Scientific Annals of Economics and Business
73 (1), 2026, 61-82
DOI: 10.47743/saeb-2026-0002

Do CEOs Characteristics Affect Banks' Risk-Taking? International Evidence

Wafa Jilani*

Abstract: We examined the effect of CEO characteristics on bank risk-taking. The study collected data from of 540 international banks from 2011 to 2023, resulting in a panel that had 6,825 observations. A fixed-effects panel regression model was used to analyze the relationship between CEO attributes and risk-taking in banks. Bank risk-taking is measured by using a Z-score, non-performing loans, and standard deviation of volatility. The analysis indicates that CEOs with younger age, greater experience, and postgraduate degrees are more inclined to take on risky decisions. Furthermore, we find a significant positive relationship between CEO experience and risk-taking behavior in banks. The findings indicate that female CEOs tend to be more risk-averse than their male peers. The findings from this study have played a role in shaping regulatory policies aimed at decreasing bank risk, such as requirements for transparency in CEO decision-making and improved oversight of corporate governance practices. By analyzing a large sample of banks across different countries, the study provides empirical evidence on this relationship, contributing to the literature on corporate governance and risk management in the banking sector. The results may have important implications for regulators, shareholders and boards of directors in their assessment and selection of bank executives.

Keywords: CEO characteristics; CEO age; CEO gender; CEO education; bank risk-taking.

JEL classification: G30; G32.

* Doctor of Finance and member of Research Laboratory LARTIGE, University of Sfax, Tunisia; e-mail: *wafa.jilani@fsegs.usf.tn*.

Article history: Received 7 March 2025 | Accepted 28 November 2025 | Published online 21 February 2026

To cite this article: Jilani, W. (2026). Do CEOs Characteristics Affect Banks' Risk-Taking? International Evidence. *Scientific Annals of Economics and Business*, 73(X), 61-82. https://doi.org/10.47743/saeb-2026-0002.

1. INTRODUCTION

The performance of a bank is indicative of how effective its management team has utilized its assets to enhance shareholder value (Gupta and Mahakud, 2020; Ur Rehman *et al.*, 2022; Menicucci and Paolucci, 2023). This responsibility primarily falls on the Chief Executive Officers (CEOs), who lead the company and whose decisions are crucial for assessing their performance (Brahma and Economou, 2024). These decisions are ultimately mirrored in the company's reported profits and stock price.

Many factors can influence the decision-making process and bank performance (Hai and Diem, 2024). Human capital theory posits that an individual's education, experience, and skills influence their perception and productivity, thereby enhancing firm performance (Dom and Ahmad, 2020). Additionally, upper echelon theory suggests that CEOs' decisions are influenced by their personal values and psychological traits. In competitive markets, CEOs might opt for riskier decisions to achieve superior performance, which can impact their bank's growth (Jilani *et al.*, 2023). Risk-taking is a crucial determinant of a bank's performance and long-term sustainability (Hiebl, 2022).

The risk-taking is largely influenced by its CEOs' decisions, and their personal traits have an impact on these choices (Tang and Chang, 2024). The individual personality of the CEO can greatly influence the bank's risk profile and strategy. However, agency theory highlights a conflict in risk preferences between shareholders and managers due to the separation of ownership and control in public companies (Ramli, 2019). The skills and reputation a CEO build over their career are closely linked to their bank's performance.

A risky decision that fails can tarnish their professional standing (Kim *et al.*, 2016). In contrast, shareholders are more inclined toward riskier investments to boost future returns, as they can mitigate risks through portfolio diversification (Anjum *et al.*, 2020). CEOs often prioritize their personal interests when making strategic decisions, which can lead them to avoid risky strategies, while shareholders might advocate for riskier investments that could yield higher returns (Mustapha and Che Ahmad, 2011).

Therefore, the existing literature on the influence of CEOs' characteristics on corporate risk-taking is relatively scarce (Faccio *et al.*, 2016; Farag and Mallin, 2018). They argue that CEOs' demographic traits are significant factors in shaping their levels of overconfidence and hubris, which in turn affect the company's approach to risk-taking. Therefore, this research aims to examine the relationship between the CEOs characteristics and banks' risk-taking. Considering these factors, this paper aims to offer plausible answers to the following question:

How do CEO characteristics influence banks' risk-taking behavior?

This study examines the impact of CEO characteristics on bank risk-taking behavior. Analyzing data from 540 international banks between 2011 and 2023, we find a negative association between CEO age and bank risk. Conversely, a positive relationship exists between CEO higher education and prior board experience and bank risk. Additionally, our results suggest that female CEOs exhibit risk-averse tendencies.

Studies on the impact of CEO characteristics on bank risk-taking have several gaps. Many studies focus on a limited number of banks or countries, which limits the generalizability of results. Some studies focus on relatively short periods, which may not fully capture the long-term impact of CEO characteristics on bank risk-taking. While other studies focus on a restricted number of banks or regions, this research uses a larger, more diversified

sample, allowing for more generalizable findings. This research considers economic factors, which influence risk-taking, thus providing a more comprehensive perspective.

This study makes several key contributions. The study enriches the leadership literature by integrating CEO characteristics as an influential factor on risk-taking, adding a dimension to existing theories. It offers valuable insights for shareholders who are focused on hiring highly skilled CEOs to meet their objectives and enhance competitiveness in the global market. Based on international datasets, the study provides new insights into how CEO characteristics can influence risk. The findings provide practical recommendations for boards of directors on the selection and evaluation of CEOs, considering the traits that favor prudent risk management.

Additionally, these insights have informed the development of more effective regulatory policies, improved corporate governance, and stronger risk management strategies in banks. Furthermore, the research enhances our understanding of bank operations and provides guidance on better management practices to mitigate risks and support financial stability. The study suggests that banks could benefit from training programs targeting the development of risk-taking skills. The findings could influence the design of remuneration policies to align CEO incentives with prudent risk management.

The structure of the paper is organized as follows: Section 2 covers the literature review and the formulation of hypotheses. Section 3 details the research methodology. The results are presented in Section 4, followed by robustness checks in Section 5. Finally, Section 6 offers the conclusion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Corporate governance is typically dominated by the CEO, as they have the most decision-making authority within the company (Chen, 2013; Peni, 2014; Jilani and Chouaibi, 2021). According to agency theory, CEOs may prioritize their own risk preferences, potentially leading them to avoid taking the level of risk necessary for maximizing firm value (Jensen and Meckling, 2004). In line with the theory, Pathan *et al.* (2023) found a negative association between bank risk-taking and CEO power, particularly when the CEO had the role of Chairperson. Yim and Kang (2024) affirmed that young people are more inclined to take risks, while older CEOs may prefer a more settled environment.

Hassanein *et al.* (2024) showed that overconfident CEOs tend to adopt risk reporting practices. These practices can lead to increased stock returns, due to positive investor perceptions. More transparent voluntary risk disclosure might be particularly valued by investors as it provides insights into how the company is managing and mitigating these heightened risks, potentially reducing uncertainty and increasing firm value (Hassanein and Elsayed, 2021). Hassanein and Albitar (2024) indicated that excessive reporting can affect investor perception, leading to a reduction in firm value.

Older CEOs or those who have been in their positions for a long time may feel more secure and confident in their decision-making abilities. These CEOs may take on more dangerous financial strategies (Ho *et al.*, 2022). The Upper Echelons Theory (UET) proposed by Hambrick and Mason (1984) suggests that the characteristics of top managers influence their decision-making, which in turn affects organizational outcomes. According to this theory, while individuals aim to make rational decisions, their ability to do so is *limited* by cognitive constraints and the information available to them (Lee and Moon, 2016).

Several gaps remain in the literature. The majority of studies focus on specific characteristics, such as academic background or professional experience, without exploring other relevant traits such as executive personality. Most studies focus on firms, neglecting the impact of managerial characteristics in the banking sector.

2.1. CEO age and bank risk taking

The relationship between CEO age and risk-taking has been a prominent focus in early studies (Barker and Mueller, 2002; Ting *et al.*, 2015). CEO age as a crucial element that affects how executives approach risk, influencing their strategic decisions. There is research showing that younger CEOs may be more inclined to take risks, while other studies indicate that older CEOs, with more experience, make riskier decisions because of their confidence (Agha and Pramathevan, 2023; Yim and Kang, 2024; Yin *et al.*, 2025). According to Upper Echelons Theory, older CEOs who have successfully navigated past financial crises might possess a heightened sense of confidence in their ability to manage risk (Ali *et al.*, 2022). Barker and Mueller (2002) found that Older CEOs, who may be nearing retirement, might be less willing to commit to such long-term investments, leading to a reduction in RandD spending. They suggest that this is because RandD investments are inherently risky and require significant capital, with potential benefits often realized only after a lengthy period.

