CHIEF EXECUTIVE OFFICER (CEO) POWER, BOARD INDEPENDENCE AND BANK RISK IN UGANDA

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Declaration

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Abstract

The study's main aim was to establish the moderating role of board independence in the relationship between CEO power and bank risk. Although risk management has dominated bank management literature and discourse, policy and practice, previous studies on how CEO power affects risk-taking have produced mixed results. Some studies show that CEO power reduces risk, while others indicate that it increases the risk. This lack of conclusive findings is due to the failure to include moderator variables such as board independence that influence that relationship. Failure to include the role of board independence in regulating the extent to which CEO power affects bank risk in the annual reports of commercial banks and the absence of the same in policy documents could also be responsible for bank failures in Uganda over the last 15 years. This study was therefore conducted with four objectives: examining the relationship between CEO power and bank risk, assessing the moderating effect of board independence on the relationship between CEO power and bank risk, analysing the cointegrating relationship between CEO power and bank risk and analysing the causality relationship between CEO power and bank risk.

This explanatory panel research used secondary data from a sample of 14 commercial banks in Uganda from 2010 to 2020. The study used secondary data collected through extraction from reports and documents. System General Method of Moments (GMM) was used to establish the relationship between variables and to test the moderating effect of board independence on the relationship between CEO power and bank risk. Diagnostic tests were also carried out to check the suitability of the GMM estimator. Autoregressive Distributed Lag (ARDL) approach was used to infer causality and to analyse the short and long-run linkages between CEO power and bank risk or cointegration. The speed of adjustment of the model in the long run was established using the Error Correction Term (ECT).

The findings revealed an inverse relationship between CEO power and bank risk. Commercial banks that have powerful CEOs seemingly have lower risk. Such powerful CEOs have prestige power, are internally hired, have ownership, and have served for more years; hence, they possess expert power. The relationship between current and previous bank risk is positive and significant, confirming a long-run positive relationship between previous and current bank risk. The moderating effect of board independence in

the relationship between CEO power and bank risk is significant for prestige power and the CEO being internally hired. This means that commercial banks in Uganda should appoint CEOs with outside connections and serve for more years since experienced CEOs reduce bank risk in Uganda. Furthermore, the relationship between their power and bank risk is positively affected by board independence. The findings all confirmed cointegration between CEO power and Z-score in the panel dataset, and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will correct its previous period's disequilibrium at a speed of approximately 2.58% annually to get back to the steady state. Lastly, it was determined that there is a causal relationship between CEO power and bank risk. In case there is a need to reduce bank risk in Uganda, adjusting CEO power will help to attain this. It is thus recommended that commercial banks' annual reports should include the extent to which board independence affected the relationship between CEO power and bank risk. Banks should also encourage CEOs to stay in office for more than four years, to a maximum of seven years. CEOs and bank staff must find new products that will attract people in the informal sector, speed up the readjustment of operations to equilibrium, and reduce risk. CEOs, bank managers, employees and policymakers should not expect immediate results regarding expected changes in bank risk. The results of actions taken in the current year to improve a bank's risk profile can only be seen in the following year. Therefore, there is a need for persistent adjustment and observation of decisions and policy actions if bank risk is to be minimised.

Keywords: CEO power; bank risk; board independence; commercial banks; Uganda

Dedication

I dedicate this thesis to my parents, who instilled in me the value of quality education from a young age.

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List of acronyms

ABC	African Banking Corporation
ACE	Audit committee effectiveness
ADF	Augmented Dickey-Fuller test
A-IRB	Advanced internal ratings-based approach to credit risk
AI	Artificial intelligence
ALCO	Presence of Assets/Liabilities Committee (ALCO).
AMA	Advanced measurement approaches
AUQ	Audit quality
BCBS	Basel Committee on Banking Supervision
BINP	Board Independence
BIS	Bank for International Settlements
BKSZ	Bank size
BODE	Board of Directors' Effectiveness
BR	Bank risk
BRICS	Brazil, Russia, India, China and South Africa
BRMCE	Board Risk Management Committee Effectiveness
CAMELS	Capital adequacy, Asset quality, Management soundness, Earnings and profitability, Liquidity, Sensitivity to market
CAR	Capital adequacy ratio
CEO	Chief executive officer
CEOP	CEO power
CFEP	CEO being a former executive (internally hired)
CFOP	CEO founder
COR	Cost of risk
COSASE	Committee on Commissions, Statutory Authorities and State Enterprises
COSO	Committee of Sponsoring Organizations of the Treadway Commission
COVID-19	Corona Virus Disease of 2019
CRO	Chief Risk Officer
CVA	Credit Valuation Adjustment
DF	Dickey-Fuller test

DFCU	Development Finance Company of Uganda
DRG	Duration gap
DW	Durbin-Watson
ECT	Error Correction Term
EILR	Exposure to industry liquidity risk
EPRC	Economic Policy Research Centre
ERM	Enterprise Risk Management
ERR	Earnings retention ratio
EUR	Euro
EXPP	Expert power
FPPR	Fines and penalties paid to total revenue
FXG	Foreign currency gap
G10	Group of Ten
GDP	Gross Domestic Product
GDPG	Gross Domestic Product Growth
GMM	Generalised Method of Moments
G-SIBs	Global Systemically Important Banks
HIE	Highest industry exposure
I & M	Investments and Mortgages
IAF	Internal audit function
ILO	International Labour Organization
IRB	Internal ratings-based approach to credit risk
KCB	Kenya Commercial Bank
KPSS	Kwiatkowski-Phillip-Schmidt-Shin
LDR	Loan-to-deposit ratio
LLR	Loan loss reserve/coverage ratio
LR	Liquidity ratio
LRR	Loan recovery ratio
LSST	Listing status
MDI	Microfinance Deposit-taking Institution
MPT	Modern Portfolio Theory

MRMC	Presence of management risk management committee
MSR	Market share of revenue
NCBA	National Commercial Bank of Africa
NPLs	Non-performing loans
OWNP	Ownership power
PCA	Principal Components Analysis
POPI	Protection of Personal Information
PP	Phillips-Perron test
PPE	Profit per employee
PREP	Prestige power
QMDFR	Quality of management discussion in financial reports
QRAD	Quality of financial reporting and additional voluntary disclosures
RMS	Risk management structure
ROA	Return on Assets
RPG:	Re-pricing gap/interest rate
RPLA	Related party loans to loans
RWAs	Risk-Weighted Assets
SACCO	Saving and Credit Cooperative Organization
SMME	Small, Micro and Medium Enterprise
STRP	Structural power
TETOE	Training expense to operating expense ratio
TMT	Top Management Team
UNEMPL	Unemployment
VAR	Vector Autoregressive

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Chapter One: Introduction

1.1 Background to the study

Risk management has dominated bank management literature and discourse, policy, and practice as it is at the core of several bank decisions, whether they are liquidity-, operations, credit, or solvency-related. Among the many contributors to the global financial crisis of 2008, the Asian financial crisis of 1998 and the economic recessions that followed, was excessive risk-taking by banks under the management of chief executive officers (CEOs) with varying levels of power (Gontarek & Belghitar, 2021; Fernandes, Farinha, Martins, Francisco & Mateus, 2021; Mavrakana, 2019; Ozili, 2018; De Haan & Vlahu, 2015). Hemdan, Suhaily and Ur Rehman (2021) consider CEO power to denote the degree to which a CEO has impact on a firm's management.

Previous studies on how CEO power affects risk-taking have produced mixed results. Some studies show that CEO power reduces risk (Fernandes *et al.*, 2021; Fang, Lee, Chung, Lee & Wang, 2020; DeBoskey *et al.*, 2019; Belenzon, Shamshur & Zarutskie, 2019; Haider & Fang, 2018; Li, Li, & Minor, 2016b). Other studies, on the contrary, indicate that it increases the risk (Altunbaş, Thornton & Uymaz, 2020; Hunjra *et al.*, 2021; Huang, Chen & Chen, 2018; Mamun, Balachandran & Duong, 2016; Li, Lu & Phillips, 2014; Barnea & Rubin, 2010). The mixed findings in these studies and their failure to give conclusive remedies could be a result of the studies' focus on the direct relationship between CEO power and risk, while overlooking the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. In certain studies, the lack of conclusive findings or the presence of mixed findings is due to failure of including moderator variables such as board independence that may influence the relationships (Makhlouf, Laili, Ramli, Al-Sufy & Basah, 2018; Namazi & Namazi, 2016; Hayes, 2013; Hair, Black, Babin & Anderson, 2010). Further to this, most CEO power studies have concentrated on the characteristics and effects of CEO power but have not considered how that power could be regulated and what interventions must be made to regulate the effect of such power on firm performance outputs such as risk in general and bank risk-taking in particular. In fact, Hua, Song and Talavera (2019) examined CEOs and bank risk taking and concluded that there is limited evidence of a relationship

between bank risk-taking and a bank CEO's experience-related characteristics, thus necessitating further scholarly inquiry.

Although bank risk-taking is essential, it could lead to detrimental effects on bank survival (Mourouzidou-Damtsa, Milidonis & Stathopoulos, 2017). However, it would be overly highhanded to deny banks opportunity to undertake risks, or even misleadingly optimistic, to expect that the risk level of a bank should be zero. It is through accepting a certain level of risk that innovation can take place, although the level of risk must be checked. Risk taking does not occur in isolation for it to put a bank in a vulnerable position. Corporate governance also plays a role through practices of the board, top management, the CEO, and staff. As Bonini and Taatian (2021) noted, the managers of a bank have immense discretion in choices like combination of business portfolios, investments, and capital structure, all of which have capacity to expose banks to excessive risk. One of the proposed approaches to mitigating the excessive risk is strengthening internal corporate governance mechanisms, such as regulating CEO power since internal corporate governance mechanisms affect bank risk (Mavrakana, 2019; Abobakr & Elgiziry, 2017).

In policy, although banks are highly regulated, regulation is not sufficient to cover all the dynamics affecting managerial decision making, especially the decisions of the CEO (Mourouzidou-Damtsa, Milidonis & Stathopoulos, 2017). The Financial Institutions Statute (2004) of Uganda, although amended in 2016, is still silent on matters pertaining to regulating or utilising CEO power regarding risk-taking levels of banks (The Financial Institutions Statute of Uganda, 2004). The Capital Markets Corporate Governance Guidelines make mention of independence of directors but do not provide guidance on how this affects or moderates the relationship between CEO power and risk taking of banks. The same is missing from Table F of Uganda's Companies Act (2012) of Uganda that deals with the Code of Corporate Governance Boards and Directors (The Companies Act of Uganda, 2012). The corporate governance guidelines also do not emphasise the role of board independence in the relationship between CEO power and risk-taking in banks (The Financial Institutions (Corporate Governance) Regulations of Uganda, 2005).

Unlike several CEO power and bank risk-taking-related empirical studies that have been conducted in developed and developing countries with relatively larger number of banks

like Malaysia, Pakistan and Kenya, no such study has been undertaken in Uganda, a country with a relatively small, but innovatively adoptive growing banking industry. Further, when it comes to the realm of the moderating role of board independence in the relationship between CEO power and bank risk taking, a cursory examination yields no study.

A bank must be able to monitor the risk level and ensure that it is minimised, but not eliminated, since being too cautious will stifle bank innovation. A stable and thriving banking industry is one of the important pillars for financial intermediation and economic development capable of leading to sustainable economic development and improved social welfare through promoting positive externalities to private sector activities while minimising negative externalities. In this way, a bank's operation must be done cognizant of the fact that any possibility of collapse will spill over a wide range of sectors.

A glimpse at the bank practices in Uganda, as reflected in their risk management reports, shows that the role of board independence in regulating the effect of CEO power on bank risk is largely ignored. The corporate governance statements in the annual reports produced by the commercial banks mention the composition of the board and its committees, including the risk committee, which is a mandatory committee, but are silent on matters pertaining to CEO power and how this impact on the risk taking of the bank. Board independence is mentioned in the reports but discussion of its role in the relationship between CEO power and bank risk-taking is ignored. One therefore needs to assess the most appropriate practice sufficient for risk taking given the independence of the board. Among the many risks mentioned in the risk management statements, insolvency risk is not mentioned despite it being one that affects survival of the bank. Among the measures put in place or activities carried out to mitigate the effects of the different types of risks, the role of CEO power is also not stated. Lastly, the role of board independence in the relationship between CEO power and risk taking, is not considered in the published reports. In the practice of staff evaluation, middle managers may be blamed for the poor performance of expansion and investment in risky decisions, whereas such decisions may have been taken by an overzealously powerful CEO. Therefore, CEO power must be factored into the performance evaluation and appraisal strategies of bank human resources.

1.2 Problem statement

The CEO has an important role in determining decisions of the firm, as per the upper echelons theory (Saidu, 2019; Hambrick & Mason, 1984), and those of a bank (DeBoskey *et al.,* 2019). Those decisions will affect the risk level of a bank. A powerful CEO can improve the efficiency of a firm due to his/her ability to make quick decisions (Ozbek & Boyd, 2020; Wang, DeGhetto, Ellen & Lamont, 2019; Gupta, Han, Nanda & Silveri, 2018; Mostafa, Hasnan & Saif, 2021). However, an independent board, through its oversight role, should monitor the CEO's activities in line with the agency theory (Fama & Jensen, 1983). Such an independent board will also guide and dominate over the decisions of the CEO regarding bank risk. Although a CEO can act in the interest of shareholders as per the stewardship theory, with excessive power, he/she can make decisions that are not in line with the interests of shareholders (Hua *et al.*, 2019; Kung'u & Munyua, 2016; Berle & Means, 1932). This will lead to exposing a bank to excessive risk.

Management of banking operational activities cannot be separated from the banking risk management process (Gurendrawati, Khairunnisa, Ulupui, Zakaria & Suryarini, 2021). There is a dire need to regulate CEO power since too much authority can cause a CEO to be so entrenched in the company, as to even offset governing mechanisms put in place by the shareholders (Hemdan, Suhaily & Ur Rehman, 2021). The way CEO power is used, determines its effectiveness (Tang, 2021). Influence over the CEO should therefore be done and is probably possible where there is an independent board (Saidu, 2019; Ramly & Nordin, 2018; Kumar & Zattoni, 2018b; Pfeffer and Salancik, 1978; Jensen & Meckling, 1976); and if this is done effectively, the impact of the CEO's power on bank risk should be regulated.

Although Uganda has largely enjoyed relative political, macroeconomic, social and technological stability over the last thirty years, the banking industry has experienced some turbulence. Despite this stability, coupled with the enactment of a financial institutions statute and publishing commercial bank corporate governance guidelines, there have been several bank closures over that thirty-year period. To stabilise the industry, a judicial commission of inquiry into the closure of banks was set up in 1999 (Judicial Commission of Inquiry into The Closure of Commercial Banks, 1999). Despite this step, more banks closed after that period, the most recent being Crane Bank Limited

which was sold in 2018 and the arrest of some members of the top management team (TMT) of Post Bank Limited in 2019 (Daily Monitor, 2019).

The Financial Institutions Statute (2004) of Uganda, though amended in 2016, is still silent on matters pertaining managing or utilising CEO power regarding risk levels of banks. The capital markets corporate governance guidelines make mention of independence of directors but do not guide on how it affects the relationship between CEO power and risk taking of banks. The same is missing in Table F of Uganda's Companies Act (2012) that deals with Code of Corporate Governance Boards and Directors. The corporate governance guidelines also do not emphasise the role of board independence in the relationship between CEO power and risk taking in banks. A glimpse at the bank practices as shown in their risk management reports shows that the role of board independence in regulating the effect of CEO power on bank risk is ignored. The corporate governance statements in the annual reports produced by the commercial banks mention the composition of the board and its committees including the risk committee, which is mandatory committee, but are silent on matters pertaining CEO power and how this impact on the risk taking of the bank.

As a further intervention, the Parliament of Uganda set up a committee called the Committee on Commissions, Statutory Authorities and State Enterprises (COSASE) to investigate bank closures and a report was produced in 2019 (COSASE Report, 2019). The report identified poor records management regarding assets inventory, banks were in distress and needed recapitalisation. COSASE also concentrated more on the procedure followed by the central bank in closing banks as that was its mandate and not the role of board independence in the relationship between CEO power and bank risk in the defunct banks. This report did not mention the possible role of CEO power in the risk taking of the banks even under circumstances where some owners or shareholders of banks also managed those banks, a situation which may probably still exist. Given the important intermediary role played by commercial banks in the financial markets, the role of board independence in regulating the effect of CEO power on risk taking of banks in Uganda needs investigation, knowledge of which could guide formulation of policies, procedures and practices that could lead the banking industry to normalcy and stability.

It is therefore posited in this study that the relationship between CEO power and bank risk can be regulated or moderated by board independence. Risk taking is good for a bank if innovation is to take place. Shahbaz (2018) points out that value creation and great innovations are attributed to powerful CEOs. However, the ability of the CEO to use his/her power to escalate the risk-taking exposure of a bank must be regulated since excessive risk taking can lead to collapse of a bank.

It is thus against this background that this study has been necessitated, considering the lack of conclusive results regarding the effect of CEO power on bank risk, the turbulence of the banking sector in Uganda, the silence of policy documents and bank practices regarding the role of board independence in regulating the effect of CEO power on bank risk.

1.3 Research objectives

The overall aim of the study is to assess the moderating role of board independence in the relationship between CEO power and bank risk-taking in Uganda. It is posited in this study that board independence affects the relationship between CEO power and bank risk. CEO power in this study includes characteristics such as structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank.

The following are the specific research objectives of the study:

i. To examine the relationship between CEO power and bank risk;
ii. To assess the moderating effect of board independence on the relationship between CEO power and bank risk;
iii. To analyse the cointegrating relationship between CEO power and bank risk;
iv. To analyse the causality relationship between CEO power and bank risk.

1.4 Research questions

The following are the research questions of the study:

i. What relationships exist between CEO power and bank risk?
ii. What moderating effect does board independence exert on the relationship between CEO power and bank risk?
iii. What is the cointegrating relationship between CEO power and bank risk?

iv. What is the direction of causality between CEO power and bank risk?

1.5 Scope of the study

The study focused on commercial banks in Uganda, for the period 2005 to 2020. Commercial banks have been chosen because of their pivotal role in the economic development and financial health of a country as financial intermediaries. The period of 2005 was chosen because it is the year in which the Financial Institutions Corporate Governance Regulations being followed by banks were enacted into law in Statutory Instrument Number 47 of 2005. This data was collected up to 2020 as it was expected that all commercial banks had their 2020 financial statements audited and published by the data collection period in 2021, and 16 years after the change in banking regulations is an adequate period to undertake an assessment of the effects thereof.

1.6 Potential contribution to knowledge

The findings from this study will contribute to the body of research knowledge on CEO power, board independence and risk-taking in banks. Previous studies on how CEO power affects risk taking have produced mixed results, wherein some studies show that CEO power can reduce the risk (DeBoskey *et al.*, 2019; Belenzon *et al.,* 2019; Haider & Fang, 2018). Other studies indicate that increased CEO power increases capital expenditures and risk (Mamun *et al.,* 2019; Huang *et al*., 2018; Li *et al*., 2016a; Li *et al*., 2014). The mixed findings in these studies and their failure to give conclusive remedies could be because they only concentrated on the direct relationship and ignored the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. In certain studies, the lack of conclusive findings or the presence of mixed findings is due to failure of including moderator variables that may influence the relationships (Makhlouf, Laili, Ramli, Al-Sufy & Basah, 2018; Garcia-Castro & Aguilera, 2014; Hayes, 2013).

Previous studies by Hunjra *et al.* (2021); Hunjra *et al*. (2020); Dias, (2020); Teixeira *et al.* 2019; and Luu (2015) have focused on external factors such as monitoring and regulation of banks by government agencies and capital markets as affecting bank risk taking with little focus on internal corporate governance factors such as CEO power. Further to this, most CEO power studies have concentrated on the characteristics and effects of CEO

power but have not considered how that power could be regulated. This study will contribute to the body of knowledge by showing how board independence moderates the relationship between CEO power and bank risk taking.

Research on CEO power in Africa is scanty (Anaso, 2020; Walla, 2019; Saidu, 2019). Despite an increase in studies about CEO power in developed and developing countries, African countries especially those that are south of the Sahara, are lagging (Saidu, 2019). Moreover, when it comes to CEO power in Uganda, no study has been undertaken in this regard, specifically considering CEO power and risk taking in the banking industry in Uganda, despite the many bank challenges therein. Findings from this study will feed into bank policy and practice in Uganda and extend the scope of scholarly studies on CEO power, board independence and bank risk taking to include Uganda. Broadly, this study seeks to ascertain whether the ability of CEO power to influence risk in a bank can be moderated by board independence, an emerging topic within the banking and risk management academic space.

The study will further contribute to the stabilisation of the banking industry in Uganda by making suggestions to bank directors on how bank risk can be managed through the board of director's regulation of CEO power and bank risk. There have been many bank closures and take-overs in Uganda, and one of the reasons given has been excessive risk taking. Given that many banks are private limited companies, the control of CEOs and owners seems to be high. To confirm whether this is the situation, this study will establish and advise on the policies and practices that can help banks better manage risk exposure that arises from the power decisions of the CEOs. For the banks that are listed on the Uganda Securities Exchange, this study will analyse the moderating role of board independence on the relationship between CEO power and bank risk taking in those banks and compare whether this is any different from the situation among banks that are private limited companies. Thereafter the aggregate situation in the Uganda banking industry was assessed with the aim of proposing recommendations on improving the situation in the Ugandan banking industry.

There are policy gaps in The Financial Institutions Act of Uganda (2004), which is silent on matters pertaining to managing or utilising CEO power regarding risk levels of banks.

Thus, this study will further suggest policy adjustments that the Government of Uganda can include in the statute, to have bank risk managed better and improve/strengthen the role of independent boards in regulating the effect CEO power on bank risk-taking. The study will also suggest policy amendments to the Capital Markets Authority and Bank of Uganda, both of which have produced corporate governance guidelines but with no express statements regarding the role of an independent board in the relationship between CEO power and bank risk-taking. More guidelines regarding the regulation of CEO power are needed on top of management of shareholding and the CEO also holding the position of Board Chairman. Since Table F of the Uganda's Companies Act (2012) that deals with Code of Corporate Governance Boards and Directors is also silent on matters pertaining CEO power and bank risk-taking, and independent boards, this study will endeavour to make necessary policy suggestions to guide practice in the banking sector.

Lastly, this study will inform commercial banks on how to incorporate CEO power statements in the corporate governance statements' section of the annual reports. Similar to the reporting on the composition of the board of directors, and its committees, including the risk committee, which is mandatory committee, banks will specifically be guided on how to report on matters pertaining to CEO power, and how this impact on the risk taking of the bank. Although board independence is mentioned in the reports, its role in the relationship between CEO power and bank risk is ignored. One therefore needs to know the most appropriate practice sufficient for risk-taking, given independence of the board. Among the many risks mentioned in the risk management statements, insolvency risk is ignored, despite its role in determining survival of the bank.

1.7 Chapter conclusion

This chapter presented the background to the study, problem statement, research objectives, research questions, scope of the study and the potential contribution to knowledge. The next chapter presents the review of literature about CEO power, bank risk, board independence and the moderating effect of board independence on the relationship between CEO power and bank risk.

Chapter Two: Literature review

2.1 Introduction

This section presents the relevant literature review on the moderating role of board independence in the relationship between CEO power and bank risk-taking. It considers several studies have been carried out regarding CEO power and risk, as well as the respective applicable theories pertaining to CEO power, as well as the role of the board.

2.2 CEO power

2.2.1 Definitions of CEO power

In its general meaning, power is considered as a relationship between people or groups that can influence the actions of other people or groups, according to the wishes of the first party (Lasswell, Kaplan & Brunner, 2017). CEO power is the ability of the CEO to exert influence over the decisions of the board and those of the company. It is also the ability of the CEO to overcome resistance and influence key decisions within a firm (Saidu, 2019; Haleblian & Finkelstein, 1993). Wei (2019) avers CEO power as the capacity of the CEO to overcome resistance in achieving their preferred outcomes. While studying CEO power in Indonesia, Hamidlal and Harymawan (2021) recognised the CEO to be an executive officer with the highest position in the company and who is fully responsible for company performance. The position of the CEO and nature of duties also give CEOs power (Saidu, 2019). Power also gives one ability to employ his for her will and accomplish their goals in a certain affiliation (Singh, Tabassum, Darwish & Batsakis, 2018). Hemdan, Suhaily and Ur Rehman (2021) deem CEO power to denote the degree to which a CEO has impact over a firm's management.

From the assertions above, the CEO is the head of an institution, makes crucial decisions, leads other members and is responsible for the decision taken. The board of directors also relies on information provided by the CEO regarding the activities of the organisation. CEOs provide the board with information, deal with the external environment and take charge of daily administration (Wei, 2019). A CEO, by virtue of being the top echelon, has structural power and can influence risk-taking decisions of the organisation. The CEO and the management team are ultimately responsible for the implementation of the firm's strategic plan, in line with the upper echelons theory.

2.2.2 Theoretical framework of CEO power

Different theories have been applied to explain the dimensions of CEO power and its effect on bank performance outputs. The two key theories underpinning CEO power are the upper echelons theory (Herman & Smith, 2015; Hambrick & Mason, 1984) and the agency theory (Berle & Means, 1932; Jensen & Meckling, 1976; Fama & Jensen, 1983). In addition, there are other background theories such as the stewardship theory (Donaldson, 1985; Ng, Bucic & Ruyter, 2005; Donaldson & Preston, 1995; Donaldson & Davis, 1991), resource-based theory (Wernerfelt, 1984; and later developed by Penrose (1959) and the social network theory (Saidu, 2019; Kavitha & Bhuvaneswari, 2016), which guide CEO power.

2.2.2.1 The upper echelons theory

The main proponents of this theory were Hambrick and Mason (1984) who opined that organisational outcomes such as strategic choices can be predicted from a managerial background and that top managers are responsible for, and can produce, results in an organisation. Since top managers are the main decision makers in an organisation; thus, risk taking and the risk level of a bank can be attributed to them, their decisions and their personalities, experiences and values when dealing with situations. The theory also suggests that top executives determine the strategic choice. In the case of a bank, managers have much discretion in choices such as which loans to give, which combination of business portfolio to hold, what investments to make, and the capital structure (Bonini & Taatian, 2021).

The upper echelons theory organisational outcomes area affected by the strategic decisions of the top executives' values, characteristics, and experiences (Shen, 2021). These views were earlier observed by Hambrick and Mason (1984). They point out observable managerial characteristics of CEOs or top management that affect strategic decision-making and organisational performance, aside from psychological characteristics, to include the financial position, age, education, socioeconomic roots, group characteristics, other career characteristics and functional trucks. This analysis, therefore, indicates that a CEO's power is reflected in the several attributes of that person and the nature of decisions that the person makes.

The cognitive values of a CEO are reflected in his/her strategy since he/she has a role in making vital and effective decisions for any firm (Hamidlal & Harymawan, 2021; Saidu, 2019; Hambrick & Mason, 1984) and those of a bank specifically (DeBoskey *et al.,* 2019). Such decisions can affect the risk level of a bank. In cases where CEO power is excessive and the decisions being made are questionable, this will expose the bank to more risk. Bank CEOs with a high risk-taking attitude facilitate progress (Bui, Chen, Lin & Lin, 2021). Conversely, too much power from an influential CEO making cautious decisions will reduce the risk of a bank.

2.2.2.2 The agency theory

The main proponents of this theory were Berle and Means (1932), Jensen and Meckling (1976) and Fama and Jensen (1983). The shareholders, as principals, entrust the operations and running of a company to managers, who are agents, to run the company on their behalf, hence, the agency relationship between shareholders and managers. The separation of ownership from control in firms leads to conflicts of interest between managers, including the CEO, who are agents, and shareholders who are the principals (Ochieng, 2016). According to the agency theory, corporations need to address divergent interests by checking the actions of management via monitoring and controls (Li, Li & Minor, 2016; Yusoff & Alhaji, 2012; Jensen & Meckling, 1976). Thus, the agency theory addresses problems that arise when the desires or goals of the principal and agent are in conflict. The firm is a legal fiction with conflicting objectives of individuals and all parties act in their self-interest (Jensen & Meckling, 1976). This often leads to the shareholders and CEO having different attitudes towards risk. The problem of information asymmetry increases in banks given their complexity (Hamidlal & Harymawan, 2021; Mavrakana, 2019). The board, through its oversight role, should monitor the CEO's activities as per the agency theory (Fama & Jensen, 1983), and will attempt to guide and dominate over the decisions of the CEO regarding bank risk. The agency theory therefore puts the CEO at the helm of a firm as an agent of the shareholders, and hence has power. This power must be checked by the board to reduce CEO hubris, and the information and decision asymmetry existing between shareholders and management. A vigilant corporate board is therefore capable of limiting a CEO from pursuing his or her individual managerial interests (Li & Yang, 2019; Singh *et al*., 2018). Through the board of directors,

shareholders monitor CEOs to prevent them from investing in non-value maximising projects and from pursuing selfish objectives like empire-building (Onali, Galiakhmetova, Molyneux & Torluccio, 2016).

2.2.2.3 The stewardship theory

According to Donaldson (1985); Ng et al. (2005); Donaldson and Preston (1995); and Donaldson and Davis (1991), the stewardship theory contextualises situations in which managers are not motivated by individual goals, but rather are stewards whose motives are aligned with the objectives of their principals. In this perspective, stewards are company executives and managers working for the shareholders and are also expected to generate returns for the shareholders. CEOs are pro-organisation, have collectivistic behaviours than individualistic and self-serving behaviours (Shen, 2021). As a steward, a CEO is expected to pursue shareholders' interests faithfully and honestly. Although the stewardship theory views the CEO as a faithful person working for the best interests of the shareholders, excessive CEO power and discretion to making decisions leads to non-value adding decision making (Saidu, 2019; Veprauskaite & Adams, 2013), given inherent information asymmetry as per the agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976; Berle & Means, 1932). The CEO is viewed as a good steward who always has the bank at heart; thus, he/she needs support from the board in his/her decisions. Such support can be proffered through counselling and advice (Saidu, 2019; Hu & Alon, 2014). The CEO will formulate and implement decisions better, where he/she has good harmonious relationships with the board. Faithful individuals will quickly rise to the CEO position and as they remain faithful, they will be trusted by shareholders and other stakeholders, which will increase their power.

2.2.2.4 The resource-based theory

As postulated by Wernerfelt (1984), and later refined by Penrose (1959), this theory advanced the argument that the valuable intangible and tangible resources to which a firm has access, if applied well, will improve that firm's competitive advantage. The resource-based theory suggests that a company's resources are the main drive behind its competitiveness and performance. These resources include both tangible and intangible assets (Daryaee, Pakdel, Easapour & Khalaflu, 2011). The resources must be

non-substitutable, valuable, inimitable, and rare (Barney, 2001). Employees and managers form an important resource base that when trained and invested in, will be vital intellectual capital to the firm. They will be more committed to achieving organisational goals, hence reducing the need for constant monitoring by shareholders. One of the sources of CEO power is where a CEO was internally hired or a former employee in the bank to which he/she has been appointed CEO. By appointing a CEO from among the employees, the resource-based theory applies. Banks are encouraged to look internally, harness and identify resources that give them competitive advantage over others. In such cases, an executive whose performance is superior can be promoted to the CEO position. This will give him power to perform even better at a strategic level.

2.2.2.5 The social network theory

The way individuals, organisations and groups interact with one another to achieve their common goal is the core of this theory (Kavitha & Bhuvaneswari, 2016). A CEO is expected to have an excellent reputation and to reflect good values for the bank (Hamidlal & Harymawan, 2021). One of the sources of CEO power is prestige power which arises from the CEO having connections outside the bank including other directorships. A bank CEO with vast connections and social networks wields more power than one who has no connections and networks outside the organisation. Although it is advantageous for a CEO to be highly connected since he/she will learn and share with other individuals, such a CEO may not concentrate on the firm he/she manages (Kirchmaier & Stathopoulos, 2008). The status of being connected may overwhelm the CEO such that he/she misuses his power by making risky decisions that strengthen his/her connections or widening them, rather than build and achieve the strategic direction of the bank in which he/she is CEO. This will then adversely affect the risk position of the bank firm.

2.2.3 Empirical literature regarding CEO power

Although CEO power determines risk-taking in banks (Hunjra *et al.*, 2020), previous studies have shown mixed results regarding the benefit of CEO power to a firm, thus making CEO power a two-pronged phenomenon. Some studies contend that powerful CEOs make risky decisions which can lead to the collapse of a company (Saidu, 2019), while others opine that powerful CEOs add innovative and create value to firms if they can respond to changes rapidly (Shahbaz, 2018; Li, Lu & Phillips, 2018). It is believed

that being the main director of a bank, the CEO takes the lead role in decision making (Hamidlal & Harymawan, 2021).

2.2.3.1 Sources and dimensions of CEO power

Previous studies on CEO power and bank risk have pointed out varying sources of CEO power including one holding both titles of board chairman and CEO or CEO/chair duality. They also include percentage of shareholding, the number of years the individual has served as CEO or tenure, CEO holding directorships in other firms and the CEO's connections to key officers and board members, the CEO having been an executive in the firm before being appointed CEO and the CEO being one of the founder members of the firm (Mostafa, Hasnan & Saif, 2021; Hamidlal & Harymawan, 2021; Hemdan, Suhaily & Ur Rehman, 2021; Hua *et al*., 2019; Saidu, 2019; Li *et al*., 2018; Han, Nanda & Silveri, 2016; Boyd, Hynes & Zona, 2011). These lead to the dimensions of CEO power including structural power, ownership power, expert power, prestige power, CEO being a former executive and the CEO being a founder respectively. These different dimensions of CEO power gauge the extent of a CEO's power in combination or in part. These have also been pointed out by authors who have related CEO power to other variables like firm value, profitability, and firm earnings. The various dimensions of CEO power are discussed below.

2.2.3.2 Structural power

This comes from a CEO holding a high position in the organisation's hierarchy, having many positions and many titles, and being the only insider of the board or CEO resident (Saidu, 2019). From organisational theory and management, and in the culture of many organisations, where an individual is in a higher positioned by order of hierarchy and as shown in the organisational structure, such a person has power and if the person is a CEO, he or she is at the peak of the chain of command. Such an individual will command respect by virtue of their position in the organisational structure, hence having structural power. Also, where an individual has a greater role to play beyond that of being CEO,

such as being a chair of the company's board of directors, such an individual is said to have structural power (Aibar-Guzmán & José-Valeriano, 2021). It is believed that as a CEO matures, the hierarchy of organisation and their structural power grow, such an individual becomes more dominant. As Schumacher (2021) emphasised, the dominance continues to solidify the person approaches the position of ultimate authority. Those characteristics will give such an individual authority to make decisions and ensure that the team lead implements them.

2.2.3.3 Ownership power

Previous studies have identified CEO share ownership as one of the sources of the power of such CEOs and has influence on agency costs (Baker, Lopez, Reitenga & Ruch, 2019; Noradiva, Parastou & Azlina, 2016; Shahveisi, Khairollahi & Alipour, 2016; Abobakr & Elgiziry, 2016; Bemby, Mukhtaruddin & Ferdianti, 2015) since such a CEO would need either more or less monitoring. A shareholder commands respect as one of the owners of the company; but when the CEO also owns shares, this will give that CEO power. It is against that background that it is believed that by making one of the shareholders to be CEO, there are less agency costs, especially in monitoring the activities of management by shareholders. The information and decision asymmetry between shareholders and management reduces with a CEO being a shareholder. Such trust will enable the CEO to command respect among organisational members, hence a symbol of power. However, this can also be detrimental in a way that more monitoring will be required where such CEOs will have the ability to redirect or consume corporate resources in ways that benefit themselves, but which are not in the best interests of the other owners as per agency theory (Jensen & Meckling, 1976 and Gogineni, Linn & Yada, 2013). The CEO shareholder may take advantage of the dual role to selfishly hide useful information from other outside shareholders which is one of the disadvantages of this source of power.

2.2.3.4 Expert power

This dimension of power is derived from the number of years the individual has served as CEO or tenure. As one serves in the position of CEO, such a person learns the art of managing the organisation. He or she can foresee possible outcomes of decisions and can advise effectively. It is possible that many organisational members will respect the

person due to the longevity at the epic of the organisation and such a person has power. More knowledgeable CEOs were found to increase value of firms (Chiu, Chen, Cheng & Hung, 2019). A CEO with experience can deal with environmental dependency, has cognitive work experience gained with time and can deal with critical contingencies and is said to have expert power (Wu, Quan & Xu, 2011). Experienced CEOs with expert power are sensitive about their reputation (Lee & Kao, 2020) and will ensure that they make cautious decisions that do not lead the firm to losses or jeopardise their personal reputation. In fact, it is their reputation that will maintain their power and open opportunities to other jobs.

2.2.3.5 Prestige power

Prestige power arises out of personal status, respect, admiration accorded to a person, reputation, and connections that one has and other people's perception of that person's influence through contacts and qualifications. The reputation that one has acquired in the office reflects that person's power (Saidu, 2019). As one's personal status, education, fame, reputation, and connections increase, so does the command and influence of that person. Prestige power grows with connections, CEOs holding directorships in other firms and the CEO's connections to key officers and board members. The reputation of a CEO contributes to the power of that CEO in the perception of stakeholders, and it even increases where such as a CEO is a board member of other organisations, be they profit or non-profit making (Lee & Kao, 2020). The way other stakeholders view the company is affected by the reputation of the CEO. These networks to which the CEO belongs will still bring a prestigious CEO more connections to the organisation, some of which will be political while others commercial. Employees and other lower-level managers of the organisation as well as its suppliers, customers and the public will hold such a CEO in high esteem. The fame which comes with prestige will further escalate the power of the CEO. The CEO with prestige power will also access, integrate, and interpret external information and knowledge due to these networks, which will lead to better decision making.

2.2.3.6 CEO being a former executive

An individual who was a former executive of a bank before being appointed CEO commands more respect than one who was not. Such a person will have knowledge about the bank and all its operations. He/she will also easily connect with most stakeholders of the bank and the bank operations will not experience a CEO change shock as would have been the case if the person had come from outside. Such a CEO, if ambitious, will want, to take on new projects to prove that he/she is better than the previous one to whom he/she was a subordinate. In such cases, if the CEO is reckless, he or she will increase the risk exposure of the bank. An employee promoted to CEO position implies extraordinary performance and this will lead to other company members according to that person's respect. Promoting a former executive to CEO position also reflects good succession planning (Ma, Seidl & Guérard, 2015). Where there is good succession planning, a person who will replace the CEO is groomed and trained to take up such a position when time comes. An individual who has been groomed and later becomes CEO from within the firm commands respect and cooperation from other members of the organisation and board approval of such a CEO signifies trust in the person.

2.2.3.7 CEO being a founder

Where a founder member becomes CEO, he/she attains more power (Hemdan, Suhaily & Ur Rehman, 2021; Saidu, 2019; Li, Lu & Phillips, 2018). The performance of a founder CEO differs significantly from that of a non-founder CEO with regards to achieving organisational goals (Abebe & Alvarado, 2013). This could be because founder CEOs tend to have more commitment to the firms they founded. It is difficult to separate the founder owner from control of the company and many organisations depend on the social capital of their CEOs for survival and growth (Fund, 2016). For this crucial attribute, a founder member wields much power.

