THE EFFECT OF CULTURE ON RISK-TAKING ACTIVITIES OF BANKS

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Abstract

One of the topical issues under debate in bank governance is the effect of organizational culture on bank risk (Nguyen, Nguyen, & Sila, 2019; Srivastav & Hagendorff, 2016). We contribute to this discourse by examining the impact of organizational culture on the risk behavior of banks in South Africa. Using the generalized least squares (GLS) estimation which controls autocorrelation and heteroskedasticity, we found that banks with externally-oriented cultural values (create and compete) are more likely to take more credit risk whereas banks with an internally focused culture (collaborate) are less likely to take high risk. We, however, could not find evidence of the role of control-oriented culture on bank risk-taking activities. Our findings are robust to alternative specifications. Our results also show that remuneration (bonus deferment and clawbacks) moderates the relationship between culture and bank risk, particularly in banks with an external focus. Our evidence carries governance and regulatory implications.

Keywords: Organizational Culture, Risk-Taking, Moderate, Banks, GLS, South Africa

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1. INTRODUCTION

One of the topical issues under debate in bank governance is the role of organizational culture on risk outcomes. Debates on this discourse emanate from the view that culture shapes human behavior (Cohn, Fehr, & Merechal, 2014), and misconduct erodes public trust in banks which affects their critical efficient financial intermediation function (Chaly, Hennessy, Menand, Stiroh, & Tracy, 2017). Thus, a bank's cultural orientation can significantly affect its risk decisions and outcomes. Based on the competing value framework (CVF), banks with an external focus (compete and create cultural orientations) are presumed to be more aggressive (high-risk appetite) than banks with an internal focus (control and collaborate cultural dimensions). As evidence, the Wells Fargo cross-selling scandal demonstrates how a competitive cultural orientation provokes excessive risk-taking behavior among employees to achieve sales targets (Nguyen, Nguyen, & Sila, 2019). Similarly, the House of Commons (2016) attributes financial services mis-selling to cultural deficiencies and incentives given to sales teams. Moreover, Song and Thakor's (2019) model shows that banks chose growth (more risk-taking) over safety when they are faced with multi-tasking decisions, but a strong safety culture weakens the impetus for excessive competition, resulting in lower risk.

A handful of studies have attempted to explore the nexus between culture and bank risk (Suss, Bholat, Gillespie, & Reader, 2021; Barth, 2016; Bianchi, Farina, & Fiordelisi, 2016). However, the role of executives' remuneration in this relationship has not been explored in literature, to the best of our knowledge. We attempt to fill this knowledge gap by

investigating the moderating effect of executives' compensation on the interplay between organizational culture and bank risk. We argue that monetary rewards cannot be ignored as a key driver of poor cultural practices. Remuneration models can encourage individualism and short-termism if they are not properly structured (Group of Thirty, 2015), which can lead to high risk-taking (Bebchuk & Spamann, 2009). Thakor (2016) demonstrates that culture not only affects the ability of remuneration to influence behavior but also affects the alignment of work ethics with the organization's values. Hence, we extend the literature on the culture-bank risk nexus by investigating the moderating effect of remuneration on the relationship between bank culture and risk outcome.

Our contribution to literature is threefold. First, we contribute to understanding the impact of bank culture and bank risk in South Africa — an emerging economy — which is lacking in the literature. Second, to the best of our knowledge, we provide the first empirical analysis of the moderating effect of compensation on the relationship between bank culture and risk. Third, the study explores the key bank and governance characteristics that drive the risk activities of banks in South Africa which may be important for bank governance and regulation. We found strong evidence that banks with an external focus (create and compete) take more credit risk and the opposite holds for banks with a collaborative cultural dimension (internal focus). We could not find evidence of a relationship between

a control (safety) cultural perspective and bank risk. As for the moderating role of compensation, we obtain that bonus deferment and clawback provisions positively and negatively affect risk outcomes, respectively. We could not find evidence of the contribution of performance shares to bank risk.

The paper is structured as follows: in Section 2 we analyze the theoretical framework and show how it relates to the risk activities of banks. Following this, in Section 3, the applied methodology is discussed followed by the presentation and analysis of the empirical findings in Section 4. Section 5 is the conclusion by providing a summary of the key findings, pointing to the implications of the findings as well as areas of further research.

2. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1. The competing value framework (CVF)

We apply the CVF to examine how a bank's culture influences its risk choices. The CVF is widely used to explain organizational behavior in both literature and practice (Barth, 2016). The model was originally proposed by Quinn and Rohrbaugh (1983), and further developed by Cameron, Quinn, DeGraff, and Thakor (2006). This study adopts this theoretical framework, depicted in Figure 1, to analyze the interplay between organizational culture and risk-taking in banking institutions.

