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Article

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REVIEW ARTICLE



The Relationship Between CEO Characteristics and Banks' Risk-Taking: Review and Research Directions

Patrick Hertrampf · Thomas M. Brunner-Kirchmair · Martin R. W. Hiebl D · Arnd Wiedemann

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Abstract The fundamental role of the banking sector in society and the economy necessitates extensive regulation and supervision. Given that increased risk-taking behavior can undermine the stability of the banking sector, it is crucial to identify the factors affecting banks' risk-taking. This study focuses on the impact of chief executive officer (CEO) characteristics on banks' risk-taking behavior. To achieve this, we conduct a systematic literature review and analyze the findings through the lens of the upper echelons theory (UET) framework. Our analysis reveals that banks' risk-taking is measured in diverse and often arbitrary ways, highlighting the need for standardized measurement methods to ensure comparability. Our findings also indicate that various CEO characteristics, including demographic, psychological, social psychological, biological, and other traits, significantly influence banks' risk-taking. These results suggest that stringent regulations do not serve as a boundary condition for UET. We propose five research avenues, include new methods for measuring CEO characteristics (such as linguistic approaches), explore new areas of research based on the developments of UET (such as moderators and the objective situation), refine the measurement of banks' risk-taking, address questions regarding control variables, and identify additional CEO characteristics of major interest (such as emotional intelligence or CEO attractiveness). Our study underscores the relevance of UET in banking, providing valuable insights for practitioners, academics, and regulators.

Keywords Risk-taking · Executives · Upper echelons · Bank

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JEL-Classification $D81 \cdot D91 \cdot G01 \cdot G21 \cdot G41$

1 Introduction

The financial sector, particularly banks, plays a crucial role in the stability of a country's financial system and, consequently, its economic prosperity (Bulatova and Ipatova 2021; Mourouzidou-Damtsa et al. 2019). Banks sustain the economy by providing credit, liquidity, and opportunities for private individuals and companies to save and invest their funds (Dionne 2003; Naili and Lahrichi 2022). Moreover, they are the primary channels through which monetary policies, such as those aiming for inflation stability, are implemented (Mourouzidou-Damtsa et al. 2019). They play a significant role in the operation of payment systems and act as intermediaries among private citizens, businesses, and public interests (Heffernan 2005). However, given the significant economic importance of banks, problems in the banking sector may not only affect this very sector, but also spread across the entire economy. The 2007-2009 financial crisis especially exposed how excessive risk-taking behavior can destabilize the banking sector and disrupt the entire financial system (Zhou et al. 2019). It has become evident that banks' risk-taking behavior can undermine the stability of the banking system, adversely affecting credit supply, corporate investment, and the broader economy (Badarau and Lapteacru 2020). Consequently, identifying the factors that influence the risk-taking behavior of banks is not only relevant for academic research but is also crucial for the banks themselves and for the stability of the financial system.

The nature of risk-taking by banks is fundamentally different from that of nonbank companies due to banks' unique characteristics. Banks encounter specific risks that are either uncommon or more intensified in the banking sector because these risks are intrinsic to their business model. One example is credit risk, which is central to a bank's strategy and essential to its profitability and survival. However, settlement risk and interest rate risk are also significantly more important for banks than for non-financial institutions (Heffernan 2005; Rose and Hudgins 2010). Their unique business model, which generates shareholder value through both their assets and liabilities-specifically customer deposits-significantly influences their risktaking behavior. The perceived riskiness of a bank affects its customers' confidence and, consequently, its ability to attract and retain deposits (Stulz 2015). Additionally, because of the critical role banks play in economic stability, their risk taking and the entire banking system are subject to extensive regulation and supervision, further distinguishing their approach to risk from that of non-bank companies (Mourouzidou-Damtsa et al. 2019; Saunders et al. 1990). Regular stress-tests, capital requirements or necessary liquidity ratios might limit risk-taking of banks and require more sophisticated risk management frameworks (PWC 2023).

Previous literature has identified a variety of factors influencing the risk-taking of banks. Well-known examples of external macro-factors are the monetary policy of central banks, banking supervision, and the general economy (Angeloni et al. 2015; Delis and Kouretas 2011; Maddaloni and Peydró 2011). Additionally, there is evidence that local banks' environment, such as competition (e.g., Jiménez et al.

2013) as well as company characteristics such as size (e.g., Tabak et al. 2012) and ownership structure (e.g., Barry et al. 2011; Mohsni and Otchere 2014), impact risk-taking. While these environmental, institutional and organizational factors have been analyzed extensively, the more recent literature has increasingly highlighted the impact of individual factors such as executives and their characteristics, particularly due to their leadership responsibilities and expertise in strategic decision-making, which can significantly influence banks' risk-taking (Andreou et al. 2016; Medcraft 2016).

In this paper, we focus on the latter aspect and, in particular, the effect of individual chief executive officer (CEO) characteristics on banks' risk-taking. In the finance literature, top managers' sometimes irrational behavior has long been underrepresented (Bertrand and Schoar 2003). This research area has only received increased scholarly attention in recent years. However, the findings in this literature appear fragmented and inconclusive and consensus on the influences, interdependencies, and interrelationships is lacking. Despite a number of literature reviews on executives' characteristics on decision-making and performance (e.g., Abernethy and Wallis 2019; Bromiley and Rau 2016; van Doorn et al. 2023; Hanlon et al. 2022; Plöckinger et al. 2016; Yamak et al. 2014; Whitler et al. 2021), there is a lack of synthesis on CEOs' effect on risk-taking, especially the banking industry. When it comes to risk-taking more generally, Burkhard et al. (2023) recently presented a meta-analysis spanning 199 primary studies on the impact of overconfidence on risk-taking. They argue and find that it is specifically CEOs and their characteristics that impact organizational risk taking, which is why we also focus on CEOs. More specifically, Burkhard et al. (2023) show that there is a positive relationship between CEO overconfidence and risk-taking. Furthermore, this relationship was found to be stronger when CEOs have more managerial discretion. Relatedly, Cragun et al. (2020) reviewed the literature on the effect of CEO narcissism on decision-making. Their review shows that more narcissistic CEOs make riskier decisions in order to receive recognition and attention. However, their meta-analysis could not confirm this relationship due to different measures of risk. Additionally, the link between gender diversity and risk-taking has been explored, as highlighted in a literature review by Teodósio et al. (2021). This study demonstrates that the inclusion of women on the board of directors and in top management roles reduces a firm's litigation, failure, and operational risks, although it does not significantly affect insolvency risk. Similarly, Jeong and Harrison (2017) used a meta-analysis to demonstrate that increased female representation in upper management positions leads to a reduction in strategic risk-taking.

While these literature reviews all support the general idea that top managers and their personal characteristics can affect organizational risk-taking, the underlying studies were based on evidence from various different industries. However, in spite of its idiosyncrasies and more intense regulations, no comprehensive review of the banking sector is available to guide academic discourse. Consequently, a systematic review of the academic literature on whether and how managerial characteristics significantly impact banks' risk-taking is needed. This question is not only empirically and practically relevant but is also interesting from the theoretical standpoint of upper echelons theory (UET), which we use in this paper to organize and analyze the connections between CEO characteristics and banks' risk-taking behaviors. While this theory argues that top managers and their characteristics significantly drive organizational decisions and outcomes (Abatecola and Cristofaro 2020; Hambrick 2007; Hambrick and Mason 1984), it also acknowledges that these relationships are influenced by the 'objective situation' a firm finds itself in. An important part of that objective situation is the level of regulation, which is why reviews of UET research have argued that regulation may limit the impact of executives on organizational outcomes (Lu et al. 2022; Plöckinger et al. 2016). In this paper, we aim to analyze this conjecture by systematically reviewing the literature on CEO characteristics and banks' risk taking. In addition, given the fragmentation of this literature, UET may also help the field to move forward in a theoretically-informed way. That is, while UET has already received vast attention in the management literature (e.g., Abatecola and Cristofaro 2020; Neely et al. 2020), it has been less used in the finance literature. Thus, a second theory-driven rationale for our study is to examine UET's potential to serve as an apt and holistic framework to guide future research on CEO characteristics and banks' risk taking.

To summarize, we seek to address the following inquiries:

1. What is the current state of research regarding the impact of CEO characteristics on banks' risk-taking?

2. How can existing research be interpreted through the lens of the upper echelons theory (UET), and what contributions does this perspective offer to the development of UET?

3. What future research paths should be explored to further understand the influence of CEO characteristics on banks' risk-taking?

We address these research questions by providing a critical review of existing research on CEO characteristics and banks' risk-taking to suggest improvements and new ideas for research, regulation and practice (Leuz 2018; Rousseau et al. 2008). Methodologically, we provide a systematic literature review (Simsek et al. 2021; Tranfield et al. 2003) of 58 papers that have empirically examined the relationship between CEO characteristics and banks' risk-taking.

Our findings indicate that, despite high levels of regulation, CEOs' individual characteristics contribute to an explanation of banks' varying risk-taking behavior. At the same time, our findings indicate that the high level of regulation and strong state control of banks and financial institutions can serve as a boundary condition for upper echelons' effects on organizational outcomes, which has thus far received only scant attention in the UET literature. Given these overall observations, our review highlights UET's potential to guide not only future research in the management domain, but in finance as well. In more detail, our review shows that current risk-taking variables exhibit significant heterogeneity and that a reclassification of those variables could provide better information about banks' risk-taking. Furthermore, we can see that CEO's narcissism, materialism, overconfidence, social connection, and masculinity tend to increase risk-taking, whereas CEO's politician connection,

affective traits, and religiosity tend to reduce risk-taking. Moreover, female and domestic CEOs also tend to decrease banks' risk-taking. To move the field forward, we introduce five broader research avenues that could guide future finance research in this domain.

The remainder of our paper is organized as follows. In Sect. 2, we provide the theoretical and empirical basis and introduce UET. In Sect. 3, we detail our review methods and sample construction. In Sect. 4, we present the content analysis and identify challenges in the present literature, for which we propose solutions in Sect. 5. The paper ends with a conclusion.

2 Theoretical Background: Upper Echelons Theory

Previous studies have shown that management decisions are subject to emotional and cognitive influencing factors called behavioral anomalies (Mano 1994; Tversky and Kahnemann 1981). This is also reflected in the considerations of Hambrick and Mason (1984), who see the organization as a reflection of its top managers within the concept of UET. This theory posits that top managers' cognitive bases, values, experiences, and personalities influence their perception and interpretation of information, consequently impacting strategic decisions and organizational performance (Hambrick and Mason 1984; Hambrick 2007). Due to the challenge in quantifying these cognitive aspects, Hambrick and Mason suggested using demographic indicators like age and education as proxies. Recent studies have expanded this approach by directly measuring CEOs' characteristics, traits, and values (Hiebl 2014; Plöckinger et al. 2016). Subsequently, the relationship between CEO characteristics and strategic choices as well as the outcomes of an organization can be examined (Zona et al. 2013). For this reason, we draw on the core tenets of UET as



Fig. 1 An upper echelons perspective. (Based on Hambrick and Mason 1984; Hambrick and Finkelstein 1987; Hambrick et al. 2005; Hambrick 2007; Wowak and Hambrick 2010)

displayed in Fig. 1, and focus our analysis on the effect of CEO characteristics on banks' risk-taking.

According to UET, both CEO characteristics and organizational outcomes can be influenced by the 'objective situation' (Hambrick and Mason 1984), which refers to the internal and external environment affecting the selection and decisions of CEOs. Hambrick and Mason (1984) specifically highlight industry characteristics, such as competition and growth, as well as company strategy, such as a "prospector" strategy, as examples for the objective situation. These internal and external environmental factors influence firms' selection of CEOs who are best suited to address these particular circumstances. Despite limited research on the environment, previous literature has expanded the definition of the 'objective situation' to also include factors such as national culture (Yamak et al. 2014). In their foundational paper on UET, Hambrick and Mason (1984) specifically noted the unique characteristics of banks as a distinct objective situation, pointing out the stringent regulations in the banking industry. This strongly regulated environment, they argued, tends to attract CEOs with "significant banking experience" (p. 197). In addition, more recent reviews of the UET literature concluded that strong regulation may limit the effect of CEOs on organizational outcomes (Lu et al. 2022; Plöckinger et al. 2016). Thus, regulation as part of the objective situation may pose a boundary condition to UET more generally, and potentially limit its applicability. In the present review paper, we thus examine whether even in strongly regulated industries such as banking, the basic tenets of UET hold.