Previous studies have shown mixed results regarding the benefit of CEO power to a firm, hence making CEO power a two-pronged phenomenon. Some studies contend that powerful CEOs can make bad decisions which can lead to the collapse of company (Saidu, 2019). However, others opine that powerful CEOs are innovative and create value for firms if they can respond to changes rapidly (Shahbaz, 2018; Li *et al*., 2018). Both the

best and worst performing firms have been associated with powerful CEOs (Sheikh, 2018; Li *et al*., 2018; Adams Almeida & Ferreira, 2005). In as much as the CEO may not want to take on risky ventures to save himself/herself or the bank, outside directors will provide advice basing on their knowledge and exposure which will affect the effect of the CEO power on the overall risk of the firm. Independent directors may guide the CEO on how to cautiously take on risky ventures which will change the strength of the CEO's relationship to the level of risk. The Global Financial Crisis in 2008 was largely caused by lack of board independence (Ramly & Nordin, 2018).

Extreme outcome hypothesis posits that powerful CEOs tend to make less 'balanced' decisions (Sah and Stiglitz, 1986; Adams *et al.,* 2005). As a CEO becomes powerful, he or she becomes less consultative of other management team members and ends up individually taking extreme decision. Under such a CEO, there is less coalition and consensus in decision making. The possibility of committing errors increases hence more risk to the bank. Errors of judgement are also likely, which can lead to actual bank performance adversely deviating from the expected performance. Therefore, the extreme outcome hypothesis thus argues that more powerful CEOs should be associated with risky corporate strategies. CEOs that are less powerful, and with power not yet consolidated, will have more risk-avoidance behavior.

2.3 Bank risk

2.3.1 Definitions of risk and bank risk

Risk is the likelihood that the expected outcome will not be achieved or that adverse events may occur or the variability of returns from those that are expected (Horne, 2002). In banking, it is considered as an action which does not ensure outcomes (Hassan, Waemustafa & Hidthiir, 2020). Danaan (2018) considers risk to be the likelihood that an event will have significant impact (positive or negative) and that it relates to likelihoods, possibilities or probabilities linked to events with uncertain or unknown outcomes in the present moment. In finance, risk is unpredictability in expected outcomes, both negative and positive (Power, 2007). Cade (1997) and Van Horne (2002) give a statistical meaning of the term risk to be the probability of an adverse outcome measured by measures of dispersion such as standard deviation or variance around the predicted mean return. A higher deviation implies higher risk. Danaan (2018) considers risks to be subjective and,

as such, interpreted differently by board members, investors, community leaders, clients, and staff, all of whom are stakeholders.

2.3.1.1 Risk in banking

Risk in banking refers to an exposure to unpredictability of the outcome that contains a probability of variation in the desired or expected returns (Ishtiaq, 2015; Rahman, Abdullah & Ahmad, 2012; Gallati, 2003;). According to Ghosh (2012), risk in banks is a potential loss that may occur due to some antagonistic events such as economic downturns, adverse changes in fiscal and trade policy, unfavourable movements in interest rates or foreign exchange rates, or declining equity prices. Risk in banking is also considered to be undesirable impacts on returns due to various distinct sources of uncertainties (Bessis, 2002; Schroeck, 2002).

Risk in banking institutions is the possibility that the outcome of an action or event could bring up adverse impact that could either result in a direct loss of earnings/capital or may result in imposition of constraints on the bank's ability to meet its business objectives (Ishtiaq, 2015; State Bank of Pakistan, 2003). Therefore, risk in banking is the probability that an internal or external event or threat will adversely affect the earnings capacity of a bank and increase its volatility of earning and cash flows, which would eventually lead to insolvency.

When a bank is exposed to risk, it is considered unstable. This situation arises when the bank is not likely to achieve the expected profit and its capital is not likely to cover the losses. Such a situation will lead to insolvency. If a bank's senior management approves financing proposals without adequate due diligence, such a situation may result in poor asset quality, hence, excessive risk-taking (Ramly & Nordin, 2018). A bank's stability reflects the extent of the risk to which it is exposed. Although government regulation and deposit insurance have traditionally been used to reduce the possibility of depositors losing money in case of bank failure (Abbas, Masood, Ali & Rizwan, 2021), they have also served to distort the risk incentives of banks in that banks have complacently taken on more ventures that increase the risk of failure. This was also noted by Kim and Santomero (1988) who opined that it is the deposit insurance schemes that lead to banks

having overconfidence and consequently choosing portfolios of higher risk. This over-confidence in government and deposit insurance protection serve to increase bank risk taking, which can lead to collapse of banks.

2.3.2 Global bank risk-based regulations

2.3.2.1 The Basel Accords

Basel Accords are risk-based capital adequacy regulations enacted by the Basel Committee on Banking Supervision (BCBS) pertaining to recommendations on banking regulation and banking laws (BCBS) (Pham & Daly, 2020; Tahtamouni & Al Qaisi, 2016). According to the Bank for International Settlements (BIS) (2019a), after the banking crisis in the early 1970s in which several global banks had faced distress, central bank representatives from the Group of Ten (G10) industrialised countries, formed a committee on banking regulations and supervisory practices which was later named the Basel Committee on Banking Supervision in 1974 (Oyetade, Obalade & Muzindutsi, 2021). The G10 comprises 11 industrial countries including Italy, Germany, Belgium, Switzerland, Canada, Sweden, Japan, the Netherlands, France, the United Kingdom, and the United States of America, which provide technical advice on economic and financial matters. BCBS sets standards for banking regulation and aims at improving financial stability through ensuring strengthened bank supervision and regulation (BIS, 2018a).

The name of the accords came from Basel in Switzerland, the place where the Committee meets (Tahtamouni & Al Qaisi, 2016). The committee formulates and publishes Basel Accords containing regulations for banks to be followed by member countries. The Basel Accords are optional or non-binding and apply to member countries of the BIS (BIS, 2018a; Tahtamouni & Al Qaisi, 2016). The first Basel Accord was published in 1988 but revised later to result into Basel II Accord in 2004 (BCBS, 1988; BCBS, 2006). Basel II Accord pillars were revised in 2010 into the Basel III Accord (BCBS, 2010). Each of the Basel Accords had implications on bank risk as discussed below.

a. Basel I Accord

This was issued in 1988 after the committee noticed decrease in capital ratio in the early 1980s amidst globalisation which exposed banks to international risk (Aljaber & Al-Tamimi, 2021; BIS, 2019a; Tahtamouni & Al Qaisi, 2016). Basel I aimed to ensure that

banks held an amount of capital enough to cover their level of respective risk, to have the same capital standards and measures across jurisdictions and to have capital positions of comparable banks. However, it concentrated on credit risk and market risk but excluded other risks. It was issued in response to increasing risks of bank failure and to ensure the appropriate capitalisation of internationally active banks. The decreasing capital ratios and varying level of completion among banks was one of the reasons for the Basel I Accord.

This regulation was made with a high degree of consistency in application between banks in different countries. Its main aim was to reduce credit risk of banks while also regulating capital. It established minimum capital level for international banks stating that at least half of a bank's capital base should consist of equity capital and disclosed reserves (BCBS, 1988). It also required all international banks to hold a capital to risk-weighted asset ratio of at least 8% by end of 1992. The implication was that if a bank was to gain more risk, its risk-weighted assets would increase and would therefore be required to hold more capital (BCBS, 1997). To respond to any unexpected risk by a band, this accord recommended that the reserves should be increased (Tahtamouni & Al Qaisi, 2016).

b. Basel II Accord

The banking crises in the 1990s coupled with the criticisms of the Basel I Accord led to the development of this more comprehensive accord to further strengthen the stability of the international banking system (Tahtamouni & Al Qaisi, 2016). The Basel II Accord was developed in 1999 and published in 2004 (BCBS, 2006). Although the committee proposed this in 1999, the accord was implemented in 2007. This accord allowed banks to rely on internal mathematical modelling techniques to extrapolate required capital and risk, that is, use own internal models to assess credit risk when determining capital requirements. Operating risk capital requirement, market discipline, disclosure and review processes were introduced. Basel II Accord has three pillars intended to cover the major risks of a bank (BCBS, 2006). Given the many different internal models that banks have, the top management team may find it difficult to judge and manage the level of risk in a respective bank. Simplistic models may not show the high-risk areas.

The first pillar considered minimum capital requirements consisting of the same requirement as the Basel I Accord, with a minimum capital to risk-weighted asset ratio of 8%. It also required that at least half of the capital must consist of Tier 1 capital which consists of common equity and retained earnings (BCBS, 2006; BCBS, 1988). Banks were allowed to measure operational risk, market risk and credit risk in a way that reflected their business hence getting a more precise measure of their risks (Tahtamouni & Al Qaisi, 2016; BCBS 2006). Basel II also had a focus on market discipline and supervisory review to cover those risks not accounted for in the first pillar. Pham and Daly (2020) after a study about the impact of Basel Accords on the management of Vietnamese commercial banks concluded that change in the level of banks' risk and change in capital adequacy ratio are inversely and significantly related. Increase in capital adequacy would significantly reduce a bank's risk level.

The second pillar stated that the supervisors should control how well the banks estimated their need for capital and should encourage the banks to use good risk management techniques. If they considered that a bank did not have adequate capital in relation to their risk, they should take actions against the bank (BCBS, 2006). This implies that whenever a bank faced more risk, it could increase capital requirements. Pillar two also requires banks to develop customised risk management procedures and capital evaluations. This pillar also imposes a direct duty on the bank's management and board of directors in ensuring compliance to Basel II (Tahtamouni & Al Qaisi, 2016).

The third pillar demanded for more disclosure leading to better transparency for stakeholders (BCBS, 2006). Its aim is to ensure market discipline by imposing transparency requirements. These requirements permit market participants to evaluate the data on the bank's capital adequacy (Tahtamouni & Al Qaisi, 2016). This enables market participants to predict or measure the extent of risk.

c. Basel III Accord

The three pillars in the Basel II Accord were revised in 2010 and strengthened to form the Basel III Accord whose aim was to support banks facing the sever effect of the 2007-2008 financial crisis in terms of capital adequacy and liquidity (Aljaber & Al-Tamimi, 2021). This was implemented in 2013. The crisis of 2007 and 2008, according to the Basel

Committee, was caused by high leverage and low liquidity in the banking sector. This accord was aimed at strengthening the capital and liquidity regulation for banks to prepare for any shocks in future (BCBS, 2010). In Basel III, the number of principles for good bank governance increased to fourteen from the previous eight principles. Tahtamouni and Al Qaisi (2016) assert that Basel III had three pillars. Pillar I enhanced the minimum capital and liquidity requirements; Pillar II enhanced supervisory review process for firm-wide risk management and capital planning; and Pillar III enhanced risk disclosure and market discipline. Basel III of 2010 increased the minimum capital level, introduced the non-risk-based leverage ratio, increased the quality of capital to ensure that it is loss-absorbing and introduced the Liquidity Coverage Ratio and the Net Stable Funding ratio. The bank's capital ratio was increased to 2.5%. Capital ratio is the available capital expressed as a percentage of its risk-weighted assets. Risk-weighted assets are the bank's assets, including its interest-bearing loans to customers, adjusted for certain risks, such as the probability of default by the borrower and the loss that would result. Basel II also introduced a countercyclical capital buffer, leverage ratio and liquidity requirements. A countercyclical buffer aimed at incentivising banks to increase capital cushions when times are economically good to avoid the temptation to take more risk and invest all the capital for the highest gain possible owing to favourable economic conditions was introduced (Parchimowicz & Spence, 2020).

The three new principles relate to the responsibilities, structures, and processes of risk management, the responsibility of the Board with regards to its own activities and processes and the responsibilities and arrangements of Board in group structures (Tahtamouni & Al Qaisi, 2016). It also emphasised capital norms, liquidity standards, leverage and risk coverage which would lead to effective supervision, efficient management of risk and portfolios, more transparency in operations and increase in risk-sensitivity (Boora & Jangra, 2019; Tanna, 2016). The Accord increased requirements for quality and quantity of capital, minimum requirements for liquidity ratio, minimum requirements for leverage (BCBS, 2012). It however maintained the capital requirement to risk weighted assets at 8%. The accord proposed stricter regulations of how much of the capital that must be Tier 1 capital. The capital must consist of 6%, rather than the previous 4%, of tier 1 capital and 4.5% of common equity, compared to the previous 2%

(BCBS, 2012). The Basel III Accord enhances the transparency of banks and specifies what criteria the capital must meet to be counted as Tier 1- or Tier 2 capital.

d. Basel IV Accord

Published by the BCBS in December 2017, Basel IV enhances risk sensitivity of the standardised approaches (SA) for credit risk and operational risk. The accord limits the application of internal ratings-based (IRB) approaches to credit risk but eliminates using internal modelling approaches to operational risks from the calculation of regulatory capital requirements for corporates with a turnover of at least 500 million EUR. The Credit Valuation Adjustment (CVA) standards are also overhauled. It is expected that these reforms will enable comparability of capital ratios of banks. The capital floor has been revised to 72.5% to limit the extent to which banks can drive down capital requirements using their internal risk models (Feridun & Özün, 2020; BCBS, 2017a). Basel IV was to be implemented on 1 January 2022, but due to the impact of COVID-19 on the banking system globally, implementation was postponed to 1 January 2023 (Parchimowicz & Spence, 2020; Oyetade, Obalade & Muzindutsi, 2021).

In the Basel IV Accord risk-weighted assets were standardised for comparability and reliability of capital ratios (BCBS, 2022; Oyetade, Obalade & Muzindutsi, 2021). Basel IV limits the use of the Advanced IRB (A-IRB) approach to credit risks for low-default portfolios, removes the internally modelled approach and a revised standardised approach to CVA risks is introduced. It also removes the Advanced Measurement Approaches (AMA) for operational risk and revises the standardised approach, introduces an aggregate output floor to ensure that banks' risk weighted assets (RWAs) generated by internal models are no lower than 72.5% of RWAs as calculated by the standardised approach and finally introduces a leverage ratio buffer for Global Systemically Important Banks (G-SIBs), which will take the form of a Tier 1 capital buffer set at 50% of a G-SIB's risk-weighted capital buffer.

From the analysis of the Basel Accords above, it is noteworthy that Basel I focused on simple matrix and comparability but lacked risk-sensitivity. Basel II, due to newly available statistical and mathematical modelling techniques, allowed for more complex and risk-sensitive models. Basel III raised capital requirements, placed more emphasis on liquidity management, and introduced the non-risk-based leverage ratio. The key question in Basel I was whether a bank's capital is sufficient to meet the potential losses. Some of the challenges of Basel I, Basel II and Basel III are that banks use different approaches

to credit risk, bank differ in their computation of capital ratios, the definition of risky clients differs across banks, defaults used by banks differ in definition, the margins of conservatism added by banks to risk parameters differ, approaches differ when adjusting for cyclical effects, issues arise when estimating parameters for low-default portfolios and there are also different approaches when translating external ratings to internal ratings.

Although the Basel Accords were first published over 30 years ago, they have not ended bank crises and closures. The Accords have concentrated on capital requirements and liquidity as the major sources of bank stability. By adhering to Basel I, Basel II (2004), and Basel III (2010) risk-based capital adequacy regulations, banks would be required to hold adequate tiered capital based on the level of risk in their portfolio hence ensuring that their capital was sensitive to the risks reflected by banks' portfolios (Pham & Daly, 2020). Basel II Accord principles recognised the importance of Board members in providing an independent role in monitoring the bank operations as well as ensuring suitable accountability and transparency. However, the Accords together have been silent on the moderating role of board independence on the relationship between CEO power and bank risk. One of the reasons why bank risk exposure increased and even led to closure of some banks could be the failure to include this moderator relationship and guidelines on how the board of directors can regulate the extent to which the CEO exerts his/her influence on bank risk-taking.

Although Tahtamouni and Al Qaisi (2016) point out that for the Basel Accords to be effective, there is need for an effective and independent board to apply the principles on their banking system effectively by monitoring and evaluating the bank performance and ensuring that the bank has an effective risk management system. More so, there should be sufficient liquidity and capital adequacy able to prevent any potential deficits that may affect the bank, the moderating role of the independent board in regulating the extent to which CEO power affects a bank's risk is not mentioned.

2.3.2.2 Committee of Sponsoring Organizations of the Treadway Commission (COSO) Risk Management Guidelines

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is composed of five professional organisations. COSO was founded in 1992 as a private-

sector initiative formed to combat fraudulent financial reporting internal controls and enterprise risk management. It is sponsored by the American Accounting Association, the American Institute of Certified Public Accountants, Financial Executives International, The Institute of Internal Auditors, and the Institute of Management Accountants. COSO is committed to ensuring that organisations attain good performance through good leadership that enhances risk management, governance, internal control, and fraud deterrence (COSO, 2022; Wahyuni & Novita, 2021). It was upgraded to the 2013 Internal Control – Integrated Framework and later to the COSO Enterprise Risk Management framework in 2017. The objectives of Enterprise Risk Management (ERM) in the COSO framework are to ensure the implementation of the predetermined strategy, the effectiveness and efficiency of operational activities, the reliability of a financial report and the compliance with applicable regulations. COSO formulated five components of risk management that can be used to implement the organisation's setting to help achieve the goals. They include mission, vision and core values, business objective formulation, strategy development, implementation and performance, and enhanced value (Wahyuni & Novita, 2021; COSO, 2017). COSO groups risks into four categories including financial risk, operational risk, strategic risk, and information technology risk (COSO, 2017). All these must be managed using a well-thought risk management framework.

The executive summary of COSO (2017) Enterprise Risk Management (ERM) framework considers risk in the context of an organisation's performance and enables organisations to better anticipate risk in a proactive manner with an understanding that change creates opportunities, not simply the potential for crises. Many banks adopt COSO's Internal Control-Integrated Framework which has five internal control elements including control environment, risk assessment, control activities, information and communication, and monitoring activities. The internal environment is considered the bedrock of formation of company policies, especially risk management policies. Board members, under the element of control environment, are expected to tailor the control framework to influence a bank's culture, ethics, and philosophy, all aimed at establishing a good control environment and maintaining it. Regarding risk assessment, the top management team and board of directors should assess risks in time. Top management sets goals and competitive strategies to achieve the company's vision, mission, and goals (Wahyuni & Novita, 2021). A bank's risk tolerance should be determined as well as establishing

appropriate risk measurement practices. Manual and automated control activities should be instituted. New or altered activities needed to manage risk level should be instituted as risk exposures change. There must be an information management system that safely stores and controls the information needed to achieve the organisation's control objectives. Controls and activities must be monitored by the audit function. Self-assessment and audit review results should be reported to the board of directors of banks. Having an internal audit department is essential for strengthening monitoring activities. For banks, there must be frequent assessment of lending policies to ensure fair lending risk. In 2017, COSO published Enterprise Risk Management with Strategy and Performance (COSO, 2017).

COSO emphasises the compilation of frequent Risk management reports. The reports enable management to easily analyse external and internal factors and come up with steps to mitigate strategic risks and threats in a proactive manner in an integrated risk management manner. COSO's 2017 ERM process involves setting the mission, vision and core values, developing strategy, formulation of business objectives, implementation and performance and eventually enhancing value (COSO, 2017). The process, once carefully implemented, will ensure minimum risk for the bank. The roles of top management, middle management and other staff is pertinent is ensuring that this is achieved.

Since banking operations and their associated risks are unique, there is need for specialised risk measures to cater for the respective peculiarities (Adam, Soliman & Mahtab, 2021). Adam *et al.* (2021) combine the ERM model for the banking sector and the CAMELS (Capital adequacy, Asset quality, Management soundness, Earnings and profitability, Liquidity, Sensitivity to market) model for assessing performance of banks. Banks use the CAMELS model to assess their financial health using ratio. Combining the COSO ERM model and the CAMELS model gives rise to the following matrix which shows ratios and risk measures:

Table 1: Matrix of ratios and risk measures for the combination of COSO ERM model and the CAMELS model

CAMELS-MODEL COMPONENTS	ERM - THEMES					
		Risk organisation & Governance	Risk insight and strategy	Risk process and decisions	Operating and regulatory environment	Risk monitoring and reporting
	Capital adequacy	CAR	CAR	CAR	CAR	CAR
	Asset quality	RPLL	CAR	NPL., COR, LLR	HIE	LRR
	Management soundness	BODE, ACE	CRO, RMS, IAF	TETOE, PPE	RPPR	QMDFR
	Earnings and profitability	EER	COR	COR	MSR	AUQ
	Liquidity	BRMCE	ALCO	LR, LDR	EILR	DRG
	Sensitivity to market risk	BRMCE	MRMC	FXT, RPG	FXG, RPG	QRAD

Source: Adam, Soliman and Mahtab (2021)

The key to the abbreviations is in Table 2 below:

Table 2: Quantitative measures of items in Table 1

Abbreviation	Meaning	How it is calculated
CAR	Capital adequacy ratio	Risk weighted asset/Qualifying capital
RPLA	Related party loans to loans	Related party loans/Total loans
NPL	Non-performing loan ratio	Total non-performing loans/Total gross loans
COR	Cost of risk	Loan provision expense/Gross loans
LLR	Loan loss reserve/coverage ratio	Cumulative loan provision/Total non-performing loans
HIE	Highest industry exposure	
LRR	Loan recovery ratio	Recovery/Total-non-performing loans
TETOE	Training expense to operating expense ratio	Total training expenses/total operating expenses
FPPR	Fines and penalties paid to total revenue	Fines and penalties paid/Gross revenue

PPE	Profit per employee	Total profit/Total number of employees
ERR	Earnings retention ratio	Earnings retained/Total earnings available for distribution
MSR	Market share of revenue	Firm gross revenue/Industry gross revenue
LR	Liquidity ratio	Total liquid assets/total deposit.
LDR	Loan to deposit ration	Total loans/Total deposit.
EILR	Exposure to industry liquidity risk	Net exposure to the interbank market / Total industry interbank dealings
DRG	Duration gap	Short term maturity of assets – short term maturity of liability
FXG	Foreign currency gap	Foreign currency assets – foreign currency liabilities
RPG:	Re-pricing gap/interest rate	Rate sensitive asset – rate sensitive liabilities.

Source: Adam, Soliman and Mahtab (2021)

Table 3: Qualitative measures of items in Table 1

Abbreviation	Meaning
BODE	Board of directors' effectiveness
BRMCE	Board risk management committee effectiveness
ACE	Audit committee effectiveness
CRO	Presence of a Chief Risk Officer
RMS	Risk management structure
IAF	Internal audit function
QMDFR	Quality of management discussion in financial reports
ALCO	Presence of Assets/Liabilities committee
AUQ	Audit quality
MRMC	Presence of management risk management committee
QRAD	Quality of financial reporting and additional voluntary disclosures

Source: Adam, Soliman and Mahtab (2021)

The matrix in Table 1 shows the extent to which the elements of the CAMELS models can be used to assess the risks embedded in the COSO ERM framework.

The COSO framework gives guidelines on risk management of several enterprises including banks. It introduces the strategic approach to risk management and the need to consider organisational culture, vision and mission while managing risk. When combined with the CAMELS model, different ratios can be used to assess various risks of an organisation from the perspective of capital adequacy, asset quality, management soundness, earnings and profitability, liquidity, sensitivity to market. Despite these

guidelines, COSO guidelines are silent on the moderating role of board independence on the relationship between CEO power and bank risk-taking.

2.3.3 Theoretical framework of bank risk

Several frameworks and theories have been advanced to explain risk-taking in banks. They include portfolio theory/model, contracting model, regulatory hypothesis theory, risk balancing hypothesis, and the managerial overconfidence hypothesis.

2.3.3.1 Portfolio theory/model

The main proponent of this theory was Harry Markowitz in 1950 who stated that the decision to take on a risk must be guided by the return expected from that venture. High risk investments must have high expected returns. This is the essence of the modern portfolio theory (MPT). According to this model, banks become reluctant to invest in ventures that bring high returns albeit with low profitability in situations where deposit markets are more concentrated. They take on less risk. However, as deposit markets become less concentrated, individual banks take on risky ventures by attempting to take on low profitable ventures. A bank CEO must analyse every potential project returns relative to its risks. Thus, there is a need to maximise the expected return of a portfolio given an amount of risk (Osayi, Dibal & Ezuem, 2019). A bank's portfolio includes the different types of loans given out and the ventures in which surplus funds are invested to earn interest and future cash flows beside lending activities including business innovation activities and financial instruments such as bonds and treasury bills. Expansionist ventures that may be taken up by the CEO have to be done after analysing the probability of loss (risk) relative to the benefits or returns expected. A bank CEO should ensure that the risks of the portfolio are minimised and the returns are maximised. Any error in this will expose the bank to insolvency. It is noteworthy that the decision to invest in an asset or investment venture is not based on that asset's individual absolute returns but rather the relative returns and risks of other investments in that category.

The need to diversify investment and hedge against risk needs not to be ignored. This approach to quantification of the relationship between risk and return is useful to a bank because it gives an objective approach to risk taking from which a CEO can benefit. Using the standard deviation of expected returns and using the weight contribution of each

investment to the portfolio (Markowitz, 1991), the MPT makes it possible for the CEO to take calculated risks.

The key objectives of a bank's portfolio management strategy are liquidity, profitability, and safety (Osayi, Dibal & Ezuem, 2019). These must be reconciled as the bank attempts to get the most optimum portfolio to reduce risk. While using the MPT, the assumption is that the decision maker is rational and there are efficient markets. Sometimes, the power of a CEO overshadows their rational decision-making ability and the markets in Uganda are not efficient.

2.3.3.2 Contracting model

According to this model, risk increases with increasing competition in both the deposit market and the loans market. Boyd and De Nicoló (2003) opined that as a bank's market becomes more concentrated, a bank becomes risky. When a bank aims to win the market, there is a tendency for management of such a bank to take on more risk. In such cases, a bank may even reduce its loan interest and take on risky investments. To further affirm this, Li (2019) noted that bank risk-taking is affected by the competitive environment. However, with little or no competition, a bank will be cautious and selective of how it lends out and the risk charged. In this theory, competition is a deriver of risk-taking and risk exposure. This creates volatility on the assets section of the bank's statement of financial position or balance sheet.

2.3.3.3 Regulatory hypothesis theory

The regulatory hypothesis theory proposes increasing the capital ratio with an increase in the risky portfolio. Koehn and Santomero (1980) in Abbas *et al. (*2021) conclude that the rise in capital leads to an increase in banks' risk. To have a strong capital base, a bank's CEO must take on risky ventures albeit legally. Banks as financial intermediaries get money from surplus units and finance deficit units. But as they do this, they must maximise shareholders' wealth using depositors' money. If they concentrate on satisfying shareholders, they will expose depositors to high risks. To protect depositors, the Central Bank gives guidelines and regulation. There is also the government deposit insurance scheme to do this protection. Although the money of the depositors is secure due to the guarantees of insurance, the deposit insurance plan motivates bank managers to engage

in risky projects (Abbas *et al.,* 2021; Ding & Sickles, 2018). Government regulation, deposit insurance and government bail-out options make bank CEOs engage in risk-taking activities. While studying banks in Indonesia, Gurendrawati *et al.*, 2021 advised that to optimally manage risk, banks ought to follow the regulations set out by central banks.

2.3.3.4 Risk-balancing hypothesis

This hypothesis implies that as a bank attempts to reduce one risk, it may increase another risk. Attempting to reduce one risk may ignite another type of risk (Danaan, 2018). The risk balancing hypothesis suggest that banks, other businesses, and individuals have an equilibrium level of total risk they are comfortable with (Hulinsky, 2015). At that level, they are willing to take on certain risks as long as doing that can reduce another risk. In the same spirit, banks can perform risk balancing by altering one of the types of risk opposite of the other to maintain the equilibrium level of total risk. The first paper written on balancing risk was by Stephen C. Gabriel and C. B. Baker in 1980 while referring to risks in agriculture (Gabriel & Baker, 1980). Although it was in agriculture, the concept applies to commercial bank risk taking. For example, there is an inherent incentivisation by banks with lower liquidity risk to increase other risks (Grossmann, 2018). Using a data set of 30 Vietnamese banks from 2007 to 2019, Nguyen, Le & Ho (2021) found that credit risk negatively affected bank insolvency.

2.3.3.5 Managerial overconfidence hypothesis

The managerial overconfidence hypothesis says that managers credit themselves for successes while blaming outside factors for failures, cause managerial overconfidence to increase following successes but not commensurately decrease following failures (Adam, Fernando & Golubena, 2015). Managers base on the outcomes of their past financial decision to make current decision. Where a manager made a decision in the past and it was successful, such a manager will develop confidence and make a decision in a similar situation even if this may lead to adverse results. A CEO who is overconfident tends to make riskier decisions and increase the likelihood of bankruptcy when he/she delays reaction to bad news (Leng, Ozkan, Ozkan & Trzeciakiewicz, 2021), especially in innovative environments such as the banking sector. Past financial success creates

managerial over-confidence. If a manager made a loss out of a decision, such a manager will blame it on misfortune and will not affect his level of confidence. Over-confident managers take on more risk, but when the decision leads to fall in revenue or any other negative result, managers will blame this on bad luck or other causes; thus, they will try again.

2.3.4 Types of risks that banks face

Banks are exposed to several risks such as liquidity risk, market risk, credit risk, operational/transactional risk, external business risk, legal and regulatory risk, foreign exchange risk, interest rate risk, counterparty risk, reputation risk, fraud risk, strategic risk, technology risk, off-balance sheet risk, governance risk and solvency risk (Gurendrawati *et al.*, 2021; Osayi, Dibal & Ezuem, 2019; Okafor & Fadul, 2019; Buston, 2015; Ishtiaq, 2015; Shafique, Hussain & Hassan, 2013; Abu & Al-Ajmi, 2012; Hassan, 2011; Kuritzkes & Schuermann, 2010; Al-Tamimi & Al-Mazrooei, 2007; Crouhy, Galai & Mark, 2006; Bessis, 2002; Pyle, 1999; Santomero, 1997). Some of the risks are systematic while others are unsystematic. Systematic risk is that possible uncertainty that is influenced by external factors that the bank cannot control while unsystematic risk refers to those possible adverse occurrences that can be controlled by the bank. The several risks are explained below.

2.3.4.1 Liquidity risk

This arises when a bank lacks money for running operations mainly due to possibility of its creditors to extend or renew credit to it (Buston, 2015). It arises as a result of unexpected raise in withdrawals by depositors that may force banks to liquidate their assets in the shortest time period. It arises when there is a possibility of the bank not being able to meet its cash obligations in form of customer withdrawals, demands for loans and costs of operations (Osayi, Dibal & Ezuem, 2019; Danaan, 2018). Where a bank fails to dispose of its holdings in securities or any assets without incurring great losses of capital and or income during conversion, it incurs liquidity risk (Okafor & Fadul, 2019). Liquidity risk forms part of the risk profile of a bank Gurendrawati *et al.*, 2021). Rapid increase in the sudden demand of the bank's depositors and an inadequate market depth or market disruption can lead to liquidity risk. Inadequate liquidity can induce a bank towards insolvency (Ishtiaq, 2015). Different financial ratios such as liquidity ratio, capital

adequacy ratio and bad debts ratio have been used to represent liquidity, capital and credit risks, respectively, in order to measure the risk management.

Whenever different cash revenues and payments are not matched in time and or amount, a bank will be exposed to liquidity risk. Liquidity risk can either be funding liquidity risk or market liquidity risk Funding liquidity risk occurs whenever there is probability that a bank is not able to immediately settle its obligations while market liquidity risk is where there is chance that a bank cannot sell or buy assets of different volumes at any time due to the inadequate depth of financial markets (Grossmann, 2018). At any time, a bank must have money or cash at its disposal to meet the immediate requirements. Customer confidence in a bank is built upon that bank's ability to give them their money on demand or as and when needed. The same applies to other bank creditors. Where a bank cannot meet its cash obligations immediately when they arise, customer confidence will reduce, and a bank will experience a bank run. Customers will fear that a bank is going insolvent; hence they will rush to get their money. Such bank runs can lead to eventual bank insolvency. A CEO must therefore ensure that all actions taken do not lead to a possible liquidity crisis.

2.3.4.2 Market risk

Whenever economic factors like exchange rates, interest rates, equity prices and commodity prices change, they will affect the in fact cause changes in the net assets value of a bank. This is what is referred to as market risk (Pyle, 1999). This is risk that emerges out of systematic factors arising from financial instruments like equities, security portfolios and instruments. The unfavourable change in the market value of instruments traded over the transactions' liquidity period (Ishtiaq, 2015). Market risk forms part of the risk profile of a bank (Gurendrawati *et al.*, 2021). Potential losses due to undesirable change in the interest rates, equity or commodity prices and foreign exchange rates will cause this risk. The liberalisation of the financial markets has increased the risks that banks face (Okafor & Fadul, 2019). A bank CEO has authority to advise or decide on what financial instruments in which a bank can trade. Where the analysis of expected returns is not done or is done poorly, or where the results thereof are ignored by a CEO, there is likely to be loss to the bank. Continuous loss to a bank can lead to insolvency.

2.3.4.3 Credit risk

It occurs where there is change in net asset value due to changes in the perceived or actual ability of counterparties to meet their contractual obligations (Pyle, 1999). In case borrowers default, there is a chance that both the principal and interest will be lost (Okafor & Fadul, 2019; Osayi, Dibal & Ezuem, 2019). Banks that can manage credit risk well have low level of non-performing loans, and this situation makes them channel higher credit to their borrowers (Gurendrawati *et al.*, 2021).

A CEO can influence the loan sales and the rescheduling to diversify some of the risk that may arise out of default. Taking steps to diversify assets with potential credit risk will reduce the possibility insolvency (Osayi, Dibal & Ezuem, 2019). A CEO can also advise on the recovery of poorly performing loans and those that have gone bad. Together with other functional managers and staff in the credit departments, a CEO can influence who to lend, how to lend, when to lend, how much to lend, from whom to recover, and who should get relief from paying back.

2.3.4.4 Operational/transactional risk

This is risk that results from costs incurred arising out of errors made in day-to-day bank activities like settlement mistakes, inadequate or failed internal processes, day-to day practices (Okafor & Fadul, 2019; Danaan, 2018; Ishtiaq, 2015; Kuritzkes & Schuermann, 2010; Pyle, 1999) and administrative bottlenecks which affect performance in service delivery (Danaan, 2018). Human capacity and back-office operations can result in losses and service failure if not handled well hence escalating operational risk (Danaan, 2018). The Basel Committee on Banking Supervision defines operational risk as the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events. This definition includes legal risk but excludes strategic and reputation risk (New Basel Capital Accord 2003:5). This description is in line with several other opinions that the operational risk is related to the likelihood of inverse effects on the financial performance as well as the capital of bank that is the outcome of staff members' negligence, inadequate internal processes and inapt management information systems or unpredictable and undesirable external events.

2.3.4.5 External business risk

This is a possibility of loss arising from factors from outside the bank in the external environment such as economic trends, political interference, competition, terrorist attacks and natural disasters (Danaan, 2018). For instance, where there are inflationary tendencies in the economy, such an occurrence is not caused by the bank but affects the value of currency held by the bank. It may also affect lending interest rates upwards, hence reducing the amount or borrowed and hence loss of revenue. Banks are ranked by profitability, client base and size; as a result, competition has emerged as one of the risk drivers (Danielsson & Zigrand, 2015 in Okafor & Fadul, 2019). Failure to respond to acts of competitors in time may lead to loss of revenue of the bank. Sometimes, political interference in the form of pressure to recruit certain people, offer loans at discounted rates or threats of closure may affect the future profitability, hence survival of a bank. Natural disasters will also make it difficult for banks to survive. Therefore, a bank CEO must put measures in place to prepare the bank in case of such eventualities and their possible adverse effects on the solvency of the bank.

2.3.4.6 Legal and regulatory risk

This is risk that comes from the non-fulfilment of regulatory requirements and disputes arising from violation or negligence of the several laws, regulations and ethical standards governing banks. A bank operates in a regulatory environment (Teixeira *et al.*, 2019) and contravention of any law or regulation will lead to litigation. Litigation may also arise from disputing decisions or actions of the bank say over-deduction of lean instalments. Litigation could also arise from negligence or unlawful dismissal of employees. Where a CEO leads to a bank carrying out activities that may lead to the withdrawal of the bank's operating license, such an act exposes the bank to regulatory risk. A CEO should be wary of such occurrences leading to financial loss to the bank and eventual insolvency.

2.3.4.7 Foreign exchange risk

The globalisation of the financial markets has increased the risks that banks face (Okafor & Fadul, 2019). This risk arises due to an erratic transition in the foreign exchange rate resulting into a negative impact on the obligations of banks (Tahir, 2006). There are instances where the exchange rate volatility affects the value of a bank's assets and

liabilities located outside the country (Osayi, Dibal & Ezuem, 2019). Saunders and Cornett (2008) describe foreign exchange risk as the threat that variation in foreign exchange rate could affect inversely on the value of assets or liabilities reported in foreign currencies. Similarly, Bessis (2002) defines foreign exchange risk as bearing losses due to unfavourable changes in the foreign exchange rates. These losses may arise because of an imbalance between the market value of specific assets or liabilities in the local and foreign currency. Market speculation, public debt, inflation, current-account deficits, and political stability can lead to depreciation on a country's currency. All the foreign exchange transactions with counterparties located outside the home country contain this risk. A CEO with power can influence the nature, location and quantity of a bank's assets and liabilities held in foreign currency. Where this is done well, the loss arising from foreign exchange transactions will be minimised. But if the CEO wrongly exerts his/her power without sufficient consultation, he/she will expose the bank to high foreign exchange risk-taking with will increase the loss of the bank due to foreign exchange losses. This affects the solvency and long-term survival of the bank.

2.3.4.8 Interest rate risk

This risk rises with the decline in the market value of banks assets, loans, or securities because of increase in the interest rates (Ishtiaq, 2015). The earnings of a bank can reduce due to the change in the interest rates. To meet the demands of clients, banks offer loans, take deposits of different maturities and interest rates. Whenever interest rates are not properly fixed, there will be an adverse impact on the bank's earnings as a result, leading to insolvency. A bank earns interest on the loans given to clients as part of income generation. However, the interest rates are based on factors both internal and external to the bank. To avoid loss due to interest rate volatility, a CEO must carefully study the factors that affect changes in interest rate and guide the bank accordingly. Where this is done wrongly, bank revenue will reduce which can eventually lead to insolvency of the bank.

2.3.4.9 Counterparty risk

This risk arises when the counterparty of a trade transaction potentially fails to meet its obligations (Ishtiaq, 2015). Santomero (1997) considers counterparty risk as the non-

performance risk of a trading party. The counterparty risk is more transient banking risk than typical default risk of creditors and is usually linked to credit derivatives in which each member of counterparty is sensitive to symmetrical two-way risk exposures (Bessis, 2002; Crouhy, Galai & Mark, 2006). In over-the-counter transactions, counterparty risk occurs where there is private contractual negotiation between two parties and there is potential for loss and cash was delivered but the counterparty fails to deliver the security (Okafor & Fadul, 2019). Where a CEO leads the bank to enter an over-the-counter transaction say with another bank, say in inter-bank money market, or any other party and the other party fails to meet their obligations or the bank fails to meet its obligation to which cash was committed, such a transaction may lead to losses to the bank, and eventually insolvency.

2.3.4.10 Reputation risk

In certain situations, the customers' and shareholders' beliefs and trust can affect the profitability and capital of a bank. When this arises, then there is reputation risk. The Basel Committee (2009) considers reputation risk as the possibility of losses emerging from a negative perception on the side of customers, depositors, counterparties, market analysts, investors, shareholders, regulators and other concerned parties (Ishtiaq, 2015). Banks consult and collaborate with stakeholders as they carry out their activities and this has an impact on their risk taking (Danaan, 2018), and for the good health of a bank in all areas, stakeholders must exert influence (Ochieng, 2016). Stakeholders are both internal and external. Internal stakeholders include executives, board of directors and employees, while the external ones comprise of customers, suppliers, debt creditors, trade creditors and shareholders (Ochieng, 2016). Banks affected by such risk find it challenging to develop new business affairs, and sustain existing ones.

2.3.4.11 Fraud risk

This is the possibility of losses arising from massive theft or fraud, which can eventually lead to collapse of the bank. Therefore, there is need for a high level of staff integrity so that it is possible to have transparency and accountability (Danaan, 2018). Where there is high integrity and minimum loss, customer confidence increases.

