344)	(0.489)	(0.00570)
Total assets	0.772	14.90	-0.0112
	(0.242)* **	(7.565)*	(0.0225)
Bank branches	0.0201	-1.123	0.0128
	(0.227)	(4.236)	(0.0142)
KSE index	-0.206	-4.786	0.0406
	(0.358)	(9.738)	(0.0439)
Kibor rate	-0.717	-21.36	0.00916
	(0.534)	(19.13)	(0.0219)
GDP growth rate	-0.0529	-5.546	-0.0609
	(0.268)	(8.204)	(0.0584)
Constant	-15.60	-258.7	-0.0872
	(4.472)* **	(82.04)* **	(0.164)
N	203	203	203
R-sq.	0.235	0.149	0.087
Bank fixed effects	No	No	No
Time fixed effects	No	No	No

Table 6
Impact of executive compensation on risk taking within Pakistan (OLS estimates).

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
Total compensation as a ratio of total assets	20.97	-0.907
	(4.623)* **	(2.477)
CEO experience	-1.797	1.238
	(2.648)	(1.575)
Board independence	0.656	-0.0523
	(0.284)* *	(0.0935)
Total assets	-1.772	-0.983
	(1.781)	(0.838)
Bank branches	3.117	-0.130
	(1.402)* *	(0.591)
KSE index	-5.826	-1.671
	(2.091)* **	(1.233)
Kibor rate	1.518	0.835
	(4.271)	(1.943)
GDP growth rate	0.854	0.187
	(2.183)	(0.997)
Constant	129.7	43.54
	(33.14)* **	(18.31)* *
N	203	203
R-sq.	0.344	0.123
Bank fixed effects	No	No
Time fixed effects	No	No

Table 8
Impact of executive compensation on bank risk taking in Pakistan (Fixed effect estimates) with executive compensation lagged variable estimates.

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
Total executive compensation as a ratio of total assets lagged variable(−1)	-10.82	-2.117
	(5.713)*	(4.036)
CEO's experience	-3.202	-2.088
	(3.327)	(2.771)
Board independence	0.721	0.169
	(0.191)* **	(0.116)
Total assets	-14.75	-3.696
	(7.500)*	(3.822)
Bank branches	12.52	3.898
	(6.140)*	(2.429)
KSE index	-4.429	-1.722
	(5.509)	(2.878)
Kibor rate	-1.800	1.486
	(3.222)	(2.434)
GDP growth rate	2.226	0.633
	(1.276)*	(1.104)
Constant	432.5	102.4
	(118.8)* **	(70.11)
N	185	185
R-sq.	0.474	0.282
Bank fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Relationship between compensation of CEO, bank performance, and risk-taking.

compensation as a robustness check to investigate if our results are consistent across various specifications. The results are presented below in Table 7 and Table 8. In Table 7, column 1 presents the impact of executive compensation on return on assets, column 2 shows the result for the impact of executive compensation on the bank's return on equity, and column 3 shows the impact of executive compensation on operating profit as a percentage of total assets. Table 8 shows the impact of executive compensation on the risk of the banks within Pakistan, i.e., column 1 shows the impact of executive compensation on risk-weighted assets as a percentage of total assets within Pakistani banks. Lastly, column 2 shows the impact of executive compensation on nonperforming loans within banks in Pakistan. The results are the same as OLS model and the fixed-effect model without lagged variable; however, the impact of compensation as a ratio of total assets comes out to have a slightly significant impact on a bank's risk-weighted assets.

Table 7
Impact of executive compensation on bank performance in Pakistan (Fixed effect estimates) with executive compensation lagged variable estimates.

