African Review of Economics and Finance (Online), , 123–144
ISSN (Print) 2042-1478
ISSN (Online) 2410-4906

ARTICLE

Liquidity Creation and GCC Bank Stability: The Moderating Effects of Bank Diversification and African Geopolitical Risk

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Abstract

This study examines the relationship between bank liquidity creation and financial stability in GCC countries, with particular emphasis on the moderating roles of income diversification and African geopolitical risk. Using a panel of 120 banks from six GCC countries over the period 2000–2021, the analysis investigates how banks' business models and external geopolitical conditions shape the liquidity creation–stability nexus. The results show that liquidity creation is associated with higher financial instability, with bank stability being more sensitive to liquidity generated through balance-sheet activities than through off-balance-sheet operations. Income diversification through non-interest activities enhances bank stability and moderates the destabilizing effect of liquidity creation by reducing reliance on traditional lending. In addition, African geopolitical risk conditions this relationship by altering banks' liquidity creation behavior under heightened uncertainty. Overall, the findings highlight the importance of balanced liquidity strategies, diversified revenue structures, and geopolitical risk considerations for safeguarding banking stability in GCC and other emerging, bank-based financial systems.

Keywords: Liquidity creation, diversification, bank stability, GCC bank, African geopolitical risk

Article history: Received: September 05, 2025 || Accepted: June 07, 2026

1. Introduction

Financial crises have highlighted the fragility and complexity of banking systems and the central role of intermediation activities in sustaining economic growth. Despite the extensive literature on bank stability, several dimensions of banking behavior remain insufficiently understood, particularly the conditions under which liquidity creation contributes to stability or, conversely, amplifies financial fragility. Among these dimensions, liquidity creation, income diversification, and geopolitical risk represent interrelated but often separately examined factors.

Liquidity creation is one of the core functions of banks and lies at the heart of financial intermediation. By transforming liquid liabilities into illiquid assets, banks facilitate investment and support economic activity. Berger and Sedunov (2017) document that enhanced liquidity provision

is positively associated with real economic growth, underscoring its macroeconomic importance. According to classical intermediation theory, liquidity creation primarily occurs through balance-sheet activities, whereby banks finance illiquid loans with liquid deposits (Diamond & Dybvig, 1983). In addition, banks generate liquidity through off-balance-sheet activities such as loan commitments and guarantees (Berger & Bouwman, 2009). While these mechanisms support economic development, they also expose banks to liquidity shortages, rollover risk, and heightened vulnerability to confidence shocks (Boyd & Graham, 1986).

Excessive liquidity creation may therefore undermine bank stability by intensifying maturity mismatches and reducing liquidity buffers. Berger and Bouwman (2009) show that high levels of liquidity creation increase banks' exposure to systemic risk, particularly during periods of financial stress. These risks are amplified in interconnected banking systems, where liquidity shocks can propagate rapidly across institutions, as observed during the global financial crisis (Davydov et al., 2021; Bai et al., 2023). Theoretical and empirical evidence thus points to a trade-off between the growth-enhancing role of liquidity creation and its destabilizing potential.

In parallel, banks have increasingly diversified their income sources in response to heightened competition, income volatility, and regulatory pressures. By expanding into non-interest income activities, banks aim to stabilize revenues and reduce dependence on traditional lending (Li et al., 2021). A growing literature documents a positive association between income diversification and bank stability. Nisar et al. (2018) find that diversification enhances the stability of South Asian banks, while Shahriar et al. (2023) report similar effects in MENA countries. López-Penabad et al. (2021) provide supporting evidence for European banks. However, diversification may also introduce managerial complexity and agency problems, suggesting that its stabilizing role is not universal and may depend on institutional and economic contexts.