According to agency theory, As CEOs approach the end of their careers, their concern for future employment and reputation may decrease (Li *et al.*, 2016). Serfling (2014) showed that younger CEOs tend to adopt riskier corporate policies compared to their older counterparts. This is attributed to younger CEOs' greater willingness to pursue ambitious strategies. Ting *et al.* (2015) suggested that younger CEOs tend to maintain higher levels of financial leverage. Gupta (2022) suggest that younger CEOs often seek to establish a strong reputation and may therefore be more prone to overstate their confidence in decision-making. This drive to project a competent managerial image can result in greater risk-taking behavior among younger CEOs.

Additionally, Agha and Pramathevan (2023) propose that as CEOs age, their financial responsibilities to their families increase, leading to a more cautious approach compared to younger CEOs. This implies that younger CEOs, with fewer obligations beyond themselves, are more inclined to take risks. Yin *et al.* (2025) argued that the way managers are compensated can influence the level of risk their firms are willing to take. Similarly, Chowdhury and Fink (2017) pointed out that CEOs approaching retirement tend to allocate less to RandD, a tendency they termed the "horizon problem." they indicated that younger CEOs are more inclined to invest in RandD compared to their older peers. The younger CEOs are more inclined to take risks compared to older CEOs, suggesting a potential deviation in risk behavior among younger CEOs (Peltomäki *et al.*, 2021). Hence, we hypothesise the following:

H1*: CEO age has a positive effect on the bank risk-taking.*

2.2. CEO gender and bank risk taking

It has been found by many studies that men are more inclined to take risks in their decision-making than women (Hoang *et al.*, 2019; Expósito *et al.*, 2023). It's possible that the low percentage of women on bank boards is due to the perception that women are less risk-

averse than men (Skała and Weill, 2018). Peni (2014) stated that there is a low proportion of women on boards because male CEOs are more risk-averse. According to resource dependency theory, Female CEOs may seek to mitigate risks to maintain relationships with stakeholders (Akram and Abrar Ul Haq, 2022). This reliance on external resources can lead to more cautious decision-making to ensure stability.

On the other hand, Firms with more gender diverse boards had lower sub-prime lending involvement (Lewellyn and Muller-Kahle, 2022). Similarly, Huang and Kisgen (2013) also report that female CEOs are less inclined to use long-term debt and are less likely to engage in acquisitions. They find that female CEOs tend to exercise stock options earlier than male CEOs, indicating that male CEOs may exhibit greater overconfidence in their corporate decision-making.

According to stakeholder theory, Female CEOs may focus more on stakeholder interests rather than solely on shareholder value (Cooper, 2017). This broader perspective can lead to more conservative risk-taking as they aim to ensure long-term sustainability and stakeholder welfare. Alm El-Din *et al.* (2022) affirmed that firms would aim to achieve a more positive financial performance, which can lead to less transparent information for stakeholders. Firms that engage in proactive risk disclosure can benefit from improved investor perception, which translates into higher returns (Hassanein, 2022).

However, a higher percentage of female board members is linked to a greater propensity for taking risks(Berger *et al.*, 2014). This diversity may encourage more innovative and bold strategies, leading to a greater propensity for risk-taking. Adams and Funk (2012) affirmed that Female directors are less power-oriented than their male counterparts. They proved that female directors like taking more risks than their male counterparts.

In addition, Faccio *et al.* (2016) show female CEOs are more risk averse. They claim that firms run by female CEOs have lower advantage, less volatile earnings, and a higher chance of survival than firms run by male CEOs. Expósito *et al.* (2023) argue that implementing process innovations is more common among male CEOs than their female counterparts. In contrast, Palvia *et al.* (2015) found that banks led by women tend to be more conservative, maintaining approximately 5-6% more equity capital compared to those led by men. They indicate that female CEOs face lower default risks during financial crises, suggesting that this conservative approach plays a crucial role in the stability of banks. We formulate the second hypothesis based on the previous discussion:

H2*: The presence of female CEOs has a negative effect on the bank risk-taking.*

2.3. CEO experience and bank risk taking

According to agency theory, a more experienced CEO might have a possess greater power to influence the board towards a higher risk appetite (Bonazzi and Islam, 2007). Experience equips CEOs with a more comprehensive understanding of the firm's external environment, including insights into customers, suppliers, and regulatory frameworks (Anderson *et al.*, 2018). This expertise allows CEOs to assess investment opportunities more effectively by balancing the associated risks and returns (Orens and Reheul, 2013). Studies show that CEOs with long experience are more likely to take risks, while others find that this experience can also lead to risk aversion (Barker and Mueller, 2002; Zhang and Rajagopalan, 2010; Anderson *et al.*, 2018). Moreover, CEOs with professional expertise are also more likely to perceive business issues more clearly, which could improve coordination and

communication within the organization and lead to better decision-making (Ali *et al.*, 2022). Their experience also serves as a strong indicator of their knowledge, values, and skills, reflecting their strategic decision-making. Longer tenure might lead to greater embeddedness in the community and a stronger commitment to social goals, potentially encouraging more social value risk-taking (Lee, 2025). Conversely, it could also lead to more risk aversion.

Upper echelons theory suggests that a leader's experiences and personalities significantly influence strategic choices (Ting *et al.*, 2015). A CEO's experiences could shape the bank's risk-taking. Furthermore, Barker and Mueller (2002) suggests that experienced CEOs contribute valuable expertise to the board, which can enhance their confidence. As a result, these CEOs tend to be less risk-averse compared to their less experienced counterparts. Le *et al.* (2023) suggests that CEOs who have previous experience are more likely to make bold decisions because they are open to innovation, enthusiastic about challenges, and can handle risky ventures.

Consequently, more experienced CEOs are better equipped to make decisions from a broader perspective Zhang and Rajagopalan (2010). In this context, Loukil and Yousfi (2022) found that firms with lower leverage ratios are more likely to have CEOs with prior professional experience, which indicates a less inclined to risk. On the other hand, Farag and Mallin (2018) affirmed that CEOs with external experience are more likely to seize new opportunities and embrace innovation, thereby showing a greater willingness to take risks. Given this explanation, the third hypothesis for this study is formulated as follows.

H3*: CEO experience has a positive effect on the bank risk-taking.*

2.4. CEO education and bank risk taking

Anderson *et al.* (2018) suggest that the educational background of CEOs influences their perspectives, and the decision-making process. CEOs with higher levels of education prefer innovative projects and investment opportunities with an open mind to new changes (Gao *et al.*, 2017). Martino *et al.* (2020) found that CEOs with higher levels of education and strong skills are more inclined to adopt audacious strategies, fostering innovation and growth. Upper echelons theory posits that education increases an individual's skills and knowledge, making them more productive and capable decision-makers (Ali *et al.*, 2022). As a CEO, higher education could lead to better strategic decision-making, which includes risk management.

Barker and Mueller (2002) asserted that CEOs with higher education levels are more likely to lead innovative firms and are more inclined to pursue novel projects and investment opportunities. Beber and Fabbri (2012) claimed that overconfident directors with MBA degrees might be more willing to take risks. From an agency perspective, the level of a CEO's education could influence their alignment with shareholders' interests regarding risk. Highly educated CEOs might have a better understanding of shareholder value maximization (Yahaya, 2025). Wei *et al.* (2025) showed that CEOs with a financial background tend to make risky decisions, which can lead to improved financial performance. This type of CEO shows a preference for investment strategies that balance risk and return, drawing on their expertise.