Besides the objective situation, there is a growing interest in possible moderators impacting the relationship between CEO characteristics and strategic choices. This includes pay arrangements, which impact managerial decisions and specifically risktaking of CEOs, as incentive payments may be a primary reason for banks' excessive risk-taking (Wowak and Hambrick 2010). Another moderator is managerial discretion, defined as the extent to which CEOs can act with significant freedom, facing few or no constraints (Abatecola and Cristofaro 2020; Hambrick and Finkelstein 1987). The impact of CEO characteristics on risk-taking behaviors may become more pronounced with an increase in the degree of freedom executives have, as illustrated by Li and Tang (2010). Another moderator is executive job demands, defined "as the degree to which a given executive experiences his or her job as difficult or challenging" (Hambrick et al. 2005, p. 473). Similar to managerial discretion, CEO characteristics may have a stronger impact on risk-taking behaviors under high job demands, such as time pressure or information overload. Under these conditions, CEOs are more inclined to employ mental shortcuts and depend more heavily on their cognitive foundations, values, and experiences (Plöckinger et al. 2016).

In summary, UET suggests that individual characteristics, the objective situation and moderators affect CEOs' decisions, decision quality, and risk-taking (Brennan and Conroy 2013; van Scotter and Roglio 2020; Wang and Chen 2020). To reflect the current state of research, we conduct a systematic literature review to generate an overall picture of the banking industry.

3 Review Methods and Sample Selection

The systematic literature search is conducted using the three phases suggested by Tranfield et al. (2003). In the first phase, the motivation of the paper is described, as stated in our introduction. The second and third phases refer to search and selection of relevant literature, the quality assurance of the covered research items, and the evaluation of the results. In short, we relied on a database-focused search approach (Hiebl 2023) and filtered the search hits by relying on the A/B/C logic according to Pittaway et al. (2004). For the final sample, we additionally searched all literature references, as suggested by Webster and Watson (2002). For quality assurance, we only included articles published in journals that are listed in the Association of Business Schools (ABS) Guide 2018. In total, the final sample contains 58 papers (see Table 1). Similar to other recent review studies (e.g., Goel et al. 2023; Ndemewah and Hiebl 2022), details on our systematic search and selection procedures can be found in the appendix.

As our overriding criterion for papers to be included in our review sample, we exclusively select those that offer evidence about the relationship between CEO characteristics (as the main variable of interest or as a control variable) and a bank's risk-taking. CEO characteristics refer to any personal attribute, trait, or quality of a CEO. As detailed below, this includes CEOs' demographic, psychological, socialpsychological, and biological characteristics (Abernethy and Wallis 2019), as well as variables that measure CEOs' contractual arrangements such as for pay arrangements and power. While the latter contractual arrangements are not as personal to CEOs as the other characteristics, we follow earlier UET research that has also treated these arrangements as CEO characteristics (e.g., Benischke et al. 2019; Jaggia and Thosar 2022; Lin and Cheng 2013; Whitler et al. 2021). Earlier research has mainly explained this interpretation by noting that these arrangements are position-based and specifically geared toward CEOs and no other actors within an organization (Lin and Cheng 2013; Whitler et al. 2021), and that CEOs' contractual arrangements reflect their risk-bearing capacity (Benischke et al. 2019; Jaggia and Thosar 2022). In contrast, we do not treat phenomena that measure CEOs' interactions with other actors as CEO characteristics. These joint phenomena primarily include governance characteristics where CEOs and other board members jointly account for phenomena like board power. If such phenomena were investigated in the reviewed papers, they are treated as potential moderators of the relationship between CEO characteristics and banks' risk taking; this is also consistent with earlier UET research (Hambrick and Finkelstein 1987; Hambrick et al. 2005; Wowak and Hambrick 2010).

Our evaluation of the selected literature is based on an integrative approach according to Alvesson and Sandberg (2014) and Alvesson and Sandberg (2020). In terms of a critical systematic literature review, the papers' content is critically reflected, problematic and limiting views are identified, and new ideas from interdisciplinary research strands are included. This systematic and critical approach is intended to break down established scientific views in the sense of box changings and to gain new approaches and insights (Alvesson and Sandberg 2014).

The results from the third step of the process, as outlined by Tranfield et al. (2003), are presented in the following sections. First, we discuss how the reviewed

Table 1 De	scriptions used in	this sample								
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Acrey et al. (2011)	Pay arrangements (MV), age, tenure	Demographic, other (MV)	Bank's interest-accruing loams, bank's delinquent loans, book value of fore- closed real estate, value of domestic certificates of deposit, bank's equity, net operating income before extraordi- nary items, less the gain (loss) on sale of securities, book value of investment securities, expected default frequency, distance to default, subprime mortgages, securitization income as a percentage of the bank's net income, trading assets, recourse	 (i) Credit, equity, insolvency, operational 	1	1	United States	Banks	84	2004-2008
Adhikari and Agrawal (2016)	Religiosity (MV)	Social psy- chological (MV)	Standard deviation of banks ¹ stock returns, tail risk, idiosyncratic risk, Z-score ⁴	(ii) Market, insolvency	I	I	United States	Banks	1459	1994–2010
Ahmed and Ndayisaba (2016)	Pay arrangements (MV)	Other (MV)	Expected default probability	(i) Insol- vency	Board power	I	Australia	Financial institutions	45	2004–2015
Ahmed et al. (2019a)	Crisis experience (MV)	Demographic (MV)	Ratio of risk-weighted assets, real estate loan exposure (defined here as total bank risk), ratio of loan loss provisions/loans	(ii) Total bank, credit	I	I	United States	Commercial banks	104 banks involving 134 CEOs	2006–2014
Ahmed et al. (2019b)	Masculinity (MV)	Biological (MV)	Standard deviation of banks' stock returns, idiosyncratic risk, Z-score	(ii) Market, insolvency	I	I	United States	Banks	104	2006–2014
Akbar et al. (2017)	Power (MV), ownership	Other (MV)	Idiosyncratic risk, market adjusted idiosyncratic risk, Z-score, industry adjusted Z-risk	(ii) Market, equity, insolvency	I	I	United Kingdom	Financial institutions	276	2003–2012

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Table 1 (Coi	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Aljughaiman and Salama (2019)	Power (MV)	Other (MV)	Standard deviation of banks' stock returns, ratio of impaired loans/total loans, standard deviation of the return on average assets, inverse ratio of cash and cash equivalent/total assets, Z-score	(ii) Market, credit, operational, insolvency, liquidity	I	I	Middle East and North Africa region	Banks	65	2005–2015
Al-Own et al. (2018)	Pay arrangements (MV), age, tenure	Other (MV), demographic	Distance to default	(i) Insol- vency	I	I	Europe	Banks	60	2006–2011
Altunbaş et al. (2020)	Power (MV)	Other (MV)	Z-score, systematic risk, marginal expected shortfall	(ii) In- solvency, market	Board power	I	United States	Banks	960	1998–2015
Anginer et al. (2016)	Pay arrangements (MV), power (MV)	Other (MV)	Trer 1 ratio, total capital ratio, common equity ratio, tangible equity ratio, ratio of market value	(i) Equity	I	I	International	Banks	N/A	2003–2011
Bacha and Azouzi (2019)	Overconfidence (MV), opti- misn (MV), loss aversion (MV), gender (MV), gender (MV), ege, financial lit- eracy, experience, education level	Psychological (MV), de- mographic (MV)	Credit decisions of the CEOs	(i) Credit	T	1	Tunisia	Banks	11 banks involving 106 bankers	V/N
Bai and Elyasiani (2013)	Pay arrangements (MV)	Other (MV)	Z-score	(i) Insol- vency	I	I	United States	Bank holding companies	132	1992–2008
Belkhir and Boubaker (2013)	Pay arrangements (MV)	Demographic	Dummy variable when the notional amount is positive, natural logarithm of the notional amount of interest rate derivatives held for risk management purposes/total assets	(i) Market	I	I	United States	Publicly traded bank holding companies	150	2006–2010

Table 1 (Coi	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Belkhir and Chazi (2010)	Pay arrangements (MV), ownership	Other (MV)	Systematic risk, idiosyncratic risk, standard deviation of banks' stock returns	(i) Market	1	I	United States	Bank holding companies	700	1993–2006
Ben Zeineb and Mensi (2018)	Power (MV)	Other (MV)	Z-score	(i) Insol- vency	I	I	Gulf Co- operation Council	Islamic banks	56	2004-2013
Bennett et al. (2015)	Pay arrangements (MV), tenure	Other (MV), demographic	Expected default frequency, distance to default, total risk (defined here as insolvency risk), CAMELS composite ratings, actual failures occurred during 2007–2011	(i) Insol- vency	I	I	United States	I	371	2006–2008
Berger et al. (2014)	Gender (MV), education (MV), age (MV), tenure	Demographic (MV)	Capital adequacy ratio, ratio of risk- weighted assets/total assets, loan portfo- lio concentration	(ii) Credit, total bank	I	I	Germany	Banks	826	1994–2010
Berger et al. (2016)	Ownership (MV)	Other (MV)	Bank failure	(i) Insol- vency	I	I	United States	Commercial banks	341	2007-2010
Bharati and Jia (2018)	Pay arrangements (MV), age, tenure	Other (MV), demographic	Systematic risk, idiosyncratic risk, standard deviation of banks' stock returns	(i) Market	I	I	United States	Banks	217	1993–2009
Boyallian and Ruiz-Verdú (2018)	Pay arrangements (MV), age, tenure, power	Other (MV), demographic	Dummy variable firm fails in 2007 to 2010, distance to default, expected default frequency	(i) Insol- vency	I	1	United States	Financial institutions	129	2007–2010
Bushman et al. (2018)	Materialism (MV), pay arrangements	Psychological (MV), other	Tail risk, marginal expected shortfall	(i) Market	I	I	United States	Bank holding companies	284 firms involving 445 CEOs	1992–2013
Buyl et al. (2019)	Narcissism (MV), power, position tenure	Psychological (MV), other, demographic	Ratio of commercial and business loans/total assets, ratio of non-interest income/net operating income, derivatives and off-balance sheet items/total assets	(i) Credit	Board power	I	United States	Banks	92 CEOs	2006–2014

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Table 1 (Coi	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Byrd et al. (2012)	Power (MV), Ownership	Other (MV)	Bank failure	(i) Insol- vency	I	I	United States	Publicly traded thrifts	130	1987–1992
Cerasi et al. (2020)	Pay arrangements (MV)	Other (MV)	Ratio of non-performing loans/total loans, standard deviation of banks' stock returns	(ii) Credit, market	I	I	Worldwide	Large financial institutions	1197	2006–2014
Chen and Ebrahim (2018)	Power (MV)	Other (MV)	Z-score. ratio of non-performing loans/ total assets	(ii) In- solvency, credit	Board power	I	United States	Banks	172 bank CEO turnovers	1995–2010
Chen and Lin (2016)	Power (MV)	Other (MV)	Ratio of non-performing loans/total loans, earnings at risk, dollar amount of bank liquidity creation/total assets	(i) Credit, liquidity, market	I	I	Worldwide	Banks	1604	2002–2010
Dbouk et al. (2020)	Social connec- tions (MV), age, tenure	Social psy- chological (MV), demo- graphic	Z.score	(i) Insol- vency	I	I	United States	Publicly traded banks	481	2000–2012
Delgado- García et al. (2010)	Affective traits (MV), tenure, education, ownership	Psychological (MV), de- mographic, other	Variance in return on asset, ratio of non- performing loans/total loans, commercial loans and secured loans and finance leases correlation with the ratio of non- performing loans/total loans	(ii) Market, Credit	I	I	Spain	Banks	51	2004
De Young et al. (2013)	Pay arrangements (MV)	Other (MV)	Systematic risk, idiosyncratic risk, stan- dard deviation of banks' stock returns, no of private morgages escuritization investments (at fair value/Motal assets, ratio of non-interest income/net oper- ating income, ratio of commercial and industrial loans/total assets	(ii) Market, credit, operational	1	I	United States	Commercial banks	114 banks involving 145 CEOs	1995-2006
Fabrizi (2018)	Pay arrangements (MV)	Other (MV)	Securitization, credit losses, subprime	(i) Credit	I	I	United States	I	81	2003–2009