Beyond its direct effect on stability, diversification may condition the impact of liquidity creation on bank risk. Empirical findings remain mixed. Hou et al. (2018) show that income diversification reduces liquidity creation in Chinese banks, while Van Hoanga et al. (2020) report similar results for emerging markets. In contrast, Kinini et al. (2023) find that diversification strategies enhance liquidity creation in Kenyan banks. These divergent findings suggest that the interaction between liquidity creation and diversification is context-dependent and shaped by broader macro-financial conditions.

One such condition that has received growing attention is geopolitical risk. Geopolitical risk captures uncertainty arising from wars, diplomatic conflicts, terrorism, and international tensions that disrupt economic activity and financial markets. Elevated geopolitical risk weakens investor and depositor confidence, disrupts trade and capital flows, and increases macro-financial volatility, thereby affecting banks' lending behavior and liquidity provision. Foundational banking theories emphasize the fragility of liquidity creation under heightened uncertainty, particularly when confidence in asset values and bank solvency deteriorates (Bryant, 1980; Diamond & Dybvig, 1983). Diamond and Rajan (2000, 2001) further argue that banks' ability to create liquidity depends critically on confidence in funding conditions and asset quality, implying that uncertainty can constrain liquidity provision. Similarly, Shleifer and Vishny (2010) highlight how declines in market liquidity and collateral values amplify banking instability.

Recent empirical evidence supports these mechanisms. Phan et al. (2022) show that realized geopolitical events exert stronger destabilizing effects than perceived threats, operating through investor sentiment and liquidity contractions. Al-Shboul et al. (2020) document that political instability increases bank risk-taking and insolvency risk in the MENA region. Fianto and Ibrahim (2025) provide evidence that geopolitical risk depresses credit growth in GCC banks as institutions adopt precautionary "wait-and-see" strategies and hoard liquidity. These findings suggest that geopolitical risk may not only affect bank stability directly but also condition how liquidity creation translates into risk.

This channel is particularly relevant for GCC banking systems. GCC economies are characterized by bank-dominated financial structures, strong exposure to oil price cycles, and increasing financial integration with neighboring regions, including Africa. Geopolitical tensions originating in Africa may spill over into GCC countries through heightened regional risk perceptions, trade and investment linkages, and cross-border financial exposures. In such an environment, geopolitical risk may moderate the liquidity creation–stability relationship by amplifying funding constraints and reinforcing precautionary behavior, thereby altering the risk profile of liquidity creation.

Against this backdrop, this study examines the effect of liquidity creation on bank stability in GCC countries and investigates the moderating roles of income diversification and African geopolitical risk. Using panel data on GCC banks over the period 2000–2021, the analysis explores how bank business models and external geopolitical conditions jointly shape stability outcomes. By explicitly incorporating African geopolitical risk as a moderating factor, the study contributes to provide insights relevant to emerging and bank-based financial systems. Drawing on liquidity creation theory and banking fragility models, we hypothesize that excessive liquidity creation increases banks' vulnerability to risk and undermines stability. We further posit that income diversification enhances bank stability and moderates the adverse effects of liquidity creation by reducing reliance on traditional lending. Finally, we argue that African geopolitical risk conditions this relationship by amplifying uncertainty and influencing how liquidity creation translates into bank stability outcomes.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the data and econometric methodology. Section 4 discusses the empirical results, and Section 5 concludes.

2. Literature

2.1 Interlinkages Between Liquidity Creation and Financial Stability

Liquidity creation is a core banking function rooted in maturity transformation, whereby banks issue liquid liabilities while investing in illiquid, long-term assets. This intermediation role provides liquidity insurance to depositors and supports economic activity, but it simultaneously introduces inherent fragility into the banking system (Diamond & Dybvig, 1983; Allen & Gale, 2004).

From a theoretical perspective, maturity mismatch exposes banks to liquidity shocks, rollover risk, and fire-sale externalities, especially when liquidity creation expands beyond prudent levels. As banks increase liquidity creation, balance sheets become more leveraged and sensitive to funding withdrawals, which can weaken solvency and amplify systemic risk (Allen & Gale, 2004; Berger & Bouwman, 2009).