Some research shows that CEOs with an MBA degree make more conservative decisions, while others suggest that they are more inclined to take risks to maximize performance (Orens and Reheul, 2013; Gao *et al.*, 2017; Farag and Mallin, 2018). Additionally, Orens and Reheul (2013) suggest that CEOs' decisions are influenced not only by their psychological and social traits but also by their educational background. They suggested that CEOs who are educated more tend to be more risk-averse and more open to

innovative business ideas. Farag and Mallin (2018) found a strong positive association between education for CEOs and increased risk-taking in firms in China. Higher education levels may enhance a CEO's confidence in their ability to navigate the uncertainties. Therefore, we hypothesise the following:

H4*: CEO's education level has a positive effect on the bank risk-taking.*

3. RESEARCH DESIGN

3.1. Dataset and source

To conduct a thorough empirical analysis of the impact of CEO characteristics on bank risk-taking, we began by examining a preliminary sample of 800 commercial banks from 34 countries, spanning from 2011 to 2023. The banks were selected based on their efficiency rankings within their respective countries. Banks were chosen according to their efficiency rankings within their own countries. This implies that the study aimed to analyze the most effective banks. Banks that had incomplete or missing data were not included in the analysis. This step ensures that the dataset used for the study is reliable. The final dataset included 540 banks, along with 7020 bank-year observations. This indicates a comprehensive analysis over long period, which can help in understanding bank performance.

Panel A of Table no. 1 outlines the selection process used for the study. Panel B provides a regional breakdown of the sample banks. The majority of the banks are based in Europe (43.35%), indicating a strong presence of the banking sector in the region. Banks located in the Americas make up 20% of the sample, while the remaining 6.65% are distributed across other regions. Additionally, a macroeconomic variable sourced from the World Development Indicators database was included in the analysis. Bank financial data were obtained from Thomson Reuters (Datastream), while CEO-related information was manually gathered from annual reports, Bloomberg, and the banks' websites. Table no. 1 summarizes the sample selection and data collection procedures.

Table no. 1 – Sample selection and distribution

Panel A: Sample selection		
	Banks	Observations
Initial sample	800	10400
Less banks with missing data	260	3380
Final sample	540	7020
Panel B: Sample distribution by country		
Region	Banks	%
Africa	51	9.44
Asia	69	12.78
America	108	20
Europe	234	43.33
Middle east	78	14.45
Total	540	100

Source: authors' own work.

3.2. Measurement of variables

3.2.1. Dependent variable: bank risk-taking

Banks' risk-taking is the dependent variable in this study. In previous research, several measures have been employed to quantify this variable, including the Z-score, the non-performing loan ratio, and the standard deviation of the stock return (Faccio *et al.*, 2016; Mathew *et al.*, 2018; Martino *et al.*, 2020; Loukil and Yousfi, 2022). Laeven and Levine (2009); Mathew *et al.* (2018); Adu (2022) have referred to the Z-score as a measure of risk-taking.

This measure is determined by summing the equity-asset ratio (or capital-asset ratio (CAR) and the return on assets (ROA), then dividing this total by an estimate of the standard deviation of ROA. A higher Z-score signifies lower risk and greater solvency, representing how many standard deviations ROA can drop before equity capital is exhausted and the bank becomes insolvent. The Z- score is calculated as follows:

$$Z_{it} = \frac{ROA_{it} + CAR_{it}}{\sigma ROA_{it}}$$

where ROA represents the return on assets and CAR denotes the equity-asset ratio for bank i at time t, measured at the end of the year. The return on assets (ROA) is computed as the ratio of pre-tax profit to total assets.

We use a ratio to measure banks' risk-taking, which is known as the non-performing loan (NPL) ratio. This ratio is calculated as the proportion of non-performing loans to gross loans at the end of the fiscal year. This ratio provides insight into the quality of a bank's loan portfolio. However, this measurement is not directly comparable to the Z-score because it focuses on banks' traditional lending activities.

Lastly, we also examine our hypotheses using the standard deviation of return on assets (σ(ROA)i,t) (Delis *et al.*, 2009). The volatility of the bank's earnings can be determined through the standard deviation of return on assets, as riskier operations lead to more volatile (Zhang and Rajagopalan, 2010). The risky investment decisions made by firms can be captured by earnings volatility (Faccio *et al.*, 2016).

3.2.2. Independent variables

The independent variables in this study were CEO characteristics, with firm characteristics accounted for as control variables. Four attributes of CEOs were examined: age, gender, education level, and experience. CEO age was quantified using the natural logarithm of the CEO's age up to year t. CEO age is measured by the number of years from the CEO's year of birth in the year of the study. Gender was represented by a binary variable, where a value of one indicated a female CEO and zero denoted a male CEO.

The education level of the CEO was measured using a binary variable, which simplifies the assessment into two categories. If the CEO has a Master of Business Administration (MBA), they receive a value of one; if they do not have an MBA, they are assigned a value of zero. Rather than considering different levels of education or types of degree obtained, we have simplified the measure by focusing specifically on whether or not they have an MBA. This approach allows us to classify CEOs in two distinct groups based on this specific educational criterion. CEO experience was measured by the total number of years the individual had served as a CEO.

3.2.3. Control variables

To examine how CEO characteristic effects bank risk-taking behavior, this study includes many control variables that could affect this relationship. These variables include board independence, CEO duality, CEO ownership, bank size, bank age, real GDP growth, and inflation rate. Table no. 2 below provides information on the measurement of these control variables and related variables.

Table no. 2 – Definitions and measurements of study variables

Variables	Symbols	Measures	Sources
Dependent variable: Bank risk-taking			
Insolvency risk	Z-score	The sum of the return on assets and equity/assets, normalized by the standard deviation of the return on assets (ROA).	Thomson Reuter (DataStream)
Credit risk	NPL	Ratio of nonperforming loans to gross loans	Thomson Reuter (DataStream)
Market risk	SDVL	Annualized standard deviation of daily stock returns for each bank year.	Thomson Reuter (DataStream)
Independent variables			
CEO age	CEO_AGE	Number of years of CEO age	Annual reports
CEO gender	CEO_GEN	A binary variable that is set to 1 if the CEO is female and 0 if the CEO is male.	Annual reports
CEO experience	CEO_EXP	The total number of years an individual has held the position of CEO.	Annual reports
CEO education	CEO_EDU	A dummy variable, taking the value 1 if the CEO has an MBA degree and 0 otherwise.	Annual reports
Control variables			
Board independence	B_IND	The proportion of independent non-executive directors sitting on the board of directors	Thomson Reuters (Datastream)
CEO duality	CEO_DUAL	A dummy variable equal to 1 if the CEO also holds the chairman of the board position and "0" if not.	Thomson Reuters (Datastream)
CEO ownership	CEO_OWN	The percentage of share of capital owned by the CEO to total assets of the firm.	Thomson Reuters (Datastream)
Bank size	SIZE	Natural Logarithm of total assets for bank i in year t	Thomson Reuters (Datastream)
Gross loan growth	LOAN	The change in the loan portfolio from the previous year to the current year, expressed as a ratio of the previous year's loan portfolio.	Thomson Reuters (Datastream)
GDP growth rate	GDP	Annual real GDP growth in the economy where the bank is located.	World Development Indicators (WDI)
Inflation rate	INF	Percentage variation in the consumer price index.	World Development Indicators (WDI)

Notes: The variables utilized in the study are defined in this table.

3.3. Model

Panel regression analysis was conducted using STATA 17 as the statistical software. The panel regression model is described below:

$$RISK_{i,t}=\beta_0+\beta_1 CEO\_AGE_{i,t}+\beta_2 CEO\_GEN_{i,t}+\beta_3 CEO\_EXP_{i,t}+\beta_4 CEO\_EDU_{i,t}+\beta_5 B\_IND_{i,t}$$
$$+\beta_6 CEO\_DUAL_{i,t}+\beta_7 CEO\_OWN_{i,t}+\beta_8 SIZE_{i,t}+\beta_9 LOAN_{i,t}+\beta_{10} GDP_{i,t}+\beta_{11} INF_{i,t}+$$
$$\sum_{i=12}^{24} \beta_i year_{i,t}+\sum_{j=25}^{58} \beta_j country_{j,t}+\varepsilon_{i,t}$$

Table no. 2 defines the variables used in this study. YEAR and COUNTRY denote the fixed effects for year and country, respectively. The term ε represents the error term, while the indices i and t refer to the bank and the year, respectively.

4. EMPIRICAL RESULTS

4.1. Descriptive statistics

Table no. 3 provides a summary of the statistics for the main variables utilized in the empirical analysis. For Z-score variable, the average value and standard deviation were 4.854 and 2.392 respectively. The mean indicates a relatively high level of risk-taking. Some banks have much higher Z-scores (10.386), indicating very high risk, while others have lower scores (-1.818), suggesting lower risk. The mean of the variable "NPL" indicates that, on average, banks in the sample have 4% of their loans that are non-performing.