2.3.4.12 Strategic risk

This is risk related to the effect on profitability of a bank related to strategic decisions made by the management team of the bank (Ishtiaq, 2015). Investment decisions have an effect on all the other types of risks. It can also be escalated where there is investment in long-term ventures involving substantial commitment of resources. Ishtiaq (2015) also points out that increased competition may lead a bank to offer loans to new subprime customers having poor credit history or a sudden increase in the interest rate generates a quick fall in the mortgage volumes of banks moreover competition is inevitable (Wang, 2018).

2.3.4.13 Technology risk

In the advent of using information technology to carry out bank operations, a bank is exposed to risk of loss in earnings and capital in case of system failure, computer viruses, network failure, system upgrade downtime, system integration errors, lack of skill and imperfections in information systems. and hacking (Ishtiaq, 2015). One of the objectives of automating processes is to cut the costs of operations and by doing so, saving money, and increasing profitability and subsequently survival and solvency of the bank. Whenever there is a possibility that introduction and or improving the use of technology may not lead to the desired reduction in costs, then technology risk occurs. The failure in the introduction of technology meeting its desired end is seen in the continued bureaucratic inefficiencies, the redundancy of staff who are paid, and the excess capacity in the bank (Osayi, Dibal & Ezuem, 2019). A powerful CEO must therefore ensure that technology is deployed efficiently and effectively. A powerful CEO may do this well by enabling proper planning, system scheduling, system upgrades and upscaling, hence reducing the risk-taking of the bank. But if he/she wrongly deploys technology, then he/she increases the possibility of insolvency of the bank hence increased risk-taking.

2.3.4.14 Off-balance sheet risk

This is the possibility of losses faced by banks owing to have the contingent assets and liabilities within the banking transactions (Saunders & Cornett, 2008 in Ishtiaq, 2015), An example of such a situation is where a letter of credit guarantee is issued by a bank and entered as a contingent liability.

2.3.4.15 Governance risk

Such risk arises from inadequacy or poor governance (Danaan, 2018). A bank is likely to incur losses due to governance related matters such as poor corporate governance, ineffective oversight, mission drift, management quality, ownership, and strategy. Ensuring strategic survival of a bank is the role of the top management team. However, when top management does not follow the strategic plan, fail to monitor operations and the CEO fails to work with other top management team members, staff members and the board of directors, losses are likely to occur.

2.3.4.16 Solvency risk

The solvency of a bank is a joint product of its available capital and all risks (Ishtiaq, 2015). Bessis (2002) explains solvency risk as, “the risk of being unable to absorb losses with the available capital” (Bessis, 2002 p4). All the other risks collectively constitute solvency risks. Firms faced by all the risks above will not be able to survive and is likely to go bankrupt. By credit risk increasing due to debtors not meeting their payment obligations or delaying to pay, this affects the smooth running of day-to day activities (transaction risk) and also adversely affecting the loan portfolio (portfolio risk) (Danaan, 2018). This situation leads to a fall in cash flows (liquidity risk), reduction in profitability, loss of reputation, failure to meet legal obligations and eventually insolvency (solvency risk) and collapse of the bank. Insolvency can also happen when there are adverse changes in market interest rates (interest risk), when the bank lacks sufficient protection against fluctuations in foreign currencies (foreign exchange risk) and when there is a possibility that money invested in long-term assets will not produce positive returns (investment portfolio risk). Solvency risk therefore materialises when the other risks happen in total or in combination of some of them. Solvency risk should therefore be the focus of a bank and its measurement will guide appropriate remedies the aggregate solutions for all the other risks.

From the above analysis, banks face several risks that arise from factors both internal and external to the bank. Where risk-taking is excessive, a bank may face insolvency ultimately leading to its closure. It is therefore incumbent upon the CEO as the most member of the upper echelon to ensure that excessive risk-taking is minimised. For a

bank to succeed, management must take some risk but in a calculated way. Tran *et al.* (2019), Ozili (2018), Ramly and Nordin (2018), Abobakr and Elgiziry (2017), Ghassan and Krichene (2017), Berger *et al*. (2016), Lepetit and Strobel (2015) and Pathan (2009) indicate that the most prominent risk that commercial banks focus on most of the time is insolvency risk. This overrides all the others because an insolvent bank will go under liquidation. The risk of insolvency materialises when the other risks happen in total or in combination of some of them. This leads to liquidity problems and insolvency (Ghassan & Krichene, 2017). They also point out operating risk and interest rate risk as the other most prominent risks.

2.4 Board Independence

2.4.1 Definitions of Board Independence

A board is considered independent when the directors have no substantive relationship with the firm. The relationship could be in form of them being relatives or business-related parties (Tarus & Ayabei, 2016; Kung'u & Munyua, 2016, Jensen & Meckling, 1976). The governance function of the board of directors is through ratifying decisions made by managers (Yusoff & Alhaji, 2012), and monitoring implementation of those decisions (Yusoff & Alhaji, 2012; Fama & Jensen, 1983). Setting bank goals, meeting shareholders' obligation, managing day-to-day operations and considering interests of regulators and creditors are responsibilities of the board of directors in ensuring good corporate governance (Mavrakana, 2019). The proportion of independent directors on the board reflects the strength of the board (Fang *et al.,*2020). Fernandes *et al.* (2021) emphasise that the role of the independent directors is performed as a trade-off between the interests of shareholders (who prefer more risk), regulators and other public authorities (who prefer less risk and safer policies). It is particularly sensitive to regulatory recommendations/requirements (Fernandes *et al.*, 2021).

2.4.2 Theoretical framework of board independence

Different theories have been applied to explain board independence and its role. The key theory is the agency theory (Berle & Means, 1932; Jensen & Meckling, 1976; Fama & Jensen, 1983), while the background theory is resource dependency theory (Pfeffer & Salancik, 1978 in Davis & Cobb, 2010). These theories, in combination, are applicable to the study. To best describe practices, it is preferable that a mixture of theories is used

(Yusoff & Alhaji, 2012). A negligent board that intentionally or inadvertently ignores problems and allows a bank to engage in high-risk practices, as was the case with Enron (Ochieng, 2016), breaches its fiduciary duties to safeguard the shareholders. Non-executive directors must scrutinise management performance regarding meeting targets, monitor reporting of performance, and be satisfied about the integrity of the financial information and controls in the bank (Ochieng, 2016).

2.4.2.1 The agency theory

The main proponents of this theory were Berle and Means (1932), Jensen and Meckling (1976) and Fama and Jensen (1983). The shareholders as principals entrust the operations and running of the company with managers who are agents to run the company on their behalf, hence the agency relationship between shareholders and managers. The separation of ownership from control in firms leads to conflicts of interest between managers, who are agents, and shareholders who are the principals. The agency theory argues that corporations need to address divergent interest by checking the actions of management via monitoring and controls (Yusoff & Alhaji, 2012; Jensen & Meckling, 1976). Thus, the agency theory addresses problems that arise when the desires or goals of the principal and agent are in conflict. The firm is a legal fiction with conflicting objectives of individuals and all parties act in their self-interest (Alchian & Demstez, 1972; Jensen & Meckling, 1976). This will lead to shareholders and the management team having different attitudes towards risk. The board, through its oversight role, should monitor the CEO's activities as per the agency theory (Fama & Jensen, 1983), and will attempt to guide and dominate over the decisions of the CEO regarding bank risk. A vigilant corporate board can limit a CEO from pursuing his or her individual managerial interests (Singh *et al*., 2018).

2.4.2.2 Resource dependency theory

According to the resource dependency theory, external resources of organisations affect the behaviour of the organisation. To enhance its performance, a firm depends on resources from its environment. For example, employees come from outside, as do suppliers, customers, bankers, and other lenders. The procurement of external resources is an important tenet of both the strategic and tactical management of any company and directors should serve to connect the firm to external factors by co-opting the resources

needed to survive (Pfeffer & Salancik, 1978 in Davis & Cobb, 2010; Aldrich & Pfeffer, 1976). From the intellectual capital point of view, a firm should invest in relationships with those parties external to it so that they take interest in monitoring activities of the organisation since they form the relational aspect of intellectual capital. An organisation can look to its environment to recruit directors who can present independent monitoring of the CEO. These also bring in expert advice from which the bank can benefit. Where independent directors also hold other directorships, they can create social and business linkages between the bank CEO and other stakeholders, and this regulates his/her power (Saidu, 2019). Directors' link to external resources is beneficial to the firm since it abates uncertainty (Hillman, Cannella & Paetzold, 2000), which implies that risk of a bank will be reduced.

Although the stewardship theory views the CEO as a faithful person working for the best interests of the shareholders, excessive CEO power and discretion to making decisions lead to non-value adding decision making (Saidu, 2019; Veprauskaite & Adams, 2013) given inherent information asymmetry as per the agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976; Berle & Means, 1932). Therefore, a CEO needs advice and counsel from an independent board in decision making (Saidu, 2019; Hu & Alon, 2014). Thus, an independent board should have capacity to exert influence over the CEO (Saidu, 2019; Ramly & Nordin, 2018; Pfeffer & Salancik, 1978; Jensen & Meckling, 1976) and if this is done effectively, the impact of the CEO's power on bank risk should be regulated.

2.4.3 Empirical literature regarding board independence

The role of the board of directors in monitoring firm activities in general, and bank management activities in particular, cannot be ignored. The board of directors is one of the main components of corporate governance (Makhlouf *et al.*, 2018) and its characteristics determine the effectiveness with which it monitors bank managers and limits their opportunistic behaviour (Pathan, 2009). This role is believed to be further strengthened by the independence of the board. A board is considered independent when the directors have no substantive relationship with the firm. The relationship could be in form of them being family relatives or business-related parties. Board composition affects the independence and nature of decisions of the board (Stock, Groß & Xin, 2019; Nasr & Ntim, 2018; Tarus & Ayabei, 2016; Kung'u & Munyua, 2016, Jensen & Meckling, 1976).

Hemdan, Suhaily and Ur Rehman (2021) also point out that board independence is a primary mechanism to monitor and control top management.

The board requires the combination of executive and non-executive directors to pursue the shareholders' interest. The non-executive directors on the board will not be able to exercise their duties effectively, unless they are independent from management and ensure they provide unbiased business judgment (Murhadi, Tanugara & Sutejo, 2018; Fuzi, Halim & Julizaerma, 2016). Independent directors are the persons entrusted by shareholders to represent them and will help to reduce agency problems and they could be relied upon to scrutinise financing and investment proposals objectively to provide a check and balance on the executive team (Ramly & Nordin; Fuzi *et al.,* 2016). Although executive directors have specialised skills, expertise, knowledge and experience of the firm's operations, there is a need for independent persons to contribute fresh ideas, objectivity and expertise gained from their fields (Htay & Salman, 2013). Board independence is one approach that can weaken elements of CEO power and the power dynamics between corporate board and a CEO are highly associated with board independence (Mostafa, Hasnan & Saif, 2021).

The governance function of the board of directors is through ratifying decisions made by managers (Yusoff & Alhaji, 2012), and monitoring implementation of those decisions (Yusoff & Alhaji, 2012; Fama & Jensen, 1983). The agency theory recommends involvement of independent non-executive directors to promote board independence from management. The monitoring role is more effective with more non-executive directors since the board is considered a good monitoring mechanism. This is because independent directors have no vested interests in the firm and so will lead to management pursuing shareholder goals. Boards with a higher composition of outside (independent) directors could result in effective board monitoring and exert extensive influence on managerial decision making including forcing the CEO to take unbiased decisions (Kung'u & Munyua, 2016; Cho & Kim, 2007). In fact, boards that are free of the control and influence of a powerful CEO are better able to exercise their monitoring ability (Ramly & Nordin) and prevent the CEO from taking excessive risks without a strong risk mitigation system (Ramly & Nordin, 2018). It is therefore plausible that board independence can regulate the extent to which a CEO's power affects bank risk.

However, some studies found that independent outsiders on a board do not appear to protect the firm from agency costs (Singh & Davidson, 2003) and that there is no significant relationship between board independence and firm performance (Bhagat & Black, 2002; Yermack, 1996; Hermalin & Weisback, 1991). Possibly, when a CEO is powerful, he/she may overshadow the decision of the independent directors. Also given information asymmetry, a CEO may not share vital information to them making their monitoring role difficult. The CEO may selectively give them information that favours him/her. The directors may also not be strong enough to challenge the powerful CEO during board meetings since they fear not to be re-elected onto the board (Kumar & Zattoni, 2018a). This fear of not being re-elected onto the board may keep the board members silent or even weak in their monitoring and this will compromise their independence.

Not all outside directors are independent; they can also be affiliated (Joh & Jung, 2018). Hence, it is not enough to conclude that having majority outside directors makes the board independent. Panel data analysis in Korea showed that firms with more affiliated outside directors had large firm value in presence of uncertainty, which reduced with increase in information asymmetry (Joh & Jung, 2018). A bank could therefore benefit from outside affiliated directors in risky circumstances, provided the CEO is willing to provide information to the outside directors to enable them give constructive advice which will regulate the effect of the power of the CEO on bank risk.

Despite the role of outside directors, internal directors are also important in safeguarding the interests of shareholders (Kung'u & Munyua, 2016; Rashid, 2008). They have access to documents of the company and day-to-day information regarding how the firm is running. They can provide shareholders with important financial information which will decrease the information asymmetry between managers and shareholders. In this way, they facilitate the board in monitoring the CEO. The CEO will be weary of the consequences of withholding or providing false information full of his/her vested interests to the board. Executive or non-independent directors can offer a monitoring role and can regulate the extent to which CEO power affects risk of a bank. Where board members hold shares, their interest is more aligned to the owners which gives them greater control over the influence of the CEO (Westphal & Zajac, 1995). The reliance of executive

directors on the CEO has also been found to be beneficial. Where directors are more dependent on the CEO, shareholder value improves but will decrease when more independent directors comprise the board (Kumar & Sivaramakrishnan, 2008). The reduction in shareholder value could be because of the subsequent loss in motivation and commitment by the CEO when more independent monitoring pressure is exerted on him/her.

Although a high percentage of independent directors reduces bank risk since they monitor the course of banks, Mavrakana (2019) found a positive relationship between board independence and bank risk taking since a strong independent board takes on risky ventures with confidence.

2.5 Chapter summary

This chapter has explained CEO power as being the ability of the CEO to exert influence over the decisions of the board and those of the company. The CEO is the head of an institution, makes crucial decisions, leads other members and is responsible for the decision taken. The varying sources of CEO power are discussed including structural power, ownership power, expert power, prestige power, CEO being a former executive and the CEO being a founder respectively. The theories explaining the dimensions of CEO power and its effect on bank performance outputs are presented including. the upper echelons theory, agency theory, stewardship theory, resource-based and the social network theory. CEO power can affect bank risk. Risk is explained as the likelihood that the expected outcome will not be achieved or that adverse events may occur or the variability of returns from those that are expected. Risk in banking refers to an exposure to unpredictability of the outcome that contains a probability of variation in the desired or expected returns and as a potential loss that may occur due to some antagonistic events such as economic downturns, adverse changes in fiscal and trade policy, unfavourable movements in interest rates or foreign exchange rates, or declining equity prices. In order to guide banks on managing risk, there are global bank risk-based regulations which are discussed including the Basel Accords and the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Risk Management Guidelines. The several frameworks and theories advanced to explain risk-taking in banks are discussed including the portfolio theory/model, contracting model, regulatory hypothesis theory, risk balancing

hypothesis, and the managerial overconfidence hypothesis. This analysis also espouses the fact that banks are exposed to several risks such as liquidity risk, market risk, credit risk, operational/transactional risk, external business risk, legal and regulatory risk, foreign exchange risk, interest rate risk, counterparty risk, reputation risk, fraud risk, strategic risk, technology risk, off-balance sheet risk, governance risk and solvency risk. It is posited in this study that an independent board can moderate the relationship between CEO power and bank risk. An independent board plays a crucial role in the corporate governance of a bank. A board is considered independent when the directors have no substantive relationship with the firm. Different theories have been applied to explain board independence and its role including agency theory the resource dependency theory. There are contradicting views as to whether an independent board is beneficial or not to the performance of an entity.

Chapter Three: Relationship between CEO power and bank risk, the moderating role of board independence in that relationship and the conceptual framework

3.1 Introduction

This chapter examines the expected variable relationships regarding the moderating effect of board independence on the relationship between CEO power and bank risk. The attributes of CEO power include structural power, ownership power, expert power, prestige power, CEO being a former executive of that bank, that is, internally hired CEO, and founder CEO. CEOs intervene in company affairs (Wei, 2019) and this affects risk-taking behaviour. Thus, this chapter will assess how these various CEO powers and risks can be controlled using board independence.

3.2 CEO power and bank risk

A decision made by the CEO of a bank may have chances of unexpected or undesirable outcomes (Chen, Lee & Liu, 2018; Pathan, 2009). Such risky decisions can lead to the collapse of a bank. Risk management is a challenging task to the extent that even in banks with best practice, the structures of risk management are not always ideal although effort of both senior leaders and regulators promote and prioritise risk management (Sheedy & Griffin, 2018). Highly powerful and entrenched CEOs tend to take on more risk by over investing especially in corporate social responsibility to build their reputation (Barnea & Rubin, 2010; Malmendier & Tate, 2015).

However, increased control over risk taking is possible with stronger CEO power (Fernandes *et al.*, 2021). A powerful CEO will command respect from board members, lower-level managers, employees and customers due to him/her possessing the indicators of CEO power including structural power, ownership power, expert power, prestige power, and CEO being a former executive. This leadership environment will enable the CEO to make cautious decisions hence reducing bank risk. Fernandes *et al.* (2021), Fang, Lee, Chung, Lee and Wang (2020), DeBoskey *et al.* (2019), Belenzon, Shamshur and Zarutskie (2019), Haider and Fang (2018) and Li, Li and Minor (2016b) found that increased control over risk-taking is possible with stronger CEO power.

3.3 Structural power and bank risk

Structural power is power that comes from a CEO holding a high position in the organisation's hierarchy, having many positions and many titles. By virtual of being in a top position, a CEO gains power to make decisions in the company and the other managers and staff respect the hierarchy and will accord him/her respect. Structural power can also be attained by the CEO being the only insider of the board or CEO resident (Wei, 2019; Saidu, 2019; Adams *et al.*, 2005). Structural power will also arise where one holds both the title of CEO and that of Board Chairman culminating into CEO/chair duality (Hemdan, Suhaily & Ur Rehman, 2021; Saidu, 2019; Wu *et al.,* 2011; Pathan, 2009; Adams *et al*., 2005). A CEO responsible for running the board as well as operating the firm will be able to influence decisions of the board as well as implement his decisions and plans. In combining these two roles, the individual becomes powerful (Hemdan, Suhaily & Ur Rehman, 2021; Kung'u & Munyua, 2016; Ahmed, 2008; Rechner & Dalton, 199; Abdullah, Qaiser & Ashikur, 2013). When a CEO is also the chair of the board, board members tend to unquestionably believe his/her assertions and presentations, and this gives him/her more power since the decisions will not be subjected to questions. Such a CEO has more insider information pertaining the bank and its operations. After a study of Chinese banks for the period 2006 to 2016, Fang *et al.* (2020) found that bank risk taking is significantly improved by CEO structural power. CEO duality can curtail independent decision making and effective risk oversight, thus many regulators generally discourage it (Gontarek & Belghitar, 2021).

CEO duality can compromise the role of the board as a monitoring and control mechanism. In agreement with agency theory, it is likely that shareholders' interests will be sacrificed at a degree in favour of management (Abdullah *et al.*, 2013). When the CEO wields immense power, the board tends to become passive and to submit to the direction of the CEO (Tuwei & Tarus, 2016). A CEO with duality can influence a meeting's contents and flow (Mostafa, Hasnan & Saif, 2021). A CEO may use structural power to take advantage of the board and hide information or even misinform the board when its resolutions do not favour him/her, hence exposing the bank to risk. The collapse of Enron proved the impact of CEO duality in an organisation and raised an alarm against CEO and chair duality (Sampson-Akpuru, 2009). CEO duality has a disadvantage in that it amplifies the chair-CEO to pursue his/her personal benefits without restrain (Latif, 2018).

However, a CEO with non-duality role may not have any drive for self-entrenchment (Surroca *et al.,* 2020).

However, where a CEO is faithful and can enforce decisions in the interest of the shareholders as per stewardship theory, structural power is beneficial. In this perspective, the CEO protects and makes profits for the shareholders (Abdullah & Valentine, 2009). As a steward, a CEO is expected to pursue shareholders' interests faithfully and honestly. While pursuing their duties, CEOs need support from the board in their decisions. This support can be through counselling and advice (Hu & Alon, 2014).

Conversely, Wang (2018) while studying listed banks in three capital markets, that is, Mainland China, Hong Kong, and Taiwan, found that separating the CEO role from the chairman of the board increased the risk-taking behaviour of banks. This tends to imply that when the CEO is left with only one role of managing the bank, he/she has the confidence to take on risky ventures which he/she can then report to the board. Separation from the board chair role also allows the CEO the freedom to operate without having to constantly worry about the board's reaction until the date of reporting. This increases the risk appetite of the CEO and hence increasing bank risk-taking.

After a study of 140 US banks for the period 2012 to 2017, Gontarek and Belghitar (2021) found positive relation between duality and risk taking. They propose a separation of CEO and board chairman/chairperson. Although duality has capacity to hinder board monitoring, enhancing monitoring mechanisms renders the impact of risk taking insignificant (Gontarek & Belghitar, 2021). In a study of firms in Uganda, Akisimire, Abaho and Tweyongyere (2020) found that there was no significant relationship between CEO duality and firm financial performance.

The above review of studies related to CEO/Chair duality and bank risk shows that although structural power exists as exhibited by CEO/Chair duality, there is still disagreement in literature as to whether structural power improves CEO commitment and quality of decision making. This also follows through to the lingering question as to whether structural power increases or reduces bank risk for which conclusive evidence is needed.

3.4 Ownership power and bank risk

An individual holding shares in a company gives that individual power advantage over others; likewise, where a CEO is a shareholder is thus an indicator of CEO power. The higher the percentage of shares one holds, the more power that this individual possesses (Hamidlal & Harymawan, 2021; Han, Nanda, & Silveri, 2016). Although Pathan (2009) did not include CEO ownership in his 2009 study of CEO power and bank risk taking, he nevertheless proposes that the effect of CEO shareholding on bank risk taking is an empirical issue worth pursuing. Where a CEO is also a shareholder, his interests will be in sync with those of the other shareholders, hence reducing the information and decision asymmetry that exists between shareholders and managers arising out of the agency problem. A CEO with a significant portion of ownership gains power relative to corporate board which enables him/her to reduce board influence in certain decisions makings (Mostafa, Hasnan & Saif, 2021; Ding, Li & Wu, 2018) which amplifies the role of ownership structure in bank decision making and hence risk taking.

Previous studies have identified CEO ownership as one of the types of ownership structure that have influence on agency costs (see Noradiva *et al.,* 2016; Shahveisi *et al.,* 2016; Abobakr & Elgiziry, 2016; Bemby *et al.,* 2015; Chernenko *et al.,* 2012; Florackis, 2008), since such a CEO would need either more or less monitoring. Where the CEO also owns shares in the bank, better decision making is expected, and this adds value (Hamidlal & Harymawan, 2021). More monitoring will be required where such CEOs will have the ability to redirect or consume corporate resources in ways that benefit themselves, but which are not in the best interests of the other owners (Jensen & Meckling, 1976). This action thus increases the risk.

The convergence of interest hypothesis suggests that increased managerial shareholdings help align the interests of shareholders and managers. Monitoring costs will be reduced with higher managerial/ director ownership because when the ownership of a CEO in the firm increases, it will result in the convergence of interests between company CEO and shareholders (Florackis, 2008), as suggested by Jensen and Meckling (1976) in the agency theory. As the proportion of managerial equity ownership increases, so does corporate performance (Jensen & Meckling, 1976) although that high level of managerial/ director ownership could lead to ‘entrenchment’ (Morck, Shleifer & Vishny,

1988). Agency costs are significantly higher when firms are not managed by owners (Gogineni *et al.,* 2013). CEO ownership significantly alleviates principal-agent conflicts and reduces agency costs and supervision required (Singh & Davidson, 2003). Monitoring costs are inversely related to the CEO's ownership of shares (Ang *et al.*, 2000) and they should be the highest among firms that are managed by CEOs without any ownership stake (Gogineni *et al.,* 2013). A CEO with substantial ownership control has the capacity to influence director's decisions and this reduces the protection that other shareholders (Baker *et al.,* 2019) because of the possibility of more risk taking by banks in which they hold shares.

Increasing CEO ownership is beneficial because high managerial ownership creates commitment and aligns the interests of management and shareholders. Ownership power gives a CEO motivation to be cautious while making risky decision since collapse of the firm will hurt him/her too. A CEO with a low percentage shareholding will have less interest or incentive in promoting the firm than one with a high percentage. One with a high percentage may be more motivated to innovate and take more risks than one with a lower percentage. When CEOs hold shares, they tend to wield much power, which calls for more monitoring (Arowolo & Che-Ahmad, 2016; Liu, Huang & Chen, 2016), lest they expose the company to high risks which may lead to its failure. Owner-managers have great concern for their future financial security and often try to reduce risk and are unwilling to take risks associated with investment in new business development (Sharma, Chrisman & Chua, 1997; Belenzon *et al.,* 2019). A CEO with significant ownership can influence his/her remuneration, scuffle his/her dismissal and dominate many board decisions (Saidu, 2019; Zhang *et al*., 2016).

Contrary to the benefits of having a high percentage of CEO ownership position, it is also likely that one with a low percentage shareholding may work hard to expand the bank, to increase on the profitability, thus leading to more dividends but with higher risk. Such a CEO may also be reckless since he/she will get a lower loss, than one with a high stake in the firm. A CEO with a high percentage shareholding may be more cautious not to lose the firm, and so may take on less risk. Given these two possibilities, it is still inconclusive whether more CEO ownership is beneficial or not, regarding risk taking in banks.

3.5 Expert power and bank risk

Where a CEO exhibits extraordinary knowledge of the tasks done and decision making, he is considered as an expert and possesses expert power. But this prowess grows with experience, which increases with the number of years the individual has served as CEO or tenure. The experience and knowledge of a CEO is a source of his/her strength. A CEO's ability to deal with environmental dependency, has cognitive work experience gained with time and can deal with critical contingencies, such a person has expert power (Hemdan, Suhaily & Ur Rehman, 2021; Sudana & Aristina, 2017; Wu *et al.,* 2011; Finkelstein, 1992). Where a CEO has worked in different industries, companies, and organisation, he/she has a lot of experience, which can benefit the bank (Li & Patel, 2019). The professionalism and expertise of the CEO tends to improve with longer tenure (Hamidlal & Harymawan, 2021; Li, Li, and Minor, 2016; Han *et al*., 2016). Individuals who have served longer than others are believed to have experience, and thus, are believed to serve better. Although this power gained as experience may result from gaining sufficient skills to move the organisation forward, or it may be perceived ability, such CEOs are more confident when making decisions, and are likely to make less risky decisions. However, agency costs will increase with higher CEO tenure because the more powerful he/she becomes over the years, the more he/she will value own interests, rather than those of shareholders (Hermalin & Weisbach, 1991).

The number of years a CEO has served (tenure) has a positive correlation with the monitoring required and quality of work (Makhdalena, 2015; Siddiqui *et al.,* 2013). A CEO becomes more powerful and entrenched once his/her tenure increases, thus he or she values his own interests as compared to shareholders' interests (Siddiqui *et al.,* 2013). Although a long CEO tenure increases CEO entrenchment, Mostafa, Hasnan and Saif (2021) believe that an entrenched CEO is more involved in activities that increase corporate values. With more years in office, a CEO weakens the monitoring capability of the board because he/she can control the make-up of the board. The company and its name also become synonymous with him/her and his/her name, and it is even thought that the company cannot survive without him/her. Such an entrenched CEO may be reckless and eager to spend without caution hence increasing the risk of the bank.

A CEO's power increases over his/her tenure because of commitment to a once chosen course of action, the establishment of a growing network of contacts and the institutionalisation of beliefs and practices (Wulf *et al.,* 2010). However, this overstay may lead to inefficiencies resulting from sticking to obsolete rules leading to poor performance (Meyer & Rowan, 1977). With longer stay, CEOs become more powerful and entrenched and do not have interest in over-investment (Chintrakarn, Jiraporn & Tong, 2015; Bebchuk, Cohen & Wang, 2013) hence taking on less risk. There is dire need to regulate CEO power since too much power can cause a CEO to be entrenched and offset governing mechanisms put in place by the shareholders (Hemdan, Suhaily & Ur Rehman, 2021).

Where CEO tenure is low, one inexperienced CEO may focus on self-interest, other than bank interest, since they know that they are leaving soon. In addition, newly appointed CEOs face several hindrances and encounter challenges that they had never experienced earlier in their careers (Hemdan, Suhaily &Ur Rehman, 2021; Mostafa, Hasnan & Saif, 2021). These hindrances and challenges cause them to hesitate when contemplating taking on risky decisions. There is need to know how many years are optimum for a CEO to serve so that the bank benefits from his power and beyond which a bank may experience negative benefits from that power. Some innovative CEOs will take on more risk in a short time, while others will be cautious and will wait to take on innovative projects after some time. Further to this, after carrying out a study on recession CEOs and bank risk taking in 2019, Hua, Song and Talavera (2019) concluded that evidence of a relationship between bank risk-taking and a bank CEO's experience-related characteristics is limited, thus calling for further inquiry.

3.6 Prestige power and bank risk

Prestige power arises out of personal status, respect, admiration accorded to the person, reputation, and connections that one has and other people's perception of that person's influence through contacts and qualifications. The reputation one has acquired in the office reflects that person's power (Saidu, 2019; Fetscherin, 2015). A CEO's positive perceptions, relationships with external parties like government and other influential people coupled by a good educational background also reflect prestige power (Hamidlal & Harymawan, 2021). As one's personal status, fame, reputation, and connections

increase, so does the command and influence of that person. Prestige power grows with connections. A well-connected CEO will command respect. It is prestigious to have connections and useful networks that make one's work easy. Connections can be commercial, political, social, or even business including directorships in other companies. For instance, a CEO holds directorships in other firms and has connections to key officers and board members will have more power than one who does not. These connections will expose him to opportunities and knowledge which will increase his/her prestige power in line with the social network theory (Saidu, 2019; Kavitha & Bhuvaneswari, 2016; Fetscherin, 2015; Boyd *et al.,* 2011). Prestige power will give the CEO confidence to take on more successful projects as he will be comparting himself to other successful CEOs or getting advice. This will reduce the risk of failure. Powerful and entrenched CEOs take on more risk by over-investing, especially in corporate social responsibility, to build their reputation (Barnea & Rubin, 2010; Malmendier & Tate, 2005). A CEO with a good reputation is likely to make decisions that align with the company's best interests (Saidu, 2019). Fang et al. (2020) found that increasing a CEO's prestige power will improve performance and reduce bank risk.

Contrary to that view, it is also possible that a CEO with much prestige power can place high emphasis on his/her personal fame, career enhancement and lift his/her own image rather than that of the company he/she manages (Saidu, 2019). Such a CEO will expose the bank to risky ventures even if the bank does not benefit provided the venture improves his prestige and fame. Similarly, increasing connections by the CEO, may reduce the concentration of the CEO on the activities of the firm for which he/she is directly responsible (Kirchmaier & Stathopoulos, 2008), hence increasing the vulnerability of that firm to suffering consequences of adverse events that would otherwise be prevented. This again will lead to higher risk of insolvency. Prestige power is therefore both beneficial and detrimental to a firm.

3.7 CEO being a former executive and bank risk

The resource-based view encourages firms to depend on their internal resources to improve performance. One of the executives can be promoted to the position of CEO. Such a move will be less costly in terms of hiring and orienting the individual (Saidu, 2019; Wernerfelt, 1984). A CEO who is internally hired or was a former executive has been

involved with the company or bank for a long time, and so this adds to the power of such an individual to influence board decisions (Pathan, 2009). An internally appointed CEO will have more power than one who is hired from outside of the organisation, since the former will have more information about the firm. This move is motivating to the individual and will enable to him/her work towards expansion and sustainability of the firm. However, such a CEO may suffer 'arrivalism', that is, the excitement of arriving at a leadership position, as he/she may want to show other employees that he/she is now more powerful than them. He or she may want to implement projects that he/she had always anticipated to implement but could not since he/she was not the CEO. Such excitement may lead to reckless behaviour, thereby exposing the bank to more risk.

On the other hand, a CEO hired from outside the bank would lead to some temporary discontinuation of operations as they need time to study the firm. Such CEOs come with a mandate for strategic change which may or may not be successful. However, Barron, Chulkov and Waddell (2011) opined that hiring a CEO from within the firm prevents discontinuation of operations due to the similarity-attraction as would be for a CEO hired from outside and this reduces risk. Companies with internally developed or 'home-grown' CEO talent significantly outperform those with CEOs hired from outside the firm (Kearney, 2011). The human capital accumulated by CEOs while they were still lower-level employees gives them leverage to make better decisions which they know they can handle, hence reducing risk (Chan, 1996). New outside CEOs feel that they have a mandate for change and the freedom to assert their will on the company almost immediately, but in most cases, without fully understanding the company, its culture and its key people (Kearney, 2011). This behaviour will instead expose a bank to more risk. To reduce bank risk, promoting an executive from within to become the CEO is preferred.

3.8 CEO being a founder member and bank risk

It is common for entreprenuers to start firms and become managers thereof. Where a founder member becomes CEO, he/she attains more power (Hemdan, Suhaily &Ur Rehman, 2021; Saidu, 2019; Wei, 2019; Li *et al*., 2018; Li *et al*., 2016). The performance of founder and non-founder CEO differs significantly with regards to achieving organisational goals (Abebe & Alvarado, 2013). This could be because founder CEOs have more commitment to the firms they founded. They look at the firm as part of them,

and its growth is their growth, as opposed to non-founder CEOs who look at the firm as one of those which they will serve and move on with their careers. A founder will be eager to see the bank survive and will therefore take less risk. However, to expand widely, such a CEO may take on too much risk which may lead to insolvency of the firm. The overconfidence of founder CEOs makes them take more risks (Tang, Li & Liu, 2016). In fact, non-founder CEOs may be cautious and not take on too many risks lest the bank fails which will affect their reputation and future employment prospects.

The review above shows mixed findings regarding the effect of CEO power on bank risk. Although CEOs are known for initiating a variety of strategic changes (Li & Patel, 2019), such changes may increase the risk of a bank if not carefully executed. The dimensions of CEO power largely have contradicting relationship to bank risk in different studies. When it comes to Uganda, no related literature in this field of study is available. The mixed findings in existing empirical studies and their failure to give conclusive remedies could be because they only concentrated on the direct relationship and ignored the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. In certain studies, the lack of conclusive findings or the presence of mixed findings is due to failure of including moderator variables that may influence the relationships (Namazi & Namazi, 2016; Garcia-Castro & Aguilera, 2014; Hayes, 2013; Hair *et al*., 2010). When a bank is governed well, risks beneficial to shareholders can be identified and managers will be encouraged to take on higher risks (Wang, 2018).

3.9 Board independence and risk taking

The board plays an instrumental role on the management of risk in a bank. In a study of banks in Pakistan, Ishtiaq (2015) points out that one of the risk management guidelines imposed by The State Bank of Pakistan (SBP) is that the risk exposures of the bank should be within the limits set by the board of directors and that all the risk-taking decisions must be aligned with the objectives and business strategies established by the board of directors. There are mixed findings regarding the effect of independent directors on bank risk. As argued by Hunjra *et al.* (2020) board independence has a significant negative effect on bank risk-taking. An increase in board independence leads to decrease in bank portfolio risk, favourable increases in bank capitalisation and to more prudent bank risk taking (Degl'Innocenti, Fiordelisi, Song & Zhou, 2023; Vallascas, Mollah &

Keasey, 2017). In fact, independent directors were found to act in the interests of shareholders, and when the agency conflicts between bondholders and shareholders intensify, independent directors will make decisions that favour shareholders, hence reducing shareholders' perceived and actual risk, thereby reducing overall bank risk.

However, some studies found that independent outsiders on a board do not appear to protect the firm from agency costs and that there is no significant relationship between board independence and firm performance (Rashid, 2018; Fuzi, Halim & Julizaerma, 2016). Independent directors set corporate policies that tend to increase both credit risk and firm risk (Koutoupis & Malisiovas, 2023; Bradley & Chen, 2015). This could be because when a CEO is powerful, he/she may overshadow the decisions of the independent directors. The board's access to risk-based information is restricted by unrestrained CEO power, which subsequently reduces independent decision-making (Fama and Jensen, 1983; Gontarek & Belghitar, 2021).

3.10 The moderating role of board independence in the relationship between structural power and bank risk

Where a CEO has power arising from the many titles that he/she holds, he/she may either increase the risk of a bank or reduce it. According to the agency theory, board effectiveness in monitoring and controlling management, including the CEO, will be reduced when duality is present (Fernandes *et al.*, 2021). In such a case, the board will have less power and the monitoring of the CEO will be lessened, thus giving leeway to the CEO to exercise his/her power in affecting bank risk. Where structural power is high, one may take on several projects without caution from subordinates who may already be intimidated by the titles. For example, if one is both the board chairman and CEO, these two titles reflect the structural power the person has and will affect the extent to which he/she accepts risk. However, with the presence of an independent board, independent directors or non-executive directors will always monitor the extent to which such a CEO takes on risky projects. They will not prevent the CEO from implementing the projects but, will advise on how best the projects can be cautiously implemented hence affecting the CEO structural power effect on bank risk. Independent directors will not pass certain proposals regarding ongoing risk projects even if the CEO may have convinced other top

management team (TMT) members. Independent directors will regulate the extent to which such power can affect risk exposure of the bank.

3.11 The moderating role of board independence in the relationship between ownership power and bank risk

A CEO who is also a shareholder will take on more risk because of the need to expand the bank, and the confidence that ownership power gives him/her. Conversely, a CEO with ownership in the bank may be risk averse and will not take on risky projects since he/she fears that the bank may go bankrupt. Where CEO ownership increases, there is a combination of large voting rights and high wealth-performance sensitivity which causes CEOs to take insufficient risk. But this can be regulated by a strong board which holds them accountable for performance (Kim & Lu, 2011). Either way, independent directors on the board have ability to regulate the extent to which the CEO can take on risky ventures. Where many have experience, they will advise on how cautiously a risky venture can be undertaken by the CEO so that risk is managed. Since the CEO is also a shareholder, he/she will not want to lose independent directors on the board. Their presence increases his/her social capital and network with outsiders. For that reason, the CEO will be willing to accept the advice of independent directors as he/she takes on risky ventures.

3.12 The moderating role of board independence in the relationship between expert power and bank risk

An expert CEO is an advantage to the bank since he/she understands the business well and has experience. Such a CEO will be able to be proactive and get solutions to foreseen or probable problems or challenges well in advance before they even happen. Both experience and foresightedness give such a CEO immense power. Where many of the top management team members and staff are not that experienced, they will believe in the experienced CEO, and he/she will not feel obliged to follow their advice. The expertise is beneficial in that it allows for innovation with cautiousness, thus reducing the risk exposure of the bank. However, the overconfidence that it gives the CEO may lead him/her to recklessly implement very risky ventures hence exposing the bank to excessive risk. Despite the CEO's expertise, independent directors on the board will advise or even alter his/her implementation strategies, thus reducing the extent to which expert power of the CEO affects risk of the bank. A study of 67 firms in Kenya over the period 2010-2017

found that board independence affects the relationship between CEO tenure and risk negatively and significantly (Tarus, 2020).