Table 1 (Coi	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Faleye and Krishnan (2017)	Ownership (MV), power (MV), pay arrangements (MV)	Other (MV)	Dummy variable if borrower's long-term S&P credit rating at loan origination is investment grade (i.e., BBB or higher)	(i) Credit	I	I	United States	Banks	340 bank- years for 80 unique banks	1994-2008
Farag and Mallin (2017)	Power	Other	Ratio of impaired loans/total loans (defined here as total bank risk)	(iii) Total bank	I	I	Europe	Banks	66	2004-2012
Guo et al. (2015)	Pay arrangements (MV), age, tenure, ownership	Other (MV), demographic	Standard deviation of banks' stock returns, Zscore, ratio of non-performing loans/equity	(ii) Credit, equity, insolvency, market	1	1	United States	Publicly- traded bank holding companies	134	1992–2008
Hagendorff and Vallascas (2011)	Pay arrangements (MV), age, tenure, power	Other (MV), demographic	Distance to default	(i) Insol- vency	T	T	United States	Listed bank holding companies and state commercial banks	172	1993-2007
Ho et al. (2016)	Overconfidence (MV)	Psychological (MV)	Change in bank loans and leverage, bank loan quality, bank performances and insolvencies, dummy variable for CEO turnover, dummy variable for bank failure	(i) Credit, insolvency, operational	1	1	United States	Banks	1643 bank-year observa- tions	1994–2009
Houston and James (1995)	Pay arrangements (MV)	Other (MV)	Variance in stock returns	(i) Market	I	I	United States	Banks	134	1980–1990
Hung et al. (2017)	Political con- nection (MV), age, gender, education, tenure	Social psy- chological (MV), demo- graphic	Z-score, ratio of loan loss provisions/total loans	(i) Credit, insolvency	I	Anti-cor- ruption campaign	China	Banks	70	2007–2014
Jiang et al. (2019)	Pay arrangements (MV)	Other (MV)	Z-score	(i) Insol- vency	I.	Changes in regula- tion	China	Banks	156	2006–2013

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Table 1 (Cor	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
King et al. (2016)	Education (MV)	Demographic (MV)	Securitization, derivatives, real estate and mortgage loans, ratio of non-interest income/total assets, risk-weighted-assets growth	(ii) Credit, operational	1	I	United States	Banks	149	1992–2011
Liu et al. (2017)	Pay arrangements (MV)	Other (MV)	Standard deviation of banks' stock returns	(i) Market	I	I	United States	Bank mergers	214	1995–2012
Luu (2015)	Power (MV)	Other (MV)	Ratio of risk-weighted assets/total assets	(iii) Total bank	I	I	Asia	Commercial banks	100	2009–2012
Mahdi and Abbes (2018)	Overconfidence (MV)	Psychological (MV)	Ratio of loan loss provisions/total loans	(j) Credit	I	I	Middle East and North Africa region	Banks	133	2005-2016
Mollah and Liljeblom (2016)	Power (MV)	Other (MV)	Z-score, non-performing loans (as proxy for asset quality ratio)	(i) Credit, insolvency	I	I	Worldwide	Banks	378	2007–2011
Mourouzidou- Damtsa et al. (2019)	Citizenship	Demographic	Standard deviation of banks' stock returns, Z-score, ratio of loan loss provisions/loans	(ii) Credit, insolvency, market	I	National culture (MV)	Europe	Banks	66	1995-2014

Table 1 (Cor	ntinued)									
Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Nguyen et al. (2019)	Pay arrange- ments, age, education, experi- ence	Other, Demo- graphic	Risky borrower' dummy variable, mortgage approval rate, loan growth, ratio of non-performing loans/total loans, Tier 1 ratio, conditional value at risk	Credit, equity, market	I	1	United States	Banks	78	1993–2007
Niu (2010)	Overconfidence (MV), pay arrangements, age, tenure	Psychological (MV)	1	(i) Equity	I	1	United States	Bank holding companies	98 banks involving 131 CEOs	1993–2002
Ooi et al. (2021)	Religiosity (MV)	Social psy- chological (MV)	Ratio of non-performing loans/total assets ratio, capital adequacy ratio, ratio between return on assets and the standard deviation of return on assets, Z-score	(ii) Credit, insolvency, total bank	Religiosity of the board of directors	1	Indonesia	Listed banks	39	2010-2017
Pathan (2009)	Power (MV), ownership	Other (MV)	Standard deviation of banks' stock returns, idiosyncratic risk, systematic risk, asset-return risk, Z-score	(ii) In- solvency, market, total bank	I	1	United States	Bank holding companies	212	1997–2004
Pathan et al. (2016)	Ownership (MV)	Other (MV)	Z-score, ratio of impaired loans/total loans, standard deviation of banks' stock returns, idiosyncratic risk, systematic risk, asset-return risk	(ii) Credit, insolvency, market	I	1	United States	Bank holding companies	212	1997–2004
Sghaier and Hamza (2018)	Gender (MV)	Demographic (MV)	Standard deviation of banks' stock returns, idiosyncratic risk, systematic risks, distance to default	(ii) Market, insolvency	I	I	Europe	Bank mergers and acquisitions	112	2000–2015
Shah et al. (2017)	Pay arrangements (MV), tenure, ownership	Other (MV), demographic	Standard deviation of banks' stock returns, systematic risk, idiosyncratic risk	(i) Market	1	I	United States	Banks	81	2002–2013
Skała and Weill (2018)	Gender (MV), age	Demographic (MV)	Capital adequacy ratio, equity/assets, Z-score, ratio of non-performing loans/ total loans, ratio of loan loss provisions/ total loans	(ii) Total bank, credit, insolvency	I	I	Poland	Cooperative banks	365	2008–2012

Author(s) (year of publication)	CEO characteris- tic(s)*	Types of CEO characteris- tic(s)*	Bank risk(s)	Types of bank risk(s)	Moderating effects	Objective situation*	Country	Financial institutions	Sample size	Period
Sun (2018)	Pay arrangements (MV)	Other (MV)	Loan/income ratio, percentage of higher- priced loans among first liens and among junior liens	(i) Credit, operational	I	1	United States	Publicly traded banks	655	1999–2005
Switzer and Wang (2013)	Age (MV), power (MV)	Demographic (MV), other (MV)	Distance to default	(i) Credit	I	I	United States	Commercial and savings banks	228	2001–2010
Uhde (2016)	Pay arrangements (MV)	Other (MV)	Z-score, distance to default	(i) Insol- vency	Board power	I	Europe	Banks	63	2000–2010
Van Bekkum (2016)	Pay arrangements (MV)	Other (MV)	Stock market losses, standard deviation of banks' stock returns, value at risk, expected shortfall, conditional value at risk, probability of financial distress	(i) Market	I	I	United States	Banks	429	2007–2009
Yang (2017)	Pay arrangements (MV), tenure	Other (MV), demographic	Standard deviation of banks' stock returns, loan loss write-offs/total assets, non-interest income by the sum of interest income and non-interest income, interest income and non-interest income, investments/total assets	(ii) Market, credit, operational	I	I	United States	Large publicly traded commercial banks	82	1992–2010
Zhou et al. (2019)	Age gap (MV), tenure, experi- ence, gender	Demographic (MV)	Loan-loss reserves/total loans, ratio of impaired loans/gross loans, Z-score, standard deviation of banks' stock returns	(ii) Credit, insolvency, market	I	I	Europe	Listed banks	100	2005–2014
Total (58) *MV denotes the ^a The Z-score is a return on assets at	main variable under stuc widely used measure in d CAR denotes the capi	Jy in the paper 1 banking research (D tal-asset ratio (Bai an	bouk et al. 2020) that indicates the probability c d Elyasiani 2013; Laeven and Levine 2009; Roy	of bank failure. It 1952)	is typically calc	ulated using the	following formu	ıla: (ROA + CAR) /	o(ROA), where]	ROA represents

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papers analyzed bank risk, which is the core dependent variable. Next, we focus on the group of independent variables included in our review, which are CEO characteristics. To organize these characteristics, we use Abernethy and Wallis's (2019) classification. Finally, two sections are dedicated to potential moderators and the objective situation. Drawing on prior research on UET (Hambrick and Finkelstein 1987; Hambrick et al. 2005; Wowak and Hambrick 2010), we conceptualize moderators as internal organizational factors (e.g., CEO job demands) that may influence the relationship between independent CEO characteristics and bank risk. The objective situation (Hambrick et al. 2005) refers to both internal and external factors (e.g., industry characteristics) that may affect CEO selection.

4 Review Results

4.1 Risk-Taking

In this section, we critically analyze the current state of research. Table 1 shows the analysis of our sample following UET. It is organized according to the identified objective situation, CEO characteristics and moderators effecting the relationship between CEO characteristics and risk-taking.

First, we begin by investigating the characteristics of risk-taking. In the papers examined, the term "risk-taking" is understood as a generic term. It encompasses three different methods for measuring banking risks. Variant (i) defines risk-taking solely in terms of the change in risk within a specific risk type. Table 1 shows which risk types are examined in the papers: credit risk, equity risk, insolvency risk, liquidity risk, market risk, and operational risk. Variants (ii) and (iii) define risk-taking as total bank risk. They therefore map the bank's entire risk situation. Variant (ii) attempts to map total bank risk using combinations of risk types, while (iii) uses one overarching measure. Thus, variant (iii) tries to measure total bank risk directly by using specific indicators, some of which are based on regulatory requirements. However, the use of different variants gives rise to some issues (see Table 1 for a detailed description of the variables). Each section concludes with a brief key takeaway.

4.1.1 Single Risk Types (Variant I)

Analyzing the differences and similarities among studies that focus on individual risk types, we observe significant variability in the measurement variables across all specific risk types. For example, the measurement variables of credit risk alone can be divided into four main categories: credit failure (probability), securitization, risk provisions, and credit portfolio structure/performance. In turn, many individual variables can be found for each category. For instance, credit failure (probability) includes ratios combined with impaired loans (Zhou et al. 2019), non-performing loans (Guo et al. 2015), credit losses (Fabrizi 2018), and loan loss write-offs (Yang 2017). In this context, impaired loans have also been interpreted as total bank risk (Farag and Mallin 2017). In addition, Guo et al. (2015) see non-performing loans

as representing the general riskiness of bank assets, reconfirming how differently individual ratios are interpreted and defined. No uniform use exists in the literature.

Other risk types show a high degree of heterogeneity as well. Systematic and idiosyncratic risk can both be derived from the capital market model (Sghaier and Hamza 2018). These are represented by the beta factor and standard deviation of the residuals from this model (Bharati and Jia 2018; Belkhir and Chazi 2010). Together with total risk, defined as the standard deviation of banks' stock returns, they form the main indicators of market risk in research. In addition, downside risks or tail risks are frequently measured to map system-wide crisis situations, such as those carried out by regulatory authorities as part of stress test scenarios (Altunbaş et al. 2020; Bushman et al. 2018; Chen and Lin 2016; van Bekkum 2016).

In most papers, insolvency risk is calculated using the Z-score (Bai and Elyasiani 2013; Ben Zeineb and Mensi 2018; Jiang et al. 2019; Uhde 2016). A higher Z-score is equivalent to a lower risk of bank default. Another variant is the distance to default model of Merton (1974). Hagendorff and Vallascas (2011) are the first to use this risk measure in combination with CEO incentives on a bank's risk-taking. One advantage over pure market risk measures is that accounting data are considered in addition to market data. Alternatively, other papers use the expected default frequency (Acrey et al. 2011; Bennett et al. 2015; Boyallian and Ruiz-Verdú 2018). In a few cases, a binary distinction is made between failing and non-defaulting banks to compare both sets of characteristics (Berger et al. 2016; Byrd et al. 2012). The mere enumeration of the different variables already illustrates the lack of differentiation. Again, the choice of measurement variables does not seem coordinated.

Operational risk tries to represent the risk of the business model or business policy (King et al. 2016). One of the main measures of this kind of risk is non-interest income (King et al. 2016) or net operating income (Buyl et al. 2019; DeYoung et al. 2013). This is an attempt to use performance measures that are independent of market risk and result from a bank's operations. However, metrics that simultaneously include market risk and credit risk are also used (DeYoung et al. 2013; Yang 2017).

Liquidity risk is addressed in only two studies. Banks' cash reserves are examined by Aljughaiman and Salama (2019) and Chen and Lin (2016) in combination with other risk types. Chen and Lin (2016) point out that risk types are intertwined. For example, market risk in the form of interest rate risk results from maturity mismatches in the banking book. These also affect credit quality. Borrower defaults, in turn, can lead to liquidity risks. It has also been shown that low liquidity risks simultaneously reduce interest rate risk.

Equity risk is examined in detail by Anginer et al. (2016). They differentiate between regulatory and balance sheet equity. Since banks have discretionary power in the valuation of their assets and capital, they calculate the ratio of the market value of the bank's common equity as a proxy for the market value of a bank's total assets. Anginer et al. (2016) do not explicitly refer to the ratios as equity risk but define risk-taking in terms of low capitalization rates. Zhou et al. (2019) also classify total risk as equity risk, defined as the standard deviation of banks' stock returns. However, this position should be viewed critically, as total risk includes the systematic and idiosyncratic risk of stocks and is therefore used in the research to measure market risk as well (Aljughaiman and Salama 2019).