The low ratio of nonperforming loans indicates that banks are diligent in monitoring and managing these loans effectively. The variable "SDVL" reflects the variability of potential losses for the bank. The oldest CEO is 65 years old, and the youngest is 34. Qawasmeh and Azzam (2020) found that the average age of a CEO is about 47.135 years, which is consistent with this. Female CEOs are significantly underrepresented in the sample, comprising just 4.56% of the total. This finding is consistent with the study by Adams and Funk (2012), which highlights the low representation of women in executive roles within the banking sector.

Table no. 3 shows that, on average, the CEOs in the sample have held their positions for about 4 years, with a range from 6 to 27 years. These findings are consistent with Qawasmeh and Azzam (2020), who found that CEOs have significant prior experience. Table no. 3 shows the education level of the CEOs, with 32% having an MBA degree and 67% having lower degrees.

For the control variables, the average bank size is 14.745 with a 3.108 standard deviation. Board independence ranges from 0.038 to 0.805 with a mean value of 0.324 directors with the percentage of CEO duality being 61%. The mean values are 8.9% for inflation and 9.4% of GDP. The standard deviations for these variables are below their mean values, suggesting that the data exhibit relatively low dispersion.

Table no. 3 – Descriptive statistics of the sample

Variable	Obs.	Mean	SD	Minimum	Maximum
Panel A: The dependent variables: Bank risk-taking					
Z-score	7.020	4.854	2.392	-1.818	10.386
NPL	7.020	0.040	0.051	0.002	0.736
SDVL	7.020	0.058	0.036	0.003	0.409
Panel B: The continuous variables					
CEO_ AGE	7.020	47.135	6.750	34	65
CEO_ EXP	7.020	7.148	4.191	6.080	27.000
B_IND	7.020	0.324	0.104	0.038	0.805
CEO_OWN	7.020	0.023	0.078	0.097	0.701
SIZE	7.020	14.745	3.108	10. 091	21.976
LOAN	7.020	9.768	4.205	-11.709	62.362
GDPG	7.020	0.089	0.057	-0.036	0.194
INF	7.020	0.094	0.037	-0.026	0.182
Panel C: The dichotomous variables					
		Modality		Percentage	
CEO_ GEN		0		95.44	
		1		4.56	
CEO_EDU		0		67.06	
		1		32.94	
CEO_DUAL		0		37.90	
		1		61.01	

Note: Variables definitions are provided in Table no. 3.

4.2. Correlation matrix

Table no. 4 presents the Pearson correlation coefficients for all variables. It reveals a positive association between CEO age and both CEO experience and education. Additionally, there is a positive correlation between CEO experience and education. In contrast, CEO education is negatively correlated with CEO gender. The correlation coefficients among the independent variables are all below 0.70. To address potential concerns about multicollinearity, we computed the variance inflation factor (VIF), as presented in the last column of Table no. 4. The VIF values are all under 10, confirming that multicollinearity is not an issue in this analysis (Gujarati, 2003).

Table no. 4 – Pearson Correlation Matrix and VIF value

	CEO_ AGE	CEO_ GEN	CEO_ EXP	CEO_ EDU	B_IND	CEO_ DUAL	CEO_ OWN	SIZE	LOAN	GDP	INF
CEO_AGE	1.000										
CEO_GEN	-0.032	1.000									
CEO_EXP	0.408	-0.111	1.000								
CEO_EDU	0.034	-0.046	0.102	1.000							
B_IND	0.046	-0.088	0.037	0.169	1.000						
CEO_DUAL	0.056	0.069	0.032	0.106	0.144	1.000					
CEO_OWN	0.014	0.023	0.079	0.049	0.182	0.272	1.000				
SIZE	0.187	-0.100	0.225	0.085	0.169	0.162	-0.028	1.000			
LOAN	0.027	0.038	0.011	-0.016	0.120	0.219	0.372	-0.007	1.000		
GDP	0.055	0.099	-0.201	-0.022	0.060	0.187	0.102	-0.235	-0.058	1.000	
INF	0.221	-0.319	0.443	0.157	0.078	-0.106	0.123	-0.337	0.052	0. 253	1.000
VIF	1.47	1.69	1.72	5.38	1.56	1.26	2.48	1.03	4.81	1.92	1.58

Notes: Variables definitions are provided in Table no. 2.

4.3. Selection of fixed or random effect

The empirical analysis demonstrates a statistically significant model fit at the 1% level, as evidenced by the p-values of the F-statistics. Moreover, the adjusted R-squared metric indicates that a substantial portion of the variance in the dependent variable is explained by the included explanatory variables. These findings collectively support the model's overall significance and explanatory power. To select the most appropriate panel data estimation method, a Hausman test was conducted. The results of this test favored the fixed effects model over the random effects model (p-value < 0.05). This suggests that individual-specific effects are present and should be accounted for in the estimation process. Consequently, the fixed effects regression model emerges as the most suitable approach for analyzing the relationship between the dependent and independent variables in this context.

4.4. Regression analysis

To investigate the relationship between banks' risk-taking and CEO characteristics, we apply multiple regression analysis to the data. The findings are summarized in Table no. 5. It is evident from the columns 1, 2 and 3 in Table no. 2 that CEO age is negatively related to Z-score, NPL and SDVL with coefficients of -0.049, -0.853 and -0.474, respectively. An increase in CEO age by a unit will lead to a decline in banking and risks. The result affirmed that CEO age has a negative effect on risk-taking. The hypothesis 1 is rejected. This suggests that an older manager is associated with a lower Z-score, indicating reduced financial stability and a higher risk of bankruptcy. In addition, the result showed that an older manager is associated with a lower non-performing loan ratio, indicating better asset quality and lower credit risk.

This could suggest that older CEOs are more conservative or more risk averse. This result aligns with previous studies, which has found a negative relationship between CEO age and risk-taking behavior (Andreou *et al.*, 2017; Kaur and Singh, 2021; Yeoh and Hooy, 2022). When it comes to taking risks, older CEOs usually take more care. This finding is in line with previous literature that suggests that older CEOs are less flexible and more focused on maintaining their career stability and financial security. Older CEOs can influence their decision-making, pushing them to prioritize stability and capital preservation over aggressive growth, which could entail higher risks.

The primary objective may be to leave the bank in a strong and stable position, without introducing short-term uncertainty. When CEOs engage in risky investments, they are more likely to see immediate negative impacts on their profits. Risky investments often have the potential for substantial long-term rewards. However, those with shorter career horizons may not have enough time to benefit from these potential gains, making the risks seem less worthwhile.

Consequently, older CEOs often avoid risky decisions to protect their financial status and preserve their legacies during the final years of their careers. In contrast, younger CEOs, who are generally associated with traits like creativity, openness to new ideas, and intuition, have longer career horizons. They are more inclined to demonstrate their capabilities to the market and enhance their status through entrepreneurial ventures, as supported by the managerial signalling model.

According to Table no. 5, the coefficients obtained for the Z-score, NPL, and SDVL are -1.295, -1.882, and -1.198, respectively. The level of risk taken by the bank is significantly negative due to the presence of female CEOs. A coefficient of -1.295 indicates that banks headed by female CEOs have a Z-score on average 1.295 units lower than those headed by male CEOs do. Banks led by female CEOs have a significantly lower non-performing loan ratio than those led by male CEOs. Female CEOs may be more prudent in lending or more effective in managing credit. These findings corroborate Hypothesis 2. In line with upper echelons theory, these results are consistent with previous research such as Martín-Ugedo and Minguez-Vera (2014); Faccio *et al.* (2016); Expósito *et al.* (2023).

In line with top management theory, these results are consistent with previous research such as Martín-Ugedo and Minguez-Vera (2014); Faccio *et al.* (2016); Expósito *et al.* (2023). We find that gender is an important factor in risk-taking, with male CEOs showing a higher propensity to engage in risky activities. Female CEOs show a lower inclination toward taking risks, which may be attributed to lower self-confidence in bank decisions.