Building on this framework, recent empirical studies highlight the destabilizing channels through which excessive liquidity creation operates. Elevated liquidity creation intensifies internal feedback loops within banks, increasing earnings volatility and reducing resilience to adverse shocks (Tran Nguyen, 2024). These risks are particularly pronounced for large institutions and banks with weaker capital buffers, where liquidity creation tends to magnify existing vulnerabilities (Berger & Bouwman, 2017).

The institutional and regulatory environment further conditions this relationship. Dietrich and Gehrig (2025) argue that the funding of long-term assets with short-term liabilities increases exposure to liquidity disruptions, reinforcing financial fragility. Similarly, Sissoko and Okonkwo (2025) emphasize the paradoxical nature of liquidity creation, whereby the same mechanism that supports real economic activity can undermine bank stability when risk management and capital discipline are insufficient.

At the macro-financial level, evidence indicates that liquidity creation by conventional banks may weaken overall financial stability, particularly in high-income and financially developed economies (Berger et al., 2019). More recent contributions refine this perspective by showing that the liquid-

ity–stability nexus is shaped by bank size, policy frameworks, and incentives affecting balance-sheet expansion (Gupta & Kashiramka, 2020; Yu et al., 2025). Advanced econometric analyses continue to corroborate these findings and deepen understanding of the non-linear and context-dependent effects of liquidity creation on bank risk (Thanh Nga Thi Tran, 2024).

Taken together, established banking theory and recent empirical evidence converge on the view that excessive liquidity creation amplifies maturity mismatch, leverage, and risk exposure, thereby weakening bank stability.

Hypothesis 1: Liquidity creation negatively affects bank stability.

2.2 Bank Diversification as a Moderator of the Liquidity Creation and bank stability Relationship

Liquidity creation does not affect bank stability in isolation; rather, its impact critically depends on banks' internal business models and risk management strategies. Among these, bank diversification particularly income diversification plays a central role in shaping how liquidity creation translates into stability outcomes. By altering the composition of revenues, risk exposure, and shock absorption capacity, diversification may either attenuate or amplify the risks associated with liquidity creation.

From a theoretical standpoint, diversification moderates the liquidity creation and bank stability relation through several interrelated mechanisms. First, diversification facilitates risk sharing by spreading income sources across different activities and reducing reliance on traditional interest-based revenues. This diversification of cash flows allows banks to better absorb liquidity shocks arising from maturity transformation, thereby mitigating the destabilizing effects of excessive liquidity creation (Demsetz & Strahan, 1997; DeYoung & Roland, 2001).

Second, consistent with modern portfolio theory, income diversification can reduce earnings volatility by smoothing revenue streams across business lines. Lower income volatility enhances banks' resilience to adverse shocks and strengthens their capacity to withstand periods of financial stress. In this context, diversification may weaken the negative impact of aggressive liquidity creation on bank stability by stabilizing returns and limiting insolvency risk (Qu, 2019; Casu et al., 2019).

Third, diversification enables cross-subsidization across banking activities. Profits generated from non-traditional or fee-based services may support core intermediation functions during downturns, allowing banks to maintain liquidity provision without excessive balance-sheet expansion or heightened risk-taking. This mechanism suggests that diversification can cushion the adverse stability effects of liquidity creation, particularly in environments characterized by macroeconomic volatility (Hou et al., 2018).

However, diversification is not unambiguously stabilizing. Expanding into non-core activities may introduce agency problems, managerial complexity, and informational inefficiencies that weaken monitoring incentives and increase operational risk (Laeven & Levine, 2007; Rajan et al., 2000). Moreover, non-interest income is often more volatile than traditional lending income, which may exacerbate risk exposure and amplify the fragility associated with liquidity creation (Demsetz & Strahan, 1997). Recent evidence further characterizes diversification as a "double-edged sword," highlighting how scale and scope inefficiencies may constrain liquidity creation and undermine bank stability (Ali et al., 2025).