3.13 The moderating role of board independence in the relationship between prestige power and bank risk

A CEO with a high personal status, reputation, and connections that one has and other people's perception of that person's influence through contacts and qualifications. Such a person will wield much power. It is prestigious to have connections and useful networks that make one's work easy. For instance, a CEO holding directorships in other firms and connections to key officers and board members will have much respect from other top management team (TMT) members and the staff of the bank. Because of this prestigious power, some of his/her mistakes may be ignored basing on the advantage that he/she is well connected. If one has multiple directorships, this is an advantage to the bank because that CEO can bring in new knowledge. Prestige power will give the CEO confidence to take on risky ventures since he/she may have implemented the same in one of the places where he/she holds directorships or it may be that he just wants to improve his prestige and sometimes flamboyance. In this way, the bank will have high risk exposure (Fetscherin, 2015).

Where there are independent directors on the board, they will put the success of the bank first and will easily notice the prestige that the CEO holds. They will monitor, advise or even reject some of the approaches that the CEO has towards implementing risky projects hence affecting the effect of his prestige power on the risk of the bank.

3.14 The moderating role of board independence in the relationship between the CEO being a former executive in that bank and bank risk

A CEO who was a former executive of a bank commands more respect that one who was not. Such a person will have knowledge about the bank and all its operations. He/she will also easily connect with most stakeholders of the bank and the bank operations will not experience a CEO change shock as would have been if the person had come from outside. Such a CEO, if ambitious, will want to take on new projects to prove that he/she is better than the previous to whom he/she was a subordinate. In such cases, if the CEO is reckless, he or she will increase the risk exposure of the bank. Where one is more cautious, he or she may reduce the risk exposure of the bank, especially where the

previous one had led to increase in the risk exposure of the bank. In both circumstances, since risk is inevitable in a bank, especially since it has both benefits and costs and benefits (Danaan, 2018), an independent board will advise or even override the decision of the CEO while taking on risky ventures. The independent directors may not have a special attachment to that insider CEO or may know his/her method of work and will advise accordingly hence regulating the extent to which his/her power affect the risk of the bank.

3.15 The moderating role of board independence in the relationship between the CEO being a founder member of that bank and bank risk

Founder members hold a lot of respect since they are the brains behind a venture. They are assumed to have knowledge of the business, its history and strategic future. Such people have always taken risks, including starting the bank; thus they are respected. In most cases, other top management team (TMT) members and staff of the organisation feel they owe them a duty of respect since they are responsible for their employment. Tang, Li & Liu (2016) assert that founder CEOs are more likely to be susceptible to cognitive biases like overconfidence. This overconfidence will lead to high risk taking. However, the independent board members will advise and preside over the CEO's exerting founding member power to increase risk of the bank. CEOs with founder power feel personal attachment to the bank and may not want to consult but take on projects recklessly or cautiously, thus increasing or reducing bank risk or reducing it. Either way, independent directors will advise him/her on how best he/she can implement risky ventures to control the risk of the bank. In this way, independent directors will influence the founder CEOs power on the risk of the bank.

3.16 Relationship between control variables and bank risk

Control variables are included to normalise the results for better and more reliable inference. They include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment.

3.16.1 Bank size and bank risk

Bank risk may increase with the size of a bank. In fact, Mavrakana (2019) found that the impact of bank size on risk-taking is positive and significant. Bank risk taking increases with bank size (Fernandes *et al.*, 2021). As the bank grows, it tends to increase in scale

of operations which will bring with it more risks. As banks grow large, they tend to take on more risks and they develop the overconfidence resulting from the belief that they are too established to fail. This overconfidence causes them to recklessly take on risky ventures. Large banks involved in trade financing bear significantly higher risk relative to small and medium-sized retail banks (Grossmann, 2018; Ding & Sickles, 2018). However, this may not always be the case. Mavrakana (2019), while studying banks in Southern and Northern European countries, found that bank size reduces bank risk, but increases it in Central European banks. Smaller banks seem to be efficient and enjoy economies of scale. In fact, Li (2019) while using financial data of 7 620 banks in 118 countries, found that banks with greater market power in a banking system tend to reduce their risk-taking activities. Implying reverse causality but showing the effect of bank size, Abbas, Iqbal and Aziz (2020) found that bank risk had a negative impact on bank capital for smaller and medium-sized banks but had positive impact for larger and banks. In small firms, CEOs perform more operational activities in form of supervisory actions with judicious use of strategies to accomplish certain goals of their interests (Akisimire, Abaho & Tweyongyere 2020).

3.16.2 Listing status and bank risk

Banks listed on the securities exchange have the advantage of public scrutiny. Such banks tend to operate cautiously so as not to cause substantial loss to the investing public. Such banks may also have non-executive directors appointed by the shareholders to independently perform the monitoring roles on their behalf as per agency theory. It is therefore posited that publicly listed banks take on less risk that than privately owned banks. To confirm this, while studying US bank holding companies (BHCs) from 2001 to 2015, Tran *et al.* (2019) found that listed banks recognised less risk than unlisted banks. Consistent with the monitoring hypothesis, listed banks are less risky than their unlisted peers because of the increase in monitoring from capital markets and other external agents (Tran, Hassan & Houston, 2018). Further to this, because of the ability to take on quick decisions coupled with the fact that there are a few shareholders to satisfy, privately owned banks tend to take on more risk. In most cases, the owners are also involved in the day to day running of such banks either directly or indirectly. Such owners tend to influence the banks into over expansion. This was one of the factors that could have led

to bank failures in Uganda because all the banks that failed were private limited companies with no public shareholding and scrutiny.

On the other hand, listing status could also lead to increase in risk taking of banks. Falato and Scharfstein (2015) found that the pressure to generate earnings which is exerted on listed companies by the public intending to invest or the shareholders also encourages banks to increase risk. Further to this, agency problems derived from the separation of ownership and control make publicly listed banks riskier than their unlisted peers in line with the opportunistic hypothesis by Williamson (1971) in which it is possible that CEOs, managers and employees, who are parties to the company management transaction, can mislead and deceive the shareholders, who are the other parties to the transaction, in order to obtain private interest by not fully and truthfully disclosing information (Tran, Hassan, & Houston, 2018; Pessali, 2006; Lyons, 1995; Williamson, 1971). By listing the bank, there will be more outside shareholders whose individual monitoring of the bank will be limited. Those managing the bank will take advantage of the information and decision asymmetry to make decisions which may be risky hence increasing bank risk. It is therefore possible that listed banks can have high risk-taking.

3.16.3 GDP growth and bank risk

Gross Domestic Product (GDP) is the market value of goods and services produced within a country and measures the total market value of goods and services produced within a country's boundaries (Nayyar, 2014). It shows overall health of an economy as a sum of consumption, investment, government expenditure and exports minus imports (Szustak, Grado & Szewczyk, 2022; Ortik, Khurshida & Askar, 2020; Adusei, 2015). Dahir, Mahat and Ali (2018) aver that GDP represents the economic position of a country and that it plays a vital role in both the stability of a banking industry and credit demand. GDP is presented in terms of annual percentage growth rate (Adem, 2022; Aziz & Azmi, 2017). GDP Growth (GDPG) is the change in total market value of goods or services produced by the economy of a certain country, as well as total income earned by people living in that country (Mazreku, Morina, Misiri, Spiteri & Grima, 2018).

Although GDP growth has a substantial influence on the financial health of banks (Adem, 2022), previous studies have yielded contradicting results regarding the relationship between GDP growth and bank risk. Abbas, Ullah, Ali, Hussain and Ashraf (2022) found

a positive relationship between GDP growth and bank risk meaning that an increase in GDP will increase the affinity of people to borrow money and hence banks will be made to lend out more. In fact, credit risk was found to increase with GDP growth (Castro, 2013). High GDP growth implies that the economy is performing well, and citizens' income is increasing (Mazreku *et al.,* 2018). GDP growth rate will subsequently increase bank risk taking because of the increased amount of credit given out to individuals whose income is increasing. On the other hand, GDP growth was found to have a negative effect on bank risk because when revenue grows, borrowers will be expected to pay back loans, hence reducing the credit risk (Khan, Scheule & Wu, 2017; Anjom & Karim, 2016). Annual GDP growth will implicitly assure that bank lending would function effectively and there will be a reduction in the incidence of non-performing loans (Anjom & Karim, 2015; Salas & Saurina, 2002).

When GDP growth is high, people will have better capacity to pay back loans hence reducing bank credit risk that can arise out of loan default. On the other hand, where there is negative GDP growth, stagnation or slow GDP growth, default rates tend to be high, hence increasing risk of insolvency. Conversely, an increase in GDP growth will lead to banks giving out more loans with the belief that borrowers will have capacity to pay back. This will increase the credit risk and bankruptcy risk. To propound this contradictory position, Adem (2022) found that GDP growth parameters are negative and substantial for bankruptcy risk, whereas they are positive for profitability risk.

3.16.4 Non-performing loans and bank risk

Non-performing loans (NPL) are loans which are not paid in the structured period as set in the contract between the borrower and the bank (Mazreku, Morina, Misiri, Spiteri, & Grima, 2018; Lestari, 2018). An increase in non-performing loans increases bank's exposure to insolvency and reduction in liquidity which are both risky. Indeed, NPLs are positively correlated with the liquidity risk and represent one of commercial banks' major areas of risk exposure (Boussaada, Hakimi, & Karmani, 2022; Aroghene & Ikeora, 2022; Guy & Lowe, 2011). On the other hand, as non-performing loans increase, banks will tend to be more cautious when lending, hence reducing the risk. Where non-performing loans are few, the risk of insolvency is reduced. These findings were confirmed by Lestari (2018) who found that non-performing loans have a negative effect on bank risk-taking

behaviour. Also, a study on bank performance in Yemen from 1998 to 2013 using panel data found that NPLs has negative effect on performance (Almekhlafi *et al*., 2016). Non-performing loans have both negative and positive effects on bank risk.

3.16.5 Unemployment and bank risk

Unemployment is the percentage of people not employed but available and looking for work or total labour force (ILO, 2022; Junankar & Kapuscinski, 1991). A higher unemployment rate implies that more people will have difficulties to pay their debt, thus increasing NPLs, hence a positive relationship between unemployment rate and credit risk as reflected by problem loans (Bai, 2021; Kurumi & Bushpepa, 2017). These findings were similar to those of Khan *et al.* (2017) who carried out a study among US bank holding companies from 1986 to 2014 and found that unemployment increases bank risk taking. An increase in the unemployment rate can be translated into an increase of non-performing loans, thus lowering bank liquidity and increasing credit risk (Marozva & Mutezo, 2020; Trenca, Petria & Corovei, 2015). High unemployment shows that the unemployed population is high which increases the credit risk because the many jobless people will not have fixed income to meet their debt obligations (Huan, Ramasamy, Yen & Pillay, 2020). When the unemployment rate is low, bank risk will be low because many people will be expected to have the capacity to repay their loans. When unemployment is high, people will have less or no capacity to repay loans, hence increasing bank risk that can arise out of loan default consequently affecting a bank's solvency (Khan, Ahmad, Khan & Ilyas, 2018). On the other hand, where there is decline in unemployment, default rates tend to be low hence reducing default risk and hence risk of insolvency. Bethune, Rocheteau and Rupert (2015), Iuga and Lazea (2012) and Sullivan (2008) found that where households have few assets, they do not have access to credit during periods of unemployment and that unemployment and debt limits are negatively correlated.

3.17 Conceptual framework

In this study, the independent variable is CEO power, the dependent variable is bank risk, and the moderating variable is board independence. It is posited that board independence affects the relationship between CEO power and bank risk. CEO power in this study will include characteristics such as structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank.

Inclusion of the independent variable, that is CEO power, and the dependent variable, that is bank risk, and their relati0nship in the conceptual framework was motivated by previous studies on the relationship between CEO power and bank risk including studies by Fernandes *et al.*, 2021; Hunjra *et al.*, 2021; Fang, Lee, Chung, Lee & Wang, 2020; Altunbaş, Thornton & Uymaz, 2020; DeBoskey *et al.*, 2019; Belenzon, Shamshur & Zarutskie*,* 2019; Haider & Fang, 2018; Huang, Chen & Chen, 2018; Li, Li, & Minor, 2016b; Mamun, Balachandran & Duong*;* Li, Lu & Phillips, 2014 and Barnea & Rubin, 2010. However, previous studies did not include board independence as a moderating variable and this is the focus of this study.

Control variables are included to normalise the results for better and more reliable inference. They include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. These were chosen from the review of literature. Control variables were included in the conceptual framework following previous studies that had identified those factors as also affecting bank risk. Studies that guided on selection of control variables included those of Abbas, Ullah, Ali, Hussain and Ashraf, 2022; Adem, 2022; Boussaada, Hakimi, & Karmani, 2022; Aroghene & Ikeora, 2022; Bai, 2021; Fernandes *et al.*, 2021; Marozva & Mutezo, 2020; Tran *et al.,* 2019; Mavrakana, 2019; Grossmann, 2018; Ding & Sickles, 2018; Lestari, 2018; Khan *et al.,* 2017; Kurumi & Bushpepa, 2017; Trenca, Petria & Corovei, 2015; Castro, 2013; Guy & Lowe, 2011.

This relationship between the independent, dependent, moderating and control variables is shown in the conceptual framework in Figure 1.

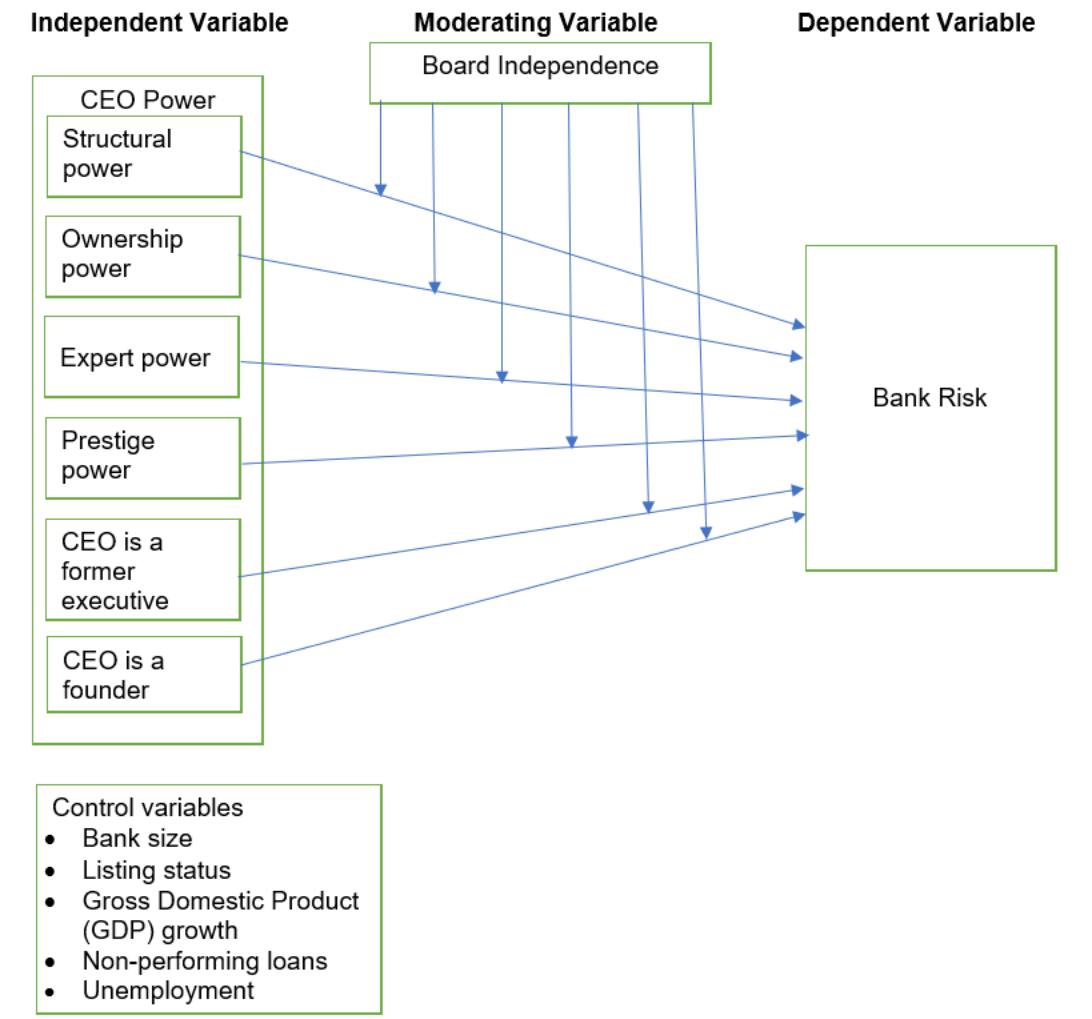

Figure 1: Conceptual framework
Source: Researcher's own

As can be deduced from the proposed conceptual framework above, the board of directors has an important role to play in ensuring that a sitting CEO acts in the best interests of his principals (shareholders), by pursuing risks that limit the downside losses within the bank. The CEO can use his power to influence the risk of a bank. Such power is exhibited through the different dimensions including structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. In exerting the power that a CEO has by virtual of having anyone or a combination of these, a CEO can influence bank risk. However, the extent of this effect can be in turn affected by the supervisory roles of an independent board and a moderator.

Board independence can affect the relationship between each of the elements of CEO power on bank risk. Other factors that influence bank risk include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment.

3.18 Chapter conclusion

The board's ability to exert influence over the CEO will depend on the board's independence which will in turn regulate the impact of the CEO's power on the risk of the bank. Although a CEO with immense power may render the board passive, the moderating role of an independent board cannot go untested regarding its impact on the effect of CEO power on firm risk. CEO power dimensions include structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. Control variables are included to normalise the results for better and more reliable inference. They include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans and unemployment. A negligent board that intentionally or inadvertently ignores problems and allows a bank to engage in high-risk practices breaches its duties to safeguard the shareholders.

A CEO who is also the chair of the board has more insider information pertaining to the bank and its operations will likely make decisions that either increase or decrease the risk of a bank. CEOs with more shareholding will need more monitoring, since they will have the ability to redirect or consume corporate resources in ways that benefit themselves but which are not in the best interests of the other owners as per agency theory (Jensen & Meckling, 1976), thereby increasing risk. Contrary to the benefits of a CEO having a high percentage of ownership position, it is also likely that one with a low percentage shareholding may work hard to expand the bank, to increase on the profitability and therefore more dividends but with more risk. The negative association between CEO power, ownership and tenure is weakened by an independent board (Hemdan, Suhaily & Ur Rehman, 2021). Prestige power arises from personal status, respect, admiration accorded to a person, reputation, and connections that one has and other people's perception of that person's influence through contacts and qualifications. A founder CEO will be eager to see the bank survive and will therefore take less risk. In contrast, such a CEO may take on too much risk which may lead to insolvency of the bank.

Given the several mixed findings carried out regarding CEO power and firm risk generally and CEO power and banks risk, none has pointed to the moderating role of board independence on this relationship. A test of the moderating role of board independence in this relationship could lead to a conclusive position.

Chapter Four: Research methodology

4.1 Introduction

This chapter presents the methodology that was applied to address the objectives of this research study. It considers the research design, and the target population. The types and sources of data, as well as the data collection instrument are also discussed. The data collection procedure and measurement of variables are presented, while the data analysis approach, econometric model specification and the statistical tests undertaken are further outlined. The chapter ends with the approaches to validity and reliability, as well as the ethical considerations.

4.2 Research philosophy

A research philosophy forms the foundation of research and relates to the development and nature of knowledge. It is a belief of how data should be collected, analysed, and used. Using the selected philosophy, a researcher can decide on the best approach to be adopted and the justification for the same. Kumatongo and Muzata (2021) assert that in research, philosophy denotes the epistemological, ontological, and axiological assumptions. Epistemology as a theory of knowledge is the philosophy of knowledge or how we come to know about the reality and assumptions about how knowledge should be acquired and accepted (Kumatongo & Muzata, 2021; Selvam, 2017; Krauss, 2005). Ontology explains ‘what’ knowledge is and assumptions about reality whereas axiology reveals the assumptions about the value system (Kumatongo & Muzata, 2021; Simui, 2018). Ontology has two aspects, namely, objectivism and subjectivism. Objectivism proposes that social entities exist and are independent of social actors. Subjectivism on the other hand, holds that social phenomena are a creation of perceptions of social actors.

In management research, there are four major aspects of philosophies including positivism, realism, interpretivism and pragmatism. According to Tarus (2013), positivism involves using scientific methods through observation to empirically test the hypotheses and make conclusions and that it is only scientific methods that can address research questions. Realism involves relating scientific inquiry to whether objects exist independently while interpretivism establishes understanding between humans and social actors. Pragmatism looks at consequences and depends on the research questions.

This quantitative study adopted both the positivism and post-positivism research philosophies with the deductive approach involving moving from theory to data accompanied by an explanation of causal relationships among variables. The idea of quantitative research originated from Auguste Comte's positivist framework (Tarus, 2013). The aim of quantitative research approach is to test theories, then facts are determined, relationships between variables are demonstrated and outcomes predicted and is considered an objective form of conducting research because knowledge is proved by scientific methods and not feelings, values, personal interpretations, and opinions (Kumatongo & Muzata, 2021; Muzata, 2017). Further in this study, post-positivism, which assumes that reality is composed of measurable objective facts precisely measurable by a researcher using statistics to test causal relationships, was used (Khaldi, 2017). Therefore, the knowledge produced after this study using the post-positivist philosophy was based on measurements and analyses of objective reality as was proposed by Creswell and Creswell (2018).

4.3 Research design and approach

The study followed an explanatory panel research design, including time series cross-sectional secondary panel data, similar to Ngware, Olweny and Muturi (2020). Explanatory research enables a researcher to understand the behaviour of phenomena and their relationships over time (Capraro, 2016; Yin, 1989).

4.4 Target population and sample

The target population was the entire banking sector in Uganda. The structure of the financial markets in Uganda includes the Central Bank at the Apex. The capital markets activity takes place on the Uganda Securities Exchange where shares and bonds are traded. In addition, the financial intermediaries include insurance companies, commercial banks, and microfinance institutions. This study however, focused on the commercial banking sector, which comprised of 25 banks as of December 2020. The reason for this is that commercial banks are the most widely spread financial intermediaries in Uganda, affecting both the microeconomic and macroeconomic environment. All other financial services' providers fall outside the scope of this study.

Previous researchers have had their target populations as all banks in a country (Agustuty, Ali, Rakhman & Sobarsyah, 2020; Ngware, Olweny & Muturi, 2020; Tran *et al.*,

2019). The sample and sample size depended on the number of banks having an official licence from the Bank of Uganda by December 2020, and that had all their financial statements audited and published by the data collection period in 2021. In this study, purposive sampling was used to arrive at the final sample of commercial banks. A total of 25 commercial banks was targeted, giving 400 firm-year observations. After full data collection, data was streamlined to include 14 banks which had full information for the period of 2010 to 2020 because most of the banks did not have complete data commencing 2006 as per the initial setup. This gives 140 data points to have a balanced panel.

Table 4 shows the list of commercial banks in Uganda as at 31 December 2020.

Table 4: Commercial banks in Uganda as at 31 December 2020

1	ABC Bank Uganda Limited
2	Absa Bank Uganda Limited
3	Afriland First Bank Uganda Limited
4	Bank of Africa Uganda Limited
5	Bank of Baroda Uganda Limited
6	Bank of India Uganda Limited
7	Cairo Bank Uganda
8	Centenary Bank
9	Citibank Uganda
10	DFCU Bank
11	Diamond Trust Bank
12	Ecobank Uganda
13	Equity Bank Uganda Limited
14	Exim Bank (Uganda)
15	Finance Trust Bank
16	Guaranty Trust Bank
17	Housing Finance Bank
18	I&M Bank Uganda
19	KCB Bank Uganda Limited
20	NCBA Bank Uganda
21	Opportunity Bank Uganda Limited
22	Stanbic Bank Uganda Limited
23	Standard Chartered Uganda
24	Tropical Bank
25	United Bank for Africa

Source: Researcher's compilation

Of the banks in Table 4 above, the listed banks include Bank of Baroda, DFCU Bank, Stanbic Bank Uganda, Equity Bank Limited and KCB Group. Majority of the banks in Uganda are not listed.

4.5 Data types and sources

Secondary data about commercial banks was hand-collected from online, publicly available sources, covering a period from 2005 to 2020. The targeted data is readily available in Uganda and is public information, as banks and other financial institutions are required by law to make their financial and annual reports public. The data included CEO power characteristics such as whether the CEO also chairs the board, which shows structural power. The percentage of CEO shareholding shows ownership power, while the number of years the individual has spent as CEO shows expert power. The number of outside directorships or education level of the CEO show prestige power, whether the CEO was a former executive, and whether CEO is a founder member of the bank. Data about board independence included the proportion of independent board members, while data on control variables included bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment.

The sources of data were individual bank annual reports, bank websites, the Bank of Uganda records, the Uganda Institute of Bankers records, Uganda Bankers Association records, Economic Policy Research Center (EPRC) records, Ministry of Finance, Planning and Economic Development records, Uganda Bureau of Statistics records, Uganda Securities Exchange records, electronic and print media, websites, and the World Bank database and reports. Using financial statements data and other company publications to make inferences about firm and industry characteristics have been applied in corporate finance and bank research by several researchers such as Agustuty, Ali, Rakhman and Sobarsyah (2020), Tran *et al.* (2019) and Ozili (2018). None of the information contains any personal identifiers or personal information. The data is published at organisational level, and as such, would thus comply with the provisions of the South African POPI Act, which guides the ethical principles for undertaking research.

4.6 Data collection process

Secondary panel data on commercial banks was hand-collected for the period from 2005 to 2020 (16 years). A total of 25 commercial banks was targeted, giving 400 firm-year

observations. After full data collection, data was streamlined to include 14 banks which had full information for the period of 2010 to 2020 because most of the banks did not have complete data commencing 2006 as per the initial setup. This gives 140 data points to have a balanced panel.

Data collected was related to dimensions of CEO power, board independence and bank risk of quantitative data, as presented in the annual financial statements and other documents and respective bank reports. A table was constructed in Excel including a cross-tabulation of banks and years labelled for rows and the columns to reflect the different values of variables observations or items accessed from bank documents containing the bank data of interest. The proxies for quantitatively measuring the variables were determined based on previous studies that had either applied any or all the three variables as used in this study, including CEO power, bank risk and board independence.

4.7 Measurement of variables

4.7.1 Dependent variable – bank risk

Bank risk was measured using the *Z*-score, which shows insolvency risk (Tran *et al.,* 2019; Ozili, 2018; Ramly *&* Nordin, 2018; Abobakr & Elgiziry, 2017; Ghassan & Krichene, 2017; Berger *et al*., 2016; Lepetit & Strobel, 2015; Pathan, 2009). Insolvency risk occurs when a bank has more liabilities than assets and will therefore be unable to settle its debts. The risk of insolvency materialises when the other risks happen in total or in combination of some of them. This leads to liquidity problems and insolvency (Ghassan & Krichene, 2017). It is computed as the sum of Return on Assets (ROA) and Capital to Assets ratio all divided by the standard deviation of ROA.

Table 5: Dependent variable description and measurement

Variable	Symbol	Measure	Source
Bank Risk	BR_{it}	Z-score - Insolvency Risk (Bank stability) for bank *i* at time *t* $Z = \frac{ROA + Capital\text{-}to\text{-}Asset\ Ratio}{S\ D\ of\ ROA}$ Where: Return on Assets (ROA) $= \frac{Net\ Income}{Total\ Assets.}$ Capital-to-Asset Ratio (CAP) $= \frac{Equity}{Total\ Assets.}$	Hua *et al.* (2019); Tran *et al.* (2019); Ozili (2018); Ramly *&* Nordin, (2018); Abobakr & Elgiziry (2017); Ghassan & Krichene, (2017); Berger *et al.,* (2016); Li et al. (2016a); Pathan (2009)

Source: Researcher's compilation

This shows a bank's stability and is measured by the Z statistic which incorporates data on a bank's expected profits, the likelihood that these profits will be realised, and a bank's capital base. The Z statistic attempts to capture the likelihood of a bank's earnings in a year becoming low enough to exhaust the bank's capital base and, thus, the likelihood of the bank becoming insolvent. The Z-score relates a bank's capital level to the variability in its returns. This enables one to know by how much variability in returns, that is the standard deviation of Return on Assets (ROA), can be absorbed by capital without the bank becoming insolvent (Li *et al.,* 2016a). Other risks such as operating risk, interest rate risk and other risks related to a bank are reflected in the variability of the comprehensive measures that are provided by ROA (Ramly *&* Nordin, 2018).

The standard deviation of ROA or variability of ROA reflects other bank risks such as interest rate risk, operating risk, and earnings risks (Tran *et al.*, 2019). Adding the ROA to the ratio of capital to assets is to assume that those two will be available to support the bank to remain in business or in case of a loss, to adjust the capital level downwards. It is believed that a bank becomes insolvent when its capital falls to zero (Li *et al.,* 2016a). A high Z-score indicates less risk and more stability for a bank (Berger *et al.,* 2016). A

bank with a high Z-score is unlikely to default and is therefore seen as having low-risk (Tran *et al.*, 2019). The advantage of using Z-score is that it reflects both the capital and expected earnings of banks (Tran *et al.,* 2019), and for a good indicator of individual bank risk taking for both listed and non-listed banks, the Z-score is preferred (Li, 2018). The Z-score shows the number of standard deviations by which ROA will have to fall before the equity capital of the bank gets exhausted. It shows the distance to insolvency. The relationship between the Z-score and the probability of insolvency is an inverse one in that a higher Z-score means lower probability of insolvency, the more the bank stability and hence lower risk while a lower Z-score means higher probability of insolvency and hence higher risk (Hafeez, Kabir & Tripe, 2022; Tran, Hassan & Houston, 2018; Ozili, 2018; De Vita & Luo, 2018; Li, Tripe & Malone, 2017; Abedifar, Molyneux & Tarazi, 2013; Rachdi & Ameur, 2011; Sinha, Taneja & Gothi, 2009).

4.7.2 Independent variable – CEO power

CEO power ($CEOP_{it}$) data was collected on its attributes including structural power, ownership power, expert power, prestige power, CEO being a former executive of that bank (that is, internally hired CEO), and founder CEO, as per the summarised information given in the table below:

Table 6: Independent variable description and measurement

Variable	Symbol	Measure	Source
Structural power	$STRP_{it}$	Duality – One concurrently holding titles of Chairman and CEO for bank *i* at time *t*; coded "1" if CEO is also chairman, and "0" for other case	Saidu (2019); Li *et al*. (2018); Sirén *et al*. (2018); Li *et al*. (2016a); Han *et al.* (2016)
Ownership power	$OWNP_{it}$	Shareholding – Percentage of shareholding of the CEO for bank *i* at time *t*	Saidu (2019); Li *et al*. (2018); Li *et al*. (2016a); Han *et al*. (2016); Gupta *et al*. (2016)
Expert power	$EXPP_{it}$	Tenure – the number of years the individual has	Saidu (2019); Li *et al*. (2018); Sirén *et al*. (2018);

		served as CEO for bank *i* at time *t*	Li *et al*. (2016a); Han *et al.* (2016)
Prestige power	$PREP_{it}$	CEO holds directorships in other firms for bank *i* at time *t;* coded "1" if CEO also holds any other directorship, and "0" otherwise.	Saidu (2019) Li *et al*. (2018); Li *et al*. (2016a); Fetscherin, (2015)
CEO being a former executive, that is, internally hired	$CFEP_{it}$	CEO was an executive before appointment as CEO; coded "1" if CEO was an executive before appointment as CEO, and "0" otherwise.	Pathan (2009); Adams *et al*. (2005); Hermalin (2005)
CEO founder	$CFOP_{it}$	The CEO is also a founder member for bank i at time *t*; coded "1" if CEO is also a founder member, and "0" otherwise.	Cormier *et al.* (2016); Gupta *et al*. (2018); Abebe & Alvarado (2013); Bahloul *et al*. (2013)

Source: Researcher's compilation

Table 6 above shows how the different dimensions of CEO power were measured. The proxy measurements have been obtained from previous studies based on firm and bank reports to study CEO power. The symbols to be used, the formulae and the sources of the formulae are shown.

4.7.3 Principal components analysis

Using principal components analysis (PCA), the researcher developed a CEO power index which was later used to determine the extent to which CEO power was high or low. CEO power has several dimensions including structural power, ownership power, expert

power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. Principal components analysis (PCA) is a technique used by researchers to model the structure of the variance of given variables. It was used to generate a single composite index of CEO power of the commercial banks in Uganda studied. Previous studies have used the dichotomous procedure where each variable is assigned a dummy variable of 1 if it holds and 0 if it does not (see Li, Lu & Phillips, 2019; Shiekh, 2018; Luo, 2016; Han, Nanda & Silveri, 2016, Muttakin, Khan & Mihret, 2016; Koo, 2015; Cheikh, 2014). This approach considers all variables without picking out those with minimum multi-collinearity or high variance. CPA is advantageous because it enables one to reduce dimensions of huge datasets and at the same time improve interpretability by minimising information loss and provides a uni-dimensional measure of a variable (Chaudhari & Dumka, 2023; Liu & Hooy, 2023; Shabir, Jiang, Shahab & Wang, 2023).

The absence in the literature of a unanimously agreed CEO power index that takes care of multi-collinearity among the indicators of CEO power has led to the need to develop one in this study using PCA. By using CPA, a uni-dimensional measure of CEO power based on the identified CEO power variables was developed because the individual variables, when considered independently may not provide information on whether CEO power in commercial banks in Uganda is high or low. The individual variables were also measured using different scales making it difficult to just average all of them and conclude on the extent of CEO power.

PCA is attained through computing the Eigen values of the variance matrix. When using CPA, the correlation matrix which summarises how the variables relate to each other is first calculated (Chaudhari & Dumka, 2023). New data are transformed into new non-correlated variables but containing the maximum variation of the original variables in the first principal components (Zhang, Zhang, Sun, Sun & Jha, 2022; Adnan, 2011). The variables in which the researcher is interested are summarised by mutually independent principal components, of which each principal is the weighted average of the underlying variables (Adnan, 2011).

Applying PCA to construct the composite CEO power index was that the index weight was based on the correlation of the individual measures of CEO power including structural

power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. From this, the first principal component for a given set of variables is the unit length linear combination of the variables which will contain the maximum variance for any combination. Where more than one principal component is generated for the variables, it shows that they are not correlated. After the first principal component, all subsequent principal components maximise the variance between the unit length linear combination and are orthogonal to the prior components and capture different aspects of the data under consideration (Greenacre, Groenen, Hastie, d'Enza, Markos & Tuzhilina, 2022). In this study, the first principal components are adopted as an aggregate measure of CEO power.

This study used PCA to determine appropriate composite indices for CEO power in commercial banks in Uganda using the following equation:

$$\boldsymbol{fj = wj1x1 + wj2x2 + wj3x3 + \cdots + wj\rho x\rho}$$

Where,

fj= estimate of the jth factor

wj= weight on factor score coefficient

xj = variable of interest

ρ= number of variables.

The CEO indices for each of the banks for every year under study were computed and the median CEO power index (CEOP_INDEX) determined. The median CEO power index was compared to each of the CEO power indices for each of the banks for every year under study to determine the overall CEO power level (CEOP). Where the individual bank's CEO power index was higher than the median CEO power index, such a bank had high CEO power and was denoted by 1 and where the individual bank's CEO power index was lower than the median CEO power index, such a bank had low CEO power denoted by 0.

4.7.4 Moderating variable – board independence

Board independence refers to the state where the board's decisions are not influenced by anyone or any factor related to the company. It is achieved with the presence of independent directors on the board. Independent directors are those who do not have any business and personal relationships with the officers of the firm that they serve. Board independence is one of those board characteristics most emphasised in the literature as a proxy for a strong bank board (Pathan, 2009; Rashid & Hossain, 2022; Hopt, 2021). Board independence (BINP) is measured by the number of independent directors divided by the total number of directors in bank board (Pathan, 2009; Rashid & Hossain, 2022).

Table 7: Moderating variable description and measurement

Variable	Symbol	Measure	Source
Board independence	$BINP_{it}$	Proportion of independent directors on the board for bank *i* at time *t*	Ramly & Nordin (2018); Murhadi *et al.* (2018); Rachdi *et* al. (2013); Pathan (2009); Carcello *et al*. (2002)

Table 7 above shows the measure of board independence proxy. From previous studies, the proportion of independent directors on the board has been used as a proxy measure for board independence. The symbol used is $BINP_{it}$.

4.7.5 Control variables

Control variables are included to normalise the results for better and more reliable inference. They include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans and unemployment and were measured and data collected as per Table 8.

Table 8: Control variables description and measurement

Variable	Symbol	Measure	Source
Bank size	$BKSZ_{it}$	As logarithm of total banks assets for bank *i* at time *t*. Total Assets = The value of assets at the end of the financial year.	Ramly and Nordin (2018); Abobakr & Elgiziry (2017); Tran *et al.* (2019); Wepukhulu (2016); Brown & Caylor (2004)
Listing status	$LSST_{it}$	A dummy for listing status, that is, a dummy variable which equals one for a listed bank, otherwise zero	Tran *et al.* (2019)
Gross Domestic Product (GDP) growth	$GDPG_t$	The GDP growth for year *t* rate is measured relative to last year's GDP $\text{GDP growth} = \frac{\text{GDP}_2 - \text{GDP}_1}{\text{GDP}_1} \; x \; 100$ GDP_1 is GDP of the base year GDP_2 is GDP of the reporting year	Ortik, Khurshida & Askar (2020); Makki (2018); Amadeo (2017); Henderson, Storeygard & Weil (2011)
Non-performing loans	NPL_{it}	Absolute figure of non-performing loans of bank *i* for year *t* is stated in the financial statements of the respective commercial bank in year t and is labelled as 'non-performing loans'	Mazreku *et al.* (2018)
Unemployment	$UNEMPL_{it}$	Unemployment rate for year *t* is the percentage of people not employed but available and looking for work or total labour force. Figures were derived from the World Bank website.	ILO (2021); World Bank (2021); Junankar & Kapuscinski (1991)

Source: Researcher's compilation

Table 8 above shows the proxy measurements of the two control variables, that is, bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and

unemployment. The measures have been adopted from previous studies that have incorporated the two variables.

4.8 Econometric model specification

The baseline model used in this study was adopted from Altunbaş *et al.* (2020); Bessler and Kurmann (2014); Haq and Heaney (2012); Victoravich *et al.* (2011); Pathan (2009) and Konishi and Yasuda (2004) who investigate bank risk factors and argue that CEO power, board independence and other bank-specific control variables are critical factors in assessing commercial bank risk.

In line with Wooldridge (2010), a simple unobserved panel data model for the study is specified as below:

$$BR_{it} = \alpha_0 + \alpha_1 CEOP_{it} + \delta X_{it-1} + D_t + \varepsilon_i \quad (1)$$

Where:

BR_{it} is the dependent variable which measures risk taking of the bank i in period *t*. $CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. D_t is a dummy variable meant to capture any structural breaks in the model.

ε_{it} is the error term.

This study employed the Z-score, which is a commonly used measure for bank risk taking in literature (Altunbaş *et al.,* 2020). More specifically, the study measured risk which was indicated by the Z-scores of each commercial bank, which equals the return on assets plus the capital asset ratio divided by the standard deviation of asset returns. The Z-scores measure the distance from insolvency which refers to the condition in which losses are equivalent to equity. In this regard, higher Z-scores indicate that the bank is more stable.

In reference to the independent variables, $CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

From equation (1), X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. D_t is a dummy variable meant to capture any structural breaks in the model while ε_{it} is the error term.

