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Country Risk and Financial Stability: A Focus on Commercial Banks in Africa

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Abstract: This paper employs dynamic panel models to investigate the impact of country risk on the financial stability of banks in Africa. Using country risk and bank specific data for 10 African countries over the period of 2000 and 2021, the results reveal that African countries have a high country risk exposure. The country risk negatively and significantly affects African bank stability. The study findings suggest that compliance with at least Basel II capital requirements is needed to protect African banks from the negative effects of country risk on their stability in the short run. However, the adverse effects of prolonged country risk are mitigated by the compliance with higher Basel capital requirements in the long run. The results further show that an efficient legal and regulatory framework is essential to complement the capital buffer against country risk. Policies must be introduced to reduce country risk to enable African banks to adequately support the African economy in good and challenging times. Overall, country risk remains a threatening factor for bank stability, and consequently, banks need adequate capital to reduce the impact of country risk on bank stability in Africa.

Keywords: Basel capital regulations; country risk; bank stability

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1. Introduction

Banks play a major role in the economy as financial intermediaries for individuals, corporates, and governments, promoting economic growth and socio-economic development (Caselli et al. 2016). However, they are inherently prone to failures, which amplify the negative effect on a country's economy (Montes et al. 2021). Banks are also major investors in government debt instruments (Fiordelisi et al. 2020). While banks have always contended with credit risk arising from lending to individuals and corporates, they are also faced with increased risk exposure from government borrowing (either local or foreign) that is deemed safe, as they are assigned zero-risk weights in the Basel Accord (BCBS 2009, 2017). This risk is evident from the 2023 bank collapse in the United States (three small- to mid-sized banks) and Switzerland because of excessive exposure to government debt. The incident arose from a government policy change to raise interest rates to slow down rising inflation in the country, which affected the carrying values of the government debt in the banks' balance sheet before maturity, thus affecting short-term liquidity and resulting in bank panic (FDIC 2023; S & P Global 2023).

When a sovereign state cannot willingly honor its debt within the terms of its contractual agreement, it increases the country's risk level (Brůha and Kočenda 2018). High country risk levels tend to influence bank failures because banking decisions are based on current economic conditions and future economic performance expectations (Montes et al. 2021). According to Maria et al. (2014), high country risk leads to losses of a bank's holdings of sovereign debt and may impact it depending on its exposure to sovereign debts (Brůha and Kočenda 2018). Country risk can affect the entire total assets of a bank (Boumparis et al. 2019). Banks hold sovereign debts to diversify asset portfolios as collateral for interbank financing or to generate more liquidity (Buch et al. 2016).

There are credit-rating agencies that measure and rate the country risk levels of different countries. Then, the ratings are published. The top three global credit-rating agencies include Moody, Fitch, and Standard and Poor (S&P). They assess and rate the capability of a sovereign state to pay its debt without default in the present economic situation on the probability of a government default (Kara and Karabiyik 2015). The ratings reflect the macroeconomic conditions prevalent in a country. The changes in the ratings, either low (upgrades) or high (downgrades), may directly impact bank stability. South Africa, the most developed country in Africa, has been experiencing deteriorating economic growth for the past ten years with disappointing country risk ratings. Makrelov et al. (2023) found that the rising country risk increased the capital buffer of South African banks, leading to higher lending rates. In addition, a country with high exposure to country risk can lose foreign direct investment (FDI) to other countries with stable country risks. This may affect the banking sector's stability. This study investigates this relationship and the impact of country risk ratings on the stability of banks in Africa.

Country risk differs from country to country and is likely higher in African countries than in developed countries (Muzindutsi et al. 2021). A downgrade of country risk ratings impacts poorer countries more than developed countries (Opoku et al. 2017; Fatnassi et al. 2014). The country's risk downgrade may adversely affect the stability of African banks. For instance, developing countries compete for capital inflow from international investors. International investors rely on the country's risk ratings to make investment decisions in countries deemed to be safe for investments and returns. The implications of downgrades for these developing countries competing for capital inflows is a loss of investor confidence, which may suddenly cease the capital inflow or instigate the panicked exit of investments in the country (Ahuja et al. 2017). For this reason, African banks may be vulnerable to higher country risks, which can affect bank stability.

Also, African countries are characterized by political instability, exchange rate volatility, high inflation, insecurities, lack of infrastructure, and slow economic growth (Triki et al. 2017). These unattractive conditions cause high country risk ratings. Other reasons African banks may be vulnerable to country risks; African banks are characterized by their fragility and vulnerability to failures due to capital inadequacies, non-performing loans, and weak banking regulations (Triki et al. 2017). In addition, many banks in African countries are not credit-rated due to lags in the compliance with Basel regulation changes. Thus, the access to wholesale funds in the international market is limited because African banks are assessed based on their country risk ratings (Opoku et al. 2017).

Therefore, this study argues that country risk matters for banks in Africa. It may adversely affect their stability. At the same time, African banks are profitable with booming international trade and high lending rates. The high lending rate increases non-performing loans. Due to these dynamics, the impact of high exposure to country risk is unknown. Also, no link has yet been established in the literature between country risk and bank stability for African banks. Thus, the two objectives for this study are to investigate the effect of country risk ratings on the stability of banks in Africa, and to examine the effect of capital adequacy on the country risk exposure of banks in Africa.

The relevance of this study is its evaluation of whether the stability of African banks is vulnerable to country risk. The findings may assist banking authorities, policymakers, and stakeholders in identifying and implementing policies that enhance African bank stability regardless of country risk dynamics. The findings may also assist banks in understanding the effect of country risk on bank resilience so that adequate measures on risk management strategies are implemented. In addition, the findings provide insights into the variables sensitive to country risk that may lead to bank failure.

The novelty of this study is that it contributes to the literature for two reasons. First, there is scant evidence of the effect of country risk on African banks. Studies on African banks, such as by Obalade et al. (2021), focus on the effect of political risk on bank performance. Opoku et al. (2017) focus on the impact of country risk on the funding cost of banks in Africa, whereas this study focuses on the effect on bank stability. This allows us

to understand the components of African banks significantly affected by changes in the country risk ratings and to determine whether the Basel II and III capital requirements act as buffers against country risk.

Moreover, unlike the existing studies (Adusei 2015; Soenen and Vander 2022; Fiordelisi et al. 2020) that offer evidence of bank stability, this study examines the effect of country risk on banks in both the short and long runs. The different perspective allows banks and other stakeholders to assess the relevant factors for both timeframe investment decisions in an African market. Overall, this paper is the first to investigate the effect of country risk ratings on the resilience of banks in Africa. The findings allow us to make recommendations to policymakers and regulatory authorities in the African context.

1.1. Conceptualization of Country Risk Ratings

Country risk is also referred to as sovereign risk. Country risk ratings reflect a country's forward-looking perspective from the broad stance of its economic, financial, and political conditions (Hammoudeh et al. 2013; Muzindutsi et al. 2021). The ratings provide creditworthiness information about the government and its related sovereign bonds, which play an essential role in the international market (Montes et al. 2021).