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total executive compensation as a ratio of total assets lagged variable(−1)	-0.335	17.75	-0.00458
	(0.565)	(20.70)	(0.0307)
CEO's experience	0.251	12.20	-0.0143
	(0.327)	(10.98)	(0.0277)
Board independence	0.0150	-1.232	-0.00902
	(0.0307)	(1.193)	(0.00996)
Total assets	0.639	52.44	-0.0557
	(1.114)	(49.93)	(0.0723)
Bank branches	-0.0608	-23.88	0.0238
	(0.642)	(24.88)	(0.0376)
KSE index	-0.444	-25.81	0.118
	(0.793)	(34.84)	(0.123)
Kibor rate	-0.881	-30.40	0.0278
	(0.742)	(28.92)	(0.0397)
GDP growth rate	-0.173	-11.82	-0.0801
	(0.283)	(11.14)	(0.0798)
Constant	-10.29	-964.9	0.289
	(19.14)	(820.8)	(0.850)
N	185	185	185
R-sq.	0.202	0.185	0.090
Bank fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Along with OLS technique, we also estimate our model using the fixed effect estimation technique with only ***CEO compensation*** (executive compensation) as a robustness check to investigate if our results are consistent across various specifications. The results are presented below in Table 9 and Table 10. In Table 9, column 1 presents the impact of executive compensation on return on assets, column 2 shows the result for the impact of executive compensation on the bank's return on equity, and column 3 shows the impact of executive compensation on operating profit as a percentage of total assets. Table 10 shows the impact of executive compensation on the risk of the banks within Pakistan, i.e., column 1 shows the impact of executive compensation on risk-weighted assets as a percentage of total assets within Pakistani banks. Lastly, column 2 shows the impact of executive compensation on nonperforming loans within banks in Pakistan. The results are the same as the fixed-effect model.

Along with OLS technique, we also estimate our model using the fixed effect estimation technique only for private banks, as a robustness check to investigate if our results are consistent across various specifications. The results are presented below in Table 11 and Table 12. In Table 11, column 1 presents the impact of executive compensation on return on assets, column 2 shows the result for the impact of executive compensation on the bank's return on equity, and column 3 shows the impact of executive compensation on operating profit as a percentage of total assets. Table 12 shows the impact of executive compensation on the risk of the banks within Pakistan, i.e., column 1 shows the impact of executive compensation on risk-weighted assets as a percentage of total assets within Pakistani banks. Lastly, column 2 shows the impact of

Table 9
Impact of CEO compensation on bank performance in Pakistan (Fixed effect estimates).

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total CEO compensation	0.629	-181.7	-0.0603
	(8.138)	(255.2)	(0.424)
CEO's experience	0.685	18.29	-0.00161
	(0.548)	(15.95)	(0.0184)
Board independence	-0.0217	-1.603	-0.00742
	(0.0367)	(1.328)	(0.00833)
Total assets	0.756	37.45	-0.0389
	(0.902)	(41.98)	(0.0605)
Bank branches	-0.498	-25.18	0.00691
	(0.582)	(22.54)	(0.0300)
KSE index	0.262	-11.66	0.0704
	(0.917)	(32.53)	(0.0715)
Kibor rate	-0.718	-28.35	0.0187
	(0.749)	(29.23)	(0.0304)
GDP growth rate	-0.226	-12.40	-0.0777
	(0.274)	(11.09)	(0.0775)
Constant	-20.10	-709.4	0.401
	(13.87)	(625.6)	(0.932)
N	202	202	202
R-sq.	0.268	0.178	0.086
Bank fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Table 10
Impact of CEO compensation on bank risk taking in Pakistan (Fixed effect estimates).