In contrast, male CEOs tend to overrate their skills and display heightened optimism regarding potential profits from risky investments, which results in greater willingness to invest. Male CEOs also tend to prioritise profitability through higher risk-taking, while female CEOs often consider family and personal factors in their business relationships, placing a greater emphasis on harmony. Consistent with resource dependency theory, we suggest that male CEOs are likely to bring a wide range of viewpoints, perspectives and professional skills to the board.

This wealth of contributions could explain their preference for riskier decisions. Female CEOs possess insightful vision and confident judgment in the decision-making process, making a positive contribution to the company's financial performance. They exhibit greater risk aversion than their male counterparts, preferring stability to the high-risk strategies that men may pursue for profits. Additionally, female CEOs are often perceived as less inclined towards innovation and technological transformation.

Table no. 5 shows that there is a positive and significant relationship (p value <1%) between CEO experience and bank risk- taking measures. For each additional year of CEO experience, the Z-score increases by an average of 0.068 units, for each additional year of CEO experience. More experienced CEOs may have developed a better understanding of risks and prefer more cautious strategies. Thus, the third hypothesis is supported by the results mentioned above. The findings are consistent with Chen (2013); Hsu *et al.* (2020); Loukil and Yousfi (2022). CEOs are more likely to take chances when making decisions because of their experience, which broadens their viewpoints and makes them more willing to support creative and risky ideas. This indicates that CEOs with longer tenure tend to be more externally focused and receptive to new business ideas than their shorter-tenured counterparts, potentially making them more inclined to explore riskier decisions.

We contend that CEOs with longer tenures may be more concerned with the effectiveness of their banks and, as a result, may take on more risk. Long-tenured CEOs may be more willing to take risks. This could be explained by the claim that CEOs with longer tenure become more dependent on obtaining and analysing information, which makes them more receptive to different viewpoints. A longer tenure also gives CEOs more authority, which boosts their independence and lessens stakeholder pressure. As a result, they become more inclined to make riskier decisions, as their tenure increases.

Being more experienced, CEOs may tend to adopt a progressive approach and become more flexible in their decisions, which in turn would raise the bank volatility. CEOs with more

experience are inclined to make bolder choices because they are pushed to be more creative and embrace decisions that are more daring.

The Table no. 5 indicates a significant positive relationship between CEOs with MBA degrees and increased risk-taking in banks. These results support our fourth hypothesis. This aligns with previous studies by Beber and Fabbri (2012); Orens and Reheul (2013); Anderson *et al.* (2018). Studies in different areas can develop different ways of thinking, solving problems and processing information. Managers with different educational backgrounds may have different risk tolerance thresholds and distinct ways of assessing the probabilities and implications of risks. This can lead to a more thorough and less conservative consideration of risky options.

CEOs with an MBA may be overconfident and more inclined to take risks. The CEOs who have a high level of education tend to be less risk-averse and are more open to innovative ideas, which helps them stay better informed about their external environment. Furthermore, CEOs who have a higher level of education are less likely to be hesitant to take risks and more inclined to accept new and inventive company concepts. Compared to their counterpart with less education, they are therefore more knowledgeable about their external environment.

Upper echelons theory supports hypothesis H4, which states that CEO education has a positive effect on bank risk-taking. This theory posits that individuals with higher levels of education possess greater skills and knowledge, making them more confident in their ability to assess and manage risks. Therefore, an educated CEO may be more inclined to adopt risky strategies, believing that they can maximize returns while controlling associated risks.

CEOs with MBAs who possess a stronger comprehension of risk management, financial markets, and strategic decision-making. Their ability to make more educated and deliberate risk-taking decisions can result from this skill. CEOs with more education may have greater faith in their abilities to recognize and successfully manage risks. This self-assurance may result in a higher willingness to take on hazardous endeavors. A CEO's ability to strategically think can be improved with advanced education, making it possible for them to assess and seize opportunities more effectively even when they come with greater risk.

The statistical results indicate that the control variables have an impact on the bank risk-taking. Bank risk-taking is negatively and significantly affected by the bank size. This finding proposes that larger banks might be less risky due to their ability to diversify investments across various assets. Such diversification can mitigate the effects of any single investment failing. Furthermore, these banks often have more advanced risk management systems and a more experienced team to handle potential risks. The results show that there is a significant association between loan growth and bank risk-taking.

When banks rapidly increase their loan, they often extend credit to borrowers with lower credit. This can lead to a higher proportion of non-performing loans, which can negatively influence a bank's financial performance. Inflation and gross domestic product (GDP) significantly influence bank risk-taking behavior. When GDP grows, liquidity and credit risks tend to decrease, but the total risk may increase. Conversely, rising inflation rates generally contribute to higher overall banking risks.

Moreover, CEO duality and managerial ownership positively influence risk-taking in banks. When the CEO doubles as chairman of the board, it can lead to faster decision-making and greater consistency in strategic direction, thus enabling bolder risk-taking. Managerial ownership encourages executives to be more invested, making them more likely to champion risky projects they believe will benefit long-term growth. On the other hand, board independence has a negative effect on risk-taking. Independent members may be motivated

by concerns about their reputation and legal liability, which leads them to avoid risky decisions that could result in losses.

Table no. 5 – Multiple regression results

	Z-score		NPL		SDVL	
Variable	**Coefficient**	**T-statistic**	**Coefficient**	**T-statistic**	**Coefficient**	**T-statistic**
CEO_AGE	-0.049**	-2.29	-0.853***	-2.35	-0.474**	-2.42
CEO_GEN	-1.295**	-2.55	-1.882***	-3.05	-1.198**	-2.28
CEO_EXP	0.068***	3.35	0.290**	2.54**	0.289***	2.81
CEO_EDU	1.874***	3.64	1.265***	3.13	0.052 **	2.15
B_IND	-0.671**	-2.17	-0.385	-1.80	-0.375*	-2.01
CEO_DUAL	0.067***	4.07	1.512***	3.37	0.057**	2.37
CEO_OWN	0.064**	2.43	1.003**	2.28	1.106	3.27
SIZE	-0.067**	-2.41	−0.168***	-3.16	-0.289***	-3.29
LOAN	-0.208**	-2.39	-0.636**	-2.03	-0.551**	-2.48
GDP	1.038***	-4.19	-0.227***	-2.74	-0.491***	-3.65
Inflation	0.176***	5.07	1.036***	4.14	1.328***	4.09
Constant	0.589***	10.16	0.549***	9.94	0.683***	12.03
Year FE	Yes		Yes		Yes	
Country FE	Yes		Yes		Yes	
Hausman Test	66.85 (0.000)		67.53 (0.000)		66.39 (0.000)	
R^2	0. 480		0.396		0.489	
F-statistic	8.52***		8.97***		9.13***	
Observations	7.020		7.020		7.020	

Notes: This table presents results from linear regressions in our model. Year and country indicators are included in the model. The asterisks *** and ** indicate significance at the 5% and 1% levels, respectively.

5. ROBUSTNESS CHECKS

The findings might be subject to different endogeneity problems, as pointed out in the research on corporate governance. Dynamic endogeneity could have an impact on them (Wintoki *et al.*, 2012). This phenomenon arises when past values of the dependent variable influence current values of one or more explanatory variables. Hermalin and Weisbach (2003) suggest that governance mechanisms are determined endogenously, implying that the direct relationship between any CEO characteristic and firm outcomes could be misleading. To address this endogeneity in our analysis, we include bank fixed effects in our regressions, which help control for bank-specific characteristics that might be omitted from the model.

To mitigate the potential impact of dynamic endogeneity and omitted variable bias in our results, we additionally employ a two-step system Generalized Method of Moments (GMM) estimation (Arellano and Bond, 1991). The system GMM method helps correct for endogeneity issues (Blundell and Bond, 1998). The results from these GMM regressions are shown in Table no. 6. For clarity, we only include the findings related to the model, as previously presented in Table no. 6.