More attention has been given to country risk following the 2008 global financial crisis (Brůha and Kočenda 2018). The crisis unveiled the macroeconomic imbalances in developed countries, leading to increased country risks (Brůha and Kočenda 2018). Empirical studies in the financial literature show that changes in country risk ratings, especially downgrades, affect banks in different ways: bank lending (Maria et al. 2014); non-performing loans (Boumparis et al. 2019); funding cost (Opoku et al. 2017); stock returns (Fatnassi et al. 2014); capital buffers (Makrelov et al. 2023); and bank stability (Davies and Ng 2011). The stock market reaction to a country risk downgrade is stronger than to an upgrade (Correa et al. 2014; Caselli et al. 2016; Fatnassi et al. 2014). Correa et al. (2014) found no statistically significant effect on stock returns following country risk rating upgrades but found a significant negative effect on stock returns following country risk rating downgrades on bank stocks in developed countries. The effect was stronger on banks in developed countries where governments were better positioned to provide support through government guarantees (Correa et al. 2014). This study aims to investigate the effect of country risk ratings on the stability of banks in Africa.

1.2. Country Risk and Bank Stability

Due to the nature of bank operations, banks are exposed to different potential risks for profits to maximize shareholders' wealth. These risks may increase losses, which affect the stability of banks (Chiaramonte and Casu 2017). The effect of country risk on bank stability can be viewed from the financial fragility hypothesis (Al-Shboul et al. 2020). African banks are fragile and operate in a high country risk environment; changes in country risk levels can increase the probability of bank failure.

Several empirical studies have examined the impact of country risk on different aspects of banks. Country risk ratings represents the general risks present in the domestic markets of each country (Obalade et al. 2021). The rating level reflects the ability of a sovereign state to honor its obligations. From the macroeconomic perspective, country risk rating downgrades negatively impact economic activities and country returns (Lee and Lee 2019; Fatnassi et al. 2014). From the micro perspective, country risk rating downgrades can influence a bank's reaction to reduce its loan supply and on-and-off balance sheet activities (Lee and Lee 2019).

Some studies (Lee and Lee 2019; Al-Gasaymeh and Samarah 2020; Junttila and Nguyen 2022) have examined the interaction between country risk ratings and bank performance. Junttila and Nguyen (2022) used a sovereign risk premium to examine the impact of country risk on the performance of banks in Europe. They found that country risk had a negative impact on the profitability of banks in Europe. The adverse effects suggest that the low-interest-rate environment in European countries causes the deterioration of bank

profits. However, Al-Gasaymeh and Samarah (2020) assert that countries with low country risks command higher bank efficiency levels. But a very low country risk is not beneficial to banks.

For emerging countries, the country risk ratings were found to be important. According to Huang and Lin (2021), the impact of country risk ratings on bank stability was more pronounced in emerging countries than in developed countries. For instance, Lee and Lee (2019) examined the impact of country risk using changes in oil prices on the performance of Chinese banks between 2000 and 2014. Bank performance was measured using CAMEL (capital adequacy, asset quality, management efficiency, and liquidity) indicators. Using the GMM estimation technique, they found that a rise in oil prices triggered a negative effect on the performance of Chinese banks (Lee and Lee 2019). Additionally, Al-Shboul et al. (2020) examined the relationship between political risk and bank stability in the Middle East and North Africa (MENA). Their study found that political risk had a negative impact on bank stability.

A country banking sector development depends on an efficient institutional framework (Obalade et al. 2021). Therefore, the adverse effect of country risk has implications for banks and the economy at large. The persistence of country risk increases the fragility of banks in emerging economies.

Other studies reported that country risk affected banks because it increased funding costs (Lee and Lee 2019; Opoku et al. 2017). For countries with weak banking regulations, the increase in funding costs can be passed on to customers (Opoku et al. 2017), depending on the degree of loan elasticity and spread (Makrelov et al. 2023). This increases the interest rates on loans. As a result, lending costs become high, increasing loan losses (Triki et al. 2017) and negatively affecting the banks' stability, especially African banks.

Some literature also considers the relationship between country risk and bank stability by focusing on bank asset quality; although, they tend to examine the link through banks' holdings of sovereign debts. That banks tend to hold a high level of sovereign debt in their balance sheets (Correa et al. 2014). In this context, when changes in country risk ratings arise due to an increase in the probability of a government default, it directly impacts bank asset quality (Correa et al. 2014; Boumparis et al. 2019). The severity of the changes in country risk ratings erodes the quality of sovereign debts presented in bank balance sheets (Boumparis et al. 2019). Therefore, the impact on bank stability depends on the extent of the exposure to sovereign debts held in the bank's books. Furthermore, Obalade et al. (2021) utilized fixed-effect models and generalized methods of moments (GMM) focusing on Nigerian banks. Their study showed that political risk reduced the asset quality of Nigerian banks, and the adverse effect can be linked to macroeconomic factors. Conversely, Ali et al. (2019) found that corruption positively influenced bank stability in Pakistan. For Islamic banks, they tended not to be influenced by political risk. This was supported by Al-Shboul et al. (2020), who found that political risk had no adverse effect on Islamic banks compared with conventional banks in MENA countries.

There is no consensus in the literature on the impact of country risk on bank stability. Some studies argue in favor of a low country risk. At the same time, a low country risk level negatively affects bank efficiency and profitability, especially in developed countries. Other studies showed that high country risk levels affected banks through funding costs and profitability. Studies on the impacts of country risk on bank stability, especially in the African context, are scarce despite the prevalent country risk in African countries. This study fills the gap by examining the impact of country risk on bank stability in Africa.

1.3. Country Risk and Capital Adequacy

The empirical literature has been extended to consider broader factors that may affect bank stability (Klomp and Haan 2012; Huang and Lin 2021). These factors include bank regulations and supervision. Historically, some bank failures have been attributed to the incidence of high country risk levels (Fiordelisi et al. 2020). In Europe, the banking sectors in Greece, Spain, Italy, Portugal, and Ireland were affected in 2010 and 2012 by high levels

of country risks (Williams et al. 2013). The effect caused large deposit withdrawals from the banking sector, totaling USD 425 billion within twelve months in 2012 (Grigorian and Manole 2017).

A distressed bank costs taxpayers money because of government bailouts (Correa et al. 2014; Boumparis et al. 2019). The 2008 financial crisis emphasized the importance of stronger bank regulations to enhance bank resilience against shocks when faced with extreme stress conditions (Vallascas and Keasey 2012).

Adequately capitalized banks signal stability and attract deposits, access to the wholesale market, and cheap sources of funds (Opoku et al. 2017). However, country risk downgrades can increase the capital buffers of banks. For instance, Makrelov et al. (2023) observe that country risk downgrades increase the capital buffers of South African banks that are Basel III compliant, which may increase the cost of lending that customers have to bear (Makrelov et al. 2023). Conversely, banks tend to reduce capital buffers when country risk ratings are favorable, making them vulnerable to sudden shocks and affecting their stability. For instance, Montes et al. (2021) showed that Brazilian banks used favorable country risk ratings to reduce their capital levels.

Many African banks are lagging in their compliance with higher Basel capital requirements. This is due to a lack of compliance with the changes in Basel capital requirements by African banks (Triki et al. 2017). Thus, many of these African banks may be more vulnerable to rising country risk levels, affecting their stability. Brůha and Kočenda (2018) found a negative relationship between banks' capital and country risk levels. This implies that adequately capitalized banks are associated with low country risk levels. This is further supported by Adesina and Mwamba (2016), using the Generalized Method of Moment (GMM) estimation technique for South African banks, observed the positive impact of capital on the Zscore, a measure of bank stability. Their study implied that banks with lower equity had a higher probability of failure.