Figure 1. The competing value framework
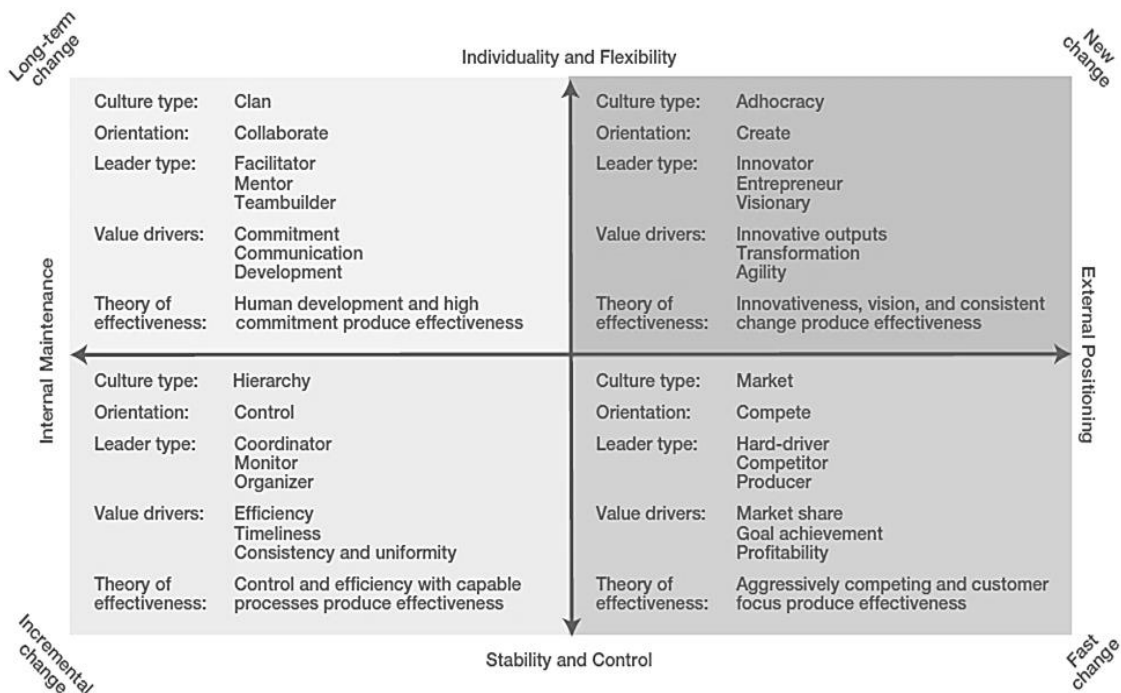
Source: Thakor (2016, p. 9).

The model emerged from studies on organizational effectiveness and attempts to explain how different human and organizational activities embedded in organizational culture, leadership styles, and value drivers work together to enhance organizational performance and create value for

shareholders. As shown in Figure 1, the CVF is made up of four quadrants and each quadrant shows a cultural type, cultural orientation, leadership type, value drivers, and theory of organizational effectiveness.

In building this model, Cameron et al. (2006), realized that different attributes influence firms' performance in different or unique ways; some firms were effective if they show traits of flexibility and adaptability while others succeeded through stability and control. They also noticed that some firms performed well if they have effective internal processes while others were effective if they adopted a competitive external positioning with respect to clients. From this framework, four organizational cultures and cultural orientations emerged; namely collaborate, create, control, and compete for cultural dimensions. These four cultural dimensions compete for the firm's limited financial, time, and human resources to the extent that some objectives have to be sacrificed to pursue the firm's strategic goals (Nguyen et al., 2019). For example, if an organization prioritizes sales maximization, it may have to sacrifice other objectives such as human resources development. As such, how an organization reacts to these competing values determines its culture and shapes the way its employees behave.

2.2. Adopting the CVF to explain the role of organizational culture in influencing banks' credit culture

The CVF is not only useful in examining cultural attributes that drive firm value; it can also be used to examine specific cultural attributes of corporate behavior, such as those involving risk practices of banks since cultural differences produce different behavioral outcomes (Thakor, 2016). Banks that fall on the right-hand side of the quadrants (see Figure 1) share the same focus in terms of external positioning in the marketplace and tend to be flexible and agile. Nguyen et al. (2019) document that banks with a compete-oriented culture take more risk through aggressive competition and a focus on customer acquisitions while creating oriented banks that target high risk through innovation, transformation, and agility initiatives. As such, banks that pursue a create and/or compete-oriented culture intensely compete for customers and are aggressive, resulting in a high appetite for risk (Barth, 2016). As evidence, Nguyen et al. (2019) found that banking institutions with these cultural dimensions are typified by high loan approval rates, lower borrower quality, and fewer covenant requirements (high-risk appetite, in short). We, thus, formulate our first hypothesis as follows:

H1: Banks with create and/or compete cultural orientation are more likely to engage in high-risk activities.

The left-hand side of the quadrants consists of banks with collaborative and control cultures. These banks are internally focused and prioritize stability and control. Such banks are willing to take lower credit risk for safety reasons even though such actions compromise their growth (Nguyen, Nguyen, & Sila, 2016). Accordingly, we hypothesize banks with these cultural values pursue conservative risk choices, resulting in lower risk-taking.