Empirical findings reflect this theoretical ambiguity. While some studies document that diversification enhances liquidity creation and resilience (Hou et al., 2018), others report that diversification reduces liquidity creation and increases uncertainty, particularly in emerging and bank-based financial systems (Dang, 2020, 2022; Van Hoanga et al., 2020; Sinha & Grover, 2021). These mixed results underscore that the moderating role of diversification is context-dependent and shaped by institutional and structural characteristics of banking systems.

Taken together, these arguments suggest that diversification fundamentally conditions the transmission of liquidity creation into bank stability outcomes. Whether diversification dampens or

intensifies the destabilizing effects of liquidity creation depends on the balance between risk-sharing benefits and inefficiency costs, making the moderating role of diversification an empirical question.

Hypothesis 2: Income diversification moderates the relationship between liquidity creation and bank stability.

2.3 African Geopolitical Risk as a Moderator of the Liquidity Creation and bank Stability Relationship

Geopolitical risk (GPR) captures uncertainty arising from wars, diplomatic conflicts, terrorism, and international tensions that disrupt economic activity and financial markets. Elevated geopolitical risk weakens investor and depositor confidence, disrupts trade and supply chains, and increases macro-financial volatility, thereby affecting banks' core intermediation and liquidity creation functions. In environments characterized by heightened uncertainty, banks face greater funding fragility, deteriorating asset quality, and increased balance-sheet risk.

Foundational theories of banking emphasize the inherent fragility of liquidity creation under uncertainty, particularly when confidence in the financial system declines. Early models highlight how shocks to expectations can trigger liquidity shortages and bank instability (Bryant, 1980; Diamond & Dybvig, 1983). Extending this framework, Diamond and Rajan (2000, 2001) argue that banks' ability to create liquidity depends critically on confidence in their solvency and asset values. When uncertainty rises, banks may curtail liquidity provision to preserve capital and reduce exposure to runs. Similarly, the theory of banking instability developed by Shleifer and Vishny (2010) posits that banks' lending and liquidity provision are highly sensitive to market liquidity and investor sentiment; adverse shifts in asset prices and collateral values can amplify financial instability.

Empirical evidence strongly supports these theoretical mechanisms. Sabani (2025) shows that heightened geopolitical uncertainty significantly reduces liquidity creation in U.S. commercial banks across asset-based, liability-based, and off-balance-sheet components. Comparable findings are reported in emerging markets, where geopolitical risk and economic policy uncertainty jointly weaken bank stability and amplify financial fragility (Olalere & Mukuddem-Petersen, 2024). Phan et al. (2022) further document that realized geopolitical events exert stronger destabilizing effects than perceived threats, operating through deteriorating investor sentiment and contractions in market liquidity. In contrast, Saha et al. (2024) demonstrate that stronger regulatory frameworks can partially mitigate uncertainty-induced declines in bank liquidity.

Recent studies provide region-specific evidence relevant to GCC banking systems. Phan et al. (2022), Al-Shboul et al. (2020), and Fianto and Ibrahim (2025) show that geopolitical and political risks represent significant destabilizing forces for banks in the GCC and broader MENA region. Heightened geopolitical risk erodes bank stability by reducing profitability, increasing earnings volatility, and intensifying insolvency risk. Political instability within the MENA region has been shown to increase bank risk-taking behavior and vulnerability to shocks (Al-Shboul et al., 2020). Moreover, Fianto and Ibrahim (2025) indicate that geopolitical tensions depress credit growth in GCC banks as institutions adopt a "wait-and-see" strategy, hoard liquidity, and reduce lending in response to heightened information asymmetry.