Key Message #1 The key metrics for individual risk types of variant (i) display excessive heterogeneity.

4.1.2 Total Banks' Risk Using a Combination of Risk Types (Variant II)

In addition to measuring individual risk types, other papers attempt to depict the entire risk situation of a bank using a combination of risk types (Acrey et al. 2011; Guo et al. 2015). However, the chosen combinations also seem arbitrary. For instance, Pathan (2009) attempts to convey insights using indicators such as insolvency risk, market risk, and overall bank risk metrics, including the standard deviation of stock returns. Other papers only use market risk and insolvency risk variables to depict the total risk situation (Adhikari and Agrawal 2016; Sghaier and Hamza 2018). Still others use credit risk, insolvency risk, and additional total bank risk variables (Ooi et al. 2021). It becomes clear that, due to their inconsistent use, combinations of individual risk types cannot claim to consistently capture the risk-taking of a bank across the board. The approaches chosen are too different.

Key Message #2 The approach of using combinations of risk types to represent total bank risk, as seen in variant (ii), lacks a consistently applied logic.

4.1.3 Total Banks' Risk Using One Measure (Variant III)

A common variant for assessing total bank risk with a single holistic measure involves using the ratio of risk-weighted assets to total assets. This criterion is not only gaining popularity in the research but is also being used by regulators (Ahmed et al. 2019a; Berger et al. 2014; Luu 2015). To complement this approach, the capital adequacy ratio is often considered (Berger et al. 2014; Skała and Weill 2018; Ooi et al. 2021). In addition to the bank's risk position, the available funds to cover risk are included in the risk assessment. However, not all papers use ratios to calculate total bank risk. The capital adequacy ratio is often omitted. Use and non-consideration seem arbitrary. Neither a uniform nor a dominant approach can be identified in the surveyed papers.

Some papers choose different ratios to calculate total bank risk. Farag and Mallin (2017) use the ratio of impaired loans to total loans to show the financial fragility of a bank, which is related to total bank risk. However, inconsistencies arise here as well. Other papers interpret the ratio exclusively as credit risk and not as a bank's general vulnerability to crises (Aljughaiman and Salama 2019; Pathan et al. 2016; Zhou et al. 2019). This interpretation is more intuitive, as financial fragility also depends on a bank's capital structure. Therefore, bank capitalization is also decisive but not considered by all authors (Anginer et al. 2016). Delgado-García et al. (2010), Yang (2017), and Mourouzidou-Damtsa et al. (2019) interpret the variance and volatility of return assets as total bank risk in contrast to papers that use the ratio to calculate market risk. According to them, the ratio only measures the total risk of investments, in line with current academic opinion (Belkhir and Chazi 2010; Bharati and Jia 2018; Cerasi et al. 2020).

Key Message #3 The ratios of variant (iii) for the direct measurement of total bank risk are subject to ambiguous interpretations and used inconsistently.

4.2 CEO Characteristics

Contemporary research goes beyond simply using demographic variables to describe CEO characteristics, as initially proposed by Hambrick and Mason (1984). Demographic variables are often used to examine the functional background of CEOs in combination with strategic decisions. However, as proxies for a CEO's cognitive framework, they are a sufficient but not a necessary condition (Hambrick 2007). Recent research has chosen a variety of new variables.

To generate the differentiated picture for CEO characteristics used in the papers, we classify all the variables by using the results of Abernethy and Wallis (2019). According to their research, a first group of CEO characteristics refers to demographic variables, as originally introduced in UET. Demographic variables are typically exogenous and either inherently fixed (such as education) or change in a predictable manner (such as age or tenure). They are easily observable and generally introduce minimal measurement error. In addition to demographic variables, Abernethy and Wallis (2019) discover research analyzing psychological variables, social psychological variables, biological variables, and other variables. Psychological variables refer to CEO characteristics that are commonly used in personality psychology, referring to individual cognitive characteristics (like overconfidence). Social psychological variables, however, refer to CEO characteristics that are shaped by the manager's social environment and their interactions with others (like organizational identification). Biological variables pertain to research based on biology or genetics, like facial masculinity. Finally, other CEO characteristics include variables that do not fit neatly into any of the previously mentioned categories, such as CEO power. Table 2 shows the resulting clustering of CEO characteristics from our retrieved papers, based on Abernethy and Wallis' (2019) understanding and classification.

4.2.1 Effects of Demographic Variables On Banks' Risk-Taking

Demographic variables are commonly used alongside other CEO characteristics and frequently exhibit varying effects on banks' risk-taking behaviors. This aspect is particularly noticeable for CEO age, experience, and tenure.

Demographic variables	Psychological variables	Social psychological variables	Biological variables	Other managerial variables
Age	Affective traits	Political connection	Masculinity	Power
Education	Loss aversion	Social connection	-	Pay arrangements
Experience	Materialism	Religiosity	-	-
Gender	Narcissism	_	-	-
Citizenship	Optimism	-	-	-
Tenure	Overconfidence	_	-	-

 Table 2
 Clustering of CEO characteristics as represented in the surveyed papers. (Classification based on Abernethy and Wallis 2019)

Several papers suggest that CEO age is associated with lower risk-taking in banks, meaning that younger CEOs tend to increase banks' risk-taking (Berger et al. 2014; Dbouk et al. 2020; Guo et al. 2015; Hung et al. 2017; Nguyen et al. 2019). These results could be explained by a lack of experience (Berger et al. 2014), stronger career incentives for younger individuals (Romano et al. 2019; Serfling 2014), or the tendency for older age to emphasize stability and the status quo, coupled with reduced stamina for new (and risky) ideas (Hambrick and Mason 1984). By contrast, Switzer and Wang (2013) find that a CEO's age does not affect credit risk, at least for U.S. commercial banks and savings banks. Only older chief financial officers (CFOs) have a reducing effect on risk-taking. Here, the effect is more pronounced for commercial banks than for savings banks. Acrey et al. (2011) and Hagendorff and Vallascas (2011) demonstrate a positive correlation between CEO age and risktaking, which might be explained by less monitoring with increasing age (Webb 2008) or reputation concerns of young CEOs (Zwiebel 1995). Zhou et al. (2019) examine the age gap between the chair and the CEO. They find that a larger age gap is associated with lower risk-taking by banks. However, several studies show no effect of age on risk-taking (Al-Own et al. 2018; Boyallian and Ruiz-Verdú 2018; Skała and Weill 2018).

Focusing on experience, Zhou et al. (2019) show that differences in the experience levels of CEOs within the industry create heterogeneous decision-making positions. These differences lead to cognitive conflicts, resulting in more defensive decisions regarding bank risk. Ahmed et al. (2019a) discovered that CEOs with prior crisis experience are more adept at risk management, quicker to recognize early warning signals, and, as a result, their banks show improved performance and reduced risk. The results indicate that executives and directors with experience from past crises use their knowledge about bank risk to more effectively determine the optimal level of risk. However, Nguyen et al. (2019) and Zhou et al. (2019) find no effect of CEOs' experience (i.e., having been in previous executive appointments) on the risk-taking of banks.

Regarding CEO tenure, that is the number of years a CEO is in their current position, results are mixed. A main problem is that tenure is used as a proxy for different aspects, such as CEO power (Berger et al. 2016), experience (Shah et al. 2017), (over-)confidence (Bennett et al. 2015; Niu 2010), career concerns (Boyallian and Ruiz-Verdú 2018), or risk aversion (Buyl et al. 2019; Yang 2017). Results show that tenure might enhance bank-risk (e.g., Acrey et al. 2011; Guo et al. 2015; Hung et al. 2017; Shah et al. 2017), decrease bank-risk (e.g., Dbouk et al. 2020; Yang 2017), or have no significant impact on bank risk at all (e.g., Al-Own et al. 2018; Bennett et al. 2015; Bharati and Jia 2018; Boyallian and Ruiz-Verdú 2018; Buyl et al. 2019; Delgado-García et al. 2010; Hagendorff and Vallascas 2011). However, tenure is not used as a main variable of interest in any of our studies at hand, but always used as a control variable, and largely not even interpreted.

Key Message #4 Results on the effects of CEO age, experience and tenure on a bank's risk-taking are mixed.

The surveyed papers mostly agree that the decision quality of CEOs improves as their education level rises. King et al. (2016) show that banks led by CEOs with MBAs generate higher returns, pursue more innovative business models, and generate better bank performance outcomes, despite higher credit and operational risk. Hence, education raises decision quality in the assessment of risks. Similarly, Del-gado-García et al. (2010) show that formal education increases managers' propensity to take risks. In contrast, Berger et al. (2014) find that doctoral degrees have a risk-mitigating effect on a bank's portfolio risk. Hung et al. (2017) demonstrate that CEOs with more formal education (i.e., whether the CEO has a bachelor's, master's or doctorate degree) exhibit less risk-taking within Chinese banks, as measured by the Z-score. However, Nguyen et al. (2019) find a formal education from an Ivy League college has no effect on risk-taking.

Key Message #5 CEO education has mixed effects on risk-taking, but higher education correlates with improved performance, suggesting better decision quality.

Another important demographic variable is CEO gender. Skała and Weill (2018) show that female CEOs of Polish cooperative banks take fewer risks. Banks with female CEOs also have higher capital adequacy ratios while maintaining high credit risk. Hence, they provide greater overall bank stability. One reason for this may be that they are more risk-sensitive and less likely to delegate decisions. Bacha and Azouzi (2019) pick up this aspect, using a dataset of Tunisian banks. Their study uses psychological variables to analyze emotional bias in credit decisions. They similarly identify female CEOs as more risk averse. Sghaier and Hamza (2018) further find that female CEOs in bank mergers have a risk-reducing effect for the acquiring bank within merger and acquisition deals, as reflected in the bank's market risk. Both studies suggest introducing a gender quota as a measure for regulators to reduce risk-taking. Hung et al. (2017) demonstrate that female CEOs exhibit lower risk-taking behaviors in Chinese banks, as measured by the Z-score. However, Zhou et al. (2019) find no effect of CEO gender on bank risk.

Finally, Mourouzidou-Damtsa et al. (2019) demonstrate that domestic CEOs, defined as CEOs whose nationality matches the country of the bank's headquarters, tend to lower bank risks. However, they do not provide a deeper interpretation of these results. Studies from outside the banking industry assume that CEOs staying in their home country are more risk-averse and prefer 'safer' decisions (Fu et al. 2024).

Key Message #6 Female CEOs and domestic CEOs have a risk-reducing effect on banks.

4.2.2 Effects of Psychological Variables On Banks' Risk-Taking

Psychological variables examine a specific character trait that can be continuous and fixed over time. Such variables reveal the specific emotions and feelings that may influence a CEO's decision-making and risk-taking (Bacha and Azouzi 2019).

One of these emotional biases is overconfidence. Ho et al. (2016) consider CEOs to be overconfident when deferring the exercise of their stock options that were more than 100% in the money at least twice during their tenure. They find that U.S. banks with overconfident CEOs reduce lending standards and increase leverage in pre-crisis years. Consequently, CEO overconfidence positively affects credit risk, insolvency risk, and operational risk. Mahdi and Abbes (2018) examine the credit risk of conventional banks from the Middle East and North Africa (MENA) region. The overconfidence proxy used includes the loan growth rate and the net interest margin of the bank. They show that overconfidence leads to excessive risktaking and hence cost inefficiencies. Bacha and Azouzi (2019) ask CEOs of Tunisian commercial banks about their lending decisions. They find that overconfident CEOs (measured using surveys) tend to emphasize their skills and make credit decisions more intuitively. In addition to overconfidence, they subsume the variables of optimism and loss aversion under emotional bias. They find that female CEOs have higher loss aversion, tend to prefer the top-down administrative style, and delegate tasks less frequently. This result is consistent with the previous findings on female CEOs. Here, lower employee participation is equated with more risk-averse behavior. Optimistic male CEOs, on the other hand, tend to place an exaggerated amount of trust in employees' abilities.

What is striking about the studies is not only the different ways in which overconfidence is measured, but that the data are mostly obtained indirectly. The direct query of the personality traits of a CEO (e.g., via a questionnaire or an interview) is only used by Bacha and Azouzi (2019). The extent to which ratios, such as the loan growth rate and net interest margin used in the paper by Mahdi and Abbes (2018), can approximate overconfidence as CEO characteristic is doubtful.

Key Message #7 CEO overconfidence is measured inconsistently, often through indirect methods, and tends to increase risk-taking in banks.