H2: Banks with control and/or collaborate cultural dimensions are conservative and pursue low credit risk activities.

2.3. Moderating effect of remuneration on the culture-risk nexus

Extant literature (Kokkinis, 2019; Barth, 2016) has shown that variable compensation schemes for executives create incentives for managers to take more risk to maximize profitable payoffs while shifting bankruptcy costs to debtholders and creditors. In that regard, scholars document that managerial compensation with high pay-risk variability was responsible for the 2007–2009 financial mayhem (Srivastav & Hagendorff, 2016; Walker, 2010). Since literature demonstrates that pay engenders risky behavior, we, hypothesize that remuneration moderates the interplay between organizational culture and risk activities of banks and formulate hypothesize three as follows:

H3: Remuneration moderates the relationship between organizational culture and bank risk.

2.4. Literature review

Literature on the nexus between culture and bank risk is very limited, later alone the moderating effect of pay on this relationship. This sub-section reviews the few studies that have been conducted on this discourse.

In their study on organizational culture and bank risk, Suss et al. (2021) used diverse sources of cultural data to estimate bank culture unobtrusively and tested the hypothesis that poor organizational culture leads to more risk outcomes. They found strong evidence to support this claim in the UK. Their evidence is robust to different subsamples and alternative specifications.

Nguyen et al. (2019) investigated the impact of bank culture on stability through the lens of their credit decisions. Their evidence shows that banks with an external focus (create and compete) are willing to give credit to subprime borrowers (high-risk behavior) whereas banks with an internal focus (collaborate and control) are less willing to extend loans to such borrowers. The effect is more pronounced in banks with competing and controlling dominant banks.

Barth (2016) shed light on the role of corporate culture in hiring CEOs as well as the influence of corporate culture on the risk-taking activities of banks in the US and provides the following interesting insights. First, consistent with Song and Thakor's (2019) theoretical model, Barth found that firms use their compensation schemes to attract managers with cultural values like theirs. More precisely, the author established that banks with a competitive focus tend to attract CEOs with 'aggressive' traits or a competitive mindset. Thus, Barth (2016) concluded that banks use their compensation to attract managers that suit their culture. Second, the study found that the proportion of variable remuneration to total compensation is significantly higher in firms with a strong competition-oriented culture. Next, the study also found that banks with a corporate culture that is focused on competition take higher credit risk, and banks with a large bonus payment to the executives are associated with higher risk outcomes.

Bianchi et al. (2016) contribute to the limited empirical work on risk culture and bank behavior by developing a sound risk culture to measure risk

culture in banks. Then, they used the sound risk culture metric to assess the impact of risk culture on banks' loan portfolio management. The study found that a higher sound culture is associated with better loan portfolio management, i.e., sound culture has a positive impact on bank risk. Their evidence corroborates with Suss et al.'s (2021) finding that poor organizational culture results in higher risk-taking behavior.

3. RESEARCH METHODOLOGY

3.1. Data and sample

We hand collect annual reports of banks in South Africa for the period 2009 to 2020 from each bank's website. The target population is commercial banks which are central to financial intermediation. Thus, the target population is commercial banks in South Africa. For data cleansing, we remove outliers and banks with missing data for three or more years. Moreover, missing values were replaced by the mean. Following this data preprocessing, our sample is comprised of four commercial banks operating in South Africa between 2009 and 2020.

3.2. Empirical specifications

A two-step procedure is followed to investigate the effects of organizational culture on the risk behavior of banks in South Africa as well as the moderating role of remuneration on the relationship between organizational culture and bank risk. In the first step, the relationship between different cultural dimensions and bank credit risk is explored through panel regression analysis using the feasible generalized least squares (FGLS) estimator. We then apply Hierarchical regression analysis to examine the moderating effects of different compensation schemes on the relationship between bank culture and risk. Subject to data limitations, we investigate the following remuneration characteristics: bonus deferment, performance shares, and clawback clauses. The model for the first objective is specified as follows:

$$BankRisk_{i,t} = \alpha + \xi Create_{i,t} + \zeta Compete_{i,t} + \varsigma Collaborate_{i,t} + \varpi Control_{i,t} + \beta Compensation_{i,t} + \mu_{i,t} \quad (1)$$

where, *Create, Compete, Collaborate, Control* = cultural orientations of banks; *Control* = set of control variables; *Compensation* = remuneration award for executives. In this study, we use bonus deferment, performance shares, and clawback as the proxies. $\alpha, \beta, \zeta, \varpi, \varsigma, \xi$ = coefficients to be estimated.