In this context, geopolitical tensions originating in Africa may spill over into GCC banking systems through increased regional risk perceptions, trade and investment linkages, and heightened uncertainty affecting cross-border capital flows. Such spillovers may condition how liquidity creation translates into bank stability by amplifying funding risk, constraining credit supply, and reinforcing precautionary liquidity hoarding behavior.

Despite growing interest in geopolitical risk and financial stability, the moderating role of African geopolitical risk in the relationship between banks' liquidity creation and stability remains underexplored. Addressing this gap is particularly relevant for GCC countries given their economic ties with

African economies and their exposure to regional geopolitical developments.

Hypothesis 3: African geopolitical risk moderates the relationship between bank liquidity creation and bank stability in GCC countries.

3. Methodological approach

3.1 Data

In our study, we utilized a panel dataset comprising 120 GCC banks from Saudi Arabia, Oman, Kuwait, Bahrain, the United Arab Emirates, and Qatar. The study spans the period from 2000 to 2021, during which we constructed an original database specific to the GCC region. The volume of data varies across variables due to the unavailability of certain time-series observations for some banks. In total, the dataset includes 2,640 observations, offering a comprehensive foundation for the analysis.

3.2 Variables

3.2.1 Financial stability

The Z-score is commonly employed as a measure of bank financial stability. Originally introduced by Boyd and Graham (1986), it has since become a widely accepted indicator for evaluating firm-level stability in the banking sector (De Nicolo et al., 2006; Laeven & Levine, 2009; Demirgüç-Kunt & Huizinga, 2010; Jeon & Lim, 2013; Saeed et al., 2020). The Z-score reflects the distance to insolvency, capturing the extent to which a bank can absorb losses before becoming insolvent. It is calculated as the inverse of the probability of insolvency, where insolvency occurs when losses exceed a bank's equity capital, when negative returns on assets are large enough to wipe out equity (Laeven & Levine, 2009).

Thus, assuming a normal distribution of profits, the Z score is calculated as:

$$Z - score = \frac{ROA + EA}{\sigma(ROA)} \tag{1}$$

where ROA is the ratio of return to total assets, EA is the equity-to-asset ratio, and σ(ROA)is the stanndard deviation of return on assets, thus measuring an indicator of yield volatility. The Z score is an inverse indicator of the probability of failure of a company, representing the improvement in profitability (ROA) and equity (EA) by bearing an increase in the share of risk ((ROA)). It combines profitability, leverage and yield volatility in a single measure. A higher Z score indicates higher banking stability and overall lower banking risk.

A higher Z-score reflects a lower risk of insolvency and thus indicates stronger financial stability within banks (Jeon & Lim, 2013). Following prior studies, the Z-score was transformed using the natural logarithm to address its high skewness and improve the distributional properties of the variable (Laeven & Levine, 2009).

3.2.2 The liquidity creation

Several measures have been proposed in the literature to assess bank liquidity within the frameworks of liquidity risk management, monetary theory, and financial intermediation. However, most of these indicators are designed to capture banks' liquidity positions rather than the amount of liquidity created through their intermediation activities. To address this limitation, Deep and Schaefer (2004) introduced the Liquidity Transformation Gap (LT Gap), defined as the ratio of total assets to liquid assets minus liquid liabilities. While informative, Berger and Bouwman (2009) argue that the LT Gap provides only a partial view of liquidity creation, as it does not fully capture banks' balance-sheet and off-balance-sheet activities.

Building on this critique, Berger and Bouwman (2009) develop a comprehensive framework to measure bank liquidity creation that explicitly accounts for balance-sheet and off-balance-sheet items. Banks create liquidity primarily by financing illiquid assets, such as loans, with liquid liabilities, such as deposits. In addition, banks contribute to liquidity creation through off-balance-sheet activities, including loan commitments and guarantees (Bryant, 1980).