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
CEO compensation	17.92	24.74
	(70.33)	(42.80)
CEO's experience	-3.627	-2.563
	(3.147)	(2.980)
Board independence	1.065	0.275
	(0.273)* **	(0.114)* *
Total assets	-10.29	-2.539
	(6.798)	(3.300)
Bank branches	8.803	4.139
	(6.075)	(2.214)*
KSE index	-5.480	-2.225
	(4.274)	(2.903)
Kibor rate	-0.532	1.340
	(3.047)	(2.407)
GDP growth rate	3.358	0.896
	(1.307)* *	(1.064)
Constant	335.4	74.35
	(113.8)* **	(50.01)
N	202	202
R-sq.	0.519	0.298
Bank fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Relationship between compensation of executives, bank performance, and risk-taking in private banks.

executive compensation on nonperforming loans within banks in Pakistan. The results are the same as the fixed-effect model; however, the impact of compensation as a ratio of total assets comes out to have a slightly significant impact on a Return on assets, however for the impact of compensation as a ratio of total assets comes out to have an insignificant impact on risk taking behavior of banks since private banks are not backed by the government so, they can't tolerate high risk taking.

Table 11
Impact of executive compensation on bank performance in Pakistan (Fixed effect estimates) in Private banks.

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total CEO compensation	-1.458	12.14	-0.108
	(0.552)* *	(23.43)	(0.0938)
CEO's experience	0.0148	3.117	-0.000247
	(0.243)	(7.037)	(0.0310)
Board independence	0.0286	-1.186	-0.0183
	(0.0474)	(1.685)	(0.0186)
Total assets	0.292	47.32	-0.0501
	(0.760)	(43.71)	(0.0652)
Bank branches	0.444	-24.68	0.0132
	(0.449)	(20.52)	(0.0319)
KSE index	-0.284	-25.84	0.0865
	(0.675)	(28.45)	(0.0881)
Kibor rate	-1.065	-39.07	0.0245
	(0.850)	(32.02)	(0.0368)
GDP growth rate	-0.0357	-16.02	-0.111
	(0.436)	(17.26)	(0.109)
Constant	-4.267	-762.5	0.603
	(12.77)	(693.9)	(0.949)
N	172	172	172
R-sq.	0.303	0.191	0.137
Bank fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Table 12
Impact of executive compensation on bank risk taking in Pakistan (Fixed effect estimates) in private banks.

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
CEO compensation	-5.504	3.662
	(8.007)	(2.911)
CEO's experience	-3.458	0.438
	(3.588)	(1.483)
Board independence	0.713	0.161
	(0.343)*	(0.185)
Total assets	-12.99	-2.992
	(7.438)	(3.792)
Bank branches	13.15	4.676
	(6.882)*	(2.464)*
KSE index	-3.315	-0.0544
	(4.488)	(2.170)
Kibor rate	-0.257	2.539
	(3.526)	(2.685)
GDP growth rate	3.135	0.568
	(1.772)*	(1.719)
Constant	364.7	47.97
	(127.7)* *	(63.43)
N	172	172
R-sq.	0.420	0.341
Bank fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Post Hoc test

After getting the insignificant results we performed some additional tests to cross check our results, we perform VECM analysis to cross check either there exists any causal relationship between executive compensation and performance, or between executive compensation and risk within Banks in Pakistan. To estimate the causal relationship using VECM model analysis, first we performed the unit root (ADF) test, to figure out the stationary of the data set, thus based on the unit root test we find out that our performance index and risk index were stationary at level, however compensation as a ratio of total assets was stationary at second difference level, thus we take the log (-2) for compensation measure. After confirming the stationary of the data we

Table 13
Granger Causality Test.

Dependent Variable: Performance-Index			
Excluded	Chi-sq	df	Prob.
Risk Index	0.019987	2	0.9901
COMP2	0.945883	2	0.6232
All	1.017381	4	0.9071
Dependent variable: Risk-Index			
Performance-index	5.871704	2	0.0531
Comp2	4.449453	2	0.1081
All	9.262734	4	0.0549
Dependent Variable: COMP2			
Performance-index	0.302647	2	0.8596
Risk-Index	0.902538	2	0.6368
All	2.056382	4	0.7254

performed the granger causality test, Granger causality test is used in determining whether one time series in panel data is useful in forecasting the other or not. The Granger (1969), approach is basically used to question whether X causes Y, to see how much of the Y is impacted by the past value of Y, and see either by adding the lagged values of X, in the model should improve some explanation for Y. Frequently the two way causation is the case; X granger causes Y, and Y granger causes X.