To explore the moderating effect of remuneration on the interplay between culture and bank risk the following models will be analyzed based on hierarchical regression analysis:

Model 1 (without moderating variables)

$$BankRisk_i = \alpha + \vartheta_1 Culture + \beta_1 Gender + \beta_2 BoardInd + \beta_3 BoardSize + \beta_4 BankSize + \beta_5 CAR + \beta_6 BusModel + \beta_7 CharterValue + \beta_8 CROPresence + \beta_9 CROBoard + \varepsilon_i \quad (2)$$

Model 2 (adding bonus deferment period)

$$BankRisk_i = \alpha + \vartheta_1 Culture + \phi_1 Gender + \phi_2 BoardInd + \phi_3 BoardSize + \phi_4 BankSize + \phi_5 CAR + \phi_6 BusModel + \phi_7 CharterValue + \phi_8 CROPresence + \phi_9 CROBoard + \phi_{10} BonusDef_i + \varepsilon_i \quad (3)$$

Model 3 (adding bonus deferment period and performance shares)

$$BankRisk_i = \alpha + \vartheta_1 Culture + \psi_1 Gender + \psi_2 BoardInd + \psi_3 BoardSize + \psi_4 BankSize + \psi_5 CAR + \psi_6 BusModel + \psi_7 CharterValue + \psi_8 CROPresence + \psi_9 CROBoard + \psi_{10} BonusDef_i + \psi_{11} PerfShares_{11} + \varepsilon_i \quad (4)$$

Model 4 (adding bonus deferment period, performance shares and clawback)

$$BankRisk_i = \alpha + \vartheta_1 Culture + \xi_1 Gender + \xi_2 BoardInd + \xi_3 BoardSize + \xi_4 BankSize + \xi_5 CAR + \xi_6 BusModel + \xi_7 CharterValue + \xi_8 CROPresence + \xi_9 CROBoard + \xi BonusDef_i + \xi_{11} PerfShares_{11} + \xi_{12} Clawback + \varepsilon_i \quad (5)$$

where, *BankRisk* = risk-weighted assets to total assets (risk-weighted assets); *Culture* = cultural dimensions; *Gender* = gender identity; *BoardInd* = board independence; *BoardSize* = size of the executive board; *BankSize* = bank size by assets; *CAR* = capital adequacy ratio; *BusModel* = business model; *CharterValue* = bank's charter value (net present value of future rents); *CROPresence* = chief risk officer presence; *CROBoard* = chief risk officer board membership; *BonusDef* = bonus deferment period; *PerfShares* = performance shares; *Clawback* = clawback clauses; $\alpha, \beta, \zeta, \varpi, \varsigma, \xi$ = coefficients to be estimated.

3.3. Culture measurement

Since corporate cultural traits are not directly measurable, this study circumvents this challenge by using text analysis to estimate the four cultural orientations — create, compete, control, and collaborate — developed by Quinn and Rohrbaugh (1983) under the CVF. This approach was used in literature (Fiordelisi, Stantella Lopes, & Ricci, 2019; Mervelskemper, Moller, & Schumacher, 2018; Fiordelisi, Raponi, & Rau, 2016). The idea behind text analysis is that words or expressions in financial reports reflect a culture that a firm has developed over time (Hoberg & Phillips, 2016).

The methodology begins by identifying a set of words or synonyms used to proxy each cultural orientation and calculating the number of times that each of the bags of words appears in the annual reports for each bank each year.

The list of words used to estimate each cultural aspect is borrowed from Fiordelisi et al. (2019) and Fiordelisi and Martelli (2011) and exhibited in Table A.2 (see Appendix). These authors developed the cultural dimension synonyms from the psychological Harvard-IV dictionary. As shown in Table A.2, the cultural attributes of collaboration are associated with words like "empower, teamwork, and loyal"; compete culture is reflected in synonyms such as "challenge, profit, attack"; control-oriented culture is related to words like "boss, control, and standard" while creating cultural dimension is associated with a bag of words like "dream, risk, and vision."

The score of each cultural orientation is measured by the number of times that its set of words appears divided by the word count in the financial report in line with the literature (Fiordelisi et al., 2019). For example, if 500 *Create* associated synonyms are mentioned in a 10 000-word annual report, then creating a cultural metric would be 5%. Since the study is interested in a particular dominant culture in a bank, it follows Nguyen et al. (2019) to classify a certain culture as dominant in a specific organization if its score of a particular cultural aspect ranks the highest (i.e., in the top quartile) compared to other banks in that given year. More specifically, the variable control-dominant culture is measured by a dummy variable *Control* that equals one for a bank with a control score that is above all other banks in that particular year and zeroes otherwise. The same procedure is used to measure the other three cultural dimensions.

3.4. Control variables

Following the literature, we control for differences among banks by incorporating the following bank characteristics: size, charter value, business model, and capital (Berger, Kick, & Schaeck, 2014; Beltratti & Stulz, 2012). We also consider the effect of governance on bank risk by considering the following corporate governance indicators that are widely used in the literature: gender, board independence, the board size, CRO presence, CRO board membership (Vallascas, Mollah, & Keasey, 2017; Aebi, Sabato, & Schmid, 2012; Lingel & Sheedy, 2012).