The construction of the liquidity creation measure follows a three-step procedure. First, all balance-sheet and off-balance-sheet items are classified into three liquidity categories liquid, semi-liquid, and illiquid based on the ease, cost, and time required for customers to obtain liquid funds from the bank. Consistent with Berger and Bouwman (2017) and Fu et al. (2016), banking activities are classified by category rather than by maturity. This approach reflects the reality that banks actively create liquidity through mechanisms such as asset securitization and deposit refinancing, rather than relying solely on traditional maturity transformation.

Second, each item is assigned a weight of +0.5, 0, or -0.5 in accordance with liquidity creation theory. Positive weights (+0.5) are assigned to illiquid assets and liquid liabilities, as funding illiquid assets with liquid liabilities maximizes liquidity creation for the economy. Negative weights (-0.5) are assigned to liquid assets, illiquid liabilities, and equity, as these items reduce banks' liquidity creation capacity. Semi-liquid assets and liabilities receive a neutral weight of zero. Off-balance-sheet items are treated consistently with on-balance-sheet items, following the same classification and weighting logic.

Third, the weighted values of all classified items are aggregated to compute the overall liquidity creation index, expressed in monetary units, following the methodology outlined by Berger and Bouwman (2009). Based on this framework, two alternative measures of bank liquidity creation are constructed.

The comprehensive measure of liquidity creation, CATFAT (Category-Based Liquidity Creation – Full Activities), captures total liquidity creation generated by banks and includes both balance-sheet and off-balance-sheet activities. Formally, CATFAT is defined as:

$$cat\ fat_{it} = \left(\frac{1}{2}(IA_{it} + LL_{it} + IOBS_{it}) + 0(SA_{it} + SL_{it} + SOBS_{it}) - \frac{1}{2}(LA_{it} + IL_{it} + EQ_{it} + LOBS_{it})\right)/TA_{it} \quad (2)$$

The balance-sheet-based measure of liquidity creation, CATNONFAT (Category-Based Liquidity Creation – Non-Full Activities), focuses exclusively on on-balance-sheet activities and excludes off-balance-sheet components. It is defined as:

$$cat\ non\ fat_{it} = \left(\frac{1}{2}(IA_{it} + LL_{it}) + 0(SA_{it} + SL_{it}) - \frac{1}{2}(LA_{it} + IL_{it} + EQ_{it})\right)/TA_{it} \quad (3)$$

where i denotes the bank and t denotes the year. IA, SA, and LA represent illiquid, semi-liquid, and liquid assets, respectively. LL, SL, and IL denote liquid, semi-liquid, and illiquid liabilities. EQ refers to equity, and TA denotes total assets. IOBS, SOBS, and LOBS represent off-balance-sheet items classified as illiquid, semi-liquid, and liquid, respectively, including loan commitments, guarantees, letters of credit, and derivative instruments. To facilitate meaningful comparisons across banks of different sizes, both liquidity creation measures are standardized by total assets.

3.2.3 Bank diversification

We use in this study income diversification. According to Elsas et al. (2010) and Hsieh et al. (2013) income diversification (DIV) is calculated by taking the non-interest income into total income. High level of this ratio indicates a higher level of diversification.

Thus,

$$Diversification = \frac{Non\text{-}interest\ income}{Total\ income} \tag{4}$$

3.2.4 African geopolitical risk

African geopolitical risk is measured using a composite index based on the geopolitical risk indicators developed by Caldara and Iacoviello (2022). Specifically, the African geopolitical risk variable is constructed as the sum of country-level geopolitical risk indices for Egypt, Tunisia, and South Africa. This aggregation captures regional geopolitical tensions across North and Sub-Saharan Africa and reflects broader risk perceptions relevant for GCC economies. The composite index is used to examine how regional geopolitical uncertainty moderates the relationship between bank liquidity creation and financial stability.