Closely related to overconfidence is narcissism. Buyl et al. (2019) study U.S. commercial banks from 2006–2014, during the period of the global financial crisis. They find that narcissistic CEOs have higher levels of performance orientation and are more willing to take risks. This behavior leads to increased credit risk-taking. Narcissism is measured by the authors as the prominence of the CEO in the annual report, compensation (in relation to the second most highly compensated manager), relative use of first-person singular pronouns in relation to the number of first-person plural pronouns in the letter to the shareholders, number of signatures under the letter to shareholders (reversed), and number of words in the CEO's Marquis Who's Who biography. By increasing credit risk, banks recovered more slowly from the financial crisis. Other reasons could be that these CEOs pursue strategies that strain banks' resources more while making riskier and more expensive investments.

Similar results can be seen for materialistic CEOs. Bushman et al. (2018) examine the purchase of previously classified luxury items, such as houses, boats, and cars, over time. Risk-taking is represented here by market risk. The risk management of materialistic CEOs in U.S. bank holding companies from 1992 to 2013 is found to be insufficiently developed. These CEOs are also found to have fostered a corporate culture that provided more aggressive insider trades around government intervention during the global financial crisis. These practices inevitably increased the downside risk of their banks.

Lastly, Delgado-Garcia and de La Fuente-Sabate (2010) show that affective traits impact the total bank risk of Spanish banks and savings banks. To measure the affective traits of CEOs, they use the Positive and Negative Affect Schedule (PANAS) of Watson et al. (1988). The defined risks are intended to represent total bank risk. They find that negative affective traits reduce risk-taking, whereas positive affective traits have no significant influence. By using PANAS, a model from an interdisciplinary research area, they create a different way to measure psychological variables. In other words, they are not bound to archival data and an approximate calculation of psychological variables.

Key Message #8 CEO narcissism, materialism, and affective traits have been the focus of only a few studies. However, findings suggest that CEO narcissism and materialism generally lead to increased risk-taking in banks, while negative affective traits typically reduce it.

4.2.3 Effects of Social Psychological and Biological Variables On Banks' Risk-Taking

Social psychological variables address the entire social surroundings of CEOs, including social connection. Dbouk et al. (2020) show that social connectedness (measured as the number of professional and educational ties on the BoardEx database) increases insolvency risk for U.S. publicly listed banks. The most plausible explanation for this result is that social connections act as a safety net, enhancing the probability of reemployment if an individual loses their job. As a result, individuals are less concerned about making risky decisions. Hung et al. (2017) agree that the type of social connectedness matters. They find that Chinese banks with CEOs who have political experience produce higher returns and have significantly lower insolvency risk. The influence of CEOs is particularly high if they have worked in a higher administrative position in the same city. The political connections of CEOs seem to give these banks access to political firms, which tend to be less likely to default.

Another social-psychological variable is CEO religiosity. Adhikari and Agrawal (2016) describe religious CEOs (based on the proportion of religious people in the CEO's home state) as more risk-averse in terms of market risks, especially in times of crisis. Ooi et al. (2021) analyze Indonesian banks and find evidence that supports lower total bank risk among state-owned banks with Muslim and thus religiously influenced CEOs (based on the inclusion of Muslim names plus a Google search). However, this effect is not observed for other banks.

One paper in our sample includes biological variables, showing how CEOs' innate characteristics influence their decisions. Ahmed et al. (2019b) examine the facial features of the male CEOs (bizygomatic width divided by upper-face height and a proxy of the testosterone level) of publicly listed U.S. banks. They find a positive correlation between the masculinity of facial features and banks' market risk. A high

facial width-to-height ratio is associated with high testosterone levels, which serve as an indicator of the risk tolerance, potential aggression, and sensation seeking of the CEO.

Key Message #9 CEOs' social psychological and biological variables are underexplored in research on bank risk-taking, even though first results indicate potential risk-increasing (social connection and masculinity) and risk-decreasing (political connection, religiosity) effects.

4.2.4 Effects of Other Characteristics On Banks' Risk-Taking

Finally, we examine other CEO characteristics that, according to Abernethy and Wallis (2019), do not clearly fit into any of the previously defined categories. Other CEO characteristics also include CEO power, which several studies identify as a distinct CEO trait. Power arises from the design of the CEO's position within their company. In a monistic management system, CEOs may also chair the board. Such CEO duality provides less separation between management and control, which in turn leads to an increased shareholder orientation. Shareholder-oriented banks take on higher risks to create higher returns for their shareholders. Stakeholder-oriented banks that separate the CEO from the chair of the board, on the other hand, have lower risk (Altunbaş et al. 2020; Chen and Lin 2016; Faleye and Krishnan 2017). Mollah and Liljeblom (2016) confirm that CEO power, measured using an index consisting of CEO duality and indicators, such as internal recruitment and banking industry experience, increased the profitability of banks during the sovereign debt crisis but also heightened their insolvency risk.

However, some studies present a contrasting perspective. They suggest that, due to the higher concentration of power and increased responsibility, CEOs tend to act more risk-averse (Akbar et al. 2017; Ben Zeineb and Mensi 2018; Byrd et al. 2012; Pathan 2009). These CEOs are also associated with higher capitalization rates and lower risk-weighted assets (Anginer et al. 2016; Luu 2015). Conversely, several studies find no significant effect of CEO duality on banks' risks (Aljughaiman and Salama 2019; Boyallian and Ruiz-Verdú 2018; Buyl et al. 2019; Farag and Mallin 2017; Hagendorff and Vallascas 2011; Switzer and Wang 2013).

Another indicator of CEO power could be the extent of a CEO's ownership in their own bank, transforming them from mere managers to co-owners. This trait has been identified as a significant CEO characteristic in multiple studies. Pathan et al. (2016) describe the relationship between managerial ownership and risk-taking in U.S. bank holding companies as convex. While low to medium levels of managerial ownership promote risk aversion, higher levels align managers with shareholders, encouraging risk-seeking behavior. However, many studies do not find any significant effect of CEO ownership on banks' risk-taking (Akbar et al. 2017; Belkhir and Chazi 2010; Berger et al. 2016; Byrd et al. 2012; Delgado-García et al. 2010; Guo et al. 2015; Faleye and Krishnan 2017; Shah et al. 2017). Instead, Berger et al. (2016) observe an increase in risk due to share ownership by lower levels of management over time.

The threat of turnover—specifically, job security or the risk of job losses—is another CEO characteristic highlighted in the studies under review and might be position or fear for their job.

Key Message #10 There is no consensus on how other CEO power, that is CEO duality, CEO ownership, or CEO turnover threat, affects banks' risk-taking.

have a psychological effect on whether CEOs feel secure and comfortable in their

Finally, other CEO characteristics encompass studies that view pay arrangements as individual CEO traits that influence decision-making. Two distinct types of incentives can be identified in compensation contracts: delta and vega. Delta measures the sensitivity of pay to performance, quantifying the change in the CEO's wealth in currency terms for a 1% change in stock price. Vega, on the other hand, measures the sensitivity of pay to risk, indicating the change in the value of the CEO's wealth for a 0.01-unit change in stock return volatility (DeYoung et al. 2013).

A look at studies with vega shows that CEOs with a higher compensation vega take more systematic, idiosyncratic, credit, operational, and total risk (Bai and Elyasiani 2013; DeYoung et al. 2013; Sun 2018; Yang 2017). CEOs with a high compensation vega also tend to pursue riskier acquisitions (Hagendorff and Vallascas 2011). However, Al-Own et al. (2018) discovered that CEO compensation vega is inversely related to the proportion of credit default swaps (CDS) held by banks. They also noted that the extent of CDS held by banks correlates with increased default risk during the period preceding the 2007 financial crisis. Therefore, limiting the use of stock options could encourage hedging against credit risk, although this strategy may not necessarily reduce default risk.

Compensation delta was examined by Fabrizi (2018) who finds that CEOs with a high compensation delta executed riskier securitization transactions before and during the global financial crisis. An additional effect emerges: banks with high leverage tend to have better long-term performance. CEOs with delta compensation and low leverage, in turn, want to compensate for this disadvantage by taking higher risks (Bharati and Jia 2018).

Similarly, Boyallian and Ruiz-Verdú (2018) demonstrate that CEOs with high delta compensation in more leveraged banks tend to take greater risks. As the CEO's goal is to increase firm value and subsequently the stock price, they favor shareholders because any increase in firm value above the bank's debt benefits the shareholders of leveraged banks. These findings can also be applied to CEO compensation vega. If a CEO receives stock options, the growing convexity within the stock option value and stock price relation leads to higher risk-taking. Consequently, CEOs align themselves with the interests of shareholders and thus disadvantage debtholders (Belkhir and Chazi 2010).

In addition to the risk-increasing effects of a higher compensation vega and delta, some risk-reducing effects of other pay arrangements can be observed. For example, CEOs with inside debt holdings (i.e., pension benefits and deferred compensation) reduce the interest rate risk of their banks. One way of incentivizing a CEO to invest more of their money in their bank in the long term could be tax benefits (a reduced marginal tax rate) linked to deferred compensation (Belkhir and Boubaker 2013). Banks with CEOs who held a high proportion of inside debt relative to inside equity had lower insolvency risk during the global financial crisis (Bennett et al. 2015; van Bekkum 2016). Jiang et al. (2019) demonstrate similar effects in Chinese banks. Faleye and Krishnan (2017) show that a higher proportion of equity compensation in a CEO's total compensation package correlates with lower credit risk in U.S. banks. Houston and James (1995) study bank compensation policies during the deregulation in the 1990s. They find a positive correlation between equitybased incentives and firm value. Thus, they conclude that compensation policies are not associated with excessive risk-taking. Ahmed and Ndayisaba (2016) note that when management's variable remuneration is tied to long-term components, there is a decrease in insolvency risk among Australian banks. Anginer et al. (2016) demonstrate that bank CEOs who receive a significant portion of their compensation in stock or options often opt for higher capitalization rates to protect their wealth.

Acrey et al. (2011) assert a contrary view, finding that short-term CEO compensation mechanisms, such as bonuses and options, do not appear to elevate risks. Similarly, Shah et al. (2017) identify a negative correlation between CEO bonuses and bank risk during the pre-financial crisis period. In the post-financial crisis period, both restricted shares and options awarded to CEOs were found to reduce banks' risk-taking behaviors. Similarly, Guo et al. (2015) examine too-big-to-fail banks before and during the financial crisis. They find that performance-based compensation can improve bank performance and even reduce the probability of default, despite the presence of higher risk. At the same time, overly variable compensation can lead to excessive risk-taking, which can decrease the bank's performance and increase the probability of default (Cerasi et al. 2020; Uhde 2016). The effects are influenced by the number of the compensation components, which increases with CEO tenure.

Finally, Liu et al. (2017) examine pay arrangements, risk-taking, and bank mergers. They demonstrate that if a bank's risk increases due to a merger, CEOs receive lower bonuses. In contrast, Nguyen et al. (2019) find that the ratio of bonus to total salary has no effect on banks' risk-taking, but high equity compensation tends to increase risk-taking.

Key Message #11 Higher compensation vega and delta in CEO pay tend to increase banks' risk-taking, while insider debt holdings and variable remuneration with long-term components generally tend to reduce banks' risk-taking.

4.2.5 Effects of Moderators On the Effect of CEO Characteristics On Banks' Risk-Taking

Previous research on UET has identified moderators, such as executive job demands, that may influence the relationship between CEO characteristics and firm outcomes (Hambrick and Finkelstein 1987; Hambrick et al. 2005; Wowak and Hambrick 2010). However, the original moderators identified are not featured in the bank risk papers we analyzed. Instead, a few studies show that board power influences the relationship

between CEO characteristics and bank risk. Board power refers to the extent to which boards can influence company decisions and outcomes (Hoye and Cuskelly 2003) and is thus a phenomenon that is jointly created by CEOs and other board members. Board power can be evaluated based on characteristics such as board size, the presence of committees, and number of independent directors.

Examining the details, Ahmed and Ndayisaba (2016) analyze the relationship between CEO pay arrangements (the CEO characteristic of interest) and risk-taking in Australian financial institutions. Their study reveals that Australian financial institutions with larger boards are slower and less effective in their oversight. This indicates lower board power, which in turn leads to greater sensitivity to expected default probability in CEO remuneration agreements. Similarly, the presence of board audit committees, which reflects greater board power, is associated with reduced sensitivity to expected default probability in CEO pay structures. Similarly, Chen and Ebrahim (2018) find that the non-linear relationship between the threat of CEO turnover (which is interpreted as low CEO power) and their risk-taking behavior is primarily observed in banks with a majority of independent directors, in other words, banks with good monitoring. Altunbaş et al. (2020) investigate the moderating effects of board size and board independence (both as indicators of board power), as well as CEO power (the key CEO characteristic), on risk-taking, but find only minimal significant effects. Buyl et al. (2019) analyze the effect of CEO narcissism, the CEO characteristic of interest, on bank risk. They demonstrate that having an outside director with banking experience on the board moderates this relationship by mitigating the effects of CEO narcissism. Ooi et al. (2021) analyze the impact of religious beliefs, specifically those of Muslim CEOs, on banks' risk-taking behaviors. They show that the religiosity of the board of directors is a relevant moderator. The findings reveal that a greater presence of Muslim board members markedly decreases the risk-taking incentives for Muslim CEOs. The authors suggest that boards dominated by Muslim members develop a distinct Islamic approach to managing risk, which in turn affects Muslim CEOs' risk-taking behaviors. Uhde (2016) examines how board gender diversity influences the primary effect of excessive variable compensation (CEO characteristic) on bank risk. They find some evidence that this negative effect is weaker when there are more women on the board of directors.