3.5. Estimation approach

Different estimators can be used to model equations (1) such as the fixed effect, random effect, and pooled ordinary least squares (OLS). However, pre-estimation tests showed that the data exhibited heteroskedasticity and autocorrelation. Hence, to address this problem, we applied the FGLS that can be applied to data exhibiting heteroskedasticity and serial correlation based on the literature (Bai, Choi, & Liao, 2021; Miller & Startz, 2018; Wooldridge, 2013; Greene, 2003). Besides this, the FGLS estimator was applied by different scholars (Matemane & Wentzel, 2019). The no constant option in Stata was used to mitigate the dummy variable trap associated with the use of dummy variables. The panel-corrected standard errors (PCSE), another contemporaneous correlation estimator, was used for the robustness test.

4. EMPIRICAL RESULTS

4.1. Summary statistics

The summary statistics that describe the variables used in the study are displayed in Table 1 below.

Table 1. Summary statistics

Variable	Mean	Std. dev	Min	Max	Skewness	Kurtosis
Cultural dimensions						
Create	0.12	0.003	0.002	0.0157	-1.24	5.25
Compete	0.02	0.005	0.008	0.035	0.94	5.23
Collaborate	0.011	0.003	0.004	0.018	-0.06	3.16
Control	0.01	0.004	0.003	0.017	0.01	1.59
Regressand (dependent variable)						
Risk-weighted assets (*BankRisk*)	0.54	0.07	0.44	0.67	0.27	2.36
Controls						
Gender (*Gender*)	0.20	0.06	0.09	0.37	0.36	3.59
Board independence (*BoardInd*)	0.60	0.11	0.31	0.75	-0.86	3.50
Board size (*BoardSize*)	14.15	4.0	6.0	21.0	-0.10	1.87
Bank size (*BankSize*)	14.68	1.70	13.25	18.72	1.33	3.11
Bank capital (*CAR*)	22.29	11.6	13.5	39.0	1.43	3.2
Business model (*BusModel*)	0.46	0.09	0.11	0.68	-0.45	8.25
Charter value (*CharterValue*)	0.64	0.14	0.32	0.85	-0.45	2.50

The summary statistics shown in Table 1 show that risk-weighted assets scaled by total assets averaged 0.54 during the period 2009 to 2020 among the sampled banks, meaning that the banks used in the study invested about 54% of their assets in risky assets. Female representation on bank boards is relatively low (about 20%), implying that more advocacy is still needed to have a higher representation of females on bank boards. Interestingly, board independence is quite high (average 60%) among sampled banks. These statistics are commendable and dovetail with the principles of good corporate governance. The standard deviation of bank size (1.7) shows a small variation in balance sheet size among the banks used in this research. This suggests that the sample is made up of relatively homogenous banks, in terms of size.

All the banks used in the study are well-capitalized if one considers the minimum of capital adequacy ratio (*CAR*) is 13.5%, which is above Basel's capital adequacy ratio (12.5% minimum capital adequacy requirement). The business model

summary statistics show that sampled banks' income streams are highly diversified as they are generating, on average, 46% of their income from non-funded streams. Charter value, measured by core deposits to total assets, indicates that core deposits are about 64% of the banks' total assets, showing stable funding.

The cultural metrics show that compete-cultural orientation is the dominant cultural trait among the sampled banks (highest mean of 0.12). This evidence is rational because firms exist to make profits and resultantly, create value for the capital providers. Hence, profit maximization and shareholder value creation motives seem to be the driving forces behind the dominance of the compete-cultural orientation. Creativity scores second in terms of the mean, implying that the sampled banks continuously seek new product development to drive firm value. Again, this evidence is intuitive since innovation is associated with better performance (Kolapo, Mokuolu, Dada, & Adejayan, 2021). Control cultural metric scored the least mean, demonstrating that banks used in

this study are not very much interested in the control value drivers in their strategies. Interestingly, all the variables to be used in the study have skewness and kurtosis values that are within the normal distribution ranges (-2 to +2 and -7 to +7 respectively). We, thus, conclude that the data used in this research are normally distributed.

4.2. Baseline findings

In this subsection, we present the empirical findings on the impact of different cultural orientations on the risk-taking activities of banks in South Africa to expose the nexus between organizational culture and bank risk. The results in Table 2, column (1) relate to the full model while the results presented in columns (2) to (5) relate to each cultural orientation; namely create, compete, collaborate, and control respectively. To save space, the analysis will be inclined towards statistically significant coefficients.

Table 2. Empirical results

Variable	(1)	(2)	(3)	(4)	(5)
Create	2.2831***	3.2797**	-	-	-
Compete	7.2289***	-	5.7377***	-	-
Collaborate	-2.7171***	-	-	-2.4704	-
Control	1.0968	-	-	-	7.4354***
Gender	-0.0534	0.0013	0.1041	-0.1913	0.1273*
BoardInd	-0.22***	-0.0946*	-0.0956**	-0.0228	-0.2059***
BoardSize	0.0032***	-0.0008	0.0003	-0.0004	-0.0026**
BankSize	0.175***	0.0346***	0.0319***	0.0401***	0.0017
CAR	-0.0033***	-0.001*	-0.0012**	-0.0005	0.0023**
BusModel	0.0057	0.1907**	0.1052*	0.2558***	-0.0107
CharterValue	0.1051***	0.0341	0.0116	0.0779	0.0081
CROPresence	0.2539***	-0.0396	-0.0385	-0.132	0.5209***
CROBoard	-0.1074***	-0.0492*	-0.1608***	-0.048*	-0.1008***
Year effects	Yes	No	No	No	No