3.2.5 Control variables

The control variables are composed of bank-specific variables and macroeconomic variables:

- Capital: it is measured by the ratio of total equity to total assets. The liquidity generation process requires the allocation of resources to less liquid and higher risk assets. However, capital can be considered as stable resources that to prevent banks against these risks. Banks oriented to diversify their activities have to increase their capital in line with the Basel Committee's recommendations. Under Basel regulatory standards, banks holding riskier asset portfolios are required to maintain higher-quality capital. This requirement may incentivize banks to diversify both their assets and income streams as a means of enhancing profitability without necessarily increasing balance sheet risk. However, studies by Coval and Thakor (2005) suggest that holding elevated capital ratios can negatively impact profitability by restricting the use of capital for more productive activities, such as lending and investment in higher-yielding risk assets (Repullo, 2004).
- Size : is the logarithm of total assets. According to the argument of Berger and Bouwman (2009) large banks are able to provide loans to small investors at lower cost. This ability allows them to attract more investors and then expand their lending activities. Furthermore, Distinguin et al. (2013) argue that large banks, owing to their 'too big to fail' status, are incentivized to generate higher levels of liquidity by allocating resources to riskier and less liquid assets that serve the broader economy. In contrast, findings by Ali and Puah (2018) suggest that smaller banks tend to exhibit greater financial stability—as measured by the Z-score—compared to their larger counterparts.
- Total deposit to total assets ratio considered as leverage measure by Shahriar et al. (2023).
- ROA measure the financial performance of the bank measured by dividing the return by total assets.
- Macroeconomic variables: A growing body of research has highlighted particular vulnerabilities that continue to threaten the financial stability of banks. In this context, Berger et al. (2019) examined the relationship between bank stability and liquidity creation, shedding light on how banks' liquidity-generating activities can influence their overall financial resilience.
- The GDP growth rate: this is a measure of economic growth proposed by most empirical work. The GDP growth rate reflects the country's macroeconomic conditions, in other words, economic activity and the good economic health of economic agents.

- The inflation rate : We use the growth of the consumer price index (CPI). The increase in this rate is supposed to reflect an imbalance in the national economic situation, which would affect the performance of the banks of such a country.

Table 1 provides the definitions and sources of the variables used in the regressions.

Table 1. Variable definitions

Variables	Acronym	Definitions	Sources
Bank stability	Z-score	$Z - score = \frac{ROA+EA}{\sigma(ROA)}$	Calculated by the author
Diversification	Div	Non-interest income/total income	Calculated by the author
Liquidity creation	Cat Fat	Total on and off balance sheet liquidity creation	Calculated by the author
	Cat non Fat	Total balance sheet liquidity creation	Calculated by the author
African GPR	AGPR	The sum of country-level geopolitical risk indices for Egypt, Tunisia, and South Africa.	Calculated by the author
Capital	ETA	Ratio of total equity to total assets	Refinitiv Eikon
performance	ROA	Net income / total assets	Refinitiv Eikon
Leverage	DTA	Total deposit / total assets	Refinitiv Eikon
Size	SIZE	Logarithm of total assets	Refinitiv Eikon
Macroeconomic variables	GDP	Growth rate of GDP	World Bank
	INF	Inflation rate	World Bank

3.3 Empirical models

In this paper, we test the relationship between the liquidity creation and the stability of banks by taking into account the moderating effect of diversification on this relationship. The first estimated model test only the effect of liquidity creation on bank stability. The second model incorporates the effect of income diversification as a moderating effect on bank stability.

At the beginning of our study, we test the effect of liquidity creation on bank financial stability by estimating the following model :

$$Z - score_{it} = \alpha_{it} + \beta_1 \text{liquidity creation}_{it} + \beta_2 ETA_{it} + \beta_3 ROA_{it} + \beta_4 DTA_{it} + \beta_5 Size_{it} + \beta_6 RGDP_{it} + \beta_7 INF_{it} + \varepsilon_{it} \quad (5)$$

Z-Score is the dependent variable measures the bank financial stability, ETA is the ratio of Ratio of total equity to total assets measures the capital level, ROA is the ratio of net income to total assets measures the bank profitability, DTA is the ratio of the total deposit to total assets measures the leverage level, Size is the logarithm of total assets measures bank size, RGDP is the Growth rate of GDP and INF is the inflation rate. Liquidity creation is measured by two different measures of LC which are catfat and cat nonfat. Thus, in this step we estimate two regression models. Model 1 tests the effect of catfat on bank stability and model 2 tests the effect of catnonfat on bank stability.