To achieve the second objective of the study, equation (1) is expanded to capture the moderation effect of board independence on CEO power, while explaining bank risk taking. Equation (2) below was estimated to illustrate this effect:

$$BR_{it} = \beta_0 + \beta_1 CEOP_{it} + \beta_2 BINP_{it} + \beta_3 (CEOP_{it} * BINP_{it}) + \pi X_{it-1} + D_{1t} + \varepsilon_{1i} \qquad (2)$$

Where:

$BINP_{it}$ represents board independence which in essence implies the percentage or share of outside directors.

BR_{it} is the dependent variable which measures risk taking of the bank i in period t.

$CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans and unemployment.

D_t is a dummy variable meant to capture any structural breaks in the model.

ε_{it} is the error term.

Moderation will occur when the relationship between CEO power and bank risk depends on board independence. In this regard, board independence in model (2) is referred to as

the moderator variable or simply the moderator (Hayes, 2013). To test the hypotheses regarding moderation, direct effect of CEO power on bank risk was determined and the significance of the results determined. Following Kouki and Guiziani (2015) and Baron and Kenny (1986), the moderating effect is observed when a moderating variable (board independence) alters the form and/or strength of the relationship between the independent variable (CEO power) and dependent variable (bank risk).

In summary, three relations were established: the influence of CEO power on Bank Risk (β_1); the influence of Board Independence on Bank Risk (β_2) and the influence of CEO power and Board Independence on Bank Risk (β_3) as specified in equation (2).

Equation (2) was extended to capture the interaction terms for each construct used in generating the CEO power index. As such, equations (3) to (8) were estimated. These are presented below:

$$BR_{it} = \beta_{01} + \beta_{11}STRP_{it} + \beta_{12}BINP_{it} + \beta_{13}(STRP_{it} * BINP_{it}) + \pi_1 X_{it-1} + D_{11t} + \varepsilon_{11i} \quad (3)$$

$$BR_{it} = \beta_{02} + \beta_{12}OWNP_{it} + \beta_{23}BINP_{it} + \beta_{23}(OWNP_{it} * BINP_{it}) + \pi_2 X_{it-1} + D_{21t} + \varepsilon_{21i} \quad (4)$$

$$BR_{it} = \beta_{03} + \beta_{13}EXPP_{it} + \beta_{24}BINP_{it} + \beta_{33}(EXPP_{it} * BINP_{it}) + \pi_3 X_{it-1} + D_{31t} + \varepsilon_{31i} \quad (5)$$

$$BR_{it} = \beta_{04} + \beta_{14}PREP_{it} + \beta_{25}BINP_{it} + \beta_{34}(PREP_{it} * BINP_{it}) + \pi_4 X_{it-1} + D_{41t} + \varepsilon_{41i} \quad (6)$$

$$BR_{it} = \beta_{05} + \beta_{15}CFEP_{it} + \beta_{26}BINP_{it} + \beta_{35}(CFEP_{it} * BINP_{it}) + \pi_5 X_{it-1} + D_{51t} + \varepsilon_{51i} \quad (7)$$

$$BR_{it} = \beta_{06} + \beta_{16}CFOP_{it} + \beta_{27}BINP_{it} + \beta_{36}(CFOP_{it} * BINP_{it}) + \pi_6 X_{it-1} + D_{61t} + \varepsilon_{61i} \quad (8)$$

Where; $STRP$ represents Structural Power, $OWNP$ stands for Ownership power, $EXPP$ is the Expert Power, $PREP$ is the Prestige Power, $CFEP$ stands for whether CEO is a former executive, while $CFOP$ represents whether the CEO is the founder.

If the moderator variable, which is board independence, interacts with the independent variable, which is CEO power, and the respective constructs used in generating this index, then the regression coefficients $\beta_3, \beta_{13}, \beta_{23}, \beta_{33}, \beta_{34}, \beta_{35}, and\ \beta_{36}$ of the interactive variables $CEOP_{it} * BINP_{it}$; $STRP_{it} * BINP_{it}$; $OWNP_{it} * BINP_{it}$; $EXPP_{it} * BINP_{it}$; $PREP_{it} * BINP_{it}$; $CFEP_{it} * BINP_{it}$; $CFOP_{it} * BINP_{it}$ in the above equation will prove significant (Ngware, Olweny & Muturi, 2020; Kouki & Guiziani, 2015).

4.9 Statistical tests

4.9.1 Stationarity testing based on unit root analysis

Stationarity means that the panel data of the variables is time invariant meaning that over time, the key moments: the mean, variance and auto-covariance of the series do not change, thus, it is stationary over time (Witt, Kurths & Pikovsky, 1998). From the literature, there are three main approaches recognised in testing stationarity. These include: i) correlogram, ii) graphical analysis, and iii) unit root analysis. This research employed unit root analysis for testing whether the variables are stationary or not. Specifically, the study adopted the Augmented Dickey Fuller (ADF) test, Phillips Perron test and the Kwiatkowski-Phillips –Schmidt-Shin (KPSS) test. These tests take the unit root as the null hypothesis Ho: ρ =1. The null hypothesis was tested against the alternative H_1: ρ<1. The KPSS test is used to assess the null hypothesis that a time series is stationary and often gives results contrary to those of the unit root test (DF, ADF and PP test) with the unit root as a null (Asteriou & Hall, 2007). When a non-stationary series is regressed on another nonstationary series, spurious regressions may occur. Spurious results are characterized by a fairly high R^2, highly uncorrelated residuals and significant coefficients of the regressors and very low Durbin Watson statistic (Gujarati & Porter, 2010).

A modified version of the Dickey Fuller test is the Augmented Dickey Fuller test (ADF) which ensures that the unit root test is valid even with the presence of serial correlation of unknown form, say $AR(p)$ process. This is done by augmenting the ordinary Dickey Fuller equation with lagged values of the differenced dependent variable as shown below:

$$\Delta Z_{it} = \beta_0 + \beta_1 t + \rho Z_{it-1} + \sum_{k=1}^{M} \beta_i \Delta Z_{it-k} + U_{it} \qquad (9)$$

Where Z_{it} is the panel data series being tested, M is the optimal number of lags, U_{it} is the error term. The test is conducted under the null hypothesis ρ=0 (series has a unit root) against the alternative that ρ<0. The decision is based on the Dickey-Fuller tau statistic (Verma, 2021; Paparoditis & Politis, 2013; Wooldridge, 2013) which is given as:

$$DF_{\tau} = \frac{\hat{\rho} - 1}{Est.Std.error\ (\hat{\rho})} \qquad (10)$$

In this study, ADF test was conducted in two forms: with intercept only and then with both intercept and trend. The null hypothesis is rejected if the computed tau statistic is less than the critical dickey fuller values at a given level of significance.

Phillips and Perron (1988) suggested a nonparametric statistical method to take care of the serial correlation in the error terms without adding lagged difference terms (Guajarati, 2004). It is similar to Dickey Fuller in terms of the null hypothesis, the alternative hypothesis and the decision rule. This test is based on the following first-order auto-regressive process.

$$\Delta Z_{it} = \beta_0 + \beta_1 Z_{it-1} + U_{it} \qquad (11)$$

The Phillips-Perron test is more robust to general form of heteroscedasticity and autocorrelation in the error term and one does not have to specify lag length for the test regression.

4.9.2 Cointegration

Upon testing for unit roots, it is important to establish whether a linear combination of I (1) variables is a stationary process of I (0). If that happens, then the variables are said to be cointegrated. Cointegration is viewed as the statistical expression of the nature of long-run equilibrium relationships. In this case, variables are linked by some long-run relationship, from which they can deviate in the short run but must return to in the long-run and the residuals are stationary. In the literature, three approaches have been used to test for existence of long run relationship among the variables (cointegration), that is; Engle and Granger (1987) approach, Johansen and Juselius (1990) procedure and the ARDL bounds test by Pesaran *et al.* (2001).

The Engle Granger approach is a two-step approach which uses ordinary least squares to test for cointegration (Stock, 1997; Engle & Yoo, 1987). In the first step, the model is estimated using OLS and the residuals predicted, then unit root test is conducted on the residuals using the unit root tests such as the ADF, Philips Perron test or KPSS test. Absence of unit root in the residuals is an indicator that the variables are cointegrated.

When this occurs, the Granger representation theorem tells us that there is some valid error correction representation of the model which describes how the dependent variable and the independent variables behave in the short run and long run (Hansen, 2005; Engsted and Johansen, 1997). The second step therefore involves estimation of the error correction model with the lagged residuals from the first step included as error correction term (provided they are stationary).

The Engle-Granger approach is however limited in a way that the error made in the first step is carried forward into the second step which leads to poor estimation. In addition, OLS estimation of the static level models may create bias in finite samples due to the omitted short-run dynamics (Banerjee, Dolado, Hendry & Smith, 1986). Furthermore, Engle and Granger assume that the cointegrating variable is unique and so fails to estimate with more than two variables.

To resolve the shortcomings of the Engle-Granger approach, Johansen and Juselius (1990) developed a method that is based on maximum likelihood estimation. This approach can estimate and test even in the presence of multiple cointegrating vectors. The Johansen and Juselius (1990) method is based on VAR and the maximum Eigen value or the likelihood ratio. However, there arises identification issues when using the method and usually the number of cointegrating relations depends on the number of lags chosen (Greene, 2009). More so, the technique requires all variables to be integrated of the same order (preferably of order one, I (1)).

4.9.3 Estimation technique

Having established that variables are either integrated of order zero, I (0) or integrated of order one, I (1), this study used the autoregressive distributed lag (ARDL) approach developed by Pesaran *et al.,* (2001) to analyse the short and long run linkages between CEO power, bank risk and board independence among selected commercial banks in Uganda. The ARDL approach offers several advantages over traditional methods for evaluation of co-integration and short-run and long-run linkages. Firstly, as opposed to traditional co-integration methods such as Johansen (1991) tests, Granger and Engle causality test (Engle and Granger, 1987)) and Vector Autoregressive (VAR) model, the ARDL can be utilised to test for a level relationship for variables that are either *I*(0) or *I* (1) as well as for mix *I* (0) and *I* (1) variables (Duasa 2007; Adom, Bekoe & Akoena, 2012).

However, the ARDL approach does not apply with non-stationary variables integrated of order two *I* (2). The possibility to combine *I* (0) or *I* (1) variables is a great advantage as economic data series often are either *I* (0) or *I* (1). The ARDL approach solves the problem of endogeneity. Pesaran and Shin (1998) argued that modelling the ARDL with the appropriate lags will adjust for both serial correlation and endogeneity problems. Jalil, Ma and Naveed (2011) contend that endogeneity is less of a problem if the estimated ARDL model is free of serial correlation. The impact on a given variable is due to its past values as well as the values of other variables and their lagged values.

The basic ARDL model in the literature is given as:

$$BR_{it} = \alpha_0 + \sum_{k=1}^{\rho} \emptyset_k BR_{it-k} + \sum_{k=0}^{q} \varphi_k' X_{it-k} + \varepsilon_{it} \qquad (12)$$

Where $\emptyset_k$ and φ_k are the coefficients of the lags of the dependent variable and the independent variables respectively. The lags in equation (5) imply a set of dynamic responses in bank risks (BR) to any given change in explanatory variables (x). There is an immediate response followed by short run and long run responses. Reparameterisation of the model in equation (12) gives rise to the error correction version of the ARDL model shown in equation 13:

$$\Delta BR_{it} = \beta_0 - \alpha[BR_{it-1} - \theta' X_{it-1}] + \sum_{k=1}^{\rho-1} \gamma_k \Delta BR_{it-1} + \sum_{k=0}^{q-1} \lambda_k' \Delta X_{it-k} + \varepsilon_{it} \qquad (13)$$

In the model specified in equation (6), X and BR are as defined earlier on, $\alpha = 1 - \sum_{k=1}^{\rho} \emptyset_k$ is the speed of adjustment coefficient and $\theta = \frac{\sum_{k=0}^{q} \varphi_k}{\alpha}$ is a vector of long run coefficients. γ and λ are the short run coefficients and the term in the brackets is the error correction term that is;

$$ECT_{it-1} = BR_{it-1} - \theta' X_{it-1} \qquad (14)$$

Thus, the model in equation (14) can be written as:

$$\Delta BR_{it} = \alpha_0 + \sum_{k=1}^{\rho-1} \gamma_k \Delta BR_{it-1} + \sum_{k=0}^{q-1} \lambda_k' \Delta X_{it-1} + \omega ECT_{it-1} + \varepsilon_{it} \qquad (15)$$

Where $\omega = -\alpha$ is the speed of adjustment towards long run equilibrium. In this case, φ must be negative and statistically significant if long run equilibrium is to be restored. The optimal lag orders *p* and *q* (possibly different across regressors) can be obtained by the minimising model selection criterion, for example by using the Akaike information criterion (AIC) or the Bayesian information criterion (BIC).

To test for the existence of a long run relationship among the variables, the model in equation (8) is estimated using OLS and then Wald test (F-statistic) is conducted under the null hypothesis of no cointegration among the variables against the alternative that variables are cointegrated. This process is termed as bounds test. The null hypothesis for the test according to our reduced form model is algebraically expressed as:

$$H_0^F: (\alpha = 0) \cap \left(\sum_{k=0}^{q} \varphi_k = 0\right) \quad (16)$$

According to Pesaran, Shin and Smith (2001), the null hypothesis of no cointegration among the variables in the model (no level relationship) is rejected if the computed F-statistic exceeds the upper critical, if the computed F-statistic is lower than the lower bound critical value, we fail to reject the null hypothesis, and conclude absence of cointegration. However, if the computed F-statistic falls within the bounds, the test is inconclusive. In this case, prior knowledge about the order of integration is important to decide on the long-term relationship.

4.10 Tests of the causality relationship between CEO power and bank risk

Objective four of this study was to analyse the causality relationship between CEO power and bank risk. When establishing causality effect, it is possible to perform either the Granger, Wald or Weak Exogeneity tests. However, since the ARDL was used, causality can be inferred from the significance of error correction term (for joint causality), long-run coefficients (for long-run causality) and short-run coefficients (for short-term causality) (Gwachha, 2023; Narayan, 2004). A negative ECT implies presence of causality. The causality effect of CEO power on bank risk was established using the ARDL PMG. The Granger causality test can be used to test for causality relationship between CEO power and bank risk. The Granger causality applies on the presumption of knowing past values of a variable, say X, to help and improve forecasts of another variable, say Y. If X (a Granger variable) causes Y (another variable), it indicates that changes in X should

precede changes in Y. To emphasise this futuristic nature of causality, Kar, Nazlıoğlu and Ağır (2011) noted that future events cannot influence past events.

The Engle-Granger approach is a two-step approach which uses ordinary least squares to test for cointegration (Stock, 1997; Engle & Yoo, 1987). In the first step, the model is estimated using OLS and the residuals predicted, then unit root test is conducted on the residuals using the unit root tests such as the ADF, Philips Perron test or KPSS test. Absence of unit root in the residuals is an indicator that the variables are cointegrated. When this occurs, the Granger representation theorem tells us that there is some valid error correction representation of the model which describes how the dependent variable and the independent variables behave in the short run and long run (Hansen, 2005; Engsted & Johansen, 1997). The second step therefore involves estimation of the error correction model with the lagged residuals from the first step included as error correction term (provided they are stationary).

The Engle-Granger approach is however limited in a way that the error made in the first step is carried forward into the second step which leads to poor estimation. In addition, OLS estimation of the static level models may create bias in finite samples due to the omitted short-run dynamics (Banerjee, Dolado, Hendry & Smith, 1986). Further, Engle and Granger assume that the cointegrating variable is unique and so fails to estimate with more than two variables.

However, since the researcher used ARDL, causality was inferred from the significance of error correction term (for joint causality), long-run coefficients (for long-run causality) and short-run coefficients (for short-term causality) (Gwachha, 2023; Narayan, 2004). A negative ECT implies presence of causality. The causality effect of CEO power on bank risk was established using the ARDL PMG.

4.11 Diagnostic tests

Diagnostic tests are carried out to check if the specified model satisfies the assumptions of the classical linear regression model. In this study, the following diagnostic tests were considered: normality, serial correlation, heteroscedasticity, and the multi-collinearity test. These tests are discussed in the following section.

4.11.1 Normality test

The study applied the Jarque-Bera test to test for normality of the residuals. This test matches the skewness and kurtosis of data to see if it follows a normal distribution. The test is preferred because it has high power especially in cases of symmetric distributions with medium up to long tails and for slightly skewed distributions with long tails. The test statistic is given by:

$$JB = N\left[\left(\frac{S^2}{6} + \frac{(K-3)^2}{24}\right)\right] \qquad (17)$$

Where *S*, *K*, and *N* denote the sample skewness, kurtosis, and the sample size, respectively. Under the null hypothesis of normality, JB is distributed as a chi-square statistic with two degrees of freedom. In case the test statistic is greater than the tabulated chi-squared value, it implies that data is not normally distributed.

4.11.2 Serial correlation test

Serial correlation occurs in data time-series studies when the errors associated with a given period carried over into future time periods. In presence of serial correlation, the error term either takes an autoregressive process or a moving average process. Serial correlation leads to downward biased standard errors and thus incorrect statistical tests and confidence intervals. Presence of serial correlation also results into inefficient least squares estimates (Greene, 2009).

The study adopted the Breusch–Godfrey serial correlation (LM) test for serial correlation. The Breusch–Godfrey test is statistically more powerful than Durbin's h statistic in the sense that its procedure extends to testing higher orders of serial correlation. Unlike the Durbin Watson test which requires non-stochastic regressors, the LM test can be applied even in the presence of stochastic regressors since its limiting distribution is chi-squared independently of the data and the parameters (Greene, 2009). It can also test against the alternative of an MA(P) process for the disturbances (Dinardo & Johnson, 1997). Moreover, the Durbin Watson test is not likely to be valid when the lagged dependent variable is used as one of the explanatory variables as the statistic will be biased towards finding no serial correlation (Greene, 2009). The LM test is also more powerful than the box-pierce test when the null hypothesis is false (Greene, 2009).

4.11.3 Test for heteroscedasticity

Heteroscedasticity occurs when the variance of errors or the model is not the same for all observations. Heteroscedasticity poses potentially severe problems for inferences based on Least Squares as the t-statistic and F-statistic do not follow t and F distributions respectively (Greene, 2009). This is the case because the standard errors are normally inflated in the presence of heteroscedasticity. The two commonly used tests for heteroscedasticity are Breusch-Pagan LM test and White test.

In this study, the Breusch-Pagan LM test for heteroskedasticity was used. This test is preferred over the White test because the White test may reveal heteroscedasticity, when in the actual sense the model simply suffers from other specification errors. The White test is non-constructive that is; if the null hypothesis is rejected, the test gives no indication of what to do next (Greene, 2009). The White test can also lose its power very quickly particularly if the model has many regressors. The null hypothesis of the test is that residuals are homoscedastic against the alternative that residuals are heteroscedastic. If the test statistic has a p-value below an appropriate threshold (such as: $p<0.05$) then the null hypothesis of homoscedasticity is rejected, and heteroscedasticity assumed.

4.11.4 Multicollinearity test

Multicollinearity is a state of very high inter-correlations or inter-associations among the independent variables. In the presence of perfect multicollinearity, the regression coefficients are indeterminate, and their standard errors are infinite and if multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard errors (in relation to the coefficients themselves), implying that the coefficients cannot be estimated with great precision or accuracy (Bhandari, 2020; Shrestha, 2020; Gujarati, 2004). The study used the Variance Inflation Factor (VIF) to test for multicollinearity.

VIF is given by:

$$VIF = \frac{1}{1-R^2} . \qquad (18)$$

A VIF value that is 10 and above implies that multicollinearity is severe and calls for correcting (O'brien, 2007). The problem of multicollinearity is solved by dropping highly correlated variables. However, dropping a variable that belongs in the population model can lead to bias (Greene, 2013).

4.12 Chapter summary and conclusion

The main objective of this chapter was to present the methods that were applied to address the research objectives of this study. Starting with a discussion on the data, variables and sample, sources of data and collection methods, the chapter further shows the empirical models that were proposed, diagnostic tests and econometric estimation techniques. Approaches to determining the direction and strength of relationships as well as the moderating role of board independence on the relationship between CEO power and bank risk are presented. Principal component analysis (PCA) was applied to generate composite indices of CEO power to get the aggregated impact of the combined variables other than using individual effects of respective individual proxies.

Deterministic tests were done to establish determinant relationships of the key variables. Stationarity was assessed using the unit root and serial correlation tests. ARDL bounds testing model was suggested and justified for Cointegration testing and in case integration was not of order zero or order one, there was need to apply the VECM to test for both short-run and long-run relationships among the key variables. The Granger causality tests were conducted to establish the interrelationships among the variables (Awe, 2012). All the estimations were carried out using the STATA statistical software. Chapter five that follows presents the data analysis and discussion of the results from the empirical investigation.

Chapter Five: Data analysis and discussion

5.1 Introduction

This chapter presents the study's empirical results, data analysis and discussion thereof in chronological order as per the stated research objectives and questions. The specific research objectives of this study were to:

i. To examine the relationship between CEO power and bank risk;
ii. To assess the moderating effect of board independence on the relationship between CEO power and bank risk;
iii. To analyse the cointegrating relationship between CEO power and bank risk;
iv. To analyse the causality relationship between CEO power and bank risk.

The following are the research questions of the study:

i. What relationships exist between CEO power and bank risk?
ii. What moderating effect does board independence exert on the relationship between CEO power and bank risk?
iii. What is the cointegrating relationship between CEO power and bank risk?
iv. What is the direction of causality between CEO power and bank risk?

The sections that follow present the empirical results found, in line with addressing each of the research objectives of this study.

5.2 Empirical results and data analysis

5.2.1 Data

Secondary panel data on commercial banks was collected for the period from 2005 to 2020 (16 years). A total of 25 commercial banks was targeted, giving 400 firm-year observations. After full data collection, it was found that not all banks had all the data for all the years from 2005 to 2020. Further to this, not all banks existed between 2005 and 2020. The data collected from all banks was streamlined to include 14 banks which had full information for the period of 2010 to 2020. This is the data that was considered to give a balanced panel with 140 data points.

Since there is no centralised database or source where all data about banks and their CEOs is kept in Uganda, it took a search of several online and print sources to gather information in a piece-meal manner. Data was obtained from both digital or online and non-digital or print-based physical published sources. In Uganda, banks and other financial institutions are required by law to make their financial and annual reports public. The online and offline sources of data included individual bank annual reports, bank websites, the Bank of Uganda records, the Uganda Institute of Bankers records, Uganda Bankers Association records, Economic Policy Research Center records, Ministry of Finance, Planning and Economic Development records, Uganda Bureau of Statistics records, Uganda Securities Exchange records, electronic and print media, websites, and the World Bank database and reports. Using financial statements data and other company publications to make inferences about firm and industry characteristics has been applied in corporate finance and bank research by several researchers such as Agustuty, Ali, Rakhman and Sobarsyah (2020), Tran *et al.* (2019) and Ozili (2018). None of the information contains any personal identifiers or personal information. The data is published at organisational level; as such, it complies with the provisions of the South African POPI Act, which guides the ethical principles for undertaking research.

5.2.2 Descriptive statistics for the annual panel data

This section presents the results of the descriptive data analysis of the panel data. The researcher started by examining the relationship between CEO power and bank risk, then assessed the moderating effect of board independence on the relationship between CEO power and bank risk. The co-integrating relationship between CEO power and bank risk was analysed as well as the causality relationship between CEO power and bank risk. In this study, the independent variable was CEO power, the dependent variable was bank risk, the moderating variable was board independence while control variables included bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment.

CEO power ($CEOP_{it}$) characteristics included structural power, ownership power, expert power, prestige power, whether the CEO was a former executive, and whether CEO is a founder member of the bank. Structural power ($STRP_{it}$) was measured by a proxy of duality if a CEO held both titles of Chairman and CEO for bank *i* at time *t.* Ownership

power ($OWNP_{it}$) was measured by percentage of shareholding of the CEO for bank *i* at time *t*. Expert power ($EXPP_{it}$) was measured by the proxy of tenure, that is, the number of years the individual has served as CEO for bank *i* at time *t*. Prestige power ($PREP_{it}$) was measured by the proxy of whether the CEO holds directorships in other firms for bank *i* at time *t*. The CEO being a former executive, that is, internally hired ($CFEP_{it}$), was measured by establishing whether the CEO was an executive before appointment. CEO founder ($CFOP_{it}$) was measured by finding out whether the CEO is also a founder member and then coding it.

Data about board independence ($BINP_{it}$) was obtained by calculating the proportion of independent board members on the respective bank's board of directors for the specific years.

Bank risk is represented in the Z-score which was computed as the sum of Return on Assets (ROA) and Capital to Assets ratio all divided by the standard deviation of ROA.

$$Z = \frac{\text{ROA + Capital-to-Asset Ratio}}{\text{S D of ROA}}$$

A high Z-score indicates less risk and more stability for a bank (Berger *et al.,* 2016). A bank with a high Z-score is unlikely to default and is therefore seen as having low-risk (Tran *et al.*, 2019). The advantage of using Z-score is that it reflects both the capital and expected earnings of banks (Tran *et al.,* 2019), and for a good indicator of individual bank risk taking for both listed and non-listed banks, the Z-score is preferred (Li, 2018).

Data on control variables included bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. Bank size ($BKSZ_{it}$) was computed as the logarithm of total banks assets for bank *i* at time *t*. Total assets include a sum of the value of assets at the end of the financial year. Listing status ($LSST_{it}$) was measured as a dummy variable which equals one for a listed bank, otherwise zero. The GDP growth rate ($GDPG_t$) was measured relative to the previous year's GDP with the formula $GDPG = ((GDP_2 – GDP_1)/GDP_1) \times 100$ where GDP_1 is GDP of the base year and GDP_2 is GDP of the reporting year. Non-performing loans (NPL_{it}) was measured as the absolute figure stated in the financial statements of the respective commercial bank in year t and is labelled as 'non-performing loans. Unemployment ($UNEMPL_t$) was

measured as the percentage of people not employed but available and looking for work or total labour force, that is, the percentage rate of unemployment in Uganda in year *t.*

Table 9 presents the summarised statistics for the variables resulting from the pooled estimations:

Table 9: Summary statistics for variables used in the pooled estimation (2010-2020)

Variables	Obs	Mean	Std, Dev,	Minimum	Maximum
Z_SCORE	154	15.34	11.97	0.06	39.68
BINP	154	0.66	0.13	0.20	0.86
OWNP	154	0.00000227	0.0000104	0.00	0.00005
EXPP	154	3.59	2.78	0.70	14.00
PREP	154	0.23	0.42	0.00	1.00
CFEP	154	0.28	0.45	0.00	1.00
STRP	154	0.00	0.00	0.00	0.00
CFOP	154	0.00	0.00	0.00	0.00
CEOP	154	0.4	0.49	0.00	1.00
CEOP_INDEX	154	- 0.00	1.14	-3.76	2.42
BKSZ	154	27.18	1.23	23.06	29.32
LSST	154	0.45	0.50	0.00	1.00
GDPG	154	5.09	1.78	3.00	9.40
NPL	154	27,400,000,000	36,700,000,000	0	219,000,000,000
UNEMPL	154	2.44	0.72	1.91	3.59

Note: These are raw data derivations before transformation.
Source: Author's own computation
Note: Z-score is proxy for bank risk. CEOP is CEO power. STRP is structural power. OWNP is ownership power. EXPP is expert power. PREP is prestige power. CFEP is CEO being a former executive, i.e., internally hired. CFOP is CEO founder. BINP is board independence. BKSZ is bank size. LSST is Listing status. GDPG is Gross Domestic Product (GDP) growth. NPL is non-performing loans. UNEMPL is unemployment.

Table 9 shows the summary of descriptive statistics for the pooled results for all the banks in this study covering the period 2010 – 2020. The descriptive statistics, based on the raw data before any transformations, reflect that bank risk, as measured by the Z-score, was at an average of 15.34. A bank with a high Z-score is unlikely to default and is therefore seen as having low-risk (Tran *et al.*, 2019). Using this figure alone is not sufficient to conclude whether banks in Uganda have a high risk or low risk since the Z-score can be interpreted relatively and not absolutely. However, the table also shows that banks in Uganda had a Z-score with a minimum of 0.06 and a maximum of 39.68 over the research period. This implies that the level of risk in commercial banks in Uganda varies

tremendously among banks and is not the same with a range of 39.62 and a standard deviation of 11.97. This could be because the commercial banks have varying sizes, capital structure, internal policies, internal decision-making strategies, CEO power, ownership structures and the strategy implementation methods that are unique to each bank.

Regarding board independence (BINP), the average was 0.66 with a standard deviation of 0.13. Since the average is above 0.5, it implies that on average, there are more independent board members on the boards of directors of commercial banks studied over the study period with an average of 66%. The proportion of independent directors on the board reflects the strength of the board (Fang *et al.,* 2020). However, the results also show a minimum fraction of independent board members as 0.2 and a maximum was 0.86. This implies that for some commercial banks, there are only 20% independent directors on board which is a weakness in the strength of such boards. But a maximum value of 86% implies strong corporate governance with strong boards. With the average of 66% and a standard deviation of 0.13, the board are on average above 0.5 and therefore strong and can make independent decisions in the interest of stakeholders. The possible explanation for this could be that the central bank specifies the portion of independent board members that a board of directors should have. So all commercial banks have to comply hence.

Ownership power (OWNP) by CEOs among commercial banks that were studied during the study period was low as shown by the percentage of shareholding by the CEOs of those banks. On average, CEOs held 0.00227% of the shares in a bank with a standard deviation 0.00104%, a minimum of 0% and maximum of 0.005%. There are banks where the CEO has no shareholding and so has little power. For those few with a small fraction of shareholding, their power is more than those who have none as was confirmed by Baker, Lopez, Reitenga and Ruch (2019); Noradiva, Parastou and Azlina (2016); Shahveisi, Khairollahi and Alipour (2016); Abobakr and Elgiziry (2016); and Bemby, Mukhtaruddin and Ferdianti (2015) who noted that CEO share ownership is one of the sources of the power of CEOs and which has an negative influence on agency costs and that a CEO who owns shares commands respect as one of the owners of the company. The possible reason why there are a few owner CEOs over the study period is that, in

order to strengthen corporate governance in commercial banks, many bank shareholders opted not to be CEOs. A shareholder also being CEO of a commercial bank is discouraged by the central bank.

Expert power (EXPP) is indicated by the number of years the individual has served as CEO for the respective commercial bank. On average, most CEOs had spent 3.59 years as CEOs with a standard deviation of 2.79 years. A standard deviation of 2.79 years shows the minimum number of years is 0.70 years which is less than a year while the maximum is 14 years. A maximum of 14 years but an average of 3.59 years implies that the expert power is taken to be less than seven years which is half of the maximum. It means that CEO expert power is low and does not change by a large margin as shown by a standard deviation of only 2.79 years. The possible reason for the low CEO tenure could be because of the dynamic nature of the banking industry and the economic environment which leads to commercial banks changing CEOs before they have served for long with the hope that the new ones will come with new strategies to cope with the changes. CEOs with more years of experience increase value; evidently, Chiu, Chen, Cheng and Hung (2019) and Wu, Quan and Xu (2011) found that a CEO with experience can deal with environmental dependency, has cognitive work experience gained with time and can deal with critical contingencies is said to have expert power. This confirms the findings of Byrd, Cooperman and Wolfe (2010) who found that the tenure of bank CEOs was between three and six years. The expert power of CEOs of commercial banks in Uganda at an average of 3.59 year of CEO tenure is considered average compared to others in Africa. For instance, Josephine, Jimoh and Shuaibu (2022) after a study in Nigeria, averred that an average of 1.57 years of CEO tenure is short while an average of 5.52 years of CEO tenure is long.

Focusing on prestige power (PREP) as a source of CEO power, this was at an average of 0.23 with a standard deviation of 0.42. This looked at CEO holding directorships in other firms as source of their power. With a minimum of 0 and a maximum 1, half of this is 0.5. However, for CEOs of commercial banks in Uganda, the mean is 0.23 which is relatively low. This implies that these CEOs do not derive much power from other directorships. The possible reason for this low number could be that nature of the banking industry in Uganda which is vulnerable and is affected by the macroeconomic factors.

Bank CEOs therefore have to spend time formulating, implementing and evaluating strategies that can keep reduce risk and keep the banks afloat. Being that most of the the commercial banks' internal operations in Uganda are still manual, with human intervention, CEOs spend of their time guiding and working with the staff to ensure success. This leaves them little, if any, time to have other directorships. However, the few who have other directorships have more power than those who do not have, as was also found by Yusuf, Abubakar, Aliyu and Aneitie (2022).

Table 9 further shows that CEO being a former executive, that is, internally hired (CFEP) had a mean of 0.28 and a standard Deviation of 0.45. The minimum was 0 while the maximum was 1.00. A CEO who is internally hired wields more power than one who is brought in from outside the bank. In Uganda, on average, 28% of the CEOs are hired externally. This implies that their CEO power is slightly low since it is below the 0.5. This confirms findings by Agrawal, Knoeber and Tsoulouhas (2006) who found that firms will always opt for insiders to take on CEO position, although this is not at a low rate among commercial banks in Uganda. Balsmeier and Buchwald (2015) also confirm that the notion of firm-specific knowledge applies to most firms where innovations have improved due to promoting top managers from within.

From Table 9, structural power (STRP) and CEO being a founder (CFOP) that were presumed to be variables on commencement of the study were found not to variables basing on the fact that they did not change or vary within the banks and across all the years under observation. Regarding structural power ($STRP_{it}$) which was measured by a proxy of duality if a CEO held both titles of Chairman and CEO for bank *i* at time *t,* none of the CEOs held dual positions. As for the CEO being a founder ($CFOP_{it}$), none of the CEOs was a founder member in the period under study.

CEO power (CEOP) gave a minimum on 0.00 when CEO power index was lower than the medium CEO power index and a maximum of 1.00 where the CEO power index was higher than the median CEO power index of a particular bank. The CEO power index (CEOP_INDEX) was determined after carrying out Principal Component Analysis of the variables. From the table, the average CEO power is 0.4 which is moderate. This implies that the CEOs of commercial banks in Uganda have moderate power.

The average Bank size (BKSZ) was 27.18, with a minimum of 23.06 and a maximum of 29.32. The variations among banks regarding size as shown by the standard deviation of 1.23 was small. This is comparable to the banking industry in Kenya where Ngware, Olweny and Muturi (2020) found lean variation among the size of commercial banks as stipulated by a standard deviation of 1.51. This means that most banks are almost the same size and therefore can be reasonably compared. The possible explanation for this could be that they are operating in the same economic environment.

The listing status of commercial banks in Uganda is moderately low with an average of 0.45. This implies that on average, 45% of the commercial banks are listed. The possible explanation for this is that the capital market in Uganda is still in its infancy and therefore, it takes banks time to decide on getting listed. The public is also largely in the informal sector and has not embraced active participation in the capital market despite the fact that the Uganda Securities Exchange has existed for more than a decade. Nevertheless, getting listed exposes a firm to scrutiny by the Uganda Securities Exchange, the Capital Markets Authority of Uganda, and the public. The listing varies among banks as reflected by a standard deviation of 0.5. Getting listed increases the disclosure commitments and requirements of commercial banks (Utama & Musa, 2011).

GDP growth (GDPG) in Uganda has been on an average of 5.09% for the years of the study period with a minimum of 3.0% and a maximum of 9.40. The average GDP growth rate of Uganda during the study period was high given that the East African GDP growth for the year 2020 was 0.4% (African Development Bank, 2021). This implies that there is potential for increase in banking activity due to increase in demand for financial services like savings and credit. All these have an implication on the risk-taking behaviour of banks.

Non-performing loans (NPL) for the commercial banks averaged at UGX.27,400,000,000 with a minimum of UGX.0 and a maximum of UGX.219,000,000,000. This implies that the level at which banks are cautious towards lending and the efforts made to recover the money lent out differ and the extent of loan default rate widely differs given range and as shown by the standard deviation. Although commercial bank lending is one of the sources of revenue for banks, it also exposes the lending institution to the risk of loan default.

The rate of unemployment (UNEMPL) was at an average of 2.44% with a minimum of 1.91% and a maximum of 3.59%. The high level of employment in an economy would lead to increase in demand for banking services since people will have the income to save. Employed people also have opportunity to get salary loans. This has an impact on a bank's load default risk. The average unemployment rate of 2.44% was better than the unemployment rate in Sub-Saharan Africa for 2020, which was 6.6% (World Bank, 2023) and was stable with a standard deviation of 0.70. This implies that the employment rate in Uganda was favourable for banking activities to thrive. The possible explanation for this is the growing informal sector and the many microfinance institutions and Savings and Credit Cooperative Organisations that provide funding to people to run small businesses and also be self-employed. The government has also provided an conducive environment for businesses to operate.

5.2.3 Regression model specifications and results from the sampled commercial banks

Regression analysis was done to test the dependence of bank risk on CEO power elements and the interaction terms.

5.2.3.1 Econometric model specification

The baseline model used in this study was adopted from Altunbaş *et al.* (2020); Bessler and Kurmann (2014); Haq and Heaney (2012); Victoravich *et al.* (2011); Pathan (2009) and Konishi and Yasuda (2004) who investigate bank risk factors and argue that CEO power, board independence and other bank-specific control variables are critical factors in assessing commercial bank risk.

In line with Wooldridge (2010), a simple unobserved panel data model for the study is specified as below:

$$BR_{it} = \alpha_0 + \alpha_1 CEOP_{it} + \delta X_{it-1} + D_t + \varepsilon_i \quad (19)$$

Where:

BR_{it} is the dependent variable which measures risk taking of the bank i in period t.

$CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans and unemployment.

D_t is a dummy variable meant to capture any structural breaks in the model.

ε_{it} is the error term.

This study employed the Z-score, which is a commonly used measure for bank risk taking in literature (Altunbaş *et al.,* 2020). More specifically, the study measured risk which was indicated by the Z-scores of each commercial bank, which equals the return on assets plus the capital asset ratio divided by the standard deviation of asset returns. The Z-scores measure the distance from insolvency which refers to the condition in which losses are equivalent to equity. In this regard, higher Z-scores indicate that the bank is more stable.

In reference to the independent variables, $CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

From equation (1), X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. D_t is a dummy variable meant to capture any structural breaks in the model while ε_{it} is the error term.

To achieve the second objective of the study, equation (1) is expanded to capture the moderation effect of Board Independence on CEO power, while explaining Bank risk taking. Equation (2) below was estimated to illustrate this effect:

$BR_{it} = \beta_0 + \beta_1 CEOP_{it} + \beta_2 BINP_{it} + \beta_3 (CEOP_{it} * BINP_{it}) + \pi X_{it-1} + D_{1t} + \varepsilon_{1i}$ (20)

Where:

$BINP_{it}$ represents board independence which in essence implies the percentage or share of outside directors.

BR_{it} is the dependent variable which measures risk taking of the bank i in period t.

$CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder.

X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment.

D_t is a dummy variable meant to capture any structural breaks in the model.

ε_{it} is the error term.

Moderation will occur when the relationship between CEO power and bank risk depends on board independence. In this regard, board independence in model (2) is referred to as the moderator variable or simply the moderator (Hayes, 2013). To test the hypotheses regarding moderation, direct effect of CEO power on bank risk was determined and the significance of the results determined. Following Kouki and Guiziani (2015) and Baron and Kenny (1986), the moderating effect is observed when a moderating variable (board independence) alters the form and/or strength of the relationship between the independent variable (CEO power) and dependent variable (bank risk).

In summary, three relations were established: the influence of CEO power on bank risk (β_1); the influence of board independence on bank risk (β_2) and the influence of CEO power and board independence on bank risk (β_3) as specified in equation (2).