*Note: ***, **, * indicates statistical significance at 0.01; 0.05 and 0.1 level respectively.*

The full model findings (Table 2, column 1) show that banks with a create and compete cultural dimension pursue high-risk activities consistent with the findings from the US economy (Nguyen et al., 2019). Thus, we found evidence to support the hypothesis that banks with an external positioning take more risk in lending. As shown in Figure 1, banks that are more competition-oriented are typified by aggression in the credit market which explains why they engage in more credit risk activities. However, the evidence that a competitive culture is associated with higher risk may carry stability implications. Competition may engender stability in banking markets that are highly competitive (Kick & Prieto, 2013); however, the South African banking market is highly concentrated (implying less competitive) which may lead to stability concerns when competition heightens.

The self-selection proposition by Barth (2016) may also explain this evidence. Barth (2016) documents that banks with a competitive cultural dimension tend to attract/recruit CEOs with characteristics that are analogous to their cultural values. Such sorting mechanisms result in more credit risk behavior for banks that are characterized by aggressive competition culture. Likewise, based on the core dimensions of the competing value

framework, banks with creative cultural values derive their value from innovation, and innovation is associated with higher risk-taking. This interpretation corroborates González, Gil, Cunill, and Lindahl's (2016) finding that financial innovation in form of securitization and credit derivatives negatively impacts bank risk and stability. Tellis et al. (2009) add that creative-oriented organizations drive their value through risk tolerance. This analysis may explain why banks with a creative culture assume more risk.

Consistent with the literature (Nguyen et al., 2019) and second hypothesis (*H2*) we also found that banks with a collaborative cultural orientation pursue conservative risk policies. Nevertheless, we could not find evidence to support the claim that banks with a control cultural dimension pursue low credit risk policies since the coefficient for the variable is not statistically significant.

Turning to governance indicators, we could not find enough statistical evidence to support the notion that banks' risk decisions are influenced by gender and business model. However, we find that the more independent a board is the lower the risk executives take, meaning board independence plays a significant role in controlling the risk activities of bank executives in South Africa. Next,

the results show that board size positively impacts bank risk. This evidence contradicts earlier findings from developed economies (Minton, Taillard, & Williamson, 2014). Issues surrounding large boards highlighted by Pathan (2009) may explain these findings. Pathan (2009) documents that large boards face free-rider problems and an individual director's incentives to obtain information and monitor managers tend to be low on large boards. As such, large boards may be associated with high risk-taking as demonstrated by our evidence. The results also show that banks with a higher charter value engage more in risk activities. The intuition behind this finding is straightforward: when banks' charter value is threatened, they respond through aggressive risk-taking to preserve their charter values (Furlong & Kwan, 2005).

One of the topical aspects of risk governance is the role of the CRO on bank risk. This aspect gained prominence after the 2007–2009 financial crisis with recommendations for the creation of this post within a bank as well as a board seat for this executive position. We found that the presence of a CRO in a bank is associated with higher bank risk while a CRO appointment to the board lowers bank risk. These findings convey that just creating a CRO post is associated with high bank risk while CRO board membership leads to lower risk. The later finding (negative effect of *CROBoard* on *BankRisk*) concurs with Aebi et al.'s (2012) argument that when the CRO seats on the board he/she has more influence and power unlike when they are placed in third-level management which positively affects the bank's risk decisions. Our evidence lend support to current calls for banks to appoint CROs to the executive board. The bank size results support the too big to fail hypothesis which posits that large banks engage in high-risk behavior on the backdrop of their size and systemic importance which 'guarantees' them a government bailout in the event of failure.

4.3. Moderating role of remuneration

We employed the hierarchical regression model to investigate the moderating effects of remuneration on the relationship between culture and bank risk. The full results are presented in Table A.1 (see Appendix) and summarized in Table 3 below.

Table 3. Summary of hierarchical model findings

Model	R^2	F(df)	p-value	R^2 change	F(df) change	p-value
1	0.827	11.969 (12.3)	0.000			
2	0.866	14.452 (13.29)	0.000	0.039	8.471 (1.29)	0.007
3	0.867	12.996 (14.28)	0.000	0.000	0.0073 (1.28)	0.789
4	0.899	16.091 (15.27)	0.000	0.033	8.793 (1.27)	0.006

Note: Model 1 = empirical model, Model 2 = adding bonus deferral, Model 3 = adding performance shares, Model 4 = adding clawback.