We opted for the GMM system method, as it enables robust estimation thanks to the internal instruments available in the panel data structure. This method uses lagged dependent variables as explanatory variables, thus controlling for potential endogeneity bias. In addition, it allows us to consider the presence of lagged independent variables, a crucial element in capturing the temporal dynamics and potential time lags of the relationship. The GMM

method strengthens the validity of the analysis and provides a robust framework for examining the relationship between the variables in the study. Consequently, the estimated dynamic model consists of establishing a relationship between the level of risk-taking over period t, denoted Y, and its value lagged one year, with CEO characteristics and control variables. The model is therefore as follows:

$$RISK_{i,t}=\beta_0+\beta_1 RISK_{i,t-1}+\beta_2 CEO\_AGE_{i,t}+\beta_3 CEO\_GEN_{i,t}+\beta_4 CEO\_EXP_{i,t}+\beta_5 CEO\_EDU_{i,t}$$
$$+\beta_6 \boldsymbol{B}\_IND_{i,t}+\beta_7 CEO\_DUAL_{i,t}+\beta_8 CEO\_OWN_{i,t}+\beta_9 SIZE_{i,t}+\beta_{10} LOAN_{i,t}+\beta_{11} GDP_{i,t}+\beta_{12} INF_{i,t}$$
$$+\sum_{i=13}^{25}\boldsymbol{\beta_i year_{i,t}}+\sum_{j=26}^{59}\boldsymbol{\beta_j country_{j,t}}+\varepsilon_{i,t}$$

The dynamic panel model was estimated in Stata 17 using Roodman's (2009) Xtabond2 procedure. Across all model specifications, the tests performed indicated their overall significance. Furthermore, the Hansen test for over-identification provided evidence that the lagged and differenced instruments are valid. Serial correlation tests for the residuals (AR1 and AR2) supported the absence of second-order autocorrelation and the presence of first-order autocorrelation, suggesting that the error terms are not serially correlated in a way that would invalidate the model.

These results indicate that the moment conditions are appropriately specified and the residuals are irrelevant. The significance level and the coefficient of lagged risk-taking compellingly justify the dynamic specification of our model and the inclusion of these temporal dependencies. The risk-taking levels are largely predicted by past risk-taking, and our results confirm the importance of considering their evolving effects. This dynamic perspective enables a more integrated and clearer understanding of previously results.

Table no. 6 – Robustness checks

	Z-score		**NPL**		**SDVL**	
Variable	**Coefficient**	**T-statistic**	**Coefficient**	**T-statistic**	**Coefficient**	**T-statistic**
CEO_AGE	-0.049**	-2.29	-0.853***	-2.35	-0.474**	-2.42
CEO_GEN	-1.295**	-2.55	-1.882***	-3.05	-1.198**	-2.28
CEO_EXP	0.068***	3.35	0.290**	2.54**	0.289***	2.81
CEO_EDU	1.874***	3.64	1.265***	3.13	0.052 **	2.15
B_IND	-0.671**	-2.17	-0.385	-1.80	-0.375*	-2.01
CEO_DUAL	0.067***	4.07	1.512***	3.37	0.057**	2.37
CEO_OWN	0.064**	2.43	1.003**	2.28	1.106	3.27
SIZE	-0.067**	-2.41	−0.168***	-3.16	-0.289***	-3.29
LOAN	-0.208**	-2.39	-0.636**	-2.03	-0.551**	-2.48
GDP	1.038***	-4.19	-0.227***	-2.74	-0.491***	-3.65
Inflation	0.176***	5.07	1.036***	4.14	1.328***	4.09
Constant	0.589***	10.16	0.549***	9.94	0.683***	12.03
Year FE	Yes		Yes		Yes	
Country FE	Yes		Yes		Yes	
Hausman Test	66.85 (0.000)		67.53 (0.000)		66.39 (0.000)	
R^2	0.480		0.396		0.489	
F-statistic	8.52***		8.97***		9.13***	
Observations	7.020		7.020		7.020	

Notes: This table presents results from linear regressions in our model. Year and country indicators are included in the model. The asterisks *** and ** indicate significance at the 5% and 1% levels, respectively.

6. CONCLUSION

This study analysed the relationship between CEO characteristics and bank risk-taking using a sample of 540 international banks from 2011 to 2023. The results confirm expectations regarding the effect of CEO characteristics (CEO age, CEO gender, CEO experience and CEO education) on risk-taking at banks. The CEO is considered to be the decision-making body of a company, responsible for defining strategic priorities and objectives in various areas, including financial results, which can have an impact on risk-taking.

Indeed, older CEOs generally tend to be more risk-averse, perhaps due to concerns about their reputation and retirement. Higher levels of education among CEOs are associated with increased risk-taking. This suggests that education equips CEOs with better analytical skills to assess and mitigate risk, especially in volatile environments. CEOs with high levels of experience may overestimate potential returns and underestimate risks, leading to increased risk-taking.

The findings also show CEOs with longer experience might be less willing to take risks because they are more invested in the long-term viability of the bank. CEOs who are older are frequently seen as less risk-averse. But younger CEOs might also be more willing to take risks, especially if they have a strong drive for success. Although taking more risks can be linked to higher education levels, risk-taking behaviour can also be influenced by the particular type of education. Given these findings, the board of directors should consider these attributes when selecting a CEO, as they can impact the company's long-term performance.

This study contributes to the financial literature in several areas. In addition, CEO performance could be assessed not only on the basis of financial results, but also on how they manage risk. Banks could be encouraged to revise their risk policies according to the characteristics identified as influential, incorporating training for CEOs and management teams on risk management. If certain characteristics are linked to higher or lower risk-taking, recruitment committees could give preference to candidates with specific traits that match the bank's desired risk culture. The results could encourage the search for CEOs with diversified backgrounds to balance risk-taking and avoid overly conservative behaviour.

Therefore, boards should consider the personality traits and experience of CEOs when recruiting, as these elements influence the risk culture within the institution. It is essential to provide CEOs with ongoing training in risk management, to promote a balanced approach to opportunities and challenges. Investors should analyse CEO characteristics as an indicator of risk-taking propensity, incorporating this analysis into their investment decisions. Regulators should monitor governance practices related to CEO characteristics and their impact on risk-taking, establishing guidelines. Banks should carefully consider the potential impact of CEO characteristics on risk-taking when selecting and evaluating candidates for leadership positions. This includes assessing factors such as tenure, age, education, compensation, personality, and alignment with the bank's risk appetite. However, this work has some limitations. Firstly, the analysis relies in part on manually collected data on CEO characteristics. This manual collection process, while meticulous, introduces an inherent risk of data bias. Also, the study is limited to banking industry. Finally, future studies could subdivide the total sample according to the country’s region or the size of the bank.

References

Adams, R. B., & Funk, P. (2012). Beyond the Glass Ceiling: Does Gender Matter? *Management Science, 58*(2), 219–235. http://dx.doi.org/10.1287/mnsc.1110.1452

Adu, D. A. (2022). Competition and Bank Risk-Taking in Sub-Saharan Africa Countries. *SN Business & Economics, 2*(7), 80. http://dx.doi.org/10.1007/s43546-022-00250-1

Agha, M., & Pramathevan, S. (2023). Executive Gender, Age, and Corporate Financial Decisions and Performance: The role of Overconfidence. *Journal of Behavioral and Experimental Finance, 38*(C), 100794. http://dx.doi.org/10.1016/j.jbef.2023.100794

Akram, F., & Abrar Ul Haq, M. (2022). Integrating Agency and Resource Dependence Theories to Examine the Impact of Corporate Governance and Innovation on Firm Performance. *Cogent Business & Management, 9*(1), 2152538. http://dx.doi.org/10.1080/23311975.2022.2152538

Ali, R., Rehman, R. U., Suleman, S., & Ntim, C. G. (2022). CEO Attributes, Investment Decisions, and Firm Performance: New Insights from Upper Echelons Theory. *MDE. Managerial and Decision Economics, 43*(2), 398–417. http://dx.doi.org/10.1002/mde.3389

Alm El-Din, M. M., El-Awam, A. M., Ibrahim, F. M., & Hassanein, A. (2022). Voluntary Disclosure and Complexity of Reporting in Egypt: The Roles of Profitability and Earnings Management. *Journal of Applied Accounting Research, 23*(2), 480–508. http://dx.doi.org/10.1108/JAAR-09-2020-0186

Anderson, R. W., Bustamante, M. C., Guibaud, S., & Zervos, M. (2018). Agency, Firm Growth, and Managerial Turnover. *The Journal of Finance, 73*(1), 419–464. http://dx.doi.org/10.1111/jofi.12583

Andreou, P. C., Louca, C., & Petrou, A. P. (2017). CEO Age and Stock Price Crash Risk. *Review of Finance, 21*(3), 1287–1325. http://dx.doi.org/10.1093/rof/rfw056