Equation (2) was extended to capture the interaction terms for each construct used in generating the CEO power index. As such, equations (3) to (8) were estimated. These are presented below:

$$BR_{it} = \beta_{01} + \beta_{11}STRP_{it} + \beta_{12}BINP_{it} + \beta_{13}(STRP_{it} * BINP_{it}) + \pi_1 X_{it-1} + D_{11t} + \varepsilon_{11i} \quad (3)$$

$$BR_{it} = \beta_{02} + \beta_{12}OWNP_{it} + \beta_{23}BINP_{it} + \beta_{23}(OWNP_{it} * BINP_{it}) + \pi_2 X_{it-1} + D_{21t} + \varepsilon_{21i} \quad (4)$$

$$BR_{it} = \beta_{03} + \beta_{13}EXPP_{it} + \beta_{24}BINP_{it} + \beta_{33}(EXPP_{it} * BINP_{it}) + \pi_3 X_{it-1} + D_{31t} + \varepsilon_{31i} \quad (5)$$

$$BR_{it} = \beta_{04} + \beta_{14}PREP_{it} + \beta_{25}BINP_{it} + \beta_{34}(PREP_{it} * BINP_{it}) + \pi_4 X_{it-1} + D_{41t} + \varepsilon_{41i} \quad (6)$$

$$BR_{it} = \beta_{05} + \beta_{15}CFEP_{it} + \beta_{26}BINP_{it} + \beta_{35}(CFEP_{it} * BINP_{it}) + \pi_5 X_{it-1} + D_{51t} + \varepsilon_{51i} \quad (7)$$

$$BR_{it} = \beta_{06} + \beta_{16}CFOP_{it} + \beta_{27}BINP_{it} + \beta_{36}(CFOP_{it} * BINP_{it}) + \pi_6 X_{it-1} + D_{61t} + \varepsilon_{61i} \quad (8)$$

Where, $STRP$ represents structural power, $OWNP$ stands for ownership power, $EXPP$ is the expert power, $PREP$ is the prestige power, $CFEP$ stands for whether CEO is a former executive, while $CFOP$ represents whether the CEO is the founder.

If the moderator variable, board independence, interacts with the independent variable, CEO power, and the respective constructs used in generating this index, then the regression coefficients $\beta_3, \beta_{13}, \beta_{23}, \beta_{33}, \beta_{34}, \beta_{35}, and\ \beta_{36}$ of the interactive variables $CEOP_{it} * BINP_{it}$; $STRP_{it} * BINP_{it}$; $OWNP_{it} * BINP_{it}$; $EXPP_{it} * BINP_{it}$; $PREP_{it} * BINP_{it}$; $CFEP_{it} * BINP_{it}$; $CFOP_{it} * BINP_{it}$ in the above equation will prove significant (Ngware, Olweny & Muturi, 2020; Kouki & Guiziani, 2015).

5.2.4 Principal components analysis

Using the Principal Components Analysis (PCA), the researcher developed a CEO power index which was later used to determine the extent to which CEO power was high or low. CEO power has several dimensions including structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank.

The appropriate composite indices for CEO power in commercial banks in Uganda were determined using the following equation:

$$\boldsymbol{fj = wj_1x_1 + wj_2x_2 + wj_3x_3 + \cdots + wj_\rho x_\rho}$$

Where:

fj= estimate of the jth factor

wj= weight on factor score coefficient

xj = variable of interest

ρ= number of variables.

Table 10 gives the eigenvalues of the correlation matrix of the individual indicators that compose CEO power (CEOP). The sum of the eigenvalues is equal to the number of individual indicators.

Table 10: Principal components analysis: Eigen values

Principal Component	Eigen Value	Percentage of Variance	Cumulative %
1	1.295203	32.38	32.38
2	0.948395	23.71	56.09
3	0.932573	23.31	79.40
4	0.823829	20.60	100

Source: Author's own computation

The first principal component explains the maximum variance (32.38%) in all the individual indicators (Eigen value of 1.295). The second principal component explains the maximum amount of the remaining variance (23.7%), with Eigen value of 0.948. The third principal component explains 23.31% of the variance (Eigen value of 0.933), while the fourth principal component accounts for the remaining 20.60% of the variance with Eigen value of 0.824. Therefore, since the first three principal components explain only up to 79.40 of the variance; all the four components were considered. Structural power (STRP) and CEO being a founder (CFOP) that were presumed to be variables on commencement of the study were found not to variables basing on the fact that they did not change or vary within the banks and across all the years under observation as indicated in Table 10.

Table 11: Principal component analysis: Eigen vectors (loadings)

Variable	PC 1	PC 2	PC 3	PC 4
OWNP	-0.609592	0.024585	0.092571	0.786908
PREP	0.450635	0.141727	0.846631	0.245068

CFEP	0.463116	0.641539	-0.467874	0.393758
EXPP	0.459184	-0.753483	-0.236095	0.407029

Source: Author's computation
Note: OWNP is ownership power. EXPP is expert power. PREP is prestige power. CFEP is CEO being a former executive i.e., internally hired.

As noted in Table 11, the coefficients for the first principal component (PC1) imply that it represents the overall measure for CEO power. The maximum weight in PC2 is for the CEO being a former executive (CFEP). In PC3, prestige power (PREP) has the strongest influence while ownership power (OWNP) has the largest positive weight in PC4.

This study used PCA to determine an appropriate composite index for CEO power in commercial banks in Uganda using the following specific PCA equation:

CEOP_INDEX = 0.450635*PREP + 0.463116*CFEP + 0.459184*EXPP - 0.609592*OWNP

Where:
CEOP_INDEX = the principal component for CEO power
PREP = prestige power
CFEP = CEO being a former executive
EXPP = expert power
OWNP = ownership power
The CEO power indices for each of the banks for every year under study were computed and the median CEO power index (CEOP_INDEX) determined. The median CEO power index was compared to each of the CEO power indices for each of the banks for every year under study to determine the overall CEO power level (CEOP). Where the individual bank's CEO power index was higher than the median CEO power index, such a bank had high CEO power and was denoted by 1 and where the individual bank's CEO power index was lower than the median CEO power index, such a bank had low CEO power denoted by 0.

5.3 The relationship between CEO power and bank risk

Objective one of this study was to examine the relationship between CEO power and bank risk. Correlation analysis and system GMM were applied to examine this relationship.

5.3.1 Correlation analysis results for relationship between CEO power and bank risk

Bivariate correlation was done to measure the strength and direction of the linear association between two variables. It depicts the relationship between two variables as well as the degree of correlation between them (Gwachha, 2023). Bivariate correlation analysis was done as a precursor to regression analysis. Objective one of this study required to establish the relationship between CEO power and bank risk. A cross-tabulation was done of CEO power, all the indicators of CEO power, board independence, bank risk and the control variables which include bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans, and unemployment. The Pearson correlation coefficient results are shown in Table 12 overleaf.

Table 12: Correlation matrix

Variables	Z-SCORE	CEOP	BINP	CFEP	EXPP	GDPG	LSST	NPL	OWNP	PREP	UNEMPL	BKSZ
Z-SCORE	1.000											
CEOP	0.034*	1.000										
BINP	-0.206**	0.131*	1.000									
CFEP	0.052*	0.117*	0.095*	1.000								
EXPP	0.139**	0.472***	0.043*	0.052*	1.000							
GDPG	-0.008*	-0.090*	0.008*	0.013*	-0.084*	1.000						
LSST	0.096**	-0.062*	-0.291***	0.050*	0.045*	0.038**	1.000					
NPL	0.021*	0.058*	-0.090*	0.209***	0.255***	-0.161**	0.093*	1.000				
OWNP	0.360***	-0.177**	-0.271***	-0.136**	-0.137**	-0.036**	0.242***	-0.021*	1.000			
PREP	0.339***	0.337*	0.030*	0.067*	0.063*	-0.027**	-0.097*	0.037*	-0.121*	1.000		
UNEMPL	-0.043*	-0.233***	-0.094*	-0.038*	-0.159**	0.272***	0.179**	-0.227***	-0.121*	-0.084*	1.000	
BKSZ	0.102*	0.194**	-0.268***	0.187**	0.441***	-0.118*	0.399***	0.505***	0.158**	0.139**	-0.238***	1.000

Source: Author's own computations

Note: Z-SCORE is proxy for bank risk. CEOP is CEO power. OWNP is ownership power. EXPP is expert power. PREP is prestige power. CFEP is CEO being a former executive i.e., internally hired. BINP is board independence. BKSZ is bank size. LSST is listing status. GDPG is Gross Domestic Product (GDP) growth. NPL is non-performing loans. UNEMPL is unemployment

** significant at 10%; ** significant at 5%; *** significant at 1%.*

There was a positive relationship between ownership power and Z-score (r = 0.36). This indicated that the more a CEO owns shares in the bank, the less risky the decisions they will make and hence the bank will experience less risk. The possible explanation for this is that share ownership by the CEO creates a sense of cautiousness, care, and concern in the survival of the bank. Such a CEO will be careful when making decisions since he/she has interest in the bank. Survival of the bank will be of great interest. Where the CEO also owns shares in the bank, better decision making is expected, which adds value (Hamidlal & Harymawan, 2021). In fact, Pathan (2009) found that CEO ownership is negatively related to systematic risk. Owner CEOs will work hard to ensure that the bank takes advantage of changes in the external environment such as inflation, technological changes, and socio-cultural dynamics to reduce risk. These findings are consistent with the convergence of interest hypothesis which suggests that increased managerial shareholdings help align the interests of shareholders and managers.

Monitoring costs will be reduced with higher managerial/director ownership because when the ownership of a CEO in the firm increases, it will result in the convergence of interests between company CEO and shareholders (Florackis, 2008) as suggested by Jensen and Meckling (1976) in the agency theory. As the proportion of managerial equity ownership increases, so does corporate performance (Jensen & Meckling, 1976) although that high level of managerial/ director ownership could lead to ‘entrenchment’ (Morck, Shleifer & Vishny, 1988). Agency costs are significantly higher when firms are not managed by owners (Gogineni *et al.,* 2013), consistent with the agency theory. CEO ownership significantly alleviates principal-agent conflicts and reduces agency costs and supervision required (Singh & Davidson 2003). Monitoring costs are inversely related to the CEO’s ownership of shares (Ang *et al.*, 2000) and they should be highest among firms that are managed by CEOs without any ownership stake (Gogineni *et al.,* 2013). Ownership power affects a bank’s strategic risk. A CEO who also owns shares can decide how strategies are made and will ensure to follow them through for the sake of long-term survival of the bank. Strategic risk is related to the effect on profitability of a bank related to strategic decisions made by the management team of the bank.

The study findings show a positive relationship between expert power and Z-score (r = 0.139). This indicated that the more experienced the CEO, the lower the bank risk. The possible explanation is that experience leads to more caution when making decision especially since they can learn from past experiences. One who has held the CEO position for some time is likely to gain more expertise than one who has not held that position for that same number of years. One who has held the position for a longer time becomes more confident and will therefore make cautious informed and well calculated decisions. The findings concur with those of Hemdan, Suhaily and Ur Rehman (2021), Sudana and Aristina (2017), Wu *et al.*, (2011) and Finkelstein (1992) who found that an experienced CEO has ability to deal with environmental dependency, has cognitive work experience gained with time and can deal with critical contingencies, hence exposing the bank to less risk.

These findings contradict the managerial entrenchment theory which consider long-serving managers as becoming entrenched and therefore following personal interest as and not organisational interest. Where a CEO has worked with different industries, companies, and organisations, he/she has vast experience which can benefit the bank (Li & Patel, 2019). The professionalism and expertise of the CEO tend to improve with longer tenure (Hamidlal & Harymawan, 2021; Li, Li & Minor, 2016; Han *et al*., 2016). In the commercial banks in Uganda, entrenched CEOs reduce risk more than those that serve for a long time. This could be because of the dynamic nature of the fast-growing economy with many changes especially with the growing private sector-led economy. Many changes take place and there is a lot of demand for capital by borrower. A CEO takes time to understand the financial and economic environment. But once such CEO has learnt the dynamic of running a bank in Uganda, he/she will make decisions that reduce risk. A CEO with expert power has ability to reduce credit risk because such a CEOs, having expertise, will be good at assessing and managing the risks associated with lending.

With regards to prestige power, there was a positive relationship between prestige power and Z-score (r = 0.339). This indicated that the more prestigious a CEO is either through his connections, education, or directorships in other firms the lower the bank risk of the bank in which he or she is CEO. The possible explanation is that when a CEO has connections and other directorships, relationships with external parties like government and

other influential people coupled by a good educational background, he/she can consult on decisions and has reference points which guide him/her in decision making. That CEO will have a tendency, and probably pressure, to want to please the members of those other networks that he is successful and can manage a bank profitably and maintain the bank solvent. This tendency leads him/her to making cautious and less risky decisions in the bank. Such a CEO will avoid risky decisions such as extending loans to members of his/her other connections and networks without strictly following bank lending regulations, policies, and due procedures. This behaviour reduces bank risk. These connections will expose him/her to opportunities and knowledge which will increase his/her prestige power in line with the social network theory (Saidu, 2019; Kavitha & Bhuvaneswari, 2016; Fetscherin, 2015; Boyd *et al.,* 2011). Prestige power will give the CEO confidence to take on more successful projects as he/she will be comparting himself to other successful CEOs or getting advice, thus reducing the risk of failure.

These findings are consistent with those of Fang et al. (2020) who found that increasing a CEO's prestige power will improve performance and reduce bank risk. A CEO with high reputation is likely to make decisions that align with the company's best interests (Saidu, 2019) and this is in line with the Stewardship Theory by Donaldson (1985); Ng *et al.* (2005), Donaldson and Preston (1995), and Donaldson and Davis (1991) who assert that managers are not motivated by individual goals, but rather are stewards whose motives are aligned with the objectives of their principals. Prestige power has effect on credit risk, market risk, and reputation risk. CEOs with high prestige power are more likely to lead to a bank taking on riskier projects and engage in riskier activities like giving riskier loans or even engaging in speculative activities. Prestige power can affect market risk in the sense that when a CEO gets more respect and admiration, he or she may attract more customers and investors, which can reduce the risk of financial losses due to market fluctuations.

A CEO being a former executive of the bank was found to have a positive relationship with Z-score ($r = 0.052$). This indicated that if a CEO was a former employee before being appointed into that position, there will be low bank risk. These findings justify the resource-based theory's assertion that the valuable intangible and tangible resources that a firm has access to like employees and managers, if deployed well as vital intellectual capital, are

the main drivers behind its competitiveness and performance and will improve that firm's competitive advantage (Daryaee, Pakdel, Easapour & Khalaflu, 2011; Barney, 2001; Wernerfelt, 1984; Penrose, 1959;). The possible explanation is that whenever someone is promoted to CEO position from within the bank, and they have interest in the bank's growth, such a person will have knowledge of the bank's internal and external operating environments. This puts them in a position where they can make good decisions with the belief that they can scan the environment and make the most viable decision. Such CEOs are familiar with board members and other employees of the bank and would easily lead the team to making and implementing prudent decisions in the interest of the bank. That ability reduces the chances of failure, hence reducing risk than it would have been for a CEO hired from outside the bank would first study the internal bank culture, potentially disruptive office politics and environment and which, if he/she fails to cope with, may lead to increase in bank risk.

These findings are in line with those of Barron, Chulkov and Waddell (2011) who opined that hiring a CEO from within the firm prevents discontinuation of operations due to the similarity-attraction as would be for a CEO hired from outside and this reduces risk. Companies with internally developed or 'home-grown' CEO talent significantly outperform those with CEOs hired from outside the firm (Kearney, 2011). The human capital accumulated by CEOs while they were still lower-level employees gives them leverage to make better decision which they know they can handle hence reducing risk (Chan, 1996). New outside CEOs feel that they have a mandate for change and the freedom to assert their will on the company almost immediately but in most cases without fully understanding the company, its culture, and its key people (Kearney, 2011). This behaviour will instead expose a bank to more risk. To reduce bank risk, promoting an executive from within to become the CEO is preferred. Power arising from a CEO being a former executive can affect operational risk in that such a CEO can use rewards or punishment to influence employees to follow certain procedures or meet certain standards, which can reduce the risk of operational errors.

CEO power had a positive relationship with Z-score ($r = 0.034$). This indicated that the more power a CEO has, the lower will be the bank risk. The possible explanation is that when a

CEO is powerful, he/she will have confidence in making quick decisions and will be able to deploy resources, both human and financial, to ensure that the bank runs successfully and remains solvent, hence reducing risk. Chen, Safi and Zeb (2022) found that a very confidence bank CEO will increase the firm's systemic risk which in line with the managerial overconfidence hypothesis. A powerful CEO will command respect from board members, lower-level managers, employees, and customers due to him/her possessing the indicators of CEO power including structural power, ownership power, expert power, prestige power, and CEO being a former executive. This leadership environment will enable the CEO to make cautious decisions hence reducing bank risk. These results agree with those of Fernandes *et al.*, (2021), Fang, Lee, Chung, Lee and Wang (2020), DeBoskey *et al.*, (2019), Belenzon, Shamshur and Zarutskie (2019), Haider and Fang (2018) and Li, Li and Minor (2016b), who found that increased control over risk-taking is possible with stronger CEO power. These findings concur with the agency theory and stewardship theory, which both consider CEOs to be pro-organisation, have collectivistic behaviours than individualistic and self-serving behaviours (Shen, 2021). The findings also support the upper echelons theory that rests the responsibility of overseeing success of organisations with the CEO and top management team. These findings show that CEOs of commercial banks in Ugandan banks have a high level of commitment to reducing bank risk if given more power. Several of them are experienced and exposed with a high education and are working in a dynamic but fast-growing economic and financial environment with a history of bank failures and more strict central bank monitoring.

There was a negative relationship between board independence and Z-score (r = -0.206). This indicated that a small proportion of independent board members will reduce the Z-score and accordingly increase bank risk. The possible explanation is that independent directors may take interest in quick expansion of a bank especially after a financial crisis or in the presence of fast-growing private sector-led economy like that of Uganda. They may encourage banks to take on more risk ventures like lending more hence exposing the bank to more risk. These findings are consistent with the findings of Anginer, Demirguc-Kunt, Huizinga and Ma (2018), and Vallascas, Mollah and Keasey (2017), who found that board independence can lead to increase in bank risk-taking. This is contrary to the agency theory

which asserts that an independent board aims at reducing the risk exposure of the bank through regulating the activities of the CEO.

There was a positive relationship between bank size and Z-score (r = 0.102). This indicated that the larger the bank the lower the bank risk. The possible explanation is that when banks expand, their resilience increases and their large assets base and liquidity increase which makes it possible for them to reduce unnecessary expansion, investment and lending out money. Since they are already big, their determination for expansion and lending is low, hence their low risk-taking behaviour. These results are in line with those of Mavrakana (2019) who found that bank size reduces bank risk. Smaller banks seem to be efficient and enjoy economies of scale. The findings also agree with those of Li (2019) who, while using financial data of 7620 banks on 118 countries, found that banks with greater market power in a banking system tend to reduce their risk-taking activities. This implies reverse causality, but showing effect of bank size, Abbas, Iqbal and Aziz (2020) found that bank risk had a negative impact on bank capital for smaller and medium-sized banks.

Listing status had a positive relationship with Z-score (r = 0.096). This indicated that when a bank gets listed, the bank risk reduces. The possible explanation is that when banks get listed, they attain public confidence but also scrutiny. The policy makers and regulators who act in the interest of the unsuspecting external stakeholders and bank customers, also increase the level of supervision of such listed banks. This increased openness and lever of scrutiny attained by the banks due to getting listed will lead them to take on cautious strategies which will lead to decrease in risk. These findings are similar to those of Tran *et al.,* (2019) and Tran, Hassan and Houston (2018) who found that listed banks recognised less risk than unlisted banks, and that consistent with the monitoring hypothesis, listed banks are less risky than their unlisted peers because of the increase in monitoring from capital markets and other external agents.

There was a negative relationship between GDP growth and Z-score (r = - 0.008). This indicated that a low rate of GDP growth will increase Z-score and accordingly decrease bank risk. The possible explanation is that when GDP growth reduces, there is a recess and slowdown in economic activity and the goods and services produced in the country

reduce. This situation leads to a slowdown in economic activity and there is a high possibility of loan default and reduced investment. In such circumstances, banks will lend less and invest less hence exposing themselves to low risk. When the rate of GDP growth increases, Z-score will decrease and accordingly increase bank risk. These findings confirm those of Abbas, Ullah, Ali, Hussain and Ashraf (2022), Khan *et al.* (2017), and Anjom and Karim (2016), all of whom found that GDP growth has a negative effect on bank risk because when revenue grows, borrowers will be expected to be able to pay back loans hence reducing the credit risk.

There was a positive relationship between non-performing loans and Z-score (r = 0.021). This indicated that when non-performing loans increase, bank risk decreases. The possible explanation is that as more people start to pay back their loans, the bank's exposure to credit risk and default risk reduces and so does the threat of insolvency. These findings confirm those by Lestari (2018) and Almekhlafi *et al*. (2016), who found that non-performing loans have a negative effect on bank risk-taking behaviour and performance. Also, a study on bank performance in Yemen from 1998 to 2013 using panel data found that NPLs has negative effect on performance.

The results in Table 12 further reveal a negative relationship between unemployment and Z-score (r = -0.043). This indicated that when unemployment increases, Z-score reduce and hence bank risk increases. The possible explanation is that as more people stop working, they will not be able to access credit and salary secured loans which they would have paid back if they had jobs. As a result of this, banks will perceive a higher risk and lend less to individuals because of the increase in the possibility of the borrowers defaulting on their loans. The risk of lending to the unemployed increases as the unemployed customers increase. These results concur with those of Huan *et al.* (2020), Khan *et al.* (2018), Bethune *et al.* (2015), Marozva and Mutezo (2020); Trenca, Petria and Corovei (2015), Iuga and Lazea (2012), and Sullivan (2008) who found that when the unemployed population is high, households with unemployed members will have few assets, and that unemployment and debt limits are negatively correlated. A higher unemployment rate implies that more people will have difficulties to pay their debt, increasing NPLs, hence a

positive relationship between unemployment rate and credit risk as reflected by problem loans (Bai, 2021; Kurumi & Bushpepa, 2017).

These findings were similar to those of Khan *et al.* (2017) who carried out a study among US bank holding companies from 1986 to 2014 and found that unemployment increases bank risk taking. An increase in the unemployment rate can be translated into an increasing number of non-performing loans and thus lowering bank liquidity and increasing credit risk (Marozva & Mutezo, 2020; Trenca *et al.*, 2015). High unemployment shows that the unemployed population is high which increases the credit risk because the many jobless people will not have fixed income to meet their debt obligations (Huan *et al.,* 2020). When unemployment rate is low, bank risk will be low since many people will be expected to have capacity to pay back their loans. When unemployment is high, people will have no or less capacity to pay back loans hence increasing bank risk that can arise out of loan default, consequently affecting a bank's solvency (Khan *et al*, 2018).

5.3.2 GMM results for relationship between CEO power and bank risk

System GMM was also applied to examine the relationship between CEO power and bank risk. In previous research by Dahir *et al.* (2018), Bharati and Jia (2018) and Alimi (2015), GMM was used to investigate bank risk. The GMM model regression results are shown in Table 13. The system generalised method of moments (GMM) was used to estimate the bank risk panel data model. The GMM-based estimator by Arellano and Bond (1991), Holtz-Eakin *et al.* (1990) and Arellano and Bover (1995) was developed for dynamic models of panel data. It allows for efficient estimation in the presence of arbitrary heteroscedasticity, helps to overcome the challenge of endogeneity, solves the problems of serial correlation, and takes advantage of the use of orthogonal conditions (Leitao, 2010; Hansen, 2000). It is for this reason that it was chosen for this study as opposed to using the two stage least-squares estimation (2SLS) technique.

Since this study has lagged endogenous variables as instruments and cross-section fixed effects, the researcher used the two step systems GMM estimator. GMM handles modelling concerns such as fixed effects and endogeneity of regressors, while at the same time avoiding dynamic panel bias, accommodating unbalanced panels and multiple endogenous

variables (Roodman, 2009; Nickell, 1981). System GMM was used to find the relationship between the CEO power and bank risk and the relationship between the control variables and bank risk. The Generalized Method of Moments (GMM) is also used to control the endogeneity between stochastic error terms and explanatory variables (Javeed & Lefen, 2019).

Table 13 contains the results of the relationship between CEO power and bank risk over the period of 2010-2020 using the system GMM technique. The GMM estimator is consistent since the null hypothesis for the Hansen test is not rejected and the presence of first-order serial correlation (AR1) and the absence of second-order serial correlation (AR2) are confirmed. The Hansen test checks the validity of instruments (Dahir *et al*., 2018), therefore, the results can be interpreted. There are two models in which the first model excludes board independence, while the second model includes it. Additionally, both models include the same control variables. Model 1 gives the coefficients of the relationship between previous year's bank risk (L.Z-score), CEO power (CEOP) and bank risk (Z-score) without including board independence while Model 2 gives the coefficients of the relationship between previous year's bank risk (L.Z-score), CEO power (CEOP) and control variables with board independence included.

The coefficients discussed in section 5.6 are shown in Table 13:

Table 13: Control variable as determinants of bank risk

Variables	Model 1 (Without board independence) 2-Step System GMM Z-score	Model 2 (With board independence) 2-Step System GMM Z-score
L.Z-score	0.354***	0.308**
	(0.0956)	(0.106)
CEOP	-3.168*	-3.193*
	(1.369)	(1.544)
NPL	2.210*	2.330
	(0.934)	(1.250)
GDPG	0.199***	0.238***
	(0.0360)	(0.0404)
UNEMPL	0.791**	0.988***
	(0.263)	(0.285)
BKSZ	2.012**	2.083**
	(0.671)	(0.690)

LSST	-2.946*	-3.862*
	(1.447)	(1.632)
BINP		1.083
		(1.948)
N	126	126
Groups	14	14
Instruments	12	12
AR(1)	-3.05*	-2.99*
AR(2)	-0.84	-1.09
Sargan test	3.60	15.72
Hansen test	3.98	6.78

Source: Author's own computations.
Note: Z-score is proxy for bank risk. CEOP is CEO power. BINP is board independence. BKSZ is Bank size. LSST is listing status. GDPG is Gross Domestic Product (GDP) growth. NPL is non-performing loans. UNEMPL is unemployment. AR(1) is autoregression of order 1. AR(2) is autoregression of order 2.
** significant at 10%; ** significant at 5%; *** significant at 1%.*

The coefficient of the relationship between the previous year's bank risk (L.Z-score) and the current year's bank risk (Z-score) is positive and significant when board independence is excluded and when it is included. The relationship between current and previous bank risk is positive and significant, confirming a long-run positive relationship between previous bank risk and current bank risk. A unit change in the previous year's bank risk level will lead to an increase in the current year's bank risk by 0.354 units if board independence is excluded and an increase of 0.308 units in the current year's bank risk if board independence is included. This shows that bank risk is persistent over time and cannot just be eliminated instantly. This means that the bank risk faced by a given bank in a certain year depends on the bank risk of the respective bank for the previous year. If, in a particular year, banks take steps to reduce risk, it will take a year to realise the effect of those efforts. This is consistent with theoretical models which indicate that bank risk is persistent (Dahir *et al*., 2018; Bharati & Jia, 2018). Bank risk therefore must be managed gradually; this also proves the managerial overconfidence hypothesis.

The managerial overconfidence hypothesis says that managers credit themselves for successes while blaming outside factors for failures, cause managerial overconfidence to increase following successes but not commensurately decrease following failures (Adam, Fernando & Golubena, 2015). Where a manager made a successful decision in the past,

such a manager will develop confidence and make a decision in a similar situation even if this may lead to adverse results. A CEO who is overconfident tends to make riskier decisions and increase the likelihood of bankruptcy when they delay reaction to negative news (Leng, Ozkan, Ozkan & Trzeciakiewicz, 2021) especially in innovative environments in which a bank is one, existing in an industry where new ideas are key to meet the changing needs of customers.

CEO power (CEOP) has a negative and statistically significant impact on Z-score for both models. A unit change in CEO power leads to a 3.168 units' reduction in Z-score hence an increase in bank risk when board independence is excluded and a reduction of 3.193 units and increase in bank risk when board independence is included. This implies that as CEO power increases, bank risk increases. The plausible reason might be that whenever a CEO is entrusted with immense power, he or she will be ambitious, have hubris, have overconfidence, and will make many decisions without consulting. These findings are consistent with the findings of Barnea and Rubin (2010) and Malmendier and Tate (2015) who found that very powerful and entrenched CEOs take on more risk by over investing especially in corporate social responsibility to build their reputation (Barnea & Rubin, 2010; Malmendier & Tate, 2015). When board independence was introduced in the model, the coefficient changed from -3.168 to -3.193 implying that there was a change in the degree to which CEO power affects the Z-score, which is the proxy for bank risk.

Regarding control variables, Table 13 gives the regression effects with two models. Both models include the same control variables. Model 1 gives the coefficients of the relationship between previous year's bank risk (L.Z-score), CEO power (CEOP) and control variables, and bank risk (Z-score) without including board independence while Model 2 gives the coefficients of the relationship between previous year's bank risk (L.Z-score), CEO power (CEOP) and control variables with board independence included.

A positive and statistically significant impact of non-performing loans (NPL) on Z-score is reported in Model 1 which does not include independent directors. The same is positive even in Model 2 when board independence is included. A unit increase in non-performing loans will lead to an increase in Z-score hence a decrease in bank risk. The possible

explanation is that as more people start to pay back their loans, the bank's exposure to credit risk and default risk reduces and so does the threat of insolvency. These findings confirm those by Lestari (2018) and Almekhlafi *et al*. (2016) who found that non-performing loans have a negative effect on bank risk taking behaviour and performance. Also, a study on bank performance in Yemen from 1998 to 2013 using panel data found that NPLs has negative effect on performance.

GDP growth also has a positive relationship with Z-score. A unit change in GDP growth will lead to increase in Z-score by 0.199 when board independence is not included and by 2.330 units when board independence is included. This implies that as GDP increases, Z-score will also increase, thus leading to a decrease in bank risk and positively, there will be more bank stability. The possible cause of this could be that whenever the economy is growing, commercial banks in Uganda base on those variables to lend out more money or even invest more. Borrowers are also capable of paying back the loans since the economy is growing and there is more economic activity and more money generation. These findings are consistent with those of Khan, Scheule and Wu (2017); Anjom and Karim (2016), Anjom and Karim (2015) and Salas and Saurina (2002) who found that GDP growth leads to revenue growth; so, borrowers will be expected to repay loans, hence reducing the credit risk. Also, GDP growth implicitly assures that bank lending will function effectively and there will be a reduction in the incidence of non-performing loans.

A unit change in unemployment leads to a significant increase of 0.791 units of Z-score without board independence and an increase of 0.988 units when board independence is included. This implies that as more people become unemployed, Z-score increases, and bank risk reduces. The possible explanation for this is that the more people lose jobs or gainful employment, they will not be able to repay loans to financial institutions. As such, commercial banks will be cautious while lending out, hence reducing the risk to which they will be exposed. Where there is decline in unemployment, borrowing and default rates tend to be low, hence reducing default risk and hence risk of insolvency. These findings are consistent with those of Bethune, Rocheteau and Rupert (2015), Iuga and Lazea (2012) and Sullivan (2008) who found that where households have few assets, they do not have

access to credit during periods of unemployment and that unemployment and debt limits are negatively correlated.

Another result coming through is that bank size has a positive relationship with Z-score. A unit change in the size of a commercial bank will lead to increase in Z-score hence a decrease in bank risk by 2.012 when board independence is not included and by 2.083 units when board independence is included. This implies that as bank size increases, bank risk will also increase. The possible explanation is that when banks expand, their resilience increases and their large assets base and liquidity increase which makes it possible for them to reduce unnecessary expansion, investment and lending out money. Since they are already established, their ambition for expansion and lending is low, hence their low risk-taking behaviour. These results align with those of Mavrakana (2019) who found that bank size reduces bank risk. Smaller banks seem to be efficient and enjoy economies of scale. The findings also agree with those of Li (2019) who, while using financial data of 7 620 banks on 118 countries, found that banks with greater market power in a banking system tend to reduce their risk-taking activities. This implies reverse causality but showing effect of bank size. Abbas, Iqbal and Aziz (2020) found that bank risk had a negative impact on bank capital for smaller and medium-sized banks.

Listing status has a negative relationship with Z-score both with and without inclusion of board independence. When listing status increases by one unit, Z-score reduces by 2.946 units hence increasing bank risk. Z-score reduces by 3.862 units when board independence is included in the model hence implying increasing risk by the same units. This implies that when a bank is listed, the risk to which it is exposed increases. The possible explanation for this could be that when a bank is listed, there is pressure to generate earnings originating from the public. This pressure forces the banks to take on several projects in an urgent need to expand, which increases their risk. Further to this, by listing the bank, there will be more outside shareholders whose individual monitoring of the bank will be limited. Those managing the bank will take advantage of the information and decision asymmetry to make decisions which may be risky hence increasing bank risk. It is therefore possible that listed banks can have high risk taking. These findings are in tandem with those of Falato and Scharfstein (2015) who found that the pressure to generate earning, which is

exerted on listed companies by the public intending to invest or the shareholders also encourages banks to increase risk. Moreover, agency problems derived from the separation of ownership and control make publicly listed banks riskier than their unlisted peers. This is in line with Williamson's (1971) opportunistic hypothesis which states that it is possible that CEOs, managers and employees, who are parties to the company management transaction, can mislead and deceive the shareholders, who are the other parties to the transaction, in order to obtain private interest by not fully and truthfully disclosing information (Tran, Hassan & Houston, 2018; Pessali, 2006; Lyons, 1995; Williamson, 1971).

5.4 Diagnostic tests

Linear regression econometric models are applicable where the panels are normally distributed, not serially correlated or autocorrelated and are not heteroscedastic; diagnostic tests were carried out to check for these. Using the Jarque-Bera test, data was found to be normally distributed. The Arellano-Bond test was used to test for autocorrelation and there was no problem of autocorrelation or serial correlation. VIF was used to measure multicollinearity and all values were less than 5, which implies that there was no problem of multicollinearity in all the models. Pesaran's test was used to establish whether there was any cross-sectional independence among the variables and there was none. Using the Breusch-Pagan test for heteroskedasticity, the data had a problem of heteroscedasticity with X^2 = 6.71 and a p-value of 0.0096 which led to rejection of the null hypothesis of constant variance or absence of heteroscedasticity. To curb this problem, and to correct for heteroskedasticity, the models were run using robust standard errors that are not affected by outliers and other data irregularities. Robust standard errors can be used to run regression models in cases where there is heteroskedasticity (Huang, Wiedermann, and Zhang, 2022; Greene, 2012; Wooldridge, 2010 & Baltagi, 2008). All models were run with the number of instruments (13) less than the number of groups (14) which implies that the models were robust. The Sargan test and Hansen test were used to establish the validity of the instruments and robustness of the model. The instruments were found to have validity. The Sargan test was used to determine whether the model was robust. The test further revealed that the number of instruments (13) was less than the number of groups (14) which implies that the model is robust.

5.5 The moderating effect of board independence on the relationship between CEO power and bank risk

Objective two of this study was to assess the moderating effect of board independence on the relationship between CEO power and bank risk.

5.5.1 Moderated regression results

To establish the moderating effect of board independence on the relationship between CEO power and bank risk, the study used the Generalized Method of Moments (GMM) estimator which has been upgraded by Arellano and Bond (1991) into the different GMM estimator. The Generalized Method of Moments (GMM) data analysis approach addresses potential endogeneity, heteroscedasticity, and autocorrelation problems and is also applicable where data is dynamic like in the case of the dynamic nature of bank risk-taking activities that vary over time (Moudud-UI-Huq, Zheng & Gupta, 2018). This estimator takes advantage of a group of lagged explanatory variables as instruments for the corresponding variables in the difference equation. However, the main drawback of the difference GMM estimator is its inability to detect the problem of weak instrumental variables. Therefore, Arellano and Bover (1995) and Blundell and Bond (1998) proposed a more efficient estimator which is the system GMM estimator comprising of both the original level equation and the transformed difference equation.

5.5.2 Econometric model specification

The baseline model used in this study was adopted from Altunbaş *et al.* (2020); Bessler and Kurmann (2014); Haq and Heaney (2012); Victoravich *et al.* (2011); Pathan (2009) and Konishi and Yasuda (2004) who investigate bank risk factors and overall argue that CEO power, board independence and other bank-specific control variables are critical factors in assessing commercial bank risk.

In line with Wooldridge (2010), a simple unobserved panel data model for the study is specified as follows:

$$BR_{it} = \alpha_0 + \alpha_1 CEOP_{it} + \delta X_{it-1} + D_t + \varepsilon_i \quad (1)$$

where BR_{it} is the dependent variable which measures risk taking of the bank i in period t.

The study employed the Z-score which is a commonly used measure for bank risk taking in literature (Altunbaş *et al.,* 2020). More specifically, the study measured risk which was indicated by the Z- scores of each commercial bank, which equals the return on assets plus the capital asset ratio divided by the standard deviation of asset returns. The Z-scores measured the distance from insolvency which refers to the condition in which losses are equivalent to equity. In this regard, higher Z-scores indicate that the bank is more stable.

In reference to the independent variables, $CEOP_{it}$ represents an index of CEO power which was obtained using principal component analysis from the six proxies of CEO power, that is: structural power, ownership power, expert power, prestige power, whether the CEO is a former executive, and CEO founder. The empirical model of the study also includes other control variables which are critical in ruling out the potential for misspecification and any likelihood of biased estimation. From equation (1), X_{it-1} is a vector of other bank-specific characteristics commonly employed in the bank risk literature that include measures of bank size, listing status, Gross Domestic Product (GDP) growth, non-performing loans and unemployment. D_t is a dummy variable meant to capture any structural breaks in the model while ε_{it} is the error term.

To achieve the second objective of the study, equation (1) is expanded to capture the moderation effect of Board Independence on CEO power while explaining bank risk taking. Equation (1a) below was estimated to illustrate this effect:

$$BR_{it} = \beta_0 + \beta_1 CEOP_{it} + \beta_2 BINP_{it} + \beta_3 (CEOP_{it} * BINP_{it}) + \pi X_{it-1} + D_{1t} + \varepsilon_{1i} \qquad (1a)$$

Where $BINP_{it}$ represents board independence which in essence implies the percentage or share of outside directors. Moderation will occur when the relationship between CEO power and bank risk depends on board independence. In this regard, board independence in the model (1a) is referred to as the moderator variable or simply the moderator (Hayes, 2013). To test the hypotheses regarding moderation, direct effect of CEO power on Bank risk was determined and the significance of the results determined. Following Kouki and Guiziani (2015) and Baron and Kenny (1986), the moderating effect is observed when a moderating variable (board independence) alters the form and/or strength of the relationship between

the independent variable (CEO Power) and dependent variable (bank risk). In summary, three relationships were established: the influence of CEO power on bank risk (β_1); the influence of board independence on bank risk (β_2) and the influence of CEO power and board independence on bank risk (β_3) as specified in equation (1a).