We run these regressions for three times. First for executive compensation and performance of banks, second for executive compensation and risk taking behavior of Pakistani banks and the last one between performance and risk of banks. The results are presented below.

After the granger causality in the VAR environment we estimated the co integration within the variables. For panel co-integration we used the pedroni (Engle-Granger based), the results are given below:

Out of 11 outcomes, 6 are significant, thus we can say that we can reject the null hypothesis and accept the alternate hypothesis., that the variables are co-integrated. Thus based on the co-integration we used the vector error correction model instead of VAR. VECM is used with a 2 lag length criteria estimated from lag length criteria.

To make the system equation, or we can say system model, we ordered by variables and we get three models.

D(COMP_TOTALASSETS) =C(1)*(COMP_TOTALASSETS(−1) 0·0380609914408*RISK_INDEX(−1) - 0·0065838676374*PERFORMANCE_INDEX(−1) + 0·571239641628) + C(2)*D(COMP_TOTALASSETS(−1)) + C(3)*D(COMP_TOTALASSETS(−2)) + C(4)*D(RISK_INDEX(−1)) + C(5)*D(RISK_INDEX(−2)) + C(6)*D(PERFORMANCE_INDEX(−1)) + C(7)*D(PERFORMANCE_INDEX(−2)) + C(8)

D(RISK_INDEX) = C(9)*(COMP_TOTALASSETS(−1) - 0·0380609914408*RISK_INDEX(−1) - 0·0065838676374*PERFORMANCE_INDEX(−1) + 0·571239641628) + C(10)*D(COMP_TOTALASSETS(−1)) + C(11)*D(COMP_TOTALASSETS(−2)) + C(12)*D(RISK_INDEX(−1)) + C(13)*D(RISK_INDEX(−2)) + C(14)*D(PERFORMANCE_INDEX(−1)) + C(15)*D(PERFORMANCE_INDEX(−2)) + C(16)

D(PERFORMANCE_INDEX) = C(17)*(COMP_TOTALASSETS(−1) - 0·0380609914408*RISK_INDEX(−1) - 0·0065838676374*PERFORMANCE_INDEX(−1) + 0·571239641628) + C(18)*D(COMP_TOTALASSETS(−1)) + C(19)*D(COMP_TOTALASSETS(−2)) + C(20)*D(RISK_INDEX(−1)) + C(21)*D(RISK_INDEX(−2)) + C(22)*D(PERFORMANCE_INDEX(−1)) + C(23)*D(PERFORMANCE_INDEX(−2)) + C(24)

Estimation Method: Least Squares

Sample: 2012 2019

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.161946	0.043299	-3.740140	0.0002
C(2)	-0.144619	0.085976	-1.682091	0.0934
C(3)	0.186402	0.085233	2.186964	0.0293
C(4)	0.000992	0.003048	0.325516	0.7450
C(5)	0.002512	0.002899	0.866484	0.3868
C(6)	0.000590	0.001116	0.528474	0.5975
C(7)	0.003735	0.001958	1.908173	0.0571
C(8)	-0.048724	0.010505	-4.638288	0.0000
C(9)	1.442281	1.506444	0.957408	0.3390
C(10)	-0.073028	2.991206	-0.024414	0.9805
C(11)	-2.904613	2.965377	-0.979509	0.3279
C(12)	-0.132958	0.106056	-1.253659	0.2107
C(13)	0.010554	0.100867	0.104634	0.9167
C(14)	-0.076236	0.038823	-1.963660	0.0503
C(15)	0.041223	0.068107	0.605276	0.5454
C(16)	-0.967574	0.365475	-2.647444	0.0084
C(17)	1.015547	4.030810	0.251946	0.8012
C(18)	-2.923985	8.003605	-0.365334	0.7151
C(19)	-0.578671	7.934495	-0.072931	0.9419
C(20)	-0.261819	0.283774	-0.922631	0.3568
C(21)	0.132248	0.269892	0.490003	0.6244
C(22)	-0.203035	0.103880	-1.954509	0.0514
C(23)	-0.015130	0.182234	-0.083024	0.9339
C(24)	-1.171991	0.977906	-1.198471	0.2315

From the results we find out that only C1 and C3 are significant that is current year compensation is based on two years lag compensation. However we didn't find any significant relationship between compensation and performance and compensation and risk.