Anjum, N., Hussainl, S., Ahmed, T., & Ur Rehman, A. (2020). Risk-Taking Behavior, Corporate Governance and Product Market Competition: Evidence from Pakistan. *City University Research Journal, 10*(4), 553–571. http://dx.doi.org/10.33959/vol10iss4pp%p

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies, 58*(2), 277–297. http://dx.doi.org/10.2307/2297968

Barker, V. L., & Mueller, G. C. (2002). CEO Characteristics and Firm RandD Spending. *Management Science, 48*(6), 782–801. http://dx.doi.org/10.1287/mnsc.48.6.782.187

Beber, A., & Fabbri, D. (2012). Who Times the Foreign Exchange Market? Corporate Speculation and CEO Characteristics. *Journal of Corporate Finance, 18*(5), 1065–1087. http://dx.doi.org/10.1016/j.jcorpfin.2012.07.004

Berger, A. N., Kick, T., & Schaeck, K. (2014). Executive Board Composition and Bank Risk Taking. *Journal of Corporate Finance, 28*(C), 48–65. http://dx.doi.org/10.1016/j.jcorpfin.2013.11.006

Blundell, R., & Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics, 87*(1), 115–143. http://dx.doi.org/10.1016/S0304-4076(98)00009-8

Bonazzi, L., & Islam, S. M. (2007). Agency Theory and Corporate Governance: A Study of the Effectiveness of Board in Their Monitoring of the CEO. *Journal of Modelling in Management, 2*(1), 7–23. http://dx.doi.org/10.1108/17465660710733022

Brahma, S., & Economou, F. (2024). CEO Power and Corporate Strategies: A Review of the Literature. *Review of Quantitative Finance and Accounting, 62*(3), 1069–1143. http://dx.doi.org/10.1007/s11156-023-01231-7

Chen, H. L. (2013). CEO Tenure, Independent Directors and Corporate Innovation. *Journal of Applied Finance and Banking, 3*(5), 187–197.

Chowdhury, J., & Fink, J. (2017). How Does CEO Age Affect Firm Risk? *Asia-Pacific Journal of Financial Studies, 46*(3), 381–412. http://dx.doi.org/10.1111/ajfs.12174

Cooper, E. (2017). Corporate Social Responsibility, Gender, and CEO Turnover. *Managerial Finance, 43*(5), 528–544. http://dx.doi.org/10.1108/MF-02-2016-0049

Delis, M. D., Koutsomanoli-Fillipaki, A., Staikouras, C. K., & Katerina, G. (2009). Evaluating Cost and Profit Efficiency: A Comparison of Parametric and Nonparametric Methodologies. *Applied Financial Economics, 19*(3), 191–202. http://dx.doi.org/10.1080/09603100801935370

Dom, F. R. M., & Ahmad, A. M. (2020). The Importance of Human Capital Management in Developing Quality Human Capital. *Applied Financial Economics, 2*(1), 42–46.

Expósito, A., Sanchis-Llopis, A., & Sanchis-Llopis, J. A. (2023). CEO Gender and SMEs Innovativeness: Evidence for Spanish Businesses. *The International Entrepreneurship and Management Journal, 19*(3), 1017–1054. http://dx.doi.org/10.1007/s11365-021-00758-2

Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation. *Journal of Corporate Finance, 39*(C), 193–209. http://dx.doi.org/10.1016/j.jcorpfin.2016.02.008

Farag, H., & Mallin, C. (2018). The Influence of CEO Demographic Characteristics on Corporate Risk-Taking: Evidence from Chinese IPOs. *European Journal of Finance, 24*(16), 1528–1551. http://dx.doi.org/10.1080/1351847X.2016.1151454

Gao, H., Harford, J., & Li, K. (2017). CEO Turnover–Performance Sensitivity in Private Firms. *Journal of Financial and Quantitative Analysis, 52*(2), 583–611. http://dx.doi.org/10.1017/S0022109017000126

Gujarati, D. (2003). *Basic Econometrics* (L. Sutton Ed. 4th ed. ed.). United States Millitary Academy, West Point: McGraw Hill.

Gupta, G. (2022). CEO's Age and Investment-Cash Flow Sensitivity. *MDE. Managerial and Decision Economics, 43*(6), 2212–2224. http://dx.doi.org/10.1002/mde.3519

Gupta, N., & Mahakud, J. (2020). CEO Characteristics and Bank Performance: Evidence from India. *Managerial Auditing Journal, 35*(8), 1057–1093. http://dx.doi.org/10.1108/MAJ-03-2019-2224

Hai, N. P., & Diem, C. L. H. (2024). CEO Characteristics and Bank Stability: Evidence from an Emerging Economy. *Journal of Corporate Accounting & Finance, 35*(2), 375–384. http://dx.doi.org/10.1002/jcaf.22690

Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review, 9*(2), 193–206. http://dx.doi.org/10.2307/258434

Hassanein, A. (2022). Risk Reporting and Stock Return in the UK: Does Market Competition Matter? *The North American Journal of Economics and Finance, 59*(3), 101574. http://dx.doi.org/10.1016/j.najef.2021.101574

Hassanein, A., Abdelrasheed, H., & Elzahar, H. (2024). Do Overconfident CEOs Add to Corporate Stock Returns Through their Risk Reporting Practice? *Journal of Financial Reporting and Accounting*. http://dx.doi.org/10.1108/JFRA-03-2024-0146

Hassanein, A., & Albitar, K. (2024). An Inverted U-shaped Relationship Between Reporting Risk Information and Corporate Value: Evidence from the UK. *Review of Managerial Science, 19*(9), 2833–2866. http://dx.doi.org/10.1007/s11846-024-00832-3

Hassanein, A., & Elsayed, N. (2021). Voluntary Risk Disclosure and Values of FTSE350 Firms: The Role of an Industry-Based Litigation Risk. *International Journal of Managerial and Financial Accounting, 13*(2), 110–132. http://dx.doi.org/10.1504/IJMFA.2021.117768

Hermalin, B. E., & Weisbach, M. S. (2003). Boards of Directors as an Endogenously Determined Institution: A survey of Economic Literature. *Economic Policy Review, 9*(1), 7–26.

Hiebl, M. R. (2022). Risk Governance and Risk Management in Change: A Guest Editorial. *Journal of Accounting & Organizational Change, 18*(1), 1–11. http://dx.doi.org/10.1108/JAOC-02-2022-212

Ho, H., Kim, N., & Reza, S. (2022). CSR and CEO Pay: Does CEO Reputation Matter? *Journal of Business Research, 149*(10), 1034–1049. http://dx.doi.org/10.1016/j.jbusres.2022.04.055

Hoang, T. T., Nguyen, C. V., & Van Tran, H. T. (2019). Are Female CEOs More Risk Averse than Male Counterparts? Evidence from Vietnam. *Economic Analysis and Policy, 63*(1), 57–74. http://dx.doi.org/10.1016/j.eap.2019.05.001

Hsu, W. T., Chen, H. L., & Ho, M. H. C. (2020). CEO Tenure and RandD Investment: Founders vs. Agents and the Role of Independent Directors. *Technology Analysis and Strategic Management, 32*(10), 1209–1222. http://dx.doi.org/10.1080/09537325.2020.1757637

Huang, J., & Kisgen, D. J. (2013). Gender and Corporate Finance: Are Male Executives Overconfident Relative to Female Executives? *Journal of Financial Economics, 108*(3), 822–839. http://dx.doi.org/10.1016/j.jfineco.2012.12.005

Jensen, M. C., & Meckling, W. H. (2004). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. In D. A. Wittman (Ed.), *Economic Analysis of the Law: Selected Readings* (pp. 162–176): Wiley. http://dx.doi.org/10.1002/9780470752135.ch17

Jilani, W., & Chouaibi, J. (2021). To What Extent does CEO Behavior Enhance Risk-Taking? A Banking Sector Related Evidence. *Scientific Annals of Economics and Business, 68*(3), 309–332. http://dx.doi.org/10.47743/saeb-2021-0012

Jilani, W., Chouaibi, J., & Kouki, A. (2023). CEO Behavior and CSR Engagement: The Moderating Role of Bank Risk-Taking. *Corporate Governance (Bradford), 23*(7), 1802–1828. http://dx.doi.org/10.1108/CG-08-2022-0323

Kaur, R., & Singh, B. (2021). The Impact of CEOs' Characteristics on Corporate Leverage: Indian Scenario. *Vision (Basel), 25*(4), 428–438. http://dx.doi.org/10.1177/0972262920954596