Equation (1a) was extended to capture the interaction terms for each construct used in generating the CEO power index. As such, equations (1a_i) to (1a_vi) were estimated. These are presented below:

$$BR_{it} = \beta_{01} + \beta_{11}STRP_{it} + \beta_{12}BINP_{it} + \beta_{13}(STRP_{it} * BINP_{it}) + \pi_1 X_{it-1} + D_{11t} + \varepsilon_{11i} \quad (1a\_i)$$

$$BR_{it} = \beta_{02} + \beta_{12}OWNP_{it} + \beta_{23}BINP_{it} + \beta_{23}(OWNP_{it} * BINP_{it}) + \pi_2 X_{it-1} + D_{21t} + \varepsilon_{21i} \quad (1a\_ii)$$

$$BR_{it} = \beta_{03} + \beta_{13}EXPP_{it} + \beta_{24}BINP_{it} + \beta_{33}(EXPP_{it} * BINP_{it}) + \pi_3 X_{it-1} + D_{31t} + \varepsilon_{31i} \quad (1a\_iii)$$

$$BR_{it} = \beta_{04} + \beta_{14}PREP_{it} + \beta_{25}BINP_{it} + \beta_{34}(PREP_{it} * BINP_{it}) + \pi_4 X_{it-1} + D_{41t} + \varepsilon_{41i} \quad (1a\_iv)$$

$$BR_{it} = \beta_{05} + \beta_{15}CFEP_{it} + \beta_{26}BINP_{it} + \beta_{35}(CFEP_{it} * BINP_{it}) + \pi_5 X_{it-1} + D_{51t} + \varepsilon_{51i} \quad (1a\_v)$$

$$BR_{it} = \beta_{06} + \beta_{16}CFOP_{it} + \beta_{27}BINP_{it} + \beta_{36}(CFOP_{it} * BINP_{it}) + \pi_6 X_{it-1} + D_{61t} + \varepsilon_{61i} \quad (1a\_vi)$$

Where; $STRP$ represents structural power, $OWNP$ stands for ownership power, $EXPP$ is the expert power, $PREP$ is the prestige power, $CFEP$ stands for whether CEO is a former executive, while $CFOP$ represents whether the CEO is the founder.

If the moderator variable, board independence, interacts with the independent variable, CEO power, and the respective constructs used in generating this index, then the regression coefficients $\beta_3, \beta_{13}, \beta_{23}, \beta_{33}, \beta_{34}, \beta_{35}, and\ \beta_{36}$ of the interactive variables $CEOP_{it}$ * $BINP_{it}$; $STRP_{it}$ * $BINP_{it}$; $OWNP_{it}$ * $BINP_{it}$; $EXPP_{it}$ * $BINP_{it}$; $PREP_{it}$ * $BINP_{it}$; $CFEP_{it}$ * $BINP_{it}$;$CFOP_{it}$ * $BINP_{it}$ in the above equation will prove significant (Ngware, Olweny & Muturi, 2020; Kouki & Guiziani, 2015).

This section has the results from the system GMM estimator for the test of the moderating effect of board independence on the relationship between CEO power and bank risk were established. Diagnostic tests were also carried out to check suitability of the GMM estimator. As earlier indicated in Table 13, the GMM estimator was consistent since the results of the Hansen test do not reject the null hypothesis of the validity of the lagged and differential variables as instruments. The Hansen test checks the validity of instruments

(Dahir et al., 2018), and the presence of first-order serial correlation (AR1) and the absence of second-order serial correlation (AR2) are confirmed. The results can therefore be interpreted. Previous studies have used system GMM to study variables among commercial banks. Ngware, Olweny and Muturi (2020) used system GMM to study whether the bank size moderates the relationship between banks' portfolio diversification and financial performance of commercial banks in Kenya. Olarewaju, Migiro and Sibanda (2018) used System GMM to study impact of operational diversification on banking performance.

Before determining the moderating effect, the Hausman test was used to determine whether there are fixed effects or random effects model was appropriate. This approach was also applied by Ngware, Olweny and Muturi (2020). The Hausman test was carried out with the null hypothesis that the random effects model is appropriate.

The Hausman test returned a p-value of 0.000, which was less than 0.05. This meant rejecting the null hypothesis and adopting the alternative hypothesis that the most appropriate model to fit was the fixed effects model. The fixed effects regression model was therefore adopted to measure the moderating effect of board independence in the relationship between CEO power and bank risk among commercial banks in Uganda.

5.5.3 Interaction terms for the moderation effects

The regression results for the moderating effects of board independence on the relationship between CEO power and bank risk under the GMM estimator are contained in models 1 to 4 of Table 14. Four interaction variables (PREP*BINP, CFEP*BINP, EXPP*BINP and OWNP*BINP) were tested using the stepwise regression approach. The empirical findings are presented in Table 14.

Table 14: Results from the test for direct effect of explanatory, control and moderation variables using System GMM

Model	**Model 1 2-Step System GMM**	**Model 2 2-Step System GMM**	**Model 3 2-Step System GMM**	**Model 4 2-Step System GMM**
Variables	Z-score	Z-score	Z-score	Z-score
L.Z-score	0.233*	0.0555	0.263	0.265**
	(0.0957)	(0.154)	(0.138)	(0.102)
PREP*BINP	2.668*			
	(1.357)			
CFEP*BINP		-11.35**		
		(3.856)		
EXPP*BINP			1.585	
			(1.175)	
OWNP*BINP				112138.8
				(151727.9)
CEOP	-2.869*	-1.055	-4.472	-2.407
	(1.266)	(1.038)	(2.977)	(1.486)
BINP	1.341	31.80*	2.542	0.606
	(2.932)	(12.62)	(3.247)	(2.739)
NPL	-2.05	-1.36	7.14*	1.49
	(1.47)	(2.03)	(3.46)	(1.25)
GDPG	0.133***	-0.00815	0.309**	0.212***
	(0.0301)	(0.0826)	(0.107)	(0.0430)
UNEMPL	0.743*	1.240***	0.993*	0.936***
	(0.341)	(0.329)	(0.470)	(0.260)
BKSZ	2.134*	0.825	-0.917	1.574*
	(1.024)	(0.574)	(0.863)	(0.677)
LSST	-2.410*	-3.910*	-4.245	-3.085*
	(1.133)	(1.966)	(2.409)	(1.438)
N	126	126	126	126

Source: Author's own computations.

*Note: Z-score is proxy for bank risk. CEOP is CEO power. STRP is structural power. OWNP is ownership power. EXPP is expert power. PREP is prestige power. CFEP is CEO being a former executive i.e., internally hired. CFOP is CEO founder. BINP is board independence. BKSZ is bank size. LSST is listing status. GDPG is Gross Domestic Product (GDP) growth. NPL is non-performing loans. UNEMPL is unemployment. PREP*BINP is interaction term of prestige power and board independence. CFEP*BINP interaction between CEO being a former executive, that is, the CEO being internally hired and board independence. EXPP*BINP is interaction of expert power and board independence. OWNP*BINP is interaction between ownership power and board independence.*

** significant at 10%; ** significant at 5%; *** significant at 1%.*

Model 1 in Table 14 above shows that the coefficient of the interaction term of prestige power and board independence (PREP*BINP) is positive and significant at 10% level. This result indicates that the interaction effect of both prestige power and board independence of a commercial bank can strengthen the relationship between CEO power and Z-score, hence bank risk in Uganda. The results suggest that board independence can create more incentive for the CEO to use his prestige power to lead the bank into less risky ventures. An independent board, through its oversight role, should monitor the CEO's activities in line with the agency theory (Fama & Jensen, 1983). Such an independent board will also guide and dominate over the decisions of the CEO regarding bank risk. Although a CEO can act in the interest of shareholders as per the stewardship theory, with excessive power, he/she can make decisions that are not in line with the interests of shareholders (Hua *et al.*, 2019; Kung'u & Munyua, 2016; Berle & Means, 1932). Such a CEO will avoid risky decisions such as extending loans to members of his/her other connections and networks without strictly following bank lending regulations, policies, and due procedures.

This behaviour reduces bank risk. These connections will expose him/her to opportunities and knowledge which will increase his/her prestige power in line with the social network theory (Saidu, 2019; Kavitha and Bhuvaneswari, 2016; Fetscherin, 2015; Boyd *et al.,* 2011). Prestige power will give the CEO confidence to take on more successful projects as he/she will be comparting himself to other successful CEOs or getting advice. This will reduce the risk of failure. These findings are consistent with those of Fang et al. (2020), who found that increasing a CEO's prestige power will improve performance and reduce bank risk. A CEO with high reputation is likely to make decisions that align with the company's best interests (Saidu, 2019). If one has multiple directorships, this is an advantage to the bank because that CEO can bring in new knowledge. Prestige power will give the CEO confidence to take on risky ventures since he/she may have implemented the same in one of the places where he/she holds directorships, or it may be that he just wants to improve his prestige and sometimes flamboyance. In this way, the bank will have high risk exposure (Fetscherin, 2015).

Where there are independent directors on the board, they will put the success of the bank first and will easily notice the prestige that the CEO holds. They will monitor, advise, or

even reject some of the approaches that the CEO has towards implementing risky projects hence, affecting the effect of his prestige power on the risk of the bank. CEOs with prestige wield power and respect. Such CEOs may have led to banks taking on too much risk hence their collapse. However, with independent boards, less risk is taken since the board can lead to changing of a CEO and advise more. This finding is a sign that in Uganda, banks that hire prestigious CEOs with high qualification and connections will be able to reduce the risk exposures of the banks they head if there are independent directors.

The coefficient of the interaction between CEO being a former executive, that is, the CEO being internally hired (CFEP) and board independence (BINP) (CFEP*BINP) in Model 2 is negative and significant at 5% level. This result indicates that board independence can reduce the effect the power of the CEO as derived from the CEO being a former executive on Z-score, hence bank risk. This implies that the ability of such a CEO to expose the bank to risk is reduced by the presence of independent directors. An independent board, through its oversight role, should monitor the CEO's activities in line with the agency theory (Fama & Jensen, 1983). Such an independent board will also guide and dominate over the decisions of the CEO regarding bank risk. Although a CEO can act in the interest of shareholders as per the stewardship theory, with excessive power, he/she can make decisions that are not in line with the interests of shareholders (Hua *et al.*, 2019; Kung'u & Munyua, 2016; Berle & Means, 1932). This will lead to exposing a bank to excessive risk.

An internally appointed CEO will have more power than one who is hired from outside of the organisation, since the former will have more information about the firm. This move is motivating to the individual and will enable to him/her work towards expansion and sustainability of the firm. However, such a CEO may suffer 'arrivalism', that is, the excitement of arriving at a leadership position, as he/she may want to show other employees that he/she is now more powerful than them. He or she may want to implement projects that he/she had all along wanted to implement but could not since he/she was not the CEO. Such excitement may lead to reckless behaviour, thereby exposing the bank to more risk.

In Uganda, A CEO who was a former executive of a bank commands more respect that one who was not. Such a person will have knowledge about the bank and all its operations. He/she will also easily connect with most stakeholders of the bank and the bank operations will not experience a CEO change shock as would have been if the person had come from outside. Such a CEO, if ambitious, will want to take on new projects to prove that he/she is better than the previous one whom he/she was a subordinate to. In such cases, if the CEO is reckless, he or she will increase the risk exposure of the bank. Where one is more cautious, he or she may reduce the risk exposure of the bank, especially where the previous one had led to increase in the risk exposure of the bank. In both circumstances, since risk is inevitable in a bank, especially since it has both benefits and costs and benefits (Danaan, 2018), an independent board will advise or even override the decision of the CEO while taking on risky ventures. The independent directors may not have a special attachment to that insider CEO or may know his/her method of work and will advise accordingly, hence regulating the extent to which his/her power affect the risk of the bank.

Model 3 shows that the coefficient of interactions term expert power (EXPP) and board independence (BINP) is not significant. The results suggest that board independence does not have any impact on the extent to which expert power enables a powerful CEO to influence bank risk. The same applies to the interaction between ownership power (OWNP) and board independence which is also not significant. Regarding the moderating effect of board independence on the relationship between CEO power and Z-score, the interaction effect is between board independence and the two indicators of CEO power, that is, prestige power and CEO being a former executive.

5.6 The cointegrating relationship between CEO power and bank risk

Objective three of the study was to analyse the cointegrating relationship between CEO power and bank risk. Cointegration is viewed as the statistical expression of the nature of long-run equilibrium relationships (Gwachha, 2023; Awe, 2012). In this case, variables are linked by some long-run relationship, from which they can deviate in the short run but must return to in the long run and the residuals are stationary. Cointegration or long-run relationship presents itself as the joint significance of the level's equation. Cointegration or long-term relationship was ascertained by interpreting the significance of the long-run

coefficients and the Error Correction Term (ECT). Prior to performing the cointegration test, stationarity of the data was established using unit root tests.

5.6.1 Unit root analysis for stationarity

Prior to testing for cointegration, stationarity test using unit root analysis was first conducted. Stationarity means that the panel data of the variables is time invariant, thus over time, the key moments: the mean, variance and auto-covariance of the series do not change, it is stationary over time (Witt, Kurths & Pikovsky, 1998). Stationary data has all its covariances, variances and mean constant over time and therefore needs for differencing or transformation prior to analysis. A unit root is like a marker of non-stationarity pointing to a long-term trend that does not go away even when attempts are made to remove it through differencing.

A stationarity test is meant to examine whether the series are integrated of order 0 (I(0)), that is, stationary in level and therefore do not need any differencing because the individual time series within the panel are all non-stationary and constantly changing with time-varying means, variances and covariances and with no constant relationship between variables over time and therefore have a unit root or long-run trend component that persists over time and does not disappear when the series is differenced, whether the series are integrated of order 1 (I(1)), that is, non- stationary in level and therefore need first-differencing because the individual time series within the panel are all non-stationary; therefore they have a unit root and stationary after first difference to make the data stationary and fit for analysis, or whether series are integrated of different orders, that is, having a combination of *I*(0) and *I*(1) series (Singhal, Goyal, Sharma, Kumari, & Nagar, 2022).

From the literature, there are three main approaches recognised in testing stationarity, these include: i) correlogram, ii) graphical analysis, and iii) unit root analysis. This study employed unit root analysis for testing whether the variables are stationary or not. Unit root analysis was done using the Levin, Lin and Chu (LLC) test. The LLC test used to test for unit roots in panel data settings is a combination of the Augumented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test (Brooks, 2014; Koutsoyiannis, & Tsekouras, 2012; Gujarati, 2010; Enders, 2010). It considers the correlation between the series being tested.

The LLC test tries to determine if the mean of the panel is stable over time. This test takes the unit root as the null hypothesis Ho: ρ =1. The null hypothesis was tested against the alternative H_1: ρ<1. When a non-stationary series is regressed on another non-stationary series, spurious regressions may occur. Spurious results are characterised by a fairly high R^2, highly uncorrelated residuals and significant coefficients of the regressors and low Durbin Watson statistic (Gujarati & Porter, 2010). Details about the different stationarity tests are summarised in the next sub-sections.

Table 15 below shows the unit test results under the alternative hypothesis that panels contain unit roots (are non-stationary)

Table 15: Unit test results

Variable	Levin, Lin & Chu Statistic	Order of integration
Z-score	-10.5786***	*I*(0)
CEOP	-10.2330***	*I*(0)
BINP	-9.08317***	*I*(0)
CFEP	-2.16320**	*I*(1)
EXPP	-10.2571***	*I*(0)
BKSZ	-1.64127**	*I*(1)
GDPG	-6.00586***	*I*(0)
NPL	-9.60134***	*I*(0)
UNEMPL	-6.16521***	*I*(0)
Variable	**ADF Statistic**	
Z-score	65.3319***	*I*(0)
CEOP	45.3504***	*I*(0)
BINP	44.6134***	*I*(0)
CFEP	17.7999***	*I*(0)
EXPP	43.2662***	*I*(0)
BKSZ	42.6213**	*I*(0)
GDPG	186.259***	*I*(0)

NPL	57.9379***	*I*(0)
UNEMPL	102.214***	*I*(1)
Variable	**PP Statistic**	
Z-score	175.417***	*I*(0)
CEOP	74.1863***	*I*(0)
BINP	104.969***	*I*(0)
CFEP	63.5698***	*I*(0)
EXPP	86.7977***	*I*(0)
BKSZ	110.597***	*I*(0)
GDPG	87.7884***	*I*(0)
NPL	119.862***	*I*(0)
UNEMPL	151.900***	*I*(1)

Source: Author's own computations.
Note: Z-score is proxy for bank risk. CEOP is CEO power. EXPP is expert power. CFEP is CEO being a former executive i.e., internally hired. BINP is board independence. BKSZ is bank size. LSST is listing status. GDPG is Gross Domestic Product (GDP) growth. NPL is non-performing loans. UNEMPL is unemployment.
** significant at 10%; ** significant at 5%; *** significant at 1%. We reject the null hypothesis of unit root tests at 1%, 5% and 10%, respectively.*

From Table 15, all the absolute figures of the LLC test statistic are negative and significant which indicates that the null hypothesis of a unit root is rejected. When ADF and PP are used, all the variables have significant probabilities at levels or first differencing, the null hypothesis can be rejected and thus concluded that the panel data for all the variables are stationary. Therefore, they contain no unit roots. Analysis can thus be performed on them. We conclude that the panel data for all variables is stationary and contains no unit roots. The data is therefore stationary. A positive LLC test statistic would indicate that the data is non-stationary (Brooks, 2014; Enders, 2010; Gujarati, 2010). Since the data is stationary, the series is unlikely to exhibit random walk behaviour, and this suggests that the series is suitable for use in subsequent regression and ARDL analysis. From the series examined at either level *I*(0) or *I*(1), Z-score, CEOP, BINP, EXPP, GDPG, NPL and UNEMPL became stationary at level and are statistically significant at 1% while CFEP and BKSZ were

stationary in first difference and statistically significant at 5%. These findings are in line with those of Oduori and Kosgei (2020) who carried out a study about the influence of chief executive officer power on diversity of gender and dividend policy in Kenya and found CEO power non-stationary. Board independence was also found to be stationary by OJayeola, Kajola, Oladejo, Ojeaga, and Abass, (2018) who conducted a study on board characteristics and performance of quoted consumer goods firms in Nigeria.

Having tested for unit roots and established that variables are either integrated of order zero, I (0) or integrated of order one, I (1), the researcher proceeded to test whether CEO power and bank risk have a long run relationship. In the literature, three approaches have been used to test for existence of long run relationship among the variables (cointegration), that is; Engle and Granger (1987) approach, Johansen and Juselius (1990) procedure and the Autoregressive Distributed Lag (ARDL) bounds test by Pesaran *et al.,* (2001).

5.6.2 Cointegration results using ARDL

We used the Autoregressive Distributed Lag (ARDL) approach developed by Pesaran *et al.* (2001) to analyse the short and long run linkages between CEO power, bank risk and board independence among selected commercial banks in Uganda. The ARDL approach offers several advantages over traditional methods for evaluation of cointegration and short-run and long-run linkages. Firstly, as opposed to traditional cointegration methods such as Johansen (1991) tests, Granger and Engle causality test (Engle & Granger, 1987) and Vector Autoregressive (VAR) model, the ARDL can be utilised to test for a level relationship for variables that are either *I*(0) or *I* (1) as well as for mix *I* (0) and *I* (1) variables (Duasa 2007; Adom, Bekoe & Akoena*,* 2012). However, the ARDL approach does not apply with non-stationary variables integrated of order two *I*(2). The possibility to combine *I* (0) or *I* (1) variables is a great advantage as economic data series often are either *I* (0) or *I* (1). The ARDL approach solves the problem of endogeneity. Pesaran and Shin (1998) argued that modelling the ARDL with the appropriate lags will adjust for both serial correlation and endogeneity problems. Jalil, Ma and Naveed (2011) contend that endogeneity is less of a problem if the estimated ARDL model is free of serial correlation. The impact on a given variable is due to its past values as well as the values of other variables and their lagged values.

To determine cointegration, the researcher first established whether the data was homogeneous or not. There are several estimators that can be used to determine cointegration depending on the homogeneity of the data, but the common ones include Mean Group (MG), Dynamic Fixed Effects (DFE) and Pooled Mean Group (PMG). To determine which estimator was the most efficient, the Hausman (1978) test was used to determine whether the data was homogeneous or heterogeneous. This would in turn be used to determine which estimator was the most suitable estimator to run the cointegration test.

Comparative analysis was done of Mean Group (MG), Dynamic Fixed Effects (DFE) and Pooled Mean Group (PMG). Sighal *et al.,* (2022) used the Hausman (1978) test to choose between the MG and the PMG on one side and the PMG and the DFE on the other while studying the applicability of capital theories in BRICS banking sector focusing on capitalisation and profitability. Where data is non-random and homogeneous, PMG is the most efficient (Banda, 2021; Ferrucci, 2003). Where data is heterogeneous, MG is the most efficient of the DFE estimator which can handle both homogeneous and heterogenous data. However, the three were compared to find the most efficient. By performing the PMG analysis, you can infer cointegration from interpreting the significance of the long-run coefficients and the error correction term. Hausman (1978) test was used to measure homogeneity.

Results of the Hausman (1978) test revealed that when MG was compared to PMG under the null hypothesis that data was homogeneous, it returned a probability of 0.9877 which is less than 0.05. Hence, we do not reject the null hypothesis that data is homogeneous and concluded that PMG was a better estimator than MG. When DFE was compared to PMG under the null hypothesis that data was homogeneous, it returned a probability of 0.2466 which is less than 0.05. Hence, we do not reject the null hypothesis that data is homogeneous and concluded that PMG was a better estimator than DFE. PMG having been found to be a better estimator for the data, it was adopted as was the case with (Singhal *et al.*, 2022).

From the Hausman (1978) test, we estimated the models. Since the Hausman (1978) test favoured the PMG estimator, we observed the statistical significance of the long-run coefficient, the Error Correction Term (ECT) and the short-run coefficients to interpret the results. The results the cointegrating relationship between CEO power and bank risk using the models are indicated in Table 16.

Table 16: Cointegrating relationship between CEO power and bank risk

	PMG	**MG**	**DFE**
	D.Z-score	D.Z-score	D.Z-score
Long-run			
L.CEOP	8.461***	8.471	-4.852
	(17.62)	(1.57)	(-0.60)
L.BINP	33.85***	30.62	13.62
	(54.15)	(1.76)	(0.42)
ECT	-0.0258***	-0.137***	-0.0841
	(3.37)	(2.94)	(-1.15)
Short-run			
D.CEOP	0.151	-0.736	-0.197
	(0.28)	(-0.82)	(-0.37)
D.BINP	-3.676	-3.708	-3.502
	(-0.90)	(-0.77)	(-1.59)
_cons	-1.015	-5.560*	0.777
	(-1.24)	(-2.33)	(0.41)
N	140	140	140

Source: Author's own compilation
Note: Z-score is proxy for bank risk. CEOP is CEO power. BINP is board independence. ECT is Error Correction Term.
** significant at 10%; ** significant at 5%; *** significant at 1%.*

From Table 16 above, the results for PMG estimator were the only ones considered for interpretation. The table shows that CEO power (CEOP) is positively and significantly related to Z-score in the long run, but such relationship is not significant in the short-run. This means that in the long run, when CEOP increases, Z-score increases, and bank risk reduces since the extent of bank risk is inversely proportional to the Z-score. The CEO, when given power, has capacity to reduce bank risk in the long run. This incentive comes from the need to protect shareholder's wealth as per stewardship theory. The experience that the CEO may have accumulated from long tenure enables such a CEO to make viable

decisions being that he/she is familiar with the environment. In Uganda, most CEOs have experience and can operate in the dynamic and rapidly changing private sector-led economy with a lot of risks especially credit risk given the increase in borrowers. It turns out that bank CEOs used to that environment will quickly foresee and avoid possible risks. These results agree with those of Fernandes *et al.* (2021), Fang, Lee, Chung, Lee and Wang (2020), DeBoskey *et al.* (2019), Belenzon, Shamshur and Zarutskie (2019), Haider and Fang (2018) and Li, Li and Minor (2016b) who found that increased control over risk-taking is possible with stronger CEO power.

The speed of adjustment of the model in the long run was established using the Error Correction Term (ECT). A negative and significant value of ECT (-1) indicates that there is cointegration (Gwachha, 2023; Singhal *et al.*, 2022). From Table 16, when CEO power was related to Z-score, a negative and significant Error Correction Term (ECT) of -0.0258, significant at 1% level was found. This implies that there is cointegration between CEO power and Z-score in the panel and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will be recoded back to equilibrium or it will correct its previous period disequilibrium at a speed of approximately 2.58% annually to get back to the steady state. However, the speed of readjustment is low. This could be due to the several investigations that were taking place in the banking sector that probably make it difficult for bank CEOs, staff, and clients to make quick decisions regarding correcting disturbances in bank operations. During the ten-year period under study, there was GDP growth volatility with the highest being 9.4% and the lowest being 3%. This unstable volatility could have led to more skepticism and slow adjustment in the financial sector. In fact, Gwachha (2023) after studying the financial system of Napal and used ARDL to analyse the data, concluded that the fragility of a financial system can render it unable to swiftly react to shocks.

The basic ARDL model in the literature is given as:

$$BR_{it} = \alpha_0 + \sum_{k=1}^{\rho} \emptyset_k BR_{it-k} + \sum_{k=0}^{q} \varphi_k' X_{it-k} + \varepsilon_{it} \qquad (5)$$

Where $\emptyset_k$ and φ_k are the coefficients of the lags of the dependent variable and the independent variables respectively. The lags in equation (5) imply a set of dynamic responses in bank risks (BR) to any given change in explanatory variables (x). There is an immediate response followed by short run and long run responses. Reparameterisation of the model in equation (5) gives rise to the error correction version of the ARDL model shown in equation 6:

$$\Delta BR_{it} = \beta_0 - \alpha[BR_{it-1} - \theta' X_{it-1}] + \sum_{k=1}^{\rho-1} \gamma_k \Delta BR_{it-1} + \sum_{k=0}^{q-1} \lambda_k' \Delta X_{it-k} + \varepsilon_{it} \qquad (6)$$

In the model specified in equation (6), X and BR are as defined earlier on, $\alpha = 1 - \sum_{k=1}^{\rho} \emptyset_k$ is the speed of adjustment coefficient and $\theta = \frac{\sum_{k=0}^{q} \varphi_k}{\alpha}$ is a vector of long run coefficients. γ and λ are the short run coefficients and the term in the brackets is the error correction term that is:

$$ECT_{it-1} = BR_{it-1} - \theta' X_{it-1} \qquad (7)$$

Thus, the model in equation (7) can be written as:

$$\Delta BR_{it} = \alpha_0 + \sum_{k=1}^{\rho-1} \gamma_k \Delta BR_{it-1} + \sum_{k=0}^{q-1} \lambda_k' \Delta X_{it-1} + \omega ECT_{it-1} + \varepsilon_{it} \qquad (8)$$

Where ω =−α is the speed of adjustment towards long run equilibrium. In this case, φ must be negative and statistically significant if long run equilibrium is to be restored.

5.7 The causality relationship between CEO power and bank risk

Objective four of the study was to establish the direction of causality between CEO power and bank risk. When establishing causality effect, it is possible to perform either the Granger, Wald or Weak Exogeneity tests. However, since ARDL was used, causality was inferred from the significance of Error correction term (for joint causality), long-run coefficients (for long-run causality) and short-run coefficients (for short-term causality) (Gwachha, 2023; Narayan, 2004). A negative ECT implies presence of causality. The

causality effect of CEO power on bank risk was established using the ARDL PMG results as shown in Table 17.

Table 17: ARDL results for PMG

	PMG D.Z-score
Long-run	
L.CEOP	8.461***
	(17.62)
L.BINP	33.85***
	(54.15)
ECT	-0.0258***
	(3.37)
Short-run	
D.CEOP	0.151
	(0.28)
D.BINP	-3.676
	(-0.90)
_cons	-1.015
	(-1.24)
N	140

Source: Author's own compilation

Note: Z-score is proxy for bank risk. CEOP is CEO power. BINP is board independence. ECT is Error Correction Term.

** significant at 10%; ** significant at 5%; *** significant at 1%.*

From Table 17, ECT is negative (- 0.0258) which shows that there is a causal relationship between the CEO power and bank risk. The table shows that CEO power has a long-run positive and significant causal impact on Z-score and reduces bank risk with a coefficient of 8.461 significant at 1% level. This implies that changes in CEO power will lead to a change in bank risk in the long run; however, there is no short-run causality. Any changes in CEO power will have an impact on bank risk only in the long run. Where there are changes in CEO power with the aim of reducing bank risk, the results will be seen in the long run. This is because of the need for the CEO to first adjusts to the new position especially if he/she has just been appointed. For a CEO of a commercial bank to successfully reduce bank risk in Uganda, he/she must first study the environments, get acquainted with it, introduce strategies gradually but consistently. This will lead to reduction

of bank risk in the long run. These findings are consistent with those of previous studies which concluded that short term decisions of a CEO can have impact on the bank in the long run (Victoravich *et al.*, 2011). As chief planners, CEOs are considered architects of the long-term strategy of the firm (Sheikh, 2019; Berger, Dutta, Raffel, & Samuels, 2008).

Since ECT is negative and significant, it can be concluded that there is joint causality of the independent variables of CEOP on bank risk in the long run since there is cointegration and the model can converge to equilibrium at the speed of 2.5% in the long run. A significant coefficient of 8.461 shows that there is a positive causality between CEO power and Z-score implying that in the CEO power causes Z-score to increase showing a reduction in bank risk.

5.8 Chapter summary and conclusion

The objective of this chapter was to test the research objectives. Statistical analysis of the panel data started with the descriptive statistic and then regression analysis.

5.8.1 Descriptive statistics for the annual panel data

The summary of descriptive statistics for the pooled results for all the banks in this study covering the period 2010-2020 is presented here. The descriptive statistics reflect that bank risk, as measured by the Z-score, was at an average of 15.34. Banks in Uganda had a minimum Z-score of 0.06 and a maximum of 39.68 over the research period. This implies that the level of risk in commercial banks in Uganda varies tremendously among banks and is not the same with a range of 39.62 and a standard deviation of 11.97. Regarding board independence (BINP), there are more independent board members on the boards of directors of commercial banks studied over the study period with an average of 66%. However, the results also show a minimum fraction of independent board members as 0.2 and a maximum was 0.86.

Ownership power (OWNP) by CEOs among commercial banks that were studied during the study period was low. This is because on average, CEOs held 0.00227% of the shares in banks with a standard deviation 0.00104%, a minimum of 0% and maximum of 0.005%. There are banks where the CEO has no shareholding and so has little power. Expert power (EXPP) is indicated by the number of years the individual has served as CEO for the

respective commercial bank, on average most CEOs had spent 3.59 years as CEOs with a standard deviation of 2.79 years. A standard deviation of 2.79 years shows the minimum number of years is 0.70 years which is less than a year while the maximum is 14 years. A maximum of 14 years but an average of 3.59 years implies that the expert power is taken to be less than seven years which is half of the maximum. It means that CEO expert power is low and does not change by a large margin as shown by a standard deviation of only 2.79 years.

Focusing on prestige power (PREP) as a source of CEO power, this was at an average of 0.23 with a standard deviation of 0.42. This looked at CEO holding directorships in other firms as source of their power. With a minimum of 0 and a maximum 1, half of this is 0.5. However, for CEOs of commercial banks in Uganda the mean is 0.23 which is relatively low. This implies that these CEOs do not derive much power from other directorships. A CEO being a former executive, that is, internally hired (CFEP) had a mean of 0.28 and a standard deviation of 0.45. The minimum was 0 while the maximum was 1.00. A CEO who is internally hired wields more power than one who is brought in from outside the bank. In Uganda, on average, 28% of the CEOs are hired externally. This implies that their CEO power is slightly low since it is below the 0.5.

Structural power (STRP) and CEO being a founder (CFOP) that were presumed to be variables on commencement of the study were found not change or vary within the banks and across all the years under observation. Regarding structural power (STRP), none of the CEOs held dual positions. As for CEO being a founder (CFOP), none of the CEOs was a founder member in the period under study. CEO power (CEOP) gave a minimum on 0.00 when CEO power index was lower than the medium CEO power index and a maximum of 1.00 where the CEO power index was higher than the median CEO power index of a particular bank. The CEO power index (CEOP_INDEX) was determined after carrying out principal component analysis of the variables. From the table, the average CEO power is 0.4 which is moderate. This implies that the CEOs of commercial banks in Uganda have moderate power.

Regarding control variables, average bank size (BKSZ) was 27.18, with a minimum of 23.06 and a maximum of 29.32. The variations among banks regarding size as shown by the standard deviation of 1.23 was small. This means that most banks are almost the same size; therefore, they can be reasonably compared. The listing status of commercial banks in Uganda is moderately low with an average of 0.45. This implies that on average 45% of the commercial banks are listed. GDP growth (GDPG) in Uganda has been on an average of 5.09% for the years of the study period with a minimum of 3.0% and a maximum of 9.40. The average GDP growth rate of Uganda during the study period was high given that the East African GDP growth for the year 2020 was 0.4% (African Development Bank, 2021). This implies that there is potential for increase in banking activity due to increase in demand for financial services like savings and credit. Non-performing loans (NPL) for the commercial banks averaged at UGX.27,400,000,000 with a minimum of UGX.0 and a maximum of UGX.219,000,000,000. This implies that the level at which banks are cautious towards lending and the efforts made to recover the money lent out differ and the extent of loan default rate widely differs given range and as shown by the standard deviation. The rate of unemployment (UNEMPL) was at an average of 2.44% with a minimum of 1.91% and a maximum of 3.59%. The average unemployment rate of 2.44% was better than the unemployment rate in Sub-Saharan Africa for 2020 which was 6.6% (World Bank, 2023) and was stable with a standard deviation of 0.70. This implies that the employment rate in Uganda was favourable for banking activities to thrive.

5.8.2 Principal components analysis

Using principal components analysis (PCA), a CEO power index was developed, which was later used to determine the extent to which CEO power was high or low. CEO power has several dimensions including structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. Principal components analysis (PCA) is a technique used by researchers to model the structure of the variance of given variables. It was used to generate a single composite index of CEO power of the commercial banks in Uganda studied. By using CPA, a uni-dimensional measure of CEO power based on the identified CEO power variables was developed because the individual variables, when considered independently may, not

provide information on whether CEO power in commercial banks in Uganda is high or low. The individual variables were also measured using different scales making it difficult to just average all of them and conclude on the extent of CEO power. Applying PCA to construct the composite CEO power index was that the index weight was based on the correlation of the individual measures of CEO power including structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. From this, the first principal component for a given set of variables is the unit length linear combination of the variables which will contain the maximum variance for any combination.

5.8.3 The relationship between CEO power and bank risk

Objective one of this study was to examine the relationship between CEO power and bank risk. Correlation analysis and system GMM were applied to examine this relationship. Bivariate correlation was done to measure the strength and direction of the linear association between two variables. There was a positive relationship between ownership power and Z-score. This indicated that the more a CEO owns shares in the bank, the less risky the decisions they will make, hence the bank will experience less risk. With regards to prestige power, there was a positive relationship between prestige power and Z-score. This indicated that the more prestigious a CEO is either through his connections, education, or directorships in other firms the lower the bank risk of the bank in which he or she is CEO. A CEO being a former executive of the bank was found to have a positive relationship with Z-score. This indicated that if a CEO was a former employee before being appointed into that position, there will be low bank risk. CEO power had a positive relationship with Z-score. This indicated that the more power a CEO has, the lower the bank risk. There was a negative relationship between board independence and Z-score. This indicated that a small proportion of independent board members will reduce the Z-score and accordingly increase bank risk.

Bivariate correlation analysis was also done for control variables. There was a positive relationship between bank size and Z-score. This indicated that the larger the bank, the lower the bank risk. Listing status had a positive relationship with Z-score. This indicated that when a bank gets listed, bank risk reduces. There was a negative relationship between

GDP growth and Z-score. This indicated that a low rate of GDP growth will increase Z-score and accordingly decrease bank risk. There was a positive relationship between non-performing loans and Z-score. This indicated that when non-performing loans increase, bank risk decreases. The results outlined in Table 12 further reveal a negative relationship between unemployment and Z-score. This indicated that when unemployment increases, Z-score reduce and hence bank risk increases.

System GMM was also applied to examine the relationship between CEO power and bank risk. The coefficient of the relationship between the previous year's bank risk (L.Z-score) and the current year's bank risk (Z-score) is positive and significant when board independence is excluded and when it is included. The relationship between current and previous bank risk is positive and significant, confirming a long-run positive relationship between previous bank risk and current bank risk. A unit change in the previous year's bank risk level will lead to an increase in the current year's bank risk. CEO power (CEOP) has a negative and statistically significant impact on Z-score for both models. A unit change in CEO power leads to a reduction in Z-score hence an increase in bank risk when board independence is both excluded and included. This implies that as CEO power increases, bank risk increases.

Regarding control variables, a positive and statistically significant impact of non-performing loans (NPL) on Z-score is reported. A unit increase in non-performing loans will lead to an increase in Z-score hence a decrease in bank risk. GDP growth also has a positive relationship with Z-score. A unit change in GDP growth will lead to increase in Z-score implying a decrease in bank risk, leading to more bank stability. A unit change in unemployment leads to a significant increase in Z-score. As more people become unemployed, Z-score increases, and bank risk reduces. Bank size has a positive relationship with Z-score. A unit change in the size of a commercial bank will lead to increase in Z-score hence a decrease in bank risk. Listing status has a negative relationship with Z-score hence increasing bank risk.

5.8.4 Diagnostic tests

Linear regression econometric models are applicable where the panels are normally distributed, not serially correlated or autocorrelated and are not heteroscedastic. We carried out diagnostic tests to check for these. Using the Jarque-Bera test, data was found to be normally distributed. The Arellano-Bond test was used to test for autocorrelation and there was no problem of autocorrelation or serial correlation. We used VIF to measure multicollinearity and all values were less than 5 which implies that there was no problem of multicollinearity in all the models. Pesaran's test was carried out and results indicated that there was no cross-sectional independence among the variables. Using the Breusch-Pagan test for heteroskedasticity, the data had a problem of heteroscedasticity with X^2 = 6.71 and a p-value of 0.0096 which led to rejection of the null hypothesis of constant variance or absence of heteroscedasticity. To correct for heteroskedasticity, the models were ran using robust standard errors that are not affected by outliers and other data irregularities. Robust standard errors can be used to run regression models in cases where there is heteroskedasticity (Huang, Wiedermann & Zhang, 2022; Greene, 2012; Wooldridge, 2010; Baltagi, 2008). All models were run with the number of instruments (13) less than the number of groups (14) which implies that the models were robust. The Sargan test and Hansen test were used to establish the validity of the instruments and robustness of the model. The instruments were found to have validity. The Sargan test was used to determine whether the model was robust. The test further revealed that the number of instruments (13) was less than the number of groups (14) which implies that the model is robust.

5.8.5 The moderating effect of board independence on the relationship between CEO power and bank risk

Objective two of this study was to assess the moderating effect of board independence on the relationship between CEO power and bank risk. To establish the moderating effect of board independence on the relationship between CEO power and bank risk, the study used the Generalized Method of Moments (GMM) estimator. Four interaction variables (PREP*BINP, CFEP*BINP, EXPP*BINP and OWNP*BINP) were tested using the stepwise regression approach. The coefficient of the interaction term prestige power and board independence (PREP*BINP) was positive and significant which indicates that the

interaction effect of both prestige power and board independence of a commercial bank can strengthen the relationship between CEO power and Z-score, thus there is bank risk in Uganda. The coefficient of the interaction between CEO being a former executive, that is, the CEO being internally hired (CFEP) and board independence (BINP) (CFEP*BINP) was negative and significant, indicates that board independence can reduce the effect the power of the CEO as derived from the CEO being a former executive on Z-score, leading to bank risk. The coefficient of interactions term expert power (EXPP) and board independence (BINP) is not significant. The results suggest that board independence does not have any impact on the extent to which expert power enables a powerful CEO to influence bank risk. The same applies to the interaction between ownership power (OWNP) and board independence which is also not significant. Regarding the moderating effect of board independence on the relationship between CEO power and Z-score, the interaction effect is between board independence and the two indicators of CEO power, that is, prestige power and CEO being a former executive.