The results in Table 3 show the change in R-squared for Models 2 (cash bonus deferment) and 4 (clawback) are statistically significant at 0.01 level. The coefficient for cash bonus deferral is positive and statistically significant (Table A.1, column 2) while the point estimate for clawback is negative and statistically significant (Table A.1, column 4). On the other hand, awarding performance shares has an insignificant impact on bank risk as shown by both an insignificant F-statistic (Table 3) and coefficient value (Table A.1, column 3). We thus found strong evidence to support the intuition that clawback provisions reduce bank risk. This evidence is intuitive and consistent with the literature (Babenko, Bennett, Bizjak, & Coles, 2017; Marques et al., 2014). The merit of clawbacks is that they penalize managers in the event of unfavorable risk outcomes; hence, the positive effect (risk reduction) of clawbacks on bank risk. This behavior is prudent and improves the corporate governance practices of banks. Therefore, our evidence confirms that clawback mechanisms help firms to adjust their compensation in line with risk outcomes since the risk may take some time to materialize.

Contrary to the belief that bonus deferment induces conservatism; our results show that cash bonus payment deferral increases instead of reducing bank risk. This counterintuitive evidence suggests that deferring bonus payments increases the risk-taking activities of banks in South Africa. This behavior resonates with the view that, in a world of bailouts, the private costs of bad risk decisions are externalized, thereby tempting managers to pursue riskier projects (Efing, Hau, Kampkötter, & Rochet, 2018; Mehran & Tracy, 2016). Furthermore, since value creation entails risk-taking (Stulz, 2014), these results seem to suggest bonus deferment encourages bank executives in South Africa to take 'tail risk', i.e., activities that have a high probability of short-term gains while concealing the risk of potentially large losses in the future. Such behavior may also be attributed to uncertainties created by deferrals which incentivize managers to pursue riskier projects to maximize short-term gains (Bell & Van Reenen, 2010).

We could not find evidence of the nexus between performance shares and bank risk since the F-statistic for Model 3 is statistically insignificant; hence, we can conclude that although rewarding executives with performance shares reduce bank risk-taking incentives, the impact is not statistically significant. This evidence suggests that the contribution of performance shares to the alignment of shareholders' and managers' interests is dependent on other governance mechanisms such as board composition (Velte, 2020).

4.4. Robustness test

We used an alternative specification to the baseline GLS regression with correlated disturbances, namely the PCSE estimator for the robustness test, and present the results in Table 4. For comparison, the baseline model findings are displayed in column 1 while the PCSE model is shown in column 2.

Table 4. Robustness test results

Variable	(1)	(2)
Create	2.2831***	-4.7351**
Compete	7.2289***	5.6916***
Collaborate	-2.7171***	-7.8828***
Control	1.0968	1.097
Gender	-0.0534	-0.2137
BoardInd	-0.22***	0.0653
BoardSize	0.0032***	-0.0031*
BankSize	0.175***	0.0299***
CAR	-0.0033***	0.0001
BusModel	0.0057	0.2449***
CharterValue	0.1051***	0.0762
CROPresence	0.2539***	-
CROBoard	-0.1074***	-0.0765**
Year effects	Yes	Yes

*Note: ***, **, * indicate statistical significance at 0.01; 0.05 and 0.1 level respectively.*

The PCSE regression output shows that most of the findings are similar to earlier findings (with a few exceptions), suggesting that our results are robust to alternative estimation. Notable differences are in the variables *Create* and *CAR*. The PCSE output shows a negative and statistically significant point estimate on the variable *Create*, suggesting that banks with a create cultural orientation target low credit risk contrary to *H1*. Contrary to previous results, *CAR* has a positive but statistically insignificant coefficient, showing that risk-taking in South African banks does not depend on banks' capitalization level.

The *BusModel* and *CharterValue* have similar coefficient signs but differ in statistical significance. The variable *BusModel* now has a statistically significant point estimate, implying that banks that derive most of their income from non-funded activities take more risk consistent with Chen, Huang, and Zhang (2017). This evidence is intuitive and carries stability implications since income diversification stabilizes banks' income revenue, especially in times of crisis (Park, Park, & Chae, 2019). On the other hand, *CharterValue* is statistically insignificant in the PCSE regression. This outcome suggests that *CharterValue* does not affect *BankRisk*. All in all, we can conclude that our results are robust to alternative estimation.

5. CONCLUSION

This study explored the nexus between organizational culture and the risk-taking activities of bank executives. Consistent with literature and our expectations we found that banks with an external focus (create and compete cultural dimensions) pursue high credit risk activities while those with an internal positioning (collaborate culture) target low risk. We, however, could not find evidence of the influence of a control cultural orientation on credit risk activities of banks in South Africa. Our findings are robust to alternative specifications.

The governance and bank characteristics produced mixed findings: the positive impact of board size, bank size, charter value, and CRO presence on bank risk and the negative effect of board independence, bank capital, and CRO board membership on credit risk activities of banks in South Africa. No conclusive evidence was found on the variables gender and business model. Although mixed, most of the findings are intuitive and concur with findings from advanced economies.

Turning to the moderating effect of remuneration on the interplay between organizational culture and bank risk, we found that clawback clauses lower bank risk while bonus payment deferral increases risk-taking. Moreover, our results show that performance shares have no moderation effect on the nexus between culture and risk in banks.