The compliance with higher Basel capital requirements creates a strong banking sector and improves bank risk profiles (Nkopane 2017; Soenen and Vander 2022). Soenen and Vander (2022) found that capital had a negative impact on country risk levels and that country risk levels are converted into bank risks, but a higher capital improved bank risk profiles. Anani and Owusu (2023) used the COVID-19 crisis as a measure of risk shocks to test the effectiveness of Basel capital adequacy. Using the event study methodology for US banks in the pandemic period and Zscore as a proxy for bank risk, their study found that capital adequacy effectively ensured bank stability. However, African banks are poorly regulated and the capital reserves to protect them are very low (Triki et al. 2017). This study examines the effect of capital adequacy on the country risk exposure of banks in Africa to know whether the Basel II and III capitals act as buffers against country risk levels.

This study fills the gap in the literature by examining the effect of country risk on bank stability in African banks. We also examine whether the compliance with greater Basel capital requirements improves the stability of banks in Africa against country risk.

2. Research Hypothesis

The present study complements the different strands of empirical literature reviewed above. There are limited studies from Africa. Many of the empirical studies focus on using different proxies to investigate country risk impacts on banks (including oil price, credit default swap, and various macroeconomic indicators), while ignoring the use of comprehensive country risk ratings, such country risk scores, which account for many macroeconomic and bank specific factors in their composition. Different definitions for country risk employed in the empirical literature may arrive at different conclusions on the impact of country risk on bank stability. Also, the differences in institutional and regulatory environments, openness of the political system, and corruption levels in the operating environment of African banks are some of the reasons for this study. African banks are faced with challenges of high interest rates, high country risk levels, declining macroeconomic environments, and fragile banks. Overall, the impact of country risk

levels on bank stability in Africa is unknown. As a result, country risk impacts on African banks may differ from developed and other emerging countries. Therefore, our research hypothesis can be formulated as follows:

Hypotheses for long- and short-run impacts on country risk levels and bank stability.

H_0: *There is no long-run relationship between country risk and bank stability.*

H_1: *There is a long-run positive relationship between country risk and bank stability.*

H_2: *There is an inverse relationship between country risk and the stability of banks in Africa in the short run.*

To reduce the negative effects of country risk on bank stability, theoretically, an adequate capital is required. This should increase African banks' resilience, even during a crisis. Objective 2 examines the impact of capital adequacy on bank stability and, therefore, provides the basis for testing Hypothesis 2:

H_3: *Compliance with higher Basel capital requirements significantly decreases country risk effects on African banks' stability.*

3. Materials and Methods

This paper adopted a quantitative approach, which involved the analyses of the impacts of country risk on the stability of African banks and, subsequently, the effect of capital adequacy on the country risk exposure of banks in Africa. The paper involved the analyses of secondary panel data, their interpretation, and the drawing of inferences.

3.1. Data Sources

The panel data for African commercial banks for the study were sourced from multiple online databases. The selection of banks and the sample period were based on the availability of the data. Annual financial data were obtained from the Bloomberg online database terminal, while the country risk data for African countries were obtained from Countryrisk.io.

The bank stability and bank-specific ratios selected for the study (see Table 1) are widely used in the finance literature (Adesina and Mwamba 2016).

Table 1. Panel data of commercial banks from selected African countries.

Country	No. of Banks
Botswana	3
Egypt	7
Ghana	3
Kenya	6
Morocco	1
Namibia	1
Nigeria	6
South Africa	6
Swaziland	1
Tanzania	1
Total	35

Due to the data availability for country risk levels, this study used country risk scores (CRSs) in line with studies, like Hammoudeh et al. (2013). In addition, this study employed CRSs because it incorporated many risk factors other than government creditworthiness.

This study used CRSs[1] developed by Countryrisk.io, similar to the International Country Risk Guide (ICGR), which covers political, economic, financial, and composite risks. But, Countryrisk.io covers political, economic, financial, and sovereign risks while adjusting for the sizes of countries and including banking sector assets in their model. The African banking sector has grown over the past decade. Thus, adjusting for the rapid

increase in the banking sector, country size, and other indicators provides a holistic and progressive approach to the country's risk score. It facilitates the practical assessments of the fundamentals of a country, which is relevant to the African context.

CountryRisk.io model inputs use twenty-six publicly available indicators to generate country risk scores, grouped into four specific risk factors (economic, political, financial, and sovereign): six indicators in economic growth and stability prospects (economic risk); four in institutional and governance (political risk); seven in public finance (financial risk); and nine in external debt (sovereign risk) (Countryrisk.io 2023). Each risk factor was assigned a weight of 25 percent, while the indicators consolidated in each risk factor were assigned risk points within the range of 0–100 (Countryrisk.io 2023). Also, their model was adjusted using four factors: frequency of the country's traded currency, size of the country's economy, foreign exchange regime, and size of the banking sector or sharp increase in banking sector assets.

The final scores were in the range of 0–100 and were grouped into 5 categories: very low, low, medium, high, and very high (see Appendix A, Table A1). A low country risk score represented a country with a low probability of default, suggesting an upgrade, while a higher score meant a high likelihood of default, suggesting a country risk downgrade.

3.2. Sample Selection

This study focused on all commercial banks publicly listed on stock exchanges in Africa for which financial statements were publicly available between the period of 2000 and 2021. This sample period was selected to include the Basel II accord introduced in 2004. The total population of commercial banks sourced from the Bloomberg online database was 137 commercial banks listed on African stock exchanges. Eighty banks that were non-Basel compliant were excluded from the final sample. An additional twenty-two banks were excluded because they suffered from data insufficiency across the sample periods.

The final sample of African commercial banks represented size and Basel compliance. There was an unbalanced panel of cross-sectional and longitudinal data from 35 commercial banks in Africa over 22 years (2000–2021) that adopted Basel II or III from 10 African countries, as shown in Table 1.

3.3. Formatting of Mathematical Components

This study adopted methodologies similar to Sari et al. (2013). However, it deviated from the existing studies to examine the effects of country risk levels on bank resilience in the short and long runs. Equations (1) and (2) are dynamic panel models formulated to achieve a deviation from the existing studies:

$$Zscore_{it} = \alpha_i + \sum_{j=1}^{p} \tau_{ij} Zscore_{i,t-j} + \sum_{j=0}^{q} \delta_{ij} CRS_{i,t-j} + \sum_{j=0}^{q} \delta_{2,ij} Control_{i,t-j} + \varepsilon_t \quad (1)$$

$$Zscore_{it} = \alpha_i + \sum_{j=1}^{p} \tau_{ij} Zscore_{i,t-j} + \sum_{j=0}^{q} \delta_{1,ij} CRS_{i,t-j} + \sum_{j=0}^{q} \delta_{2,ij} Cap_{i,t-j} + \sum_{j=0}^{q} \delta_{3,ij} Npl\_ta_{i,t-j} + \varepsilon_t \quad (2)$$

where $Zscore_{it}$ is the dependent variable, $Zscore_{it}$ represents the bank stability of bank i at time t. $\varnothing_i y_{i,t-1}$ is lagged dependent variable. CRS is a proxy for the country risk score. $Control$ represents two control variables, namely, macroeconomic (GDPgrowth) and bank-specific (non-performing loans) variables. Cap represents capital adequacy values for Basel II and III capital ratios.