5.8.6 The cointegrating relationship between CEO power and bank risk

Objective three of the study was to analyse the cointegrating relationship between CEO power and bank risk. The Autoregressive Distributed Lag (ARDL) approach was used to analyse the short and long run linkages between CEO power, bank risk and board independence among selected commercial banks in Uganda. CEO power (CEOP) is positively and significantly related to Z-score in the long run, but such a relationship is not significant in the short run. This means that in the long run, when CEOP increases, Z-score increases, and bank risk reduces since the extent of bank risk is inversely proportional to the Z-score. When given power, a CEO has capacity to reduce bank risk. The speed of adjustment of the model in the long run was established using the Error Correction Term (ECT). A negative and significant value of ECT (-1) indicates that the that there is cointegration. When CEO power was related to Z-score, a negative and significant Error Correction Term (ECT) of -0.0258, significant at 1% level was obtained. This implies that there is cointegration between CEO power and Z-score in the panel and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will be recoded back to equilibrium or it will correct its previous period disequilibrium at a speed of

approximately 2.58% annually to get back to the steady state. However, the speed of readjustment is low.

5.8.7 The causality relationship between CEO power and bank risk

Objective four of the study was to determine the direction of causality between CEO power and bank risk. Causality was inferred from the significance of error correction term (for joint causality), long-run coefficients (for long-run causality) and short-run coefficients (for short-term causality). A negative ECT implies presence of causality. The causality effect of CEO power on bank risk was established using the ARDL PMG results. Since ECT was negative, there is a causal relationship between the CEO power and bank risk. CEO power has a long-run positive and significant causal impact on Z-score and reduces bank risk. There is however, no short-run causality. Since ECT is negative and significant, it can be concluded that there is joint causality of the independent variables of CEOP on bank risk in the long run since there is cointegration and the model can converge back to equilibrium at the speed of 2.5% in the long run. A significant coefficient shows that there is a positive causality between CEO power and Z-score implying that in the CEO power causes Z-score to increase showing a reduction in bank risk.

Chapter Six: Conclusion

6.1 Introduction

This chapter presents the conclusion to the study. It provides a summary of what the study set out to achieve. The chapter further highlights the theoretical and empirical insights surrounding the moderating effect of board independence on the relationship between CEO power and bank risk. Both theoretical and empirical literature review summaries are provided. A summary of major findings is presented according to objectives. Contributions of the study to the body of knowledge, policy, and practice are presented. Recommendations are also made for future research.

6.2 Theoretical and empirical insights

6.2.1 Theoretical literature review

This section summaries the various theories that formed the foundation of studying the moderating effect of board independence on the relationship between CEO power and bank risk. The theories related to CEO power and board independence are presented first followed by those that guided bank risk studies.

Different theories have been applied to explain the dimensions of CEO power and its effect on bank performance outputs. The two key theories underpinning CEO power are the upper echelons theory (Herman & Smith, 2015; Hambrick & Mason, 1984) and the agency theory (Berle & Means, 1932; Jensen & Meckling, 1976; Fama & Jensen, 1983). In addition, there are other background theories such as the stewardship theory (Donaldson, 1985; Ng, Bucic & Ruyter, 2005; Donaldson & Preston, 1995; Donaldson & Davis, 1991), resource-based theory (Wernerfelt, 1984; and later developed by Penrose (1959)) and the social network theory (Saidu, 2019; Kavitha & Bhuvaneswari, 2016) which guide CEO power.

The main proponents of upper echelons theory were Hambrick and Mason (1984) who opined that organisational outcomes such as strategic choices can be predicted from a managerial background and that top managers are responsible for, and can produce, results in an organisation. The agency theory was proposed by Berle and Means (1932), Jensen and Meckling (1976) and Fama and Jensen (1983) who averred that the shareholders, as principals, entrust the operations and running of a company to managers,

who are agents, to run the company on their behalf, hence the agency relationship between shareholders and managers. The stewardship theory as explained by Donaldson (1985); Ng *et al.* (2005); Donaldson and Preston (1995); and Donaldson and Davis (1991), contextualises situations in which managers are not motivated by individual goals, but rather are stewards whose motives are aligned with the objectives of their principal shareholders. The resource-based theory, as postulated by Wernerfelt (1984), and later refined by Penrose (1959), advanced the argument that the valuable intangible and tangible resources to which a firm has access, if applied well, will improve that firm's competitive advantage.

Several frameworks and theories have been advanced to explain risk taking in banks. They include portfolio theory/model, contracting model, regulatory hypothesis theory, risk balancing hypothesis and the managerial overconfidence hypothesis. The main proponent of portfolio theory was Harry Markowitz in 1950 who said that the decision to take on a risk must be guided by the return expected from that venture. High risk investments must have high expected returns. A bank CEO must analyse every potential project returns relative to its risks. The regulatory hypothesis theory proposes increasing the capital ratio with an increase in the risky portfolio. Koehn and Santomero (1980) in Abbas *et al. (*2021), conclude that the rise in capital leads to an increase in banks' risk. The risk balancing hypothesis implies that as a bank attempts to reduce one risk, it may increase another risk. The managerial overconfidence hypothesis says that managers credit themselves for successes while blaming outside factors for failures, cause managerial overconfidence to increase following successes but not commensurately decrease following failures (Adam, Fernando & Golubena, 2015).

6.2.2 Empirical literature review

This section presents a summary of the relevant literature review about the moderating role of board independence in the relationship between CEO power and bank risk taking. It considers several studies have been carried out regarding CEO power and risk, as well as the role of the board and justifies the need to investigate the moderating effect of board independence in the relationship between CEO power and bank risk.

Previous studies on how CEO power affects risk-taking have produced mixed results. Some studies show that CEO power reduces risk (Fernandes *et al.*, 2021; Fang, Lee, Chung, Lee & Wang, 2020; DeBoskey *et al.*, 2019; Belenzon, Shamshur & Zarutskie, 2019; Haider & Fang, 2018; Li, Li & Minor, 2016b). Other studies, on the contrary, indicate that it increases the risk (Altunbaş, Thornton & Uymaz, 2020; Hunjra *et al.*, 2020; Huang, Chen & Chen, 2018; Mamun, Balachandran & Duong, 2016; Li, Lu & Phillips, 2014; Barnea & Rubin, 2010). The mixed findings in these studies and their failure to give conclusive remedies could be a result of the studies' focus on the direct relationship between CEO power and risk, while overlooking the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. Most CEO power studies have concentrated on the characteristics and effects of CEO power but have not considered how that power could be regulated and what interventions need to be made to regulate the effect of such power on firm performance outputs such as risk in general and bank risk-taking in particular.

Banks are exposed to several risks. Although CEO power determines risk-taking in banks (Hunjra *et al.*, 2020), previous studies have shown mixed results regarding the benefit of CEO power to a firm, hence making CEO power a two-pronged phenomenon. Some studies contend that powerful CEOs can make risky decisions which can lead to the collapse of a company (Saidu, 2019), while others opine that powerful CEOs add innovative and create value to firms if they can respond to changes rapidly (Shahbaz, 2018; Li, Lu & Phillips, 2018). It is believed that being the main director of a bank, the CEO, takes the lead role in decision making (Hamidlal & Harymawan, 2021). Previous studies on CEO power and bank risk have pointed out varying sources of CEO power including one holding both titles of board chairman and CEO or CEO/chair duality, percentage of shareholding, the number of years the individual has served as CEO or tenure, CEO holding directorships in other firms and the CEO's connections to key officers and board members, the CEO having been an executive in the firm before being appointed CEO and the CEO being one of the founder members of the firm (Mostafa, Hasnan & Saif, 2021; Hamidlal & Harymawan, 2021; Hemdan, Suhaily & Ur Rehman, 2021; Hua *et al.*, 2019; Saidu, 2019; Li *et al.*, 2018; Han, Nanda & Silveri, 2016; Boyd, Hynes & Zona, 2011). This leads to the dimensions of CEO power including structural power, ownership power, expert power, prestige power, CEO

being a former executive and the CEO being a founder respectively. These different dimensions of CEO power gauge the extent of a CEO's power in combination or in part. These have also been pointed out by authors who have related CEO power to other variable like firm value, profitability, and firm earnings.

The extent to which CEO power affects bank risk is postulated to be moderated by the presence of board independence. A board is considered independent when the directors have no substantive relationship with the firm. The relationship could be in the form of them being relatives or business-related parties (Tarus & Ayabei, 2016; Kung'u & Munyua, 2016, Jensen & Meckling, 1976). Although executive directors have specialised skills, expertise, knowledge and experience of the firm's operations, there is a need for independent persons to contribute fresh ideas, objectivity and expertise gained from their fields (Htay & Salman, 2013). Board independence is one approach that can weaken elements of CEO power and the power dynamics between corporate board and a CEO are highly associated with board independence (Mostafa, Hasnan & Saif, 2021). However, some studies found that independent outsiders on a board do not appear to protect the firm from agency costs (Singh & Davidson, 2003) and that there is no significant relationship between board independence and firm performance (Bhagat & Black, 2002; Yermack, 1996; Hermalin & Weisback, 1991). As such, this calls for more studies.

CEOs intervene in company affairs (Wei, 2019) and this affects risk-taking behaviour. We thus seek to assess how these various CEO powers and risks can be controlled using board independence. Structural power comes from a CEO holding a high position and where one holds both the title of CEO and that of Board Chairman culminating into CEO/chair duality (Hemdan, Suhaily & Ur Rehman, 2021; Saidu, 2019; Wu *et al.,* 2011; Pathan, 2009; Adams *et al*., 2005). In combining these two roles, the individual becomes powerful (Hemdan, Suhaily & Ur Rehman, 2021; Kung'u & Munyua, 2016; Ahmed, 2008; Rechner & Dalton, 199; Abdullah, Qaiser & Ashikur, 2013). When a CEO is also the chair of the board, board members tend to unquestionably believe his/her assertions and presentations, and this gives him/her more power since the decisions will not be subjected to question. With the presence of an independent board, independent directors or non-

executive directors will always monitor the extent to which such a CEO takes on risky projects hence affecting the CEO structural power effect on bank risk.

Ownership power arises when an individual holding shares in a company gives that individual power advantage over others. The higher the percentage of shares one holds, the more power the individual owns (Hamidlal & Harymawan, 2021; Han, Nanda & Silveri, 2016). Although Pathan (2009) did not include CEO ownership in his 2009 study of CEO power and bank risk-taking, he nevertheless proposes that the effect of CEO shareholding on bank risk-taking is an empirical issue worth pursuing. A CEO with a significant portion of ownership gains power relative to corporate board which enables him/her to reduce board influence in certain decision makings (Mostafa, Hasnan & Saif, 2021; Ding, Li & Wu, 2018) which amplifies the role of ownership structure in bank decision making and risk taking. The convergence of interest hypothesis suggests that increased managerial shareholdings help align the interests of shareholders and managers.

Expert power arises where a CEO exhibits extraordinary knowledge of the tasks done and decision making, he is considered as an expert. A CEO's ability to deal with environmental dependency, has cognitive work experience gained with time and can deal with critical contingencies, such a person has expert power (Hemdan, Suhaily & Ur Rehman, 2021; Sudana & Aristina, 2017; Wu *et* al., 2011; Finkelstein, 1992). The professionalism and expertise of the CEO tends to improve with longer tenure (Hamidlal & Harymawan, 2021; Li, Li & Minor, 2016; Han *et al*., 2016). Individuals who have served longer than others are believed to have experience and are believed to serve better. Although this power gained as experience may result from gaining sufficient skills to move the organisation forward, or it may be perceived ability, such CEOs are more confident when making decisions, and are likely to make less risky decisions. However, agency costs will increase with the increase in CEO tenure because the more powerful s/he becomes over the years, the more s/he will value own interests, rather than those of shareholders (Hermalin & Weisbach, 1991). With more years in office, a CEO weakens the monitoring capability of the board because he/she has power to control the make-up of the board.

Prestige power arises out of personal status, respect, admiration accorded to the person, reputation, and connections that one has and other people's perceptions of that person's influence through contacts and qualifications. The reputation that one has acquired in the office reflects that person's power (Saidu, 2019; Fetscherin, 2015). Positive perceptions that a CEO has, relationships with external parties like government and other influential people coupled by a good educational background also reflect prestige power (Hamidlal & Harymawan, 2021). As one's personal status, fame, reputation, and connections increase, so does the command and influence of that person. Prestige power grows with connections. A CEO with a good reputation is likely to make decisions that align with the company's best interests (Saidu, 2019). Fang et al. (2020) found that increasing a CEO's prestige power will improve performance and reduce bank risk. Contrary to that view, it is also possible that a CEO with high prestige power can place great emphasis on his/her personal fame, career enhancement and lift his/her own image rather than that of the company he/she manages (Saidu, 2019). Such a CEO will expose the bank to risky ventures even if the bank does not benefit provided the venture improves his prestige and fame.

The CEO being a former executive is another source of CEO power. The resource-based view encourages firms to depend on their internal resources to improve performance. One of the executives can be promoted to the position of CEO. Such a move will be less costly in terms of hiring and orienting the individual (Saidu, 2019; Wernerfelt, 1984). A CEO who is internally hired or was a former executive has been involved with the company or bank for a long time, and so this adds to the power of such an individual to influence board decisions (Pathan, 2009). An internally appointed CEO will have more power than one who is hired from outside the organisation, since the former will have more information about the firm. Such may lead to reckless behaviour, thereby exposing the bank to more risk. On the other hand, a CEO hired from outside the bank would lead to some temporary discontinuation of operations as they need time to study the firm. Such CEOs come with a mandate for strategic change which may or may not be successful.

It is common for entrepreneurs to start firms and become managers thereof. Where a founder member becomes a CEO, he/she attains more power (Hemdan, Suhaily &Ur Rehman, 2021; Saidu, 2019; Wei, 2019; Li *et al*., 2018; Li *et al*., 2016). The performance

of founder and non-founder CEO differs significantly with regards to achieving organisational goals (Abebe & Alvarado, 2013). This could be because founder CEOs tend to have more commitment to the firms they founded. They look at the firm as part of them, and its growth is their growth, as opposed to non-founder CEOs who look at the firm as one of those which they will serve and move on with their careers. A founder will be eager to see the bank survive and will therefore take less risk. However, to expand widely, such a CEO may take on high risk which may lead to insolvency of the firm. The overconfidence of founder CEOs makes them take more risks (Tang, Li & Liu, 2016). In fact, non-founder CEOs may be cautious and not take on many risks lest the bank fails which will affect their reputation and future employment prospects. Either way, independent directors will advise him/her on how best he/she can implement risky ventures, to control the risk of the bank. In this way, independent directors will influence the founder CEOs power on the risk of the bank.

The review above shows mixed findings regarding the effect of CEO power on bank risk. Although CEOs are known for initiating a variety of strategic changes (Li & Patel, 2019), such changes may increase the risk of a bank if not carefully executed. The dimensions of CEO power largely have contradicting relationship to bank risk in different studies. When it comes to Uganda, no related literature in this field of study is available. The mixed findings in existing empirical studies and their failure to give conclusive remedies could be because they only concentrated on the direct relationship and ignored the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. In certain studies, the lack of conclusive findings or the presence of mixed findings is due to the failure of including moderator variables that may influence the relationships (Namazi & Namazi, 2016; Garcia-Castro & Aguilera, 2014; Hayes, 2013; Hair *et al*., 2010).

6.3 Summary of results

6.3.1 Summary of methodological approach

This section presents a summary of the methodological approach that was used to attain the research objectives. The objectives of the study included: to examine the relationship between CEO power and bank risk; to assess the moderating effect of board independence on the relationship between CEO power and bank risk; to analyse the cointegrating

relationship between CEO power and bank risk; and to analyse the causality relationship between CEO power and bank risk.

The methodological approach involved first understanding the nature of the data by determining descriptive statistics. The summary of descriptive statistics for the pooled results for all the banks in this study covering the period 2010-2020 was established. The moments determined included the average or mean and the standard deviation. Minimum and maximum values were presented, which provided insight into the range of the values. The principal components analysis (PCA) was used to develop a single composite CEO power index which was used to determine the extent to which CEO power was high or low. CEO power has several dimensions including structural power, ownership power, expert power, prestige power, CEO being a former executive, and CEO being a founder member of the bank. The principal components analysis (PCA) was also used to generate a single composite index of CEO power of the assessed commercial banks in Uganda.

Linear regression econometric models are applicable where the panels are normally distributed, not serially correlated or autocorrelated and are not heteroscedastic. Diagnostic tests were carried out to check for these. The Jarque-Bera test was used to test whether data was normally distributed. The Arellano-Bond test was used to test for autocorrelation, and VIF was used to measure multicollinearity. Pesaran's test was used to establish whether there was any cross-sectional independence among the variables. Breusch-Pagan test for heteroskedasticity was used to check whether data had a problem of heteroscedasticity. In the presence of heteroscedasticity, the models were ran using robust standard errors that are not affected by outliers and other data irregularities. All models were run with the number of instruments (13) less than the number of groups (14) which implies that the models were robust. The Sargan test and Hansen test were used to establish the validity of the instruments and robustness of the model.

Objective one of this study was to examine the relationship between CEO power and bank risk. Correlation analysis and system GMM were applied to examine this relationship. Objective two of this study was to assess the moderating effect of board independence on the relationship between CEO power and bank risk and this was determined using the

Generalised Method of Moments (GMM) estimator. Four interaction variables (PREP*BINP, CFEP*BINP, EXPP*BINP and OWNP*BINP) were tested using the stepwise regression approach and the coefficients of the interaction terms were interpreted to determine moderation. Objective three of the study was to analyse the cointegrating relationship between CEO power and bank risk. We used the Autoregressive Distributed Lag (ARDL) approach developed by Pesaran *et al.,* (2001) to analyse the short and long run linkages between CEO power and the bank. Cointegration or long-term relationship was confirmed by interpreting the significance of the long-run coefficients and the Error Correction Term (ECT). Unit root analysis was done to establish stationarity of the data. Having established that variables are either integrated of order zero, I (0) or integrated of order one, I (1), the study used the autoregressive distributed lag (ARDL) approach. Objective four of the study was to establish the direction of causality between CEO power and bank risk. When establishing causality effect, it is possible to perform either the Granger, Wald or Weak Exogeneity tests. However, since we used ARDL, causality was inferred from the significance of Error correction term (for joint causality), long-run coefficients (for long-run causality) and short-run coefficients (for short-term causality) (Gwachha, 2023; Narayan, 2004). A negative ECT implies presence of causality.

6.3.2 Summary of findings

Objective one of this study examined the relationship between CEO power and bank risk. There was a positive relationship between ownership power and Z-score. This indicated that the more a CEO owns shares in the bank, the less risky the decisions they will make, hence the bank will experience less risk. With regards to prestige power, there was a positive relationship between prestige power and Z-score. This indicated that the more prestigious a CEO is either through his connections, education, or directorships in other firms the lower the bank risk of the bank in which he or she is CEO. The CEO being a former executive of the bank, was found to have a positive relationship with Z-score. This indicated that if a CEO was a former employee before being appointed into that position, there will be low bank risk. CEO power had a positive relationship with Z-score, this indicated that the more power a CEO has, the lower the bank risk. There was a negative relationship between board independence and Z-score. This indicated that a small proportion of independent board members will reduce the Z-score and accordingly increase

bank risk. System GMM was also applied to examine the relationship between CEO power and bank risk. The coefficient of the relationship between the previous year's bank risk (L.Z-score) and the current year's bank risk (Z-score) is positive and significant when board independence is excluded and when it is included. The relationship between current and previous bank risk is positive and significant, confirming a long-run positive relationship between previous bank risk and current bank risk.

Objective two of this study assessed the moderating effect of board independence on the relationship between CEO power and bank risk. Four interaction variables (PREP*BINP, CFEP*BINP, EXPP*BINP and OWNP*BINP) were tested using the stepwise regression approach. The coefficient of the interaction term prestige power and board independence (PREP*BINP) was positive and significant which indicates that the interaction effect of both prestige power and board independence of a commercial bank can strengthen the relationship between CEO power and Z-score, hence bank risk in Uganda. The coefficient of the interaction between CEO being a former executive, that is, the CEO being internally hired (CFEP) and board independence (BINP) (CFEP*BINP) was negative and significant, which indicates that board independence can reduce the effect the power of the CEO as derived from the CEO being a former executive on Z-score, hence bank risk. The coefficient of interactions term expert power (EXPP) and board independence (BINP) is not significant. The results suggest that board independence does not have any impact on the extent to which expert power enables a powerful CEO to influence bank risk. The same applies to the interaction between ownership power (OWNP) and board independence which is also not significant.

Objective three of the study sought to analyse the cointegrating relationship between CEO power and bank risk. CEO power (CEOP) is positively and significantly related to Z-score in the long run, but such relationship is not significant in the short-run. This means that in the long run, when CEOP increases, Z-score increases, and the bank risk reduces since the extent of bank risk is inversely proportional to the Z-score. The CEO when given power, has capacity to reduce bank risk. The speed of adjustment of the model in the long run was established using the Error Correction Term (ECT). A negative and significant value of ECT (-1) indicates that the that there is cointegration. When CEO power was related to Z-score,

a negative and significant Error Correction Term (ECT) of -0.0258, significant at 1% level was obtained. This implies that there is cointegration between CEO power and Z-score in the panel and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will be recoded back to equilibrium or it will correct its previous period disequilibrium at a speed of approximately 2.58% annually to get back to the steady state.

Objective four of the study was to determine the direction of causality between CEO power and bank risk. There is a causal relationship between the CEO power and bank risk. CEO power has a long-run positive and significant causal impact on Z-score and reduces bank risk. There is however, no short-run causality. Since ECT is negative and significant, it can be concluded that there is joint causality of the independent variables of CEOP on bank risk in the long run since there is cointegration and the model can converge back to equilibrium at the speed of 2.5% in the long run. A significant coefficient shows that there is a positive causality between CEO power and Z-score implying that in the CEO power causes Z-score to increase showing a reduction in bank risk.

6.4 Contribution of the study

This section has the contribution of the study with regards to the body of knowledge, policy and practice.

6.4.1 Contribution to the body of knowledge

The absence in the literature of a single agreed upon CEO power index that takes care of multicollinearity among the indicators of CEO power has led to the need to develop one in this study using PCA. By using CPA, a uni-dimensional measure of CEO power based on the identified CEO power variables was developed because the individual variables, when considered independently may, not provide information on whether CEO power in commercial banks in Uganda is high or low. The individual variables were also measured using different scales making it difficult to just average all of them and conclude on the extent of CEO power.

There are mixed findings regarding the effect of CEO power on bank risk, in the existing literature. Although CEOs are known for initiating a variety of strategic changes (Li & Patel,

2019), such changes may increase the risk of a bank if not carefully executed. The dimensions of CEO power largely have contradicting relationship to bank risk in different studies. In Uganda, no related literature in this field of study is available. The mixed findings in existing empirical studies and their failure to give conclusive remedies could be because they only concentrated on the direct relationship and ignored the possibility that the ability of CEO power to influence risk in a bank could be moderated by board independence. In certain studies, the lack of conclusive findings or the presence of mixed findings is due to failure of including moderator variables that may influence the relationships (Namazi & Namazi, 2016; Garcia-Castro & Aguilera, 2014; Hayes, 2013; Hair *et al*., 2010). Indeed, this study contributes to the literature on CEO power and risk taking in banks with results that indicate that the moderating effect of board independence on the relationship between CEO power and bank risk is between prestige power and CEO being a former executive in Uganda, Africa and indeed developing countries. The volatility of Uganda's economy, the reliance of the private sector and a large informal sector increase the demand on banks to provide the requisite capital for investment. This increases the pressure on CEOs to exert their decision-making power while protecting the banks from risk. Under such circumstances, CEOs are likely to take on more risk. Indeed, the relationship between CEO power and bank risk in Uganda is an inverse relationship. But this relationship is moderated by board independence. Commercial banks with independent board in Uganda had reduced effect of CEO power on bank risk.

Previous studies have focused on external factors such as monitoring and regulation of banks by government agencies and capital markets as affecting bank risk taking with little focus on internal corporate governance factors such as CEO power. Further to this, most CEO power studies have concentrated on the characteristics and effects of CEO power but have not considered how that power could be regulated. This study has contributed to the body of knowledge by showing that board independence moderates the relationship between CEO power in its various forms and bank risk taking.

Research on CEO power in Sub-Saharan Africa is scanty despite an increase in studies about CEO power in developed and developing countries. When it comes to CEO power in commercial banks in Uganda, no known study had yet been undertaken in this regard,

specifically considering CEO power and risk taking in the banking industry in Uganda, despite the many bank challenges therein. Findings from this study will feed into bank policy and practice in Uganda and extend the scope of scholarly studies on CEO power, board independence and bank risk-taking to include Uganda. Broadly, this study has ascertained that the ability of the CEO to use his/her power to influence risk in commercial banks in Uganda is moderated by board independence.

This study further found that the most important elements of CEO power in Uganda which varied among commercial banks over the years of the study are expert power, prestige power, ownership power and CEO being a former executive or internally hired. CEOs of commercial banks in Uganda use their expert power to influence decisions. The more years the CEO has spent in that position is one factor that bank employee and stakeholder use to determine that the CEO has power. CEOs who have connections and a good education are also considered to have power and would easily be interpreted as good CEOs because of that prestige. The CEOs who were formerly employees of the commercial banks in which they are currently CEOs also wield power. This implies that it is possible to accord a CEO power if that person was a former employee of that bank. Such an individual will also have knowledge of the bank activities is most likely to make decisions beneficial to the bank. This possibility is also an advantage since there is low labour mobility among bank CEOs in Uganda mainly due to the amenities that come with those positions. A commercial bank finds it easy to hire internally. Regarding structural power, this does not change in Uganda and all CEOs have respect by virtual of their positions. There are also no commercial banks in which the owner or one of the owners is the CEO. These are in line with the corporate governance guidelines. Those aspects of CEO power that were common to all commercial banks and did not vary are structural power and CEO as founder.

The findings of this study also indicate that the most relevance CEO power elements in developing countries regarding affecting risk. Expert power, prestige power, ownership power and CEO being a former executive or internally hired were found to be the most important CEO power elements in Uganda. In Uganda, the more shares a CEO owns in the bank, the less risky the decisions they will make and hence the bank will experience less risk. Although it is not common to have owners as CEOs of banks in Uganda, for the

years when the situation was such in certain commercial banks, such banks exhibited less risk. Share ownership by the CEO creates a sense of cautiousness, care, and concern in the survival of the bank. Such a CEO will be careful when making decisions since he/she has interest in the bank. Survival of the bank will be on great interest.

Expert power was found to reduce bank risk in Uganda. The more experienced the CEOs, the lower the bank risk. Experience leads to more caution when making decisions especially since the CEO can learn from past experiences. The range of CEO tenure in Uganda is from 0.7 to seven years. Those CEOs who spend more years in that position were found to reduce risk of the bank. Banks with CEOs with short tenure had more risk.

The more prestigious a CEO is either through his connections, education, or directorships in other firms the lower the bank risk of the bank in which he or she is CEO. As part of the benefits of CEOs of commercial banks in Uganda is membership to clubs. This gives them opportunity to make as many connections as possible. They are also educated in that most of them are graduates with postgraduate qualifications. This enables them to make decisions that are beneficial to the banks that they lead. Banks with highly educated CEOs have less risk. CEOs with connections have a tendency, and probably pressure, to please the members of those other networks that they are successful and can manage a bank profitably and maintain the bank solvent. This tendency leads him/her to making cautious and less risky decisions in the bank. Such a CEO will avoid risky decisions such as extending loans to members of his/her other connections and networks without strictly following bank lending regulations, policies, and due procedures.

CEO being a former executive or employee of the bank was found to reduce risk of the respective bank. Where CEOs are former employees before being appointed into that position, there is low bank risk. Commercial banks in Uganda spend resource training employees and have a high degree of delegation of authority coupled by compulsory annual leave for all employees. Such internal policies and an enabling policy framework that allowed banks to appoint CEOs from within ensures that those that are familiar with the bank's internal environment and processes are appointed CEOs. Whenever someone is promoted to CEO position from within the bank, and they have interest in the bank's growth,

such a person will have knowledge of the bank's internal and external operating environments. This puts them in a position where they can make good decisions with the belief that they can scan the environment and make the most viable decision. Such CEOs are usually familiar with board members and other employees of the bank and would easily lead the team to making and implementing prudent decisions in the interest of the bank.

In Uganda, when CEO power increases, bank risk reduces. Commercial banks that have CEOs that wield great power also have less risk exposure. CEOs use their power to make and implement decisions that benefit the banks. They are also respected and have legitimate power in the perception of both internal and external stakeholders. This enables them to make decisions knowing well that they are supported by both internal and external parties. Powerful CEOs also command respect from board members, lower-level managers, employees, and customers due to them possessing the indicators of CEO power including structural power, ownership power, expert power, prestige power, and CEO being a former executive. This leadership environment will enable the CEO to make cautious decisions hence reducing bank risk. A significant coefficient shows that there is a positive causality between CEO power and Z-score implying that in the CEO power causes Z-score to increase showing a reduction in bank risk. Further to this, there is long-run relationship between CEO power and bank risk and there is causality between CEO power and Z-score implying that in the CEO power causes Z-score to increase showing a reduction in bank risk. The speed of re-adjustment of the model back to equilibrium is low, probably due to the largely informal sector that is highly risky especially when it comes to credit risk.

Regarding the moderating effect of board independence on the relationship between CEO power and bank risk the interaction effect of both prestige power and board independence of a commercial bank can strengthen the relationship between CEO power and Z-score and hence bank risk in Uganda. In commercial banks in Uganda, board independence can create more incentive for the CEO to use his prestige power to lead the bank into less risky ventures.

In commercial banks in Uganda, board independence can reduce the effect of the power of the CEO as derived from the CEO being a former executive on Z-score, hence bank risk.

The ability of such a CEO to expose the bank to risk is reduced by the presence of independent directors. Commercial banks that have majority of directors and non-executive enjoy the oversight role of such board. As a result, the ability of former employees appointed as CEOs to lead to more risk in the bank is regulated by such independence of the board. Although internally appointed CEOs will have more power than those who are hired from outside of the organisation, the former will have more information about the firm. This move motivates the individual and will enable to him/her work towards expansion and sustainability of the firm. This may lead to over-confidence of such a CEO. But with an independent board of directors, such effect is reduced. In Uganda, board independence does not have any impact on the extent to which expert power enables a powerful CEO to influence bank risk. The same applies to the interaction between ownership power (OWNP) and board independence which is also not significant.

Conclusively, in Uganda, the moderating effect of board independence on the relationship between CEO power and bank risk is between prestige power and CEO being a former executive. If policies emphasising board independence as a corporate governance measure to regulate the power of CEOs and its effect on bank risk, such should focus on the prestige of the CEO and internally hired CEOs. It is those two aspects of CEO power whose relationship with bank risk is moderated by board independence in Uganda.

6.4.2 Contribution to policy

The study will contribute to the already existing efforts of stabilising the banking industry in Uganda by making suggestions to policy makers and bank directors on how bank risk can be managed through the board of director's regulation of CEO power and bank risk. The Financial Institutions Statute (2004) of Uganda, though amended in 2016, is still silent on matters pertaining managing or utilising CEO power regarding risk levels of banks. There should be specific statements advising on the education level required by the CEO and holding of directorships that a CEO can hold to be regulated by the board. There should be more emphasis no internally hiring CEOs if the board's supervisory role is to be effective because in Uganda, the moderating effect of board independence on the relationship between CEO power and bank risk is between prestige power and CEO being a former executive. Although the capital markets corporate governance guidelines make mention of

independence of directors, they should emphasise prestige power and internally hired CEOs as being the elements of CEO power that will enable the board to regulate the relationship between CEO power and bank risk. CEO tenure should be from four years (the average is 3.59 years) to seven years for effective management of risk since the lower higher the CEO tenure the lower the bank risk. Table F of Uganda's Companies Act (2012) should be amended to include the appropriate CEO tenure, emphasis on the need to hire CEOs from within the bank and encouraging hiring CEOs with other directorships as well as graduate qualifications. This will strengthen the Code of Corporate Governance Boards and Directors.

6.4.2 Contribution to practice/industry

In practice, as commercial banks report, they should include in their annual reports the extent to which board independence affected the relationship between CEO power and bank risk. They should hire CEOs internally since those are the ones whose effect on bank risk can be affected by an independent board of directors. Commercial banks should encourage their CEOs to have connections and networks outside the banks in which they are CEOs. These connections and networks will improve their prestige power. The relationship between prestige power and bank risk can be regulated by the presence of an independent board of directors. Banks should also encourage CEOs to stay in that position for at least 4 – 7 years. This is because the longer a CEO stays in that position, the lower the bank risk. Experienced CEOs can reduce bank risks.

In the practice of banking in Uganda, it is pertinent for the policy makers and stakeholders to know that there is cointegration between CEO power and bank risk and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will be recoded back to equilibrium. It will also correct its previous period disequilibrium at a speed of approximately 2.58% annually to get back to the steady state. However, this speed of readjustment is low. This could be due to the several investigations that were taking place in the banking sector that probably make it difficult for bank CEOs, staff, and clients to make quick decisions regarding correcting disturbances in bank operations. The big informal sector and reliance on a private sector led to economic adjustments to equilibrium since both those sectors take long to adjust to formal organisational processes. CEOs and bank

staff must find new credit products that will attract the people in the informal sector. These may speed up readjustment of operations to equilibrium.

CEOs, bank managers, employees and policy makers should not expect immediate results regarding expected changes in bank risk. This is because, there is a lagged relationship between current risk, previous year's risk, and previous actions of CEOs. The results of actions taken in the current year to improve on the risk profile of a bank can be seen in the following year. Therefore, there is need for persistent adjustment and observation of decisions and policy actions in bank risk is to be minimised.

A glimpse at the bank practices as shown in their risk management reports shows that the role of board independence in regulating the effect of CEO power on bank risk is ignored. The corporate governance statements in the annual reports produced by the commercial banks mention the composition of the board and its committees including the risk committee, which is mandatory committee, but are silent on matters pertaining CEO power and how these impact on the risk taking of the bank.

6.5 Conclusion

The study was conducted with four objectives including examining the relationship between CEO power and bank risk, assessing the moderating effect of board independence on the relationship between CEO power and bank risk, analysing the cointegrating relationship between CEO power and bank risk and analysing the causality relationship between CEO power and bank risk.

Regarding examining the relationship between CEO power and bank risk, there was an inverse relationship between CEO power and bank risk. Commercial banks in Uganda that have powerful CEOs have lower risk. Such powerful CEOs have prestige power, are internally hired, have ownership, and have served for more years hence have expert power. These finding confirm those from previous empirical studies by Fernandes *et al.*, 2021; Fang, Lee, Chung, Lee & Wang, 2020; DeBoskey *et al.*, 2019; Belenzon, Shamshur & Zarutskie, 2019; Haider & Fang, 2018 and Li, Li & Minor, 2016b that of CEO power reduces

risk. Suffice to say, the relationship between current and previous bank risk is positive and significant, confirming a long-run positive relationship between previous bank risk and current bank risk. Further to this, in commercial banks in Uganda, CEO power (CEOP) is positively and significantly related to Z-score in the long run, but such a relationship is not significant in the short run. This means that in the long run, when CEOP increases, Z-score increases, and bank risk reduces since the extent of bank risk is inversely proportional to the Z-score.

The moderating effect of board independence in the relationship between CEO power and bank risk is significant for prestige power and CEO being internally hired. This means that commercial banks in Uganda should have CEOs who have outside connections and those that were previous employees in order reduce bank risk in Uganda and the relationship between their power and bank risk is positively affected by board independence. The findings agree with those of previous empirical findings. Hunjra *et al.* (2020) opined that board independence has a significant effect on bank risk-taking. An increase in board independence leads to decrease in bank portfolio risk.

Regarding analysing the cointegrating relationship between CEO power and bank risk, there is cointegration between CEO power and Z-score in the panel and that if the model is destabilised and moves away from equilibrium or has short-run disequilibrium, it will be recoded back to equilibrium or it will correct its previous period disequilibrium at a speed of approximately 2.58% annually to get back to the steady state. This speed of recovery is low probably due to the nature of the Uganda's financial system with a large informal sector which slowly regains equilibrium after macroeconomic shocks. These findings confirm those of Gwachha (2023) after studying the financial system of Napal and used ARDL to analyse the data, concluded that the fragility of a financial system can render it unable to swiftly react to shocks, hence implying slow recovery back to equilibrium.

Regarding analysing the causality relationship between CEO power and bank risk in commercial banks in Uganda, there is a causal relationship between the CEO power and bank risk. Since ECT is negative and significant, it can be concluded that there is joint causality of the independent variables of CEOP on bank risk in the long run. In case there is need to reduce bank risk in Uganda, adjusting CEO power will help to attain this. These findings are consistent with those of previous studies which concluded that short term decisions of a CEO can have impact on the bank in the long run (Victoravich *et al.*, 2011). As chief planners, CEOs are considered architects of the long-term strategy of the firm (Sheikh, S., 2019; Berger, Dutta, Raffel, & Samuels, 2008).

6.6 Recommendations for future research

This study is limited to commercial banks in Uganda. This limits its applicability to other parts of the world in both developed and developing countries. Further research needs to be done to test if the results hold true when dealing with other jurisdictions.

The study was carried out among commercial banks. The research can be expanded to include other financial services providers such as microfinance deposit-taking institutions (MDIs). The study concentrated on CEO power, board independence and bank risk among the 25 commercial banks in Uganda. However, Uganda has several other financial intermediaries including seven microfinance institutions, five microfinance deposit-taking institutions (MDIs), four credit and finance companies, two development banks, over 33,000 Saving and Credit Cooperative Organisations (SACCOs) both formally registered and unregistered. In fact, by May 2023, Uganda had 10,594 registered SACCOs under the Parish Development Model (PDM), 6,700 under Emyooga and 15,706 as other SACCOs (Ggoobi, 2023). The large informal sector, growing small, micro and medium enterprises (SMMEs) and formally employed people utilise these institutions for credit and need protection. This study must be extended to study how the CEOs of these intermediaries utilise their power to affect risk therein and protect the many people who save and borrow from there.

This study assessed the moderating effect of board independence on the relationship between CEO power and bank risk. Further research can be carried out to establish whether board independence is an intervening variable in the relationship between CEO power and bank risk, which according to the literature, is a possibility. Studies need to be carried out to establish the moderated-mediation effect of board independence on the relationship between CEO power and bank risk.

Further research can be carried out to establish the effect of each element of CEO power on specific risks of a bank. In as much as this study considered how elements of CEO power relate to bank risk in general, it is imperative to find out which element of CEO power influences which type of risk. The different types of risks in banks include, *inter alia*, liquidity risk, market risk, credit risk, operational/transactional risk, external business risk, legal and regulatory risk, liquidity risk, foreign exchange risk, interest rate risk, counterparty risk, reputation risk, fraud risk, strategic risk, technology risk, off-balance sheet risk, governance risk and solvency risk. Each of these should be studied to establish the extent to which it changes any specific element of CEO power. Moderating and mediating variables can be introduced to further inquire and suggest possible specific risk mitigating factors.

This study used secondary data only. Some of the views to expand on the explanations may be missed if not stated in financial reports and annual reports. The feelings, attitudes and observable physical characteristics of CEOs need to be tapped in the study. Future studies may, however, attempt to include interviews with CEOs to delve deeper into the analysis undertaken.

The role of artificial intelligence (AI) in bank risk taking was not taken into consideration while undertaking this study. Presently, robotics and artificial intelligence are two of the developments in the banking sector where there is less human-human interaction but more machine to human interaction. Such robots and artificial intelligence systems, although helpful, are prone to errors if not programmed well or in case of machine failure. This poses a new set of risks to the banks including litigation. Research needs to be made to establish this.

This study also used an aggregate measure of bank risk, that is Z-score, whose value is inversely related to the level of risk. The study did not establish which specific risk is affected by the specific elements of CEO power. There is a need to establish the moderating role of board independence in the relationship between specific elements of CEO power and specific types of risk.

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