Key Message #12 Few studies explore the moderating effects between CEO characteristics and banks' risk-taking behaviors. Board power acts as a significant moderator, reducing the effect of CEO characteristics on banks' risk-taking, regardless of whether the effect is positive or negative.

4.2.6 Effects of the Objective Situation On CEO Characteristics and Banks' Risk-Taking

As outlined in Hambrick and Mason's (1984) seminal work, UET also addresses CEO selection through the concept of the "objective situation," a term that refers to internal and external factors that create self-reinforcing dynamics. This situation occurs when firms with certain characteristics seek CEOs with matching traits, while CEOs with specific attributes are attracted to firms that align with their own qualities.

However, the papers in our review sample give little explicit attention to the objective situation. One of the few exceptions is Mourouzidou-Damtsa et al. (2019), whose primary focus is the impact of national culture (individualism, hierarchy, and trust) on bank risk in Europe. Additionally, they examine the effect of CEO citizenship on bank risk (see the section on the effect of demographic variables on banks' risk-taking behavior). Regarding the "objective situation," the authors conclude that the design of CEO compensation structures should reflect cultural influences and, consequently, banks' risk-taking behaviors.

Regulation is another external factor within the "objective situation." Jiang et al. (2019) examined the impact of a regulation that requires banks to defer 40–50% of their senior managers' annual variable compensation for at least three years. The findings indicate that prior to this regulation, banks with higher risks deferred less executive compensation compared to those with lower risks. However, following the regulation's implementation, banks increased the deferral of executive compensation and those with higher risk profiles before showed a higher reduction of insolvency risk. Thus, regulation can indeed influence banks' risk-taking by adjusting the CEO incentive compensation paid. Similarly, Hung et al. (2017) show that CEOs with political experience had significantly lower insolvency risk, an effect that was especially pronounced before the anti-corruption campaign by Chinese President Xi Jinping. The exogenous shock of this campaign weakened political connections of CEOs and influenced CEO decision-making.



Fig. 2 Upper echelons perspective of CEO characteristics and banks' risk-taking. (Based on Hambrick and Mason 1984; and the main results of this literature review)

Key Message #13 Few studies explore the objective situation's influence on CEO selection, where national regulations and cultural contexts impact banks' CEO choices and characteristics.

This expansion makes it possible to assign thematic clusters to the 18 CEO characteristics identified in the surveyed literature. In Fig. 2, these characteristics and the main results on banks' risk-taking are clustered and condensed.

5 Future Research Directions

In our above analysis, we focused on the effect of CEOs' characteristics on banks' risk-taking, considering their specific business models and unique risks. We examined various upper echelon characteristics and their impact on risk-taking and specific risk-related outcomes. Additionally, we analyzed the moderating effects identified in the literature and the role of the 'objective situation,' whereby companies seek upper echelons with specific characteristics. We summarized the main results in 13 key messages, demonstrating that despite the stringent regulations governing financial institutions—which might serve as a boundary condition for UET—UET indeed seems to be broadly applicable to banks.

While the methodological and topic-related results have already been presented in Sect. 5 and summarized in Fig. 2, we want to highlight three additional insights not previously mentioned. First, most research on CEO characteristics and banks' risktaking focuses on pay arrangements. This underscores the particular interest of researchers and regulators in understanding incentive structures. Second, the objective situation and potential moderators are rarely researched, with board power as the notable exception, reflecting public interest in regulations and reducing agency problems. Third, CEO age and tenure are frequently used as control variables and proxies for various constructs, yet they do not yield consistent results. This inconsistency suggests a need for further research into the mechanisms behind tenure and age. Based on these findings, we propose five research avenues for further exploration within the banking industry.

5.1 Research Avenue 1: Measuring CEO Characteristics—Strategies and Methods

While most demographic and some other variables can be collected using archival data, archival research cannot fully grasp CEOs' psychological, social psychological, biological, and other characteristics (cf. Abernethy and Wallis 2019; Hanlon et al. 2022). One example is CEOs' individual religiosity. The extent to which conclusions can be drawn about the religiosity of a CEO from the number of religious people in the home state of the CEO—as assumed by Adhikari and Agrawal (2016)—remains highly doubtful. Religiosity is person-related and can therefore vary—even within highly religious regions. Even a query on the religious affiliation of a CEO would likely be insufficient, as it provides no in-depth information on individual religiosity. Similarly, various proxies for overconfidence have been identified. While some, such

as holding vested options, have been validated (see Kaplan et al. 2020), other proxies, like a high loan growth rate of the bank, as used by Mahdi and Abbes (2018), remain questionable.

On the one hand, it is essential to more rigorously validate the proxies used, ensuring they accurately measure the intended purpose. On the other hand, there is a need for new and more innovative proxies, particularly in the areas of psychological, social psychological, biological, and other variables. This includes (among others) social connections, religiosity, materialism, and masculinity.

One approach to address this aspect is to obtain CEO characteristics directly through questionnaires or interviews rather than relying solely on archival data. Although creating and analyzing such data requires greater effort compared to analyzing databases, this method can provide a more nuanced understanding of the factors driving CEOs' influence on banks' risk-taking. Some researchers, primarily focusing on small and medium-sized enterprises in non-bank contexts, have already incorporated CEO surveys (e.g., Iguchi et al. 2022 on religiosity; Wales et al. 2013 on narcissism; Ezzi et al. 2016 on emotional intelligence) and have obtained fascinating results based on direct measures of various CEO characteristics. In our sample, only one paper measured CEO overconfidence directly using a survey (Bacha and Azouzi 2019). Questionnaire studies are rarely the focus of the finance literature and cannot always be applied, especially with larger and listed companies, but this methodology could explain risk behavior in more detail. Questionnaire-based survey research can thus enhance the quality and depth of the available data and open up the possibility of achieving different results from those obtained using archival data. Questionnaire data can also be enriched with in-depth interviews conducted with CEOs (Cronholm and Hjalmarsson 2011).

Questionnaire-based research on CEO characteristics and banks' risk-taking could also use well-established measurement scales from psychology. Approaches such as the five-factor model of Costa and McCrae (1992) and 10-item personality inventory of Gosling et al. (2003), a shorter version of the Costa-McCrae model, are widely used in behavioral research. The 10-item personality inventory measures the Big Five personality characteristics (extraversion, agreeableness, conscientiousness, emotional stability, and openness), which are well established in psychology research (Costa and McCrae 1992). Likewise, CEO narcissism could be mapped using the subscale from the Narcissistic Personality Inventory-13 proposed by Gentile et al. (2013). Jackson (1984) has published several scales for personal characteristics, such as sentience and succorance, in his Personality Research Form. For affective traits, the PANAS approach proposed by Watson et al. (1988) has been established. Likewise, Schaefer et al. (2004) study overconfidence in two ways. Finally, questionnaire constructs could be used to better determine the individual religiosity of CEOs. For instance, Huber and Huber (2012) use the Centrality of Religiosity Scale, which measures five dimensions of religiosity.

However, we acknowledge that directly measuring CEOs' characteristics poses challenges, including generally low survey response rates among top managers (Cycyota and Harrison 2006) and potential distortion caused by social desirability bias (Oesterle et al. 2016). Additionally, CEOs may be hesitant to respond to inquiries about sensitive topics (Zhu and Chen 2015; Cycyota 2002). Consequently, there is

a need for improved and novel proxies to accurately measure a person's values and traits.

One possible solution is the enhanced use of text, video, and speech produced by CEOs. In today's world, an abundance of data is available that can be used to measure CEOs' traits, such as media interviews, social media posts, earnings calls, annual reports, press releases, and even biographies and memoirs. Non-banking literature has already incorporated content analysis; for example, Malmendier and Tate (2008) measure overconfidence by analyzing the use of more confident, positive, and optimistic words, and fewer unconfident, negative, and pessimistic terms. Newer linguistic approaches go beyond mere word counting and consider words, phrases, and combinations of words used in specific contexts, as demonstrated by Harrison et al. (2019), who developed a sophisticated method to measure Big Five personality traits. Ou et al. (2024) develop a measure of CEO humility based on structural indicators in CEO speech, such as the relative frequency and length of comments during earnings calls. Applying these methods to other upper echelon characteristics, particularly in the banking industry, could provide new insights and valuable information.

Furthermore, research should more frequently scrutinize existing measures of CEO traits rather than solely rely on previously published proxies. For instance, CEO narcissism is often measured by analyzing the frequency of first-person singular pronouns compared to first-person plural pronouns in speech. However, Carey et al. (2015) found an insignificant relationship between the use of these pronouns and actual narcissism. Another well-known indicator, developed by Chatterjee and Hambrick (2007), involves the number and size of CEO photos in annual reports. Yet, Koch-Bayram and Biemann (2020) report only moderate correlations between this narcissism index and actual narcissism.

5.2 Research Avenue 2: Leveraging UET's Core Tenets

Many papers in our sample do not specifically rely on UET or refer to any theoretical framework. Applying the lens of UET could provide a more specific and nuanced understanding. Consequently, this would provide more answers to the question raised by Hambrick (2007): Are CEOs with specific characteristics attracted to certain companies, or do companies with specific values seek out CEOs with particular traits (referred to as the 'objective situation' by Hambrick and Mason 1984)? These aspects have been largely under-researched, especially within the banking context. Moreover, it is essential to consider that CEOs' decisions might be influenced not only by their information processing biases, as posited by UET, but also by the expectations of others, particularly the board of directors and their characteristics. Addressing these aspects also requires more rigorous statistical methods, such as Three-stage Least Squares (see, e.g., Shi et al. 2021; Mukherjee and Sen 2022).

Furthermore, banking research should more strongly incorporate the interaction between CEO characteristics and other power holders within banks, notably the top management team (see Georgakakis et al. 2022) and the board of directors. For example, a more gender-diverse board of directors appears to be better at monitoring, which leads to improved CEO decisions (Adams and Ferreira 2009; Bennouri

et al. 2018). Moreover, the top management team and CEO's experiences interact and play a crucial role (Reimer et al. 2018). Similarly, narcissism at both the CEO and top management team levels may interact (Junge et al. 2024), potentially influencing risk-taking behavior. Furthermore, the interplay between the CEO and Chief Financial Officer (CFO) (see Harrison and Malhotra 2024; Firk et al. 2024) and that between the CEO and board chair is particularly intriguing (see Harrison et al. 2023) and warrants further investigation in the banking context.

As shown in our above key messages, there is hardly any research in banking focusing on the 'objective situation' and 'moderators' of the relationship between CEO characteristics and firm outcome and firm performance. Potential avenues for further research include national culture as 'objective situation' (as shown in the mergers & acquisitions context by Oehmichen et al. 2022, for example) as well as ownership status, as the effect of CEO characteristics on banks' risk-taking might be different within family firms (see Chen et al. 2019) or state-owned enterprises (Kim 2018). When it comes to the moderators, existing studies solely focus on board power, which also captures managerial discretion to some extent, whereas other moderators developed by the UET literature (Hambrick and Mason 1984; Hambrick and Finkelstein 1987; Hambrick et al. 2005; Hambrick 2007; Wowak and Hambrick 2010), such as pay arrangements and executive job demands, remain unexplored in the banking industry. Such research could yield important information on how the impact of CEO characteristics on risk-taking could be curbed or even extended.

5.3 Research Avenue 3: Revisiting and Refining Banks' Risk-Taking Measurements

Three of our key messages refer specifically to the way banks' risk-taking is measured. We criticize the heterogeneity and lack of clear interpretation of the variables. To eliminate the arbitrary use of the term "risk-taking," the concept must be redefined. A distinction should be made between the consideration of individual risk types (i) and total bank risk (ii and iii). In the case of individual considerations, a more refined analysis is necessary. Starting with credit risk, we propose a more detailed classification of credit risk variables based on the degree and scope of credit failure (probability). The reason for this classification is the arbitrary use of existing variables to explain credit risk. We suggest distinguishing between loans that may be at risk of default and loans that have already been defaulted. This would lead to three groups: impaired loans, non-performing loans, and loan write-offs. To select the appropriate variable, it is necessary to define in advance which kind of credit risk should be measured. Such a classification would help avoid unspecific statements about credit risk.