Equation (1) models the effect of country risk on bank stability, while Equation (2) is used to examine whether Basel II and III capitals act as buffers against country risk levels. Equations (3) and (4) are reparameterizations of Equations (1) and (2) using the Panel ARDL pooled mean group (PMG), mean group (MG), and dynamic fixed-effect (DFE) estimators:

$$\Delta Zscore_{it} = \alpha_i + \varnothing_i Zscore_{i,t-1} + \beta'_{1i} CRS_{it-1} + \beta'_{2i} Control_{it-1} \sum_{j=1}^{p-1} \tau^*_{ij} \Delta Zscore_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{i,ij} \Delta CRS_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{2,ij} \Delta Control_{i,t-j} + \varepsilon_t \quad (3)$$

$$\Delta Zscore_{it} = \alpha_i + \varnothing_i Zscore_{i,t-1} + \beta'_{1i} CRS_{it-1} + \beta'_{2i} Cap_{it-1} + \beta'_{3i} Npl\_ta_{it-1} + \sum_{j=1}^{p-1} \tau^*_{ij} \Delta Zscore_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{1,ij} \Delta CRS_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{2,ij} \Delta Cap_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{3,ij} \Delta Npl\_ta_{i,t-j} + \varepsilon_t \quad (4)$$

3.4. Variables of Interest

The Dependent Variable Zscore

To investigate the stability of African banks, the Zscore was employed as a dependent variable to measure bank stability in line with studies, such as Al-Shboul et al. (2020). It measures bank risk-taking behavior, and the Zscore uses capital and return on assets (ROAs) in its composition, which serve as relevant factors concerning bank stability (Adesina and Mwamba 2016). A higher Zscore indicates greater stability. Studies, such as Fiordelisi et al. (2020) and Soenen and Vander (2022), use the credit default swap (CDS) spread as a measure of bank stability levels, but it is highly volatile. The Zscore has widespread use in banking and financial stability literature due to its relative simplicity and the fact that it is easy to calculate using only accounting information and data availability (Adusei 2015; Adesina and Mwamba 2016).

Explanatory Variables

The primary variable of interest was the country risk ratings *CRS*.

Cap is a proxy using Basel II and III capital ratios for banks that were Basel II and III compliant. This represented the capital adequacy levels of banks in Africa. *Cap* was proxied by BII_capratio for banks that were Basel II compliant and BIII_capratio for banks that were Basel III compliant. When a bank is adequately capitalized, the bank should be protected against country risks. Therefore, a positive relationship was expected between BII_cap and *Zscore*. BIII_cap should have a more positive relationship with the *Zscore*.

Non-performing loans- *Npl_ta*: a higher non-performing loan increases the probability of bank failure. The variable was added to explain the effect on bank stability in Africa.

Gdpgrowth is a control variable used to measure the overall health of a country's economy (Adusei 2015).

Additional Controls

Based on the findings from the existing and theoretical studies related to this study, four control variables relevant to achieve the study objectives were employed. Other control variables were eliminated because the available sample data were unbalanced panel data, which were not long and continuous enough for pooled mean group estimations. The formula and expected signs of the Equations (3) and (4) variables are presented in Table 2.

Table 2. Definitions of variables of interest.

Variable	Abbreviation	Definition	Sources	Expected Sign
Zscore	Zscore	Measure of bank stability computed as $Zscore = \frac{CAP+\mu ROA}{sd(ROA)}$	Adusei (2015)	Dependent variable
Country risk score	CRS		Countryrisk.io (2023)	Negative
Capital ratios (Basel II and III)	Cap	Tangible common equity/risk weighted asset	BCBS (2016)	Positive
Non-performing loans	Npl_ta	Non-performing loans/total assets	Soenen and Vander (2022)	Negative
Gross domestic product growth	Gdpgrowth		Adusei (2015)	Negative

3.5. Estimation Technique

Equations (3) and (4) were estimated using the panel autoregressive distributive lag (P-ARDL) model to examine the short- and long-run impact of country risk on the resilience of banks in Africa. The justification for using the P-ARDL model was that static models, such as the OLS and GMM estimation techniques for dynamic models employed in similar studies such as those by Lee and Lee (2019), Obalade et al. (2021), Junttila and Nguyen (2022), could not distinguish between the short- and long-run impacts of country risk on banks. This was important, even for investment decisions. Furthermore, Pesaran et al. (1999) argued that static models and the GMM estimation procedure for dynamic panel models assumed the homogeneity of the coefficients across groups for all countries in the sample. This can produce inconsistent and misleading long-run coefficients unless they are truly identical. Given that African countries have varying levels of market and institutional developments, the changes in country risk and bank reactions differ. As such, deploying the PMG estimator is appropriate in this setting, which allows for heterogeneity across countries in the long- and short-run relationship.

Equations (3) and (4) were estimated using the pooled mean group (PMG), mean group (MG), and dynamic fixed-effect (DFE) models. The PMG, MG, and DFE are preferred estimation techniques for the cross-sectional data where the number of observations (N-35 banks) and time period (T-22 years) are both high values (Blackburne and Frank 2007). They produce consistent and reliable results in non-stationary dynamic panels with heterogeneous parameters, according to Pesaran et al. (1999).

A Hausman test was conducted to select the most appropriate estimators for the long-run relationship suitable for the study between PMG, MG, and DFE models.

The study employed the augmented Dickey–Fuller (ADF) test and the Phillips–Perron (PPT) unit root test as the appropriate unit root tests for an unbalanced panel with the following hypothesis: H_0: panel data have unit roots. H_1: panel data have no unit roots (the panel is stationary). The unit root is necessary to check that no variable is I(2).

4. Results

4.1. Descriptive Statistics

Table 3 presents the descriptive statistics of the country risk ratings of African countries represented in the sample. The country with the lowest risk points in the sample was Botswana, with an average mean of 23, which was the lowest among all the African countries. This is an indication of a low country risk level. Egypt, Ghana, and Kenya had the highest country risk levels, with an average mean of 60. This suggests that such countries have very-high country risk levels.

Table 3. Descriptive statistics of country risk scores.

Countries	Obs	Mean	Std. Dev.	Min	Max
Botswana	66	25.30	6.09	17.32	38.85
Egypt	154	61.67	10.09	48.1	78.55
Ghana	64	60.23	4.80	51.92	72.80
Kenya	132	61.02	4.35	50.15	68.38
Morocco	22	45.06	6.28	36.72	57.20
Namibia	22	47.39	6.82	36.87	59.23
Nigeria	129	48.64	6.69	35.6	60.65
South Africa	130	43.88	3.87	36.21	50.92
Swaziland	22	52.56	5.06	42.67	61.85
Tanzania	21	53.19	6.16	43.5	62.17

Table 4 presents the descriptive statistics of key variables for the study. The country risk score (CRS) shows that African countries have high country risk levels on average. The maximum CRS in Table 4 is 78, which shows that some countries in the dataset within the sample period have a country risk level close to 100. The implication for banks operating

in such countries may become unstable and prone to bank failure, especially since many African banks are poorly capitalized. This is reflected by the banks' capital levels, as shown in Table 4. The result shows that the minimum Basel II capital (BII_capratio) for Basel II compliant banks is 2.22, while the Basel III capital (BIII_capratio) for Basel III compliant banks is 2.9. This suggests that many African banks may be poorly capitalized below the minimum regulatory capital requirements of 8 percent for Basel II and 10 percent for Basel III. The standard deviations of BII_capratio (6.9) and BIII_capratio (7.2) show that African banks are inadequately capitalized below Basel II and III capital requirements.