Table 14
Co-Integration results.

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-1.685078	0.9540	-1.528004	0.9367
Panel rho-Statistic	-0.562410	0.2869	0.957230	0.8308
Panel PP-Statistic	-9.206230	0.0000	-3.259038	0.0006
Panel ADF-Statistic	-7.245744	0.0000	-4.026161	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	2.959259	0.9985
Group PP-Statistic	-3.344837	0.0004
Group ADF-Statistic	-4.569283	0.0000

H_o: there is no co-integration within compensation, performance and risk.
H_1: there is co-integration between compensation, risk and performance.

Table 15
Impact of executive compensation on bank performance in Pakistan (Fixed effect estimates) excluding total assets from independent variables.

	ROA	ROE	Operating profit as ratio of total assets
	(1)	(2)	(3)
Total executive compensation as a ratio of total assets	-0.789	6.158	-0.0721
	(0.713)	(17.57)	(0.0571)
CEO's experience	0.683	19.77	-0.00696
	(0.554)	(15.17)	(0.0197)
Board independence	-0.0254	-1.757	-0.00800
	(0.0332)	(1.404)	(0.00868)
Bank branches	0.166	-8.550	-0.00693
	(0.558)	(8.591)	(0.0168)
KSE index	0.576	10.89	0.0343
	(0.623)	(13.31)	(0.0310)
Kibor rate	-0.645	-24.15	0.00716
	(0.701)	(26.35)	(0.0171)
GDP growth rate	-0.167	-14.86	-0.0728
	(0.329)	(14.14)	(0.0734)
Constant	-6.849	-49.08	-0.129
	(6.607)	(200.2)	(0.139)
N	203	203	203
R-sq.	0.288	0.135	0.088
Bank fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Table 16
Impact of executive compensation on bank risk taking in Pakistan (Fixed effect estimates) excluding total assets from independent variables.

	RWAs as ratio of total assets	NPLs as ratio of total assets
	(1)	(2)
Total executive compensation as a ratio of total assets	0.381	0.365
	(6.083)	(4.878)
CEO's experience	-3.972	-2.590
	(3.185)	(2.977)
Board independence	1.168	0.311
	(0.390)* **	(0.118)* *
Bank branches	5.768	3.489
	(4.695)	(1.544)* *
KSE index	-12.02	-3.593
	(2.644)* **	(1.678)* *
Kibor rate	-2.199	1.231
	(2.971)	(2.033)
GDP growth rate	3.900	1.144
	(1.781)* *	(1.468)
Constant	147.7	24.31
	(34.17)* **	(26.55)
N	203	203
R-sq.	0.469	0.282
Bank fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Table 17
Hausman Test.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	9.399599	1	0.0022

H_o: Random effect model is appropriate
H_1: Random effect model is not appropriate, fixed effect model is appropriate.

Conclusion and Discussion

Conclusion

This thesis contributes to the existing literature on executive compensation, performance, and risk of banks (Houston and James, 1995; Hubbard and Palia, 1995; Crawford, Ezzell, and Miles, 1995, Boateng et al., 2022, Ahamed, 2022), even though there already exist literature that figures out the relationship between exective compensation, risk and performance of the bank, but still there is a limited research in the context of Pakistan, thus in this paper we analyzed the impact of executive compensation on the performance and risk of the banks. The research was conducting in the Pakistan context, the sample of the study was based on the 20 listed banks in the private sector, the one that are being listed on the Pakistan Stock Exchange, the research time frame was between 2011 and 2021. All the bank level information that was required was extracted from the official bank annual statements that are being listed on the banks official websites, moreover the macro variables are being extracted from the World Bank (https://databank.worldbank.org).