Kim, J. B., Wang, Z., & Zhang, L. (2016). CEO Overconfidence and Stock Price Crash Risk. *Contemporary Accounting Research, 33*(4), 1720–1749. http://dx.doi.org/10.1111/1911-3846.12217

Laeven, L., & Levine, R. (2009). Bank Governance, Regulation and Risk Taking. *Journal of Financial Economics, 93*(2), 259–275. http://dx.doi.org/10.1016/j.jfineco.2008.09.003

Le, D. V., Le, H. T. T., Pham, T. T., & Van, L. V. (2023). Innovation and SMEs Performance: Evidence from Vietnam. *Applied Economic Analysis, 31*(92), 90–108. http://dx.doi.org/10.1108/AEA-04-2022-0121

Lee, S. K. (2025). Beyond Profit: Exploring CEO Tenure, Social Value Risk-Taking, and Competitive Dynamics in Savings Banks. *Corporate Social Responsibility and Environmental Management, 32*(2), 2362–2374. http://dx.doi.org/10.1002/csr.3070

Lee, W. S., & Moon, J. (2016). Determinants of CEO Strategic Risk-Taking in the Airline Industry. *Tourism Management Perspectives, 18*(6), 111–117. http://dx.doi.org/10.1016/j.tmp.2016.01.009

Lewellyn, K. B., & Muller-Kahle, M. I. (2022). A Configurational Exploration of How Female and Male CEOs Influence their Compensation. *Journal of Management, 48*(7), 2031–2074. http://dx.doi.org/10.1177/01492063211027225

Li, F., Li, T., & Minor, D. (2016). CEO Power, Corporate Social Responsibility, and Firm Value: A Test of Agency Theory. *International Journal of Managerial Finance, 12*(5), 611–628. http://dx.doi.org/10.1108/IJMF-05-2015-0116

Loukil, N., & Yousfi, O. (2022). Do CEO's Traits Matter in Innovation Outcomes? *Journal of International Entrepreneurship, 20*(3), 375–403. http://dx.doi.org/10.1007/s10843-022-00309-y

Martín-Ugedo, J. F., & Minguez-Vera, A. (2014). Firm Performance and Women on the Board: Evidence from Spanish Small and Medium-Sized Enterprises. *Feminist Economics, 20*(3), 136–162. http://dx.doi.org/10.1080/13545701.2014.895404

Martino, P., Rigolini, A., & D'Onza, G. (2020). The Relationships Between CEO Characteristics and Strategic Risk-Taking in Family Firms. *Journal of Risk Research, 23*(1), 95–116. http://dx.doi.org/10.1080/13669877.2018.1517380

Mathew, S., Ibrahim, S., & Archbold, S. (2018). Corporate Governance and Firm Risk. *Corporate Governance (Bradford), 18*(1), 52–67. http://dx.doi.org/10.1108/CG-02-2017-0024

Menicucci, E., & Paolucci, G. (2023). ESG Dimensions and Bank Performance: An Empirical Investigation in Italy. *Corporate Governance (Bradford), 23*(3), 563–586. http://dx.doi.org/10.1108/CG-03-2022-0094

Mustapha, M., & Che Ahmad, A. (2011). Agency Theory and Managerial Ownership: Evidence from Malaysia. *Managerial Auditing Journal, 26*(5), 419–436. http://dx.doi.org/10.1108/02686901111129571

Orens, R., & Reheul, A. M. (2013). Do CEO Demographics Explain Cash Holdings in SMEs? *European Management Journal, 31*(6), 549–563. http://dx.doi.org/10.1016/j.emj.2013.01.003

Palvia, A., Vähämaa, E., & Vähämaa, S. (2015). Are Female CEOs and Chairwomen More Conservative and Risk Averse? Evidence from the Banking Industry During the Financial Crisis. *Journal of Business Ethics, 131*(3), 577–594. http://dx.doi.org/10.1007/s10551-014-2288-3

Pathan, S., Haq, M., & Morgan, J. (2023). CEO Pay Gaps and Bank Risk-Taking. *European Accounting Review, 32*(4), 935–964. http://dx.doi.org/10.1080/09638180.2022.2043761

Peltomäki, J., Sihvonen, J., Swidler, S., & Vähämaa, S. (2021). Age, Gender, and Risk-Taking: Evidence from the SandP 1500 Executives and Market-Based Measures of Firm Risk. *Journal of Business Finance & Accounting, 48*(9-10), 1988–2014. http://dx.doi.org/10.1111/jbfa.12528

Peni, E. (2014). CEO and Chairperson Characteristics and Firm Performance. *The Journal of Management and Governance, 18*(1), 185–205. http://dx.doi.org/10.1007/s10997-012-9224-7

Qawasmeh, S., & Azzam, M. (2020). CEO Characteristics and Earnings Management. *Accounting, 6*(7), 1403–1410. http://dx.doi.org/10.5267/j.ac.2020.8.009

Ramli, A. H. (2019). Work Environment, Job Satisfaction and Employee Performance in Health Services. *Business and Entrepreneurial Review, 19*(1), 29–42. http://dx.doi.org/10.25105/ber.v19i1.5343

Roodman, D. (2009). How to Do Xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal, 9*(1), 86–136. http://dx.doi.org/10.1177/1536867X0900900106

Serfling, M. A. (2014). CEO Age and the Riskiness of Corporate Policies. *Journal of Corporate Finance, 25*(C), 251–273. http://dx.doi.org/10.1016/j.jcorpfin.2013.12.013

Skała, D., & Weill, L. (2018). Does CEO Gender Matter for Bank Risk? *Economic Systems, 42*(1), 64–74. http://dx.doi.org/10.1016/j.ecosys.2017.08.005

Tang, H. W., & Chang, C. C. (2024). CEO Overconfidence, Risk-Taking, and Firm Value: Influence of Incentive Compensation and Financial Constraints. *The North American Journal of Economics and Finance, 69*(2-3), 102034. http://dx.doi.org/10.1016/j.najef.2023.102034

Ting, I. W. K., Azizan, N. A. B., & Kweh, Q. L. (2015). Upper Echelon Theory Revisited: The Relationship Between CEO Personal Characteristics and Financial Leverage Decision. *Procedia: Social and Behavioral Sciences, 195*(July), 686–694. http://dx.doi.org/10.1016/j.sbspro.2015.06.276

Ur Rehman, A., Aslam, E., & Iqbal, A. (2022). Intellectual Capital Efficiency and Bank Performance: Evidence from Islamic Banks. *Borsa Istanbul Review, 22*(1), 113–121. http://dx.doi.org/10.1016/j.bir.2021.02.004

Wei, D., Luo, C., & Lu, J. (2025). CEOs With a Financial Background and Corporate Risk-Taking. *Journal of International Financial Management & Accounting, 36*(2), 266–291. http://dx.doi.org/10.1111/jifm.12226

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the Dynamics of Internal Corporate Governance. *Journal of Financial Economics, 105*(3), 581–606. http://dx.doi.org/10.1016/j.jfineco.2012.03.005

Yahaya, O. A. (2025). CEO Education and Firm Performance in Nigeria. *Journal of Finance & Accounting Research, 25*(4). http://dx.doi.org/10.2139/ssrn.5230813

Yeoh, S. B., & Hooy, C. W. (2022). CEO Age and Risk-Taking of Family Business in Malaysia: The Inverse S-Curve Relationship. *Asia Pacific Journal of Management, 39*(1), 273–293. http://dx.doi.org/10.1007/s10490-020-09725-x

Yim, J., & Kang, M. (2024). CEO Age and Firm Innovation: Evidence from IT Industry in Korea. *Eurasian Business Review, 14*(2), 345–367. http://dx.doi.org/10.1007/s40821-024-00262-x

Yin, D., Wang, M., Sun, Y., Wang, H., & Zhen, X. (2025). Managerial Incentives and Firm Risk Taking: The Mediating Role of Corporate Social Responsibility. *Risks, 13*(3), 42. http://dx.doi.org/10.3390/risks13030042

Zhang, Y., & Rajagopalan, N. (2010). Once an Outsider, Always an Outsider? CEO Origin, Strategic Change, and Firm Performance. *Strategic Management Journal, 31*(3), 334–346. http://dx.doi.org/10.1002/smj.812