Table 4. Descriptive statistics of key variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Zscore	642	0.502	0.065	0.233	0.887
CRS	762	51.658	12.594	17.321	78.549
Npl_ta	496	4.217	7.014	0.029	63.398
BII_capratio	514	16.032	6.959	2.22	78.7
BIII_capratio	483	18	7.294	2.901	73.807
Gdpgrowth	655	4.527	2.759	−7.652	15.329

4.2. Panel Unit Root Test

The results for augmented Dickey–Fuller (ADF) and Phillips–Perron (PPT) unit root tests show that all the variables are stationary, except for the Zscore and BII_capratio at the first difference, as presented in Table 5. We therefore employed the P-ARDL model to test the existence of short- and long-run relationships between the variables of interest as none of the variables were I(2).

Table 5. Panel unit root test.

	Level (*p*-Values)		1st Difference (*p*-Values)		Order of Integration
Variables	**ADF**	**PPT**	**ADF**	**PPT**	
Zscore			0.000	0.000	I(1)
CRS	0.000	0.000	---	---	I(0)
Npl_ta	0.000	0.000	---	---	I(0)
BII_capratio			0.000	0.000	I(1)
BIII_capratio	0.000	0.000			I(0)
Gdpgrowth	0.000	0.000	---	---	I(0)

4.3. Analyses of Country Risk and Stability

Equations (3) and (4) were estimated using pooled mean group (PMG), mean group (MG), and dynamic fixed-effect (DFE) models. It presents the findings of the impact of country risk on bank stability in Africa. Model 1 was estimated using the PMG model. Model 2 was estimated using the MG model. Model 3 was estimated using the DFE model. The Hausman test applied between the three estimation techniques selected the PMG as a better estimator. Also, the PMG performed better than MG and DFE for significant impacts and provided the theoretical consistency of the results. Therefore, the results for the PMG were interpreted.

The result in Table 6 shows that country risk has a negative and significant impact on the stability of African banks in the short run at the 1 percent level of significance. This implies that an increase in country risk ratings leads to a decrease in the stability of banks in Africa. Bank stability showed sensitivity to country risk in the short run. Npl_ta was negative and significant, implying that non-performing loans was one of the determinant factors affecting the stability of banks in Africa. An increase in non-performing loans poses a serious threat to any bank's survival. The negative impact is consistent with the literature that non-performing loans weaken bank stability (Soenen and Vander 2022). Africa has

a high lending cost; therefore, the losses in bank loans can be high, which can adversely affect the stability of banks in Africa.

Table 6. Country risk impacts on resilience.

	PMG	**MG**	**DFE**
	Model 1 D.Zscore	Model 2 D.Zscore	Model 3 D.Zscore
Long run			
CRS	0.186 ***	−0.001	−0.002 **
	(0.036)	(0.001)	(0.001)
Npl_ta	0.994 ***	−0.007	−0.002 ***
	(0.172)	(0.008)	(0.001)
Gdpgrowth	−0.007 ***	−0.009 **	−0.003 *
	(0.001)	(0.003)	(0.002)
Short run			
ECT	−0.572 ***	−0.687 ***	−0.386 ***
	(0.088)	(0.093)	(0.035)
CRS	−0.107 ***	−0.001 **	−0.001 ***
	(0.017)	(0.000)	(0.000)
Npl_ta	−0.561 ***	0.007	−0.001 ***
	(0.083)	(0.006)	(0.000)
Gdpgrowth	0.001	0.000	0.000
	(0.001)	(0.001)	(0.000)
_cons	0.359 ***	0.417 ***	0.238 ***
	(0.057)	(0.060)	(0.023)
N	488	488	488

Note: standard errors are in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$. *, **, *** indicate significance at the 10, 5, and 1 percent levels, respectively. ECT refers to the error correction term of the estimation model. -cons refers to the constant.

Finally, we noted that the Gdpgrowth was statistically insignificant. The insignificant impact of the Gdpgrowth implies that bank lending is too low in African banks to have any significant impact on bank stability. In the long run, a positive and significant relationship exists between the country risk and bank stability at the 1 percent significance level.

The fixed-effect result (see Appendix A, Table A2) suggests that country risk has a positive effect on bank stability. Hence, the use of the PMG is relevant to shed light on the short- and long-run impacts. Using the PMG, we can observe that country risk in Africa has a negative impact on bank stability in the short run, but a positive impact on bank stability in the long run.

The Implication of the positive long-run relationship of country risk on bank stability is that, as changes in the country risk ratings occur, the banks are unprepared, thus resulting in a negative impact in the short run. However, country risk can have an increasing effect as banks adjust their portfolios to the country risk rating changes. Hence, a positive long-run relationship is created.

The error correction term (ECT) in Table 6 shows that there is a co-integration among the panel variables, indicating the existence of a stable and converging long-run relationship between the Zscore, CRS, Npl_ta, and Gdpgrowth.

While the negative effect of country risk level on bank stability in Africa was determined in the previous results, it was also important to analyze how this effect changed due to the influence of regulatory capital. This was assessed to determine whether country risk levels impacted banks differently under different Basel capital levels. The estimation result for Equation (4) is reported in Table 7. It presents the findings of the effect of capital adequacy on the stability of the African bank sector. Equation (4) was estimated six times using different Basel capital ratios (CAPs) with the country risk score. Models 1, 3, and 5 included the Basel II capital ratio and non-performing loans with country risk scores. Models 2, 4, and 6 included the Basel III capital ratio and non-performing loans with country risk scores. Models 1–6 in Table 7 include non-performing loans to explore

whether non-performing loan influence the relationship between country risk and bank stability under different Basel capital levels. The results for the PMG (Models 1 and 2) are interpreted based on the Hausman selection of the PMG as the best estimator.

Table 7. Effect of capital adequacy buffer against country risk.

	PMG		**MG**		**DFE**	
	1	2	3	4	5	6
	Zscore	Zscore	D.Zscore	D.Zscore	D.Zscore	D.Zscore
ECT						
CRS	−0.001 ***	0.001 ***	0.001	−0.000	0.000	−0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)
BII_capratio	−0.127 ***		0.008 ***		0.006 ***	
	(0.027)		(0.002)		(0.001)	
BIII_capratio		−0.088 ***		0.009 ***		0.006 ***
		(0.011)		(0.003)		(0.001)
Npl_ta	0.001	−0.021 ***	−0.004	0.003	0.000	−0.000
	(0.015)	(0.008)	(0.007)	(0.006)	(0.001)	(0.000)
SR						
ECT	−0.677 ***	−0.607 ***	−0.741 ***	−0.656 ***	−0.452 ***	−0.463 ***
	(0.070)	(0.060)	(0.125)	(0.086)	(0.036)	(0.033)
CRS	0.000	−0.000	0.000	−0.000	−0.000 *	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BII_capratio	0.090 ***		0.006 ***		0.003 ***	
	(0.009)		(0.001)		(0.000)	
BIII_capratio		0.058 ***		0.003 **		0.003 ***
		(0.005)		(0.001)		(0.000)
Npl_ta	0.004 *	0.015 ***	−0.002	0.007	0.001 ***	0.001 ***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.000)	(0.000)
_cons	0.338 ***	0.216 ***	0.275 **	0.322 ***	0.180 ***	0.193 ***
	(0.043)	(0.031)	(0.107)	(0.072)	(0.022)	(0.020)
N	416	409	394	387	394	387

Note: standard errors are in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$. *, **, *** indicate significance at the 10, 5, and 1 percent levels, respectively.