For the performance we used three measures that are return on equity, return on Assets and operating profit. For risk we use risk weighted assets and non-performing loans. And for compensation we take total sum of yearly exective compensation for the concerned bank.

Our findings suggest that employee compensation has no considerable impact on the performance and risk of banks in Pakistan. Thus overall this indicates that a bank's performance and risk-taking behavior are not particularly affected by the employee compensation. Our results are supported by some of the existing literature which also found an insignificant impact of the CEO's compensation performance, and on risk of banks (Jensen and Murphy, 1990b; Hall and Liebman, 2000; Matousek and Tzeremes, 2016; Mitsudome et al., 2008; Chen and Hassan, 2022).

Discussion

- in the light of the results, whats suggested from the literature is that executive compensation is highly persistent and takes time to adjust, thus the effect of exective compensation might not be reflected in the adjacent year, it may be visible in the next coming years (Murphy,1985a;Fayyaz et al,2017).moreover for our research the only proxy for compensation was based on cash, however there are many other types of non-cash based compensation, Therefore, we also expect that considering cash-based compensation for executives might not be the best proxy for compensation that translates into bank performance as literature presents evidence using other forms of compensation, including cash and non-cash based such as stock options (Jensen and Murphy, 1990b). In Pakistan as compensation is offered mostly in monetary terms, in the form of pay therefore absence of incentives such as bonuses or stock options could have resulted in lack of relationship between compensation and performance (Ejaz Aslam, R. H, 2019). Such lack of relationship can be deduced as implying lack of moral hazard in Pakistani banks. An important reason that we believe results in the insignificant relationship between executive compensation and bank performance is that the compensation was lump sum amount in our data set, it is possible if more detailed break up of compensation was used then some components of compensation could have been found related to bank performance, as in banking sector there are many different subjective categories of employees within whom the compensation is being shared, CEO, Chairman, executives, etc. thus if we conducted the research based on different tiers of compensation results might not be the same.

- Based on the literature the reason mentioned for insignificant relationship between compensation and bank performance is Social and Economic culture of Pakistan (Dr, 2015).
- In banking industry there are many different aspects and proxies to measure the performance of a bank,some are quantitative factors

while other are qualitative factors, however in the research focus was only on the quantitative factors, if we consider a mix and match of qualitative and quantitative performance proxies, result might not be the same.

- In addition, the literature suggests that risk-taking behavior is primarily determined by shareholders' degree of control rather than managerial staff compensation (Saunders et al., 1990). Moreover in literature another aspect that determines the risk-taking behavior is the high market power, as it decreases the risk of a bank conforming the competitive-fragility (Danisman and Demirel, 2019). In literature, the reason given for the positive relationship of compensation and risk of a bank is normally when compensation is offered in terms of stock options. When executives are being offered stock option compensation, being shareholders, ownership of stock options can create an inducement for managers to indulge in excessive risk taking. Shareholders put resources into projects with high risk to amplify their return; when the risk level expands, the disadvantage is borne by debt holders, though the potential gain accrues to shareholders. So if executive compensation has big portion of stock options then they are likely to indulge in more risk taking and moral hazard is evidenced. But in case of Pakistan big portion of compensation is in monetary form, not in the form of stock options, that could be the reason we found negative relationship of RWAs (Risk Weighted Assets) with lagged compensation as reported in Table 8 and also in Table 6 as OLS estimate these evidence that higher compensation leads to lower risk taking in Pakistani banks and that implies absence of moral hazards in Pakistani. The results are supported by the literature as well (Rahim et al., 2020; Compensation Of The Ceo, 2012). Another reason for high-risk taking is that usually state-owned banks are backed by the government when compensation is being offered based on the performance, particularly in public sector banks. Therefore the riskiness of the banks increases with the known fact that these banks are backed by the government. Moreover, the insignificant relationship was found in private banks (Table 12) where there is no backing by the government. In Pakistan we believe the major reason for the insignificant relationship between executive compensation and risk of banks is that CEOs are offered cash compensation; thus, executives focus on short term performance rather than long term performance. Moreover in Pakistan as only a few banks are state-owned, and the rest are private banks, therefore high risk-taking can lead to bankruptcy of bank, resulting in executives losing jobs; and that could be a reason for absence of relationship between compensation of CEO of private banks and risk-taking behavior. The absence of relationship implies absence of moral hazard in private banks in Pakistan.