Credit risk variables can also be divided into those used in ex-post and ex-ante analyses. An ex-post view examines loans that have already been defaulted using, for example, non-performing loan ratios (Nguyen et al. 2019; Ooi et al. 2021). According to Chen and Lin (2016), the level of non-performing loans is positively correlated with bank failure. Loan loss provisions can be used to measure the exante view of credit risk. These express the risk coverage for loans that might default

in the future (Skała and Weill 2018; Mourouzidou-Damtsa et al. 2019; Mahdi and Abbes 2018).

Insolvency risk also requires a more fine-grained consideration. Some studies use the Z-score, while others use the distance to default model, without providing a rationale for their choices. Indeed, a clear rule for deciding when a variable should be used is lacking. While the distance to default criterion represents a bank's expected probability of default based on option price theory, the Z-score predicts the potential inability to pay using the standard normal distribution. Further, the Z-score can be defined in different ways, while the key figures used in the literature to define the reference value also differ. They address liquidity, leverage, activity, and profitability aspects (Gaba et al. 2019). In the distance to default model, the size of the distance-to-capital ratio depends only on the degree of the capital adequacy threshold and volatility of the bank's assets, while size is also affected by the bank's asset-to-liability ratio in the Z-score method. Chan-Lau and Sy (2007) show that the difference between these two measures is only negligible when the analyzed assets (i.e., share prices of banks) are highly volatile. Gaba et al. (2019) state that the distance to default model makes more accurate predictions when a bank suffers from financial distress.

Operational risks are approximated in the literature using metrics that address a bank as a whole. They are not attributed to a division of a bank or a single capital instrument. Thus, the metrics used in the papers in our sample merely represent the riskiness of the whole business. The consideration of individual types of operational risks, for which measurement is complex, can thus be identified as a research gap. An operational loss can be incurred from errors related to processes, people, and systems (Ames et al. 2015). The Bank for International Settlements (2001) clusters operational risk into seven types: internal fraud; external fraud; employment practices and workplace safety; clients, products, and business practices; damage to physical assets; business disruption and system failures; and execution, delivery, and process management. Recent studies such Chernobai et al. (2021) revisit this classification. They find that the risk of operational failures also depends on the complexity of a bank. Their results can be used to identify additional variables for operational risk.

When analyzing market risk, the specification should consider systematic risk. As our results show, systematic and idiosyncratic risk variables are combined in the literature to explain total market risk. In this context, systematic risk should include both potential losses and losses from possible extreme events. Extreme events, measured, for example, by the marginal expected shortfall, are not considered in all the studies, but are the foundation for estimating capital losses, especially in times of crisis (Acharya et al. 2017).

Few studies analyze equity and liquidity risks, as further special risk types, which is a gap for future research. In particular, a detailed analysis of liquidity risk and its impact on a bank's risk-taking might by interesting, as banking authorities have recently aimed to establish and improve measures of liquidity risk (Chen et al. 2021).

By contrast, variables representing total bank risk are often used in the literature. In our sample, total bank risk is measured either by a combination of several risk types (ii) or by regulatory ratios (iii). The use of regulatory ratios might have the

advantage of expressing a view of total bank risk that is consistent with supervision. As these ratios must be reported by all banks, they are comparable, allowing general statements about the risk level to be made. The combination of risk types is arbitrarily chosen in several of the analyzed papers and therefore inconsistent. However, the idea of combining risk types could be an interesting approach for future research, if the business models of banks can be represented in one metric. Savings and cooperative banks cannot be equated with investment banks due to their different business models and resulting different risk strategies (Bülbül et al. 2019). Consequently, they are exposed to these risk types to varying degrees. We therefore propose defining bank type-specific ratios that cover the typical risks associated with a specific business model. For example, the Basel Committee on Banking Supervision identifies credit risk, liquidity risk, operational risk, and insolvency risk as the most significant risk exposure categories for commercial banks (Abid et al. 2021). For investment banks, focusing on the combination of credit risk and market risk might be more conceivable in this context. The idea is to weight risk types in a way that makes banks with the same business model or in the banking sector comparable. Thus, an increase in such total bank risk ratios could be an early warning signal of financial distress for banks adopting a specific business model or operating in specific banking sectors. Further research should aim to identify the most relevant risks for each type of bank and design a suitable way to aggregate them into a total bank risk ratio.

5.4 Research Avenue 4: Enhancing Validity and Reliability of Research—A Focus On Control Variables

Using proxies instead of direct measures of CEO traits and values increases the potential problem of validity; that is, do these proxies truly measure what they intend to measure? This issue is compounded by the fact that many CEO traits, such as narcissism, overconfidence, and overoptimism, are theoretically and empirically interconnected (Brunzel 2021). Additionally, certain characteristics, like CEO age and tenure, are naturally linked; for example, a 30-year-old CEO cannot have 40 years of tenure. Consequently, we advocate for more comprehensive CEO controls beyond age, tenure, and gender. Including proxies for interrelated traits could shed more light on the traits of real importance.

Furthermore, the studies in this review investigated the influence of single CEO characteristics on a bank's risk-taking. For instance, materialistic and masculine CEOs are likely to promote market risk (Ahmed et al. 2019b; Bushman et al. 2018). Social connections are associated with insolvency risk (Dbouk et al. 2020; Chen and Ebrahim 2018), and narcissistic CEOs are found to increase credit risk (Buyl et al. 2019). However, CEOs typically possess multiple characteristics. Future research could explore the combined effects of traits such as materialism and narcissism on a bank's risk-taking, as well as how these characteristics influence each other. Such joint considerations could reveal neutralizing or reinforcing effects. Psychological and social psychological CEO characteristics could also be examined in conjunction with biological CEO attributes. For example, Canace et al. (2020) identify a positive correlation between CEO salary, CEO competencies and CEO attractiveness.

Consequently, developing individual CEO profiles and examining their influence on a bank's risk-taking could provide deeper insights.

5.5 Research Avenue 5: Broadening the Scope of CEO Characteristics

Despite the extensive analysis of various CEO characteristics in the context of banks' risk-taking (see Fig. 2), there remain numerous traits that warrant further examination. These include:

- Big Five Personality Traits: Investigating traits such as openness, conscientiousness, extraversion, agreeableness, and neuroticism (Mahmoudian et al. 2021) to understand their influence on banks' risk-taking.
- Dark Triad Traits: Expanding the analysis to include psychopathy and Machiavellianism (Cesinger et al. 2023), in addition to narcissism, to examine how these traits influence banks' risk-taking.
- Resilience (Qiao et al. 2022): Examining a CEO's ability to recover quickly from difficulties and adapt well to adversity, stress, or significant sources of stress on banks' risk-taking.
- Emotional Intelligence: Analyzing the role of emotional intelligence (Azouzi and Jarboui 2013), that is the ability to recognize, understand, manage, and influence one's own emotions and the emotions of others in the banking context.
- Political Ideology: Studying how a CEO's political beliefs shape their strategic choices (Elnahas and Kim 2017).
- Empathy: Understanding the impact of empathetic leadership (König et al. 2020), that is the ability to understand and share the feelings of another person, on banks' risk-taking.
- Humility: Investigating how humility in leadership (Ou et al. 2018, 2024) influences decision-making processes of banks.
- Private Life Events: Examining how private life events (see van Doorn et al. 2023) of CEOs, such as marriage, relocations, childbirth, illnesses, accidents, or divorce, influence the banks' risk-taking behavior.
- CEO Attractiveness: Looking into facial attractiveness (see, e.g., Ling et al. 2022), which might impact decision-making processes and should be examined in the banking industry as well.
- Paranoia: Examining a CEO's tendency "toward suspicion, feelings of ill will or resentment, mistrust, and belief in external control or influence" (Ridge et al. 2024) may influence banks' risk-taking behaviors.

By expanding research to include these additional CEO characteristics, we can gain a more comprehensive understanding of how different CEO characteristics influence strategic decision-making and organizational outcomes.

We summarized relevant research questions with regard to our five research avenues in Table 3.

Table 3	Suggested research avenues and questions
Research avenue	Specific questions for further research
Research avenue 1	 How can direct measurements of psychological traits, such as religiosity or narcissism, enhance research on UET? What innovative proxies can be developed to accurately measure CEO values and traits using text, video, and speech data? How can linguistic approaches be utilized to derive better proxies for CEO traits and values? What do the various proxies for CEO traits and values used in the literature, such as different measures of narcissism, actually measure? Do they correlate with psychological assessments of these values and traits? Which indicators should be discontinued in future research due to their lack of validity?
Research avenue 2	 How do specific CEO characteristics influence their attraction to certain companies, and vice versa, particularly within the banking sector? What role do the characteristics of the board of directors play in moderating the impact of CEO traits on banks' risk-taking decisions? What role do the characteristics of the board of directors play in the appointment of CEOs with specific traits and values? How can methodology help differentiate between a CEO's bounded rationality and the board's expectations in the decision-making process? How does national culture act as an objective factor influencing the relationship between CEO characteristics, decision-making, and bank outcomes? How do executive job demands moderate the influence of CEO characteristics on banks' risk-taking? How do pay arrangements moderate the influence of CEO characteristics on banks' risk-taking?
Research avenue 3	How can a more detailed classification of credit risk variables improve the accuracy of risk assessment in banks? What are the various aspects and classifications of banks' operational risks, and how do CEO characteristics affect them? How do CEO characteristics affect banks' equity and liquidity risks? What are the bank type-specific risk ratios that are associated with a specific business model, and how do CEO characteristics affect them?
Research avenue 4	Which CEO characteristics affect a bank's risk-taking when a more comprehensive set of CEO control variables is included beyond age, tenure, and gender? What are the combined effects of CEO traits, and how do these traits interact?
Research avenue 5	 How do the Big Five personality traits influence banks' risk-taking? What are the impacts of dark triad traits, such as psychopathy and Machiavellianism, on banks' risk-taking? How does a CEO's resilience affect a bank's risk-taking? In what ways does emotional intelligence contribute to decision-making within the banking industry? How does a CEO's political ideology affect a bank's risk-taking? How does a CEO's political ideology affect a bank's risk-taking? How doe empathy, humility, and CEO attractiveness influence decision-making processes in banks? How can private life events of CEOs explain banks' risk-taking? How does CEO paranoia influence banks' risk-taking behaviors?

 Table 3 Suggested research avenues and questions

6 Conclusions and Implications

The banking sector plays a fundamental role in today's society and economy by providing liquidity, saving opportunities, and payment services. Banks are the primary channel for monetary policy and are subject to a different set of risks than other business models. Consequently, their risk-taking differs fundamentally and banks are subject to extensive regulation and supervision. At the same time, several recent studies indicate that some CEO characteristics may have an impact on banks' risktaking, despite close regulation and supervision. Since existing reviews of UET have largely ignored the applicability of UET in strongly regulated industries, we have focused this paper on the potential effects of CEO characteristics on banks' risktaking behavior. Against this backdrop, the present paper provides a state-of-the art overview, contributes to a better understanding of the applicability of UET to the banking industry, and explores future paths relevant to academic research.

We demonstrate that risk-taking by banks is not calculated uniformly. It is measured as the change in risk within a single risk type, as an aggregation of several risk types to represent total bank risk, or as regulatory ratios. Our findings also indicate that demographic, psychological, social psychological, biological, and other CEO characteristics may all effect banks' risk-taking: for instance, female CEOs have a risk-reducing effect, and domestic CEOs also tend to reduce risk. In contrast, traits such as narcissism, materialism, social connection, high compensation vega, and high compensation delta are associated with increased risk. Affective traits, religiosity, political connections, and variable remuneration with long-term components contribute to reducing risk. However, there is mixed evidence regarding other CEO traits and values, such as age, education, tenure, and experience.

Research on moderators of this relationship and the 'objective situation,' which influences a company's choice of CEOs with specific traits and values, is rather scarce. Traditional UET literature highlights industry characteristics and company strategy as objective situations, as well as pay arrangements, managerial discretion, and executive job demands as moderators (Hambrick and Mason 1984; Hambrick and Finkelstein 1987; Hambrick et al. 2005; Hambrick 2007; Wowak and Hambrick 2010). However, these factors are rarely researched within the banking context. Board power has been identified as a relevant moderator. The results indicate that the effect of CEO characteristics on banks' risk-taking is mitigated by higher power in the board of directors. Given that much regulation tends to address corporate governance (Lu et al. 2022), we could thus infer that more stringent regulation in the banking industry may indeed contribute to weakening the effects of individual top managers such as CEOs on banks' risk-taking. While this line of thought would indeed depict strong regulation as a boundary condition for the applicability of UET, we need more research on the banking industry and beyond to ascertain this conjecture.