The results of the effects of country risk on bank stability show that when the Basel capital ratio is introduced into the models, the country risk impacts on bank stability are insignificant for Basel II and III compliant banks. However, the country risk impacts on African banks differ depending on their capital levels. For Basel II-compliant banks, country risk positively impacts bank stability, although not significantly. In comparison, country risk has a negative impact on bank stability on Basel III-compliant banks. The result shows the ability of capital to protect African banks against unexpected risks as country risk becomes insignificant when the Basel capital is introduced to the model. Our result is consistent with studies, such as Anani and Owusu (2023), which support the effectiveness of Basel capital adequacy to ensure bank stability.

For the capital adequacy of African banks, the results show a persistent positive and significant relationship between Basel capital ratios and bank stability for Basel II and III-compliant banks in the short run. The positive impact implies that the compliance with Basel capital regulations reduces the probability of bank distress in Africa. From the empirical literature, Basel III-compliant banks are deemed to have an adequate capital to continue lending in periods of high country risk levels relative to normal times, while less adequately capitalized banks restrict their lending activities (Huang and Lin 2021). But, for African banks, compliance to at least the Basel II capital improves bank stability, regardless of the country risk effects in the short run.

In the long run, Basel II and III capitals negatively and significantly impact bank stability at a 1 percent significance level. Theoretically, adequate capitalized banks have the resources to withstand long stress periods. Also, an adequate capital can stabilize

the effects of country risk changes, especially downgrades. However, the evidence from African banks shows that they may be vulnerable to country risk effects in the long run.

African banks operate in a volatile macroeconomic environment with high country risk levels. Our result suggests that being adequately capitalized may not alone be a sufficient tool to protect banks if high country risks persist into the foreseeable future.

On the other hand, the negative impact of capital on bank stability may also imply that African banks comply with bank regulations just to pass the routine banking supervision from their relevant regulatory authorities. Following this, the banks revert back to their normal activities. Therefore, there is no structured compliance with Basel regulations. Thus, African banks may practice selective compliance to Basel requirements. In this regard, African banks need to be monitored regularly by regulatory authorities. In addition, even though the African banks included in the sample were Basel II or III compliant, many operated below the minimum Basel capital requirements. Thus, the composition and quality of the capital may not protect African banks in the long run.

Non-performing loans (Npl_ta) have a positive and significant relationship with bank stability for Basel II and III-compliant banks. The result suggests that an increase in non-performing loans increases the probability of bank distress in Africa. Non-performing loans and country risk continue to be important for bank stability in African countries.

The error correction term (ECT) in Table 7 shows a co-integration among the panel variables, indicating a stable and converging long-run relationship between the Zscore, CRS, Npl_ta, and Basel capital ratios. The result provides strong evidence of the co-integrational relationship among the Zscore, CRS, Npl_ta, BII_capratio, and BIII_capratio.

5. Discussion

This study aimed to examine the impact of country risk on the financial stability of banks in selected African countries. The aim was achieved using two objectives. The first examined the impact of country risk on the stability of banks in Africa using the Zscore as a measure of bank stability. The second examined whether compliance to higher Basel CAR reduced the impact of country risk exposure on banks in Africa and other determinants against country risk.

Our findings establish that African countries have high country risk levels. This high country risk reduces the stability of African banks. Our finding is consistent with Fiordelisi et al. (2020), Williams (2011), who argue that country risk affects banks' resilience. Low country risk levels in developed countries negatively impact European banks (Junttila and Nguyen 2022). In Africa, high country risk reduces the resilience of banks, but in the short run.

Very-low country risk levels are not beneficial for banks, as established in the literature, nor are high country risk levels. Although, banks in developed countries operate in environments with developed legal and regulatory frameworks. However, African banks operate in a less-developed legal and regulatory framework, which may create an information gap in anticipating the changes in country-in-country risks. Thus, this adversely affects bank stability regardless of the Basel regulatory capital in the short run. This is further reflected in the long-run positive relationship between country risk and bank stability as the banks have available information to adjust to the country's risk changes.

This study's findings imply that an increase in country risk levels directly impacts banks, including their asset quality, since the Zscore is measured using returns on asset. According to Boumparis et al. (2019), the severity of the country's risk level on banks may also depend on the extent of bank exposure to sovereign debts recorded in the bank's books.

From the findings, the power of the significant effect of country risk on bank stability may imply that African banks hold excessive sovereign debts, such as treasury bills and government bonds, in their books. Our finding is also consistent with similar findings by Obalade et al. (2021), who determined that political risk has a negative and significant effect on the asset quality of Nigerian banks.

Additional findings reveal that the compliance to Basel CAR reduces African banks' exposure to the adverse effects of country risk changes. Some studies, such as those by Adesina and Mwamba (2016), Chiaramonte and Casu (2017), argue that higher a CAR increases the stability of banks, especially in periods of distress. For our study, compliance to at least the Basel II capital improved the resilience of African banks to country risk. Many African banks are poorly regulated; thus, the implication of these findings for African banks is that banks that are not adequately capitalized will not have adequate capital levels to protect them from losses arising from exposure to country risks. As a result, such banks may struggle with liquidity and earnings, contributing to their fragility and distress.

Furthermore, country risk has a positive long-run significant impact for Basel III-compliant banks. As a result, based on our findings, this study agrees with the arguments from the existing empirical studies that compliance with higher Basel capital requirements creates a strong banking sector and improves bank risk profiles. Also, adequate capital reduces the moral hazard problem for potential government bail outs of distressed banks that cannot prevent country risks.

The effect of non-performing loans on bank stability for Basel III-compliant banks shows that adequately capitalized banks continue to lend when the country risk level is high. They are not as constrained as Basel II-compliant banks. Despite being adequately capitalized, Basel III-compliant banks in Africa may struggle with the level of risk management practices that enable them to access borrowers' credit ratings in stressful periods and in the midst of turbulent macroeconomic environments, which may increase non-performing loans.

From the result, a stable macroeconomic environment should be addressed to reduce country risk levels, which is transmitted to the long-run stability of the African banking sector. In summary, an adequate capital is not sufficient for bank stability but is for a stable macroeconomic environment.

Policymakers and regulatory authorities in Africa should develop legal and institutional frameworks to support the financial developments and growth of African banks. Compliance with both Basel II and III capitals protects banks from the short-run negative effect of country risk. But, Basel III protects banks from country risk effects in the long run. Thus, compliance with Basel III capital requirements is expected to increase the stability of banks in Africa in the face of unexpected risks.