Risk culture has emerged as an effective tool to regulate banks' risk choices since such choices are difficult to properly regulate ex-ante (Bianchi et al., 2016). Our study contributes to current debates on bank reforms and regulations that focus on the role of culture in the behavior and risk activities of banks' corporate executives. The finding that banks with a competitive cultural orientation engage in higher-risk activities carries risk governance (risk control) connotations. Unethical behavior may stem from the heightened competition as the banks try to outperform each other, implying that bank boards need to devise strong risk governance mechanisms to curtail excessive risk behavior and unethical practices to foster banks' stability. Moreover, the 'tone from the top' mantra is vital for risk governance in banks.

The evidence that clawbacks have a strong moderating effect on banks implies that these governance mechanisms help banks to align the interests of shareholders and managers. Hence, we vouch for the voluntary adoption of clawback provisions in the banking sector to better align the interests of shareholders and managers. The negative effect of bonus deferral on bank risk calls for a re-examination of the deferral period as well as the deferral conditions. Although there is no consensus on the optimal deferral period, the deferral period should be long enough to accommodate the long-time that risk takes to materialize (Marques et al., 2014).

One of the key challenges of conducting studies in emerging markets is data unavailability. Our study also faced this challenge. Our interest was to explore the effects of culture on bank risk from both on-balance sheet and off-balance sheet perspectives, but due to data limitations, we were restricted to on-balance sheet risk analysis. Moreover, we intended to examine granular aspects of the moderating effects of different remuneration structures on the relationship between bank culture and risk, however, the unavailability of detailed data on banks' remuneration provoked us to use dummy variables which may not reflect the marginal effects of pay on executives' risk behavior. These two areas remain open to further investigation by researchers who can access this 'precious' data. Future researchers can seek to ascertain sources of such data to get a clearer picture of the interplay between culture and bank risk.

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APPENDIX

Table A.1. Hierarchical model findings

Variable	Adding bonus deferral Model 2	Adding performance shares Model 3	Adding clawback Model 4
Create	-2.2831	-2.2558	-0.7471
Compete	7.207***	6.976***	6.713***
Collaborate	-11.4842***	-11.3572***	-7.1202**
Control	1.4642	2.077	-3.5175
Gender	-0.2471	-0.2573	-0.249*
BoardInd	-0.0051	-0.0055	0.0151
BoardSize	-0.0001	-0.0007	0.0016
BankSize	-0.0116	-0.0073	0.0059
CAR	-0.0087*	-0.0082	-0.0052
BusModel	-0.0255	-0.027	-0.0407
CharterValue	0.134**	0.1233*	0.119*
CROBoard	-0.099***	-0.102***	-0.0941***
BonusDef	0.1151***	0.1028*	0.0825
PerfShares	-	-0.0081	-0.0228
Clawback	-	-	-0.0644***
R²	0.8663	0.8666	0.8994
R² difference	0.039	0.000	0.033
F-statistic	8.471***	0.073	8.793***
Diagnostic tests			
Breusch-Godfrey autocorrelation test	0.5510		
Breusch-Pagan/Cook-Weisberg heteroskedasticity test	0.7935		

Note: ***; **; * indicate statistical significance at 1%, 5% and 10% in that order.

Table A.2. Bag of words (semantic fields) to measure corporate cultural dimensions

Cultural type	Bag of words
Create	adapt*, begin*, chang*, creat*, discontin*, dream*, elabor*, entrepre*, envis*, experim*, fantas*, freedom*, futuri*, idea*, init*, innovat*, intellec*, learn*, new*, origin*, pioneer*, predict*, radic*, risk*, start*, thought*, trend*, unafra*, ventur*, vision
Compete	achiev*, aggress*, agreem*, attack*, budget*, challeng*, charg*, client*, compet*, customer*, deliver*, direct*, driv*, excellen*, expand*, fast*, goal*, growth*, hard*, initiat*, invest*, market*, monit*, mov*, outsourc*, performanc*, position*, pressur*, profit*, rapid*, reputation, result*, revenue*, satisf*, scan*, share*, signal*, speed*, strong, superior, target*, win*
Collaborate	boss*, burocr*, cautio*, cohes*, certain*, chief*, collab*, conservat*, cooperat*, detail*, document*, efficien*, error*, fail*, help*, human*, inform*, logic*, method*, outcom*, partner*, people*, predictab*, relation*, qualit*, regular*, solv*, share*, standard*, team*, teamwork*, train*, uniform*, work group*
Control	capab*, collectiv*, commit*, competenc*, conflict*, consens*, control*, coordin*, cultur*, decentr*, employ*, empower*, engag*, expectat*, facilitator*, hir*, interpers*, involv*, life*, long-term*, loyal*, mentor*, monit*, mutual*, norm*, parent*, partic*, procedur*, productiv*, retain*, reten*, skill*, social*,tension*, value*

Source: Fiordelisi et al. (2019, p. 37).