Based on the results of our systematic literature review and analysis, we developed five research avenues and associated research questions to guide future research. These avenues include new methods for measuring CEO characteristics (such as linguistic approaches), exploring new areas of research based on the developments of UET (such as moderators and the objective situation), refining the measurement of banks' risk-taking, addressing questions regarding control variables, and identifying additional CEO characteristics of major interest (such as emotional intelligence or CEO attractiveness).

The major contributions of our paper are to demonstrate that, despite the high level of regulation and strong state control of banks and financial institutions, which may serve as a boundary condition for UET, the characteristics of upper echelons still impact banks' risk-taking and, consequently, their performance. This underscores the high relevance of UET for this industry, although we reinforce the need to engage in further research on the boundary role of regulation for UET. In addition, our paper highlights that UET may serve as a useful, but so far under-leveraged, lens to guide future research on top manager characteristics in finance.

Our research also aids practitioners from banks, such as decision-makers responsible for hiring bank CEOs, by helping them develop a catalog of criteria for CEO characteristics that align with the desired and aspired levels of risk-taking for their banks. Academics may find avenues for further research in our work, contributing to the development of this crucial area of study for our economy. Finally, our results also have implications for regulators. If the goal is to minimize banks' risk-taking to the greatest extent possible, additional regulations are necessary. This includes, for example, implementing good corporate governance practices and establishing specific pay arrangements.

7 Appendix

7.1 Review Methods

7.1.1 Identification of Relevant Studies

To determine the impact of CEO characteristics on banks' risk-taking, we followed the evidence-based approach of Tranfield et al. (2003) and conducted a systematic literature review. In particular, we started our search for the relevant literature with a comprehensive keyword search in electronic databases (Hiebl 2023; Simsek et al. 2021). The CEO keywords consisted of "Chief Executive Officer*" and the keyword acronym "CEO*". The set of bank keywords included "bank*", "financial institution" and "financial firm". The risk-taking keywords only consisted of "risk-taking". We grouped the three keyword types and searched for term triplets in the titles, abstracts and keywords of the papers. We used the following electronic databases: EBSCO Business Source Complete, Emerald, Elsevier, JSTOR, Web of Science and Wiley Online Library. Since no literature reviews on the topic exist, we did not narrow the period of consideration. Hence, we identified 1740 papers. The selection process is shown in Table 4.

Removing duplicates reduced our sample to 1281 papers. To safeguard a minimum standard of research rigor, we required all papers to be published in journals included in the 2018 ABS Guide. These rankings serve as a quality indicator of papers for researchers and practitioners (Currie and Pandher 2020) and are often used as a quality indicator in the finance literature and literature reviews (Hiebl 2023; Xu

	Keyword search	After duplicate removal	After reduction to articles published in journals that are included in the Association of Business Schools (ABS) Guide*	After ap- plication of A/B/C method**	Total hits
Forward search	1740	1281	764	38	38
EBSCO Business Source Complete	135	89	67	20	-
Emerald	856	559	349	0	_
Elsevier	19	19	17	13	-
JSTOR	420	355	184	1	-
Web of Science	64	52	32	2	-
Wiley Online Library	246	207	115	2	-
Backward search	-	-	_	-	20
Total	_	-	_	-	58

 Table 4
 Search and selection process and sample construction

* Articles that meet our quality threshold based on the ABS journal ranking lists for 2018

** Papers with classification A or B following the A/B/C logic of Pittaway et al. (2004)

et al. 2018; Zhao et al. 2021). We acknowledge that rankings in general, and the ABS Guide in particular face certain limitations and criticism (e.g., Tourish and Willmott 2015). In addition, the ABS Guide features a relatively broad range of journals that are certainly not all of comparable quality. However, as suggested by Morris et al. (2009), journals included in the ABS Guide at least feature some minimum level of quality, which is why we use this guide for filtering out publication outlets of questionable quality (e.g., predatory journals, cf. Hiebl 2023). This focus on ABS-listed journals reduced our sample reduced to 764 papers. To ensure a structured and transparent content analysis, we followed Pittaway et al.'s (2004) suggestion of clustering the sample into particularly relevant papers ("A" papers), potentially relevant papers ("B" papers) and papers with little or no relevance ("C" papers; Hiebl 2023). Thus, only "A" and "B" papers were included in the sample. The A/B/C classification was determined and performed by the first author and cross-checked by the other authors based on the following criteria:

- A. A CEO characteristic is the main topic of the paper and the dependent variable represents banks' risk-taking.
- B. The paper examines the objective situation or moderators. CEO characteristics are not the main topic of the paper but are at least included in the results as a control variable (e.g., in the regression analyses). The research paper deals with banks' risk-taking at least partially.
- C. Despite appropriate keywords, the paper does not match the core topic of our investigation (i.e., CEO characteristics and banks' risk-taking).

The underlying content analysis examined the extent to which the keywords "financial institutions" and "financial firm" actually referred to banks. If the respective papers did not deal with banks and only focused on other financial institutions such as insurance companies, they were removed. Papers that examined only the overall management level and did not include details on the CEO were also removed.

Our sample was classified into 20 "A" papers, 18 "B" papers and 726 "C" papers. As noted above, "C" papers were eliminated from further analysis. We did not consider managerial fixed effect studies because they do not explicitly examine CEO characteristics.

Following the guidelines suggested by Webster and Watson (2002), we checked the references of all 38 "A" and "B" papers in the sample for further potentially relevant articles (backward search) and included another 20 not covered by the keyword search but which provided content relevant to our review focus. Of these, 10 were classified as "A" papers and 10 as "B" papers. Our final sample was therefore 58 papers. In Sect. 4, we synthesize the most important findings from these 58 papers and summarize them into 13 key messages.

7.1.2 Sample Characteristics

The sample papers (see Table 5) were published between 1995 and 2020. Most (42) were published after 2016, emphasizing that our field of research has recently gained popularity in the scientific community. Further, most papers (39) were published in finance journals compared with five papers in accounting journals and seven each in economics journals and management or socioeconomics journals. In relation to the number of research articles, the number of different journals was high (38). The top four journals in terms of the number of publications were the *Journal of Banking and Finance* (6), the *Journal of Financial Stability* (4), the *Journal of Corporate Finance* (4) and *Managerial Finance* (3). These four journals all belong to the finance sector. Overall, the topic under investigation is more likely to be found in higher-ranked journals. Of the 27 finance and accounting journals, 21 have a minimum ranking of 3 in the 2018 ABS Guide.

Methodologically, the statistical analyses of the surveyed papers mostly rely on archival data (56 of the 58 papers in the sample). These archival data are mostly freely available via financial statements or obtained from databases such as Compustat, Bankscope, Standard and Poor's and the Center for Research in Security Prices, among others. As mentioned before, the understanding of the term "risk-taking" varies depending on the subject under investigation. The term typically expresses an increase or decrease in bank risk but is specified in detail in the context of the paper in question (Anderson and Fraser 2000). The selected risk indicators should describe the development of banks' risk-taking over time under the influence of the independent variables. The risk indicators used in the papers are listed in Table 1. Most of the papers are longitudinal studies. Only six papers deal with cross-sectional data, partly only as a supplement. These papers include the two survey studies by Delgado-García et al. (2010) and Bacha and Azouzi (2019).

It is worth mentioning that 35 papers (i.e., more than half) deal with U.S. banks, while nine papers are from Europe Union and four from Asia. The remaining papers are global studies as well as studies from Australia, the United Kingdom and the Middle East and North Africa (MENA) region. In total, 48 papers examine publicly listed banks, bank holding companies, investment banks, private banks, financial

Table 5 Bibliographical in	formation o	in the revie	ewed artic	les											
Bibliographical infor- mation on the reviewed articles	ABS Grade	1995	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Finance															39
Corporate Governance: An International Review	ę	I	I	I	I	I	I	I	I	I	I	1	I	I	1
Finance Research Letters	2	I	I	I	I	I	I	I	I	I	I	I	1	I	1
Financial Markets, Institu- tions and Instruments	e.	I	I	I	I	I	1	I	I	I	I	I	I	I	-
Global Finance Journal	2	I	I	I	I	I	I	I	I	I	I	I	I	1	1
International Journal of Finance and Economics	6	I	I	I	I	I	I	I	I	I	-	I	I	I	-
International Review of Financial Analysis	б	I	I	I	I	I	I	I	I	I	7	I	ļ	I	7
Journal of Banking and Finance	б	I	1	I	I	-	1	I	I	1	1	1	I	I	9
Journal of Behavioral and Experimental Finance	1	I	I	I	I	I	I	I	I	I	I	I	1	I	1
Journal of Corporate Finance	4	I	I	I	-	I	I	1	I	7	I	I	I	I	4
Journal of Financial and Quantitative Analysis	4	I	I	I	I	I	1	I	I	1	I	I	I	I	2
Journal of Financial Eco- nomics	4	I	I	I	I	I	I	I	I	1	I	I	ļ	I	1
Journal of Financial Inter- mediation	4	I	I	I	I	I	I	I	1	1	I	I	I	I	7
Journal of Financial Ser- vices Research	б	I	I	1	I	I	I	I	I	I	I	I	I	I	1
Journal of Financial Sta- bility	б	I	I	I	I	I	I	I	I	1	1	I	1	1	4

Table 5 (Continued)															
Bibliographical infor- mation on the reviewed articles	ABS Grade	1995	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Journal of International Financial Markets, Institu- tions and Money	e	I	I	I	I	I	1	I	I	I	I	1	I	I	5
Journal of International Money and Finance	\mathfrak{S}	I	I	I	I	I	I	I	I	I	I	I	I	1	-
Journal of Money, Credit and Banking	4	I	I	I	I	I	I	I	I	1	I	I	I	I	1
Managerial Finance	1	I	Ι	I	I	I	I	I	I	I	Ι	e	I	Ι	3
Pacific-Basin Finance Journal	7	I	I	ļ	I	I	I	I	I	I	I	I	1	I	1
Research in International Business and Finance	5	I	I	ļ	I	I	I	I	I	I	1	I	I	I	1
Review of Finance (for- merly European Finance Review)	4	I	I	I	I	I	I	I	I	I	I	-	I	I	1
Review of Quantitative Finance and Accounting	б	I	I	I	I	I	I	I	1	I	I	I	I	I	1
Accounting															5
Journal of Accounting and Public Policy	ε	I	I	I	I	I	I	I	I	I	I	I	1	I	1
Journal of Business Finance and Accounting	б	I	I	1	I	I	I	I	I	I	I	I	I	I	1
British Accounting Re- view	б	I	I	I	I	I	I	I	I	I	I	I	1	I	1
Contemporary Account- ing Research	4	I	I	I	I	I	I	I	I	I	I	I	1	I	1

Table 5 (Continued)															
Bibliographical infor- mation on the reviewed articles	ABS Grade	1995	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Journal of Accounting and Economics	4*	I	I	I	I	I	I	I	I	I	I	1	I	I	1
Economics															~
Journal of Economics and Business	-	I	I	I	1	I	I	I	I	I	I	1	I	I	7
Journal of Monetary Economics	4	1	I	I	I	I	I	I	I	I	I	I	I	I	1
Economic Systems	2	I	I	I	I	I	I	I	I	I	I	1	I	I	1
Quarterly Review of Economics and Finance	7	I	I	I	I	I	I	I	ļ	1	1	I	I	I	7
Journal of Developing Areas	1	I	I	I	I	I	I	I	I	1	I	I	I	I	1
Others															~
Personality and Individual Differences	б	I	I	I	I	I	I	I	I	I	I	I	1	I	1
British Journal of Man- agement	4	I	I	1	I	I	I	I	ļ	I	I	I	1	I	0
Journal of Management	4*	I	Ι	Ι	I	Ι	Ι	I	Ι	I	I	Ι	1	Ι	-
Journal of Management and Governance	1	I	I	I	I	I	I	I	ļ	I	I	1	I	I	1
Australian Journal of Management	7	I	I	I	I	I	I	I	I	1	I	I	I	I	1
Journal of Governance and Regulation	1	I	I	I	I	I	I	I	1	I	I	I	I	I	1
Total	I	Ι	Ι	£	2	Ι	4	Ι	з	11	7	11	10	£	58

services firms, saving banks or thrifts, cooperative banks and commercial banks; the remainder do not specify the banks under investigation.

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Conflict of interest P. Hertrampf, T.M. Brunner-Kirchmair, M.R.W. Hiebl and A. Wiedemann declare that they have no competing interests.

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