In the study, it is suggested that bank regulators in Africa should adopt the Basel III accord for additional reasons, such as eliminating the internal approach in calculating capital ratios, enhanced supervisory powers of regulatory authorities, additional requirements for global systemically important banks (G-SIBs), effective risk management, more profitable banks, higher capital buffer, and increased resilience against country risk.

There is a need for the better supervision of African banks by the bank regulatory authorities in African countries to ensure compliance to bank regulations.

This study showed a direct link between country risk and bank stability in African banks. Higher country risk levels negatively affect the stability of banks across African countries in the short run. The results support the effectiveness of the Basel accords' higher capital requirements in strengthening Africa's fragile banking sector.

Robust Checks

As an additional robust check, we estimated the variables with a fixed-effect model (see Appendix A, Table A2) and found that the long-run results did not change much, even in the presence of additional control variables.

6. Conclusions

The study examined the impact of country risk on the stability of banks in Africa. The sample data covered the periods of 2000 and 2021. First, the result suggests that Africa's country risk level is high. So, country risk plays a significant role in the resilience of African banks. The analysis separated the short- and the long-run impacts of country risks on bank

stability. The findings show that the negative impact of country risk on bank stability is limited to the short run, as country risk changes have a positive impact on bank stability in the long run. The study is important in the African context as unfavorable credit ratings are published for African countries, which can affect African banks' access to investors, liquidity, and cheap finances in the international market, which is a major challenge for African banks. However, one of the measures to protect African banks is achieving an adequate capital to avoid the negative effect of country risk on banking sector stability in Africa. Nevertheless, additional measures, such as deliberate government policies, are needed to improve the macroeconomic environment that African banks operate in that boost the country's risk ratings, which helps to improve bank stability. This will further contribute to, the integration of the African banking sector globally, and access to wholesale funding markets for cheap sources of funds, which can reduce the cost of lending, thus contributing to economic growth.

African banks are lagging in their compliance to Basel's higher capital requirement; thus, it is recommended that African banks become Basel III compliant. An adequate capital will provide African banks with a safe banking environment and increase bank lending amidst unexpected risks. This study contributes to our understanding of the implications of country risks on bank stability and whether higher capital levels protect banks in Africa from country risks. Overall, the impact of country risk on bank stability is satisfactory in the long run, although African banks should increase their capital buffers to eliminate banking fragility. But, a stable macroeconomic environment with less country risks increases the long-run stability of African banks.

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Appendix A

Table A1. Mapping of country risk scores according to risk category.

Risk Points	Risk Category	Risk Level	Interpretation
0–20	Very low	A: Investment Grade	Very low risk that government will default on its foreign debt obligations
20–35	Low	A: Investment Grade	Low risk that government will default on its foreign debt obligations
35–47.5	Medium	B: Speculative Grade	Some risk that government will default on its foreign debt obligations
47.5–62.5	High	B: Speculative Grade	High risk that government will default on its foreign debt obligations
62.5–100	Very High	In Default	Very high risk that government will default on its foreign debt obligations

Adapted from: Countryrisk.io (2023).

Table A2. Country risk and control variables' effects on bank stability: fixed-effect model.

	1	2	3
	Zscore	Zscore	Zscore
CRS	0.000 ***	0.000 ***	0.000 **
	(0.000)	(0.000)	(0.000)
_Isize_2	0.003	0.011 *	0.011 *
	(0.007)	(0.006)	(0.006)
_Isize_3	0.014 *	0.012 **	0.007
	(0.007)	(0.006)	(0.006)
_Isize_4	0.027 ***	0.022 ***	0.021 ***
	(0.007)	(0.007)	(0.006)
_Isize_5	−0.006	−0.010	−0.008
	(0.009)	(0.008)	(0.007)
BII_capratio		0.004 ***	
		(0.000)	
BIII_capratio			0.003 ***
			(0.000)
Loan_deposit	0.000	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)
Npl_ta	−0.001 ***	−0.001 ***	−0.001 ***
	(0.000)	(0.000)	(0.000)
NIM	0.009 ***	0.004 ***	0.005 ***
	(0.001)	(0.001)	(0.001)
Gdpgrowth	0.001 *	0.002 ***	0.002 **
	(0.001)	(0.001)	(0.001)
Inflation	−0.001	−0.001	−0.001
	(0.001)	(0.000)	(0.000)
Repo_rate	0.000	0.000	0.001
	(0.000)	(0.000)	(0.000)
_cons	0.412 ***	0.368 ***	0.387 ***
	(0.031)	(0.017)	(0.032)
N	430	383	360
Adjusted R-squared	0.4428	0.5206	0.7329
Year effect	Yes	Yes	Yes

Note: standard errors are in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$. *, **, *** indicate significance at the 10, 5, and 1 percent levels, respectively. Model 1 includes all control variables excluding Basel capital ratios. Model 2 includes Basel II capital ratio. Model 3 includes Basel III capital ratio.

Note

[1] For the purpose of this study, the sovereign risk score is refered to as country risk score (CRS).

References

Adesina, Kolade Sunday, and John Muteba Mwamba. 2016. Do Basel III Higher Common Equity Capital Requirements Matter for Bank Risk-taking Behaviour? Lessons from South Africa. *African Development Review* 28: 319–31. [CrossRef]

Adusei, Michael. 2015. The impact of bank size and funding risk on bank stability. *Cogent Economics & Finance* 3: 1111489. [CrossRef]

Ahuja, Ashvin, Murtaza Syed, and Kevin Wiseman. 2017. *Assessing Country Risk: Selected Approaches, IMF Technical Notes and Manuals*. Washington, DC: International Monetary Fund, pp. 1–28. [CrossRef]

Al-Gasaymeh, Anwar, and Miral R. Samarah. 2020. Does Country Risk Affect Banking Efficiency: Empirical Evidence from Turkey and Selected Countries from the European Union. *Global Business Review*, 1–17. [CrossRef]

Ali, Muhammad, Amna Sohail, Lubna Khan, and Chin-Hong Puah. 2019. Exploring the role of risk and corruption on bank stability: Evidence from Pakistan. *Journal of Money Laundering Control* 22: 270–88. [CrossRef]

Al-Shboul, Mohammad, Aktham Maghyereh, Abul Hassan, and Phillip Molyneux. 2020. Political risk and bank stability in the Middle East and North Africa region. *Pacific-Basin Finance Journal* 60: 101291. [CrossRef]

Anani, Makafui, and Felix Owusu. 2023. Regulatory capital and bank risk-resilience amid the COVID-19 pandemic: How are the Basel reforms faring? *Finance Research Letters* 52: 103591. [CrossRef]

BCBS. 2009. *Strengthening the Resilience of the Banking Sector*. Basel: Basel Committee on Banking Supervision, pp. 1–72. Available online: https://www.bis.org/publ/bcbs164.pdf (accessed on 22 May 2023).

BCBS. 2016. *Standardised Measurement Approach for Operational Risk*. Basel: Basel Committee on Banking Supervision, pp. 1–18.