Limitation and future direction

The limitation of this study is that the study uses a lump sum amount of total compensation, rather than catering compensation merely based on performance, apart from that in this study we have tested only one year lagged compensation variable. As such, there is need for more studies in the context of Pakistan, which explore this relationship by utilizing diverse measures that have been used by extant research. Furthermore, future researchers should consider taking impact of longer logs of compensation particularly because of the notion that impact of these variables takes time to fully occur. Moreover, it was important to explore whether an empirical relationship existed between the variables. Once that is discovered, it will be valuable to conduct in-depth qualitative analyses which focus on nuances of each variable and their collective interaction.

As such, future studies should focus on analyzing other factors which might moderate or mediate these relationships. Also it might be useful to test if governance elements do have or do not have impact on the level of executive compensation, risk, and overall bank performance.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendices

Equations *of fixed effect estimates using* Tables 3 and 4*:*

$$(ROA)_{it} = -12.74 - 0.616(compensationratio)_{it} + 0.00263(bankbranches)_{it} + +0.678(\text{CEOexperience})_{it} + 0.324(\text{totalassets})_{it} - 0.0233(\text{boardindependence})_{it} - 0.692(\text{Kiborrate})_{t} - 0.169(\text{GDPgrowthrate})_{t} + 0.399(KSEindex)_{t} \quad (1)$$

$$(ROE)_{it} = -872.5 + 30.42(compensationratio)_{it} + 31.36(bankbranches)_{it} + 19.08(\text{CEOexperience})_{it} + 45.30(\text{totalassets})_{it} - 1.320(\text{boardindependence})_{it} - 30.67(\text{Kiborrate})_{t} - 15.14(\text{GDPgrowthrate})_{t} - 13.88(KSEindex)_{t} \quad (2)$$

$$(Operatingprofits)_{it} = 1.167 - 0.110(compensationratio)_{it} + 0.290(bankbranches)_{it} - 0.00588(\text{CEOexperience})_{it} - 0.0713(\text{totalassets})_{it} + \gamma_5(\text{boardindependence})_{it} + 0.0174(\text{Kiborrate})_{t} - 0.0723(\text{GDPgrowthrate})_{t} + 0.0733(KSEindex)_{t} \quad (3)$$

$$(RWA)_{it} = 402.5^{***} - 7.129(compensationratio)_{it} + 12.8^{*}(bankbranches)_{it} - 3.758(\text{CEOexperience})_{it} - 14.02^{*}\log(\text{totalassets})_{it} + 1.033^{***}(\text{boardindependence})_{it} - 0.182(\text{Kiborrate})_{t} + 3.986^{***}(\text{GDPgrowthrate})_{t} - 4.355(KSEindex)_{t} \quad (4)$$

$$(NPL)_{it} = 84.22 - 1.401(compensationratio)_{it} + 5.149^{*}(bankbranches)_{it} + 2.540(\text{CEOexperience})_{it} - 3.296(\text{totalassets})_{it} + 0.279^{***}(\text{boardindependence})_{it} + 1.705(\text{Kiborrate})_{t} + 1.164(\text{GDPgrowthrate})_{t} - 1.791(KSEindex)_{t} \quad (5)$$

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