BCBS. 2017. *Basel III: Finalising Post-Crisis Reforms*. Basel: Basel Committe on Banking Supervision, pp. 1–162. Available online: http://www.bis.org (accessed on 22 May 2023).
Blackburne, Edward F., and Mark W. Frank. 2007. Estimation of Nonstationary Heterogeneous Panels. *The Stata Journal* 7: 197–208. [CrossRef]
Boumparis, Periklis, Costas Milas, and Theodore Panagiotidis. 2019. Non-performing loans and sovereign credit ratings. *International Review of Financial Analysis* 64: 301–14. [CrossRef]
Brůha, Jan, and Evžen Kočenda. 2018. Financial stability in Europe: Banking and sovereign risk. *Journal of Financial Stability* 36: 305–21. [CrossRef]
Buch, Claudia M., Michael Koetter, and Jana Ohls. 2016. Banks and sovereign risk: A granular view. *Journal of Financial Stability* 25: 1–15. [CrossRef]
Caselli, Stefano, Gino Gandolfi, and Maria Gaia Soana. 2016. The Impact of Sovereign Rating News on European Banks. *European Financial Management* 22: 142–67. [CrossRef]
Chiaramonte, Laura, and Barbara Casu. 2017. Capital and liquidity ratios and financial distress. Evidence from the European banking industry. *The British Accounting Review* 49: 138–61. [CrossRef]
Correa, Ricardo, Kuan-Hui Lee, Horacio Sapriza, and Gustavo A. Suarez. 2014. Sovereign Credit Risk, Banks' Government Support, and Bank Stock Returns around the World. *Journal of Money, Credit and Banking* 46: 93–121. [CrossRef]
Countryrisk.io. 2023. Sovereign Risk Score. Available online: https://www.countryrisk.io/ (accessed on 22 May 2023).
Davies, Michael, and Tim Ng. 2011. *The Rise of Sovereign Credit Risk: Implications for Financial Stability*. Basel: Basel International Settlement, BIS Quarterly Review.
Fatnassi, Ibrahim, Zied Ftiti, and Habib Hasnaoui. 2014. Stock market reactions to sovereign credit rating changes: Evidence from four European countries. *Journal of Applied Business Research* 30: 953–58. [CrossRef]
FDIC. 2023. Bank Failures in Brief—2023. Federal Deposit Insurance Corporation. Available online: https://www.fdic.gov/bank/historical/bank/bfb2023.html (accessed on 22 May 2023).
Fiordelisi, Franco, Claudia Girardone, Federica Minnucci, and Ornella Ricci. 2020. On the nexus between sovereign risk and banking crises. *Journal of Corporate Finance* 65: 101717. [CrossRef]
Grigorian, David, and Vlad Manole. 2017. Sovereign risk and deposit dynamics: Evidence from Europe. *Applied Economics* 49: 2851–60. [CrossRef]
Hammoudeh, Shawkat, Ramazan Sari, Mehmet Uzunkaya, and Tengdong Liu. 2013. The dynamics of BRICS's country risk ratings and domestic stock markets, U.S. stock market and oil price. *Mathematics and Computers in Simulation* 94: 277–94. [CrossRef]
Huang, Jiang-Chuan, and Hueh-Chen Lin. 2021. Country Risk and Bank Stability. *Romanian Journal of Economic Forecasting* 24: 72–96.
Junttila, Juha, and Vo Cao Sang Nguyen. 2022. Impacts of sovereign risk premium on bank profitability: Evidence from euro area. *International Review of Financial Analysis* 81: 102110. [CrossRef]
Kara, Esen, and Lale Karabiyik. 2015. The effect of country risk on stock prices: An application in Borsa Istanbul. *Ülke Riskinin Hisse Senedi Fiyatlarina Etkisi: Borsa Istanbul'da Bir Uygulama* 20: 225–39.
Klomp, Jeroen, and Jakob de Haan. 2012. Banking risk and regulation: Does one size fit all? *Journal of Banking & Finance* 36: 3197–212. [CrossRef]
Lee, Chi-Chuan, and Chien-Chiang Lee. 2019. Oil price shocks and Chinese banking performance: Do country risks matter? *Energy Economics* 77: 46–53. [CrossRef]
Makrelov, Konstantin, Neryvia Pillay, and Bojosi Morule. 2023. Fiscal risks and their impact on banks' capital buffers in South Africa. *South African Journal of Economics* 91: 116–34. [CrossRef]
Maria, Cantero-Saiz, Sanfilippo-Azofra Sergio, Torre-Olmo Begoña, and López-Gutiérrez Carlos. 2014. Sovereign risk and the bank lending channel in Europe. *Journal of International Money and Finance* 47: 1–20. [CrossRef]
Montes, Gabriel Caldas, Matheus Valladares, and de Moraes Claudio. 2021. Impacts of the sovereign risk perception on financial stability: Evidence from Brazil. *The Quarterly Review of Economics and Finance* 81: 358–69. [CrossRef]
Muzindutsi, Paul-Francois, Sanelisiwe Jamile, Nqubeko Zibani, and Adefemi A. Obalade. 2021. The effects of political, economic and financial components of country risk on housing prices in South Africa. *International Journal of Housing Markets and Analysis* 14: 523–37. [CrossRef]
Nkopane, Teboho. 2017. *The Relevance of the Basel III Accord within the South African Banking System*. Wits: School of Governance, Wits University.
Obalade, Adefemi, Babatunde Lawrence, and Joseph Akande. 2021. Political risk and banking sector performance in Nigeria. *Banks and Bank Systems* 16: 1–13. [CrossRef]
Opoku, Mensah, Elikplimi Agbloyor, Simon Harvey, and Vera Fiador. 2017. Sovereign credit ratings and bank funding cost: Evidence from Africa. *Research in International Business and Finance* 42: 887–99. [CrossRef]
Pesaran, M. Hashem, Yongcheol Shin, and Ron P. Smith. 1999. Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association* 94: 621–34. [CrossRef]
S & P Global. 2023. Snapshot: The Ripple Effects of 2023 Bank Failures. Available online: https://www.spglobal.com/marketintelligence/en/news-insights/blog/snapshot-the-ripple-effects-of-2023-bank-failures (accessed on 20 March 2023).
Sari, Ramazan, Mehmet Uzunkaya, and Shawkat Hammoudeh. 2013. The Relationship Between Disaggregated Country Risk Ratings and Stock Market Movements: An ARDL Approach. *Emerging Markets Finance and Trade* 49: 4–16. [CrossRef]

Soenen, Nicolas, and Rudi Vander. 2022. Determinants of European banks' default risk. *Finance Research Letters* 47: 1–6. [CrossRef]
Triki, Thouraya, Imen Kouki, Mouna Ben Dhaou, and Pietro Calice. 2017. Bank regulation and efficiency: What works for Africa? *Research in International Business and Finance* 39: 183–205. [CrossRef]
Vallascas, Francesco, and Kevin Keasey. 2012. Bank resilience to systemic shocks and the stability of banking systems: Small is beautiful. *Journal of International Money and Finance* 31: 1745–76. [CrossRef]
Williams, Gwion, Rasha Alsakka, and Owain ap Gwilym. 2013. The impact of sovereign rating actions on bank ratings in emerging markets. *Journal of Banking & Finance* 37: 563–77. [CrossRef]
Williams, Harley Tega. 2011. Determinants of capital adequacy in the Banking Sub-Sector of the Nigeria Economy: Efficacy of Camels. (A Model Specification with Co-Integration Analysis). *International Journal of Academic Research in Business and Social Sciences* 1: 16. [CrossRef]