Then, we tried to test the effect of income diversification on the relationship between liquidity creation and financial bank stability by estimating the following model:

$$Z - score_{it} = \alpha_{it} + \beta_1 \text{liquidity creation}_{it} + \beta_2 Div_{it} + \beta_3 \text{liquidity creation} * Div_{it} + \beta_4 ETA_{it} + \beta_5 ROA_{it} + \beta_6 DTA_{it} + \beta_7 Size_{it} + \beta_8 RGDP_{it} + \beta_9 INF_{it} + \varepsilon_{it} \quad (6)$$

Z-Score is the dependent variable measures the bank financial stability, Div is the ratio of Non-interest income to total income measures the bank diversification level, ETA is the ratio of Ratio of total equity to total assets measures the capital level, ROA is the ratio of net income to total assets measures the bank profitability, DTA is the ratio of the total deposit to total assets measures the leverage level, Size is the logarithm of total assets measures bank size, RGDP is the Growth rate of GDP and INF is the inflation rate. Liquidity creation is measured by cat fat et cat non fat. Liquidity creation*Div measures the effect of Div on the relation between LC and bank stability. Thus, we estimate two empirical models considering the different measures of LC.

Finally, we tried to test the effect of African geopolitical risk on the relationship between liquidity creation and financial bank stability by estimating the following model:

$$Z - score_{it} = \alpha_{it} + \beta_1 \text{liquidity creation}_{it} + \beta_2 AGPR_{it} + \beta_3 \text{liquidity creation} * AGPR_{it} + \beta_4 ETA_{it} + \beta_5 ROA_{it} + \beta_6 DTA_{it} + \beta_7 Size_{it} + \beta_8 RGDP_{it} + \beta_9 INF_{it} + \varepsilon_{it} \quad (6)$$

Z-Score is the dependent variable measures the bank financial stability, AGPR is the African geopolitical risk, ETA is the ratio of Ratio of total equity to total assets measures the capital level, ROA is the ratio of net income to total assets measures the bank profitability, DTA is the ratio of the total deposit to total assets measures the leverage level, Size is the logarithm of total assets measures bank size, RGDP is the Growth rate of GDP and INF is the inflation rate.

In this study we rely on panel data methods to examine the relationship between liquidity creation, diversification, geopolitical risk, and bank stability across GCC banks. Preliminary diagnostics reveal the presence of heteroskedasticity and contemporaneous correlation across panels, which are common features in bank-level panel datasets characterized by cross-country exposure and macro-financial spillovers. To address these issues, we employ Feasible

4. Results

4.1 Descriptive statistics and correlation matrix

Table 2 presents the descriptive statistical summary of the studied variables of listed banks in GCC countries. Table 3 presents correlation matrix results. To reduce the impact of extreme observations, variables were winsorized at the 1% and 99% levels.

Table 2. Descriptive statistics

Variables	Mean	Std. Dev.	Min	Max
Z-score	0.239	1.135	-0.253	21.463
Cat Fat	0.224	0.771	-1.226	16.109
Cat non Fat	0.086	0.39	-1.260	0.854
AGPR	0.089	0.0393	0.0529	0.238
Div	2.483	16.341	-2.350	297.45
ETA	31.324	26.754	-15.686	100
ROA	2.716	7.265	-55.487	80.500
DTA	0.623	0.438	0.0001	16.717
Size	3.374	0.863	1.055	5.9465
Gdp	5.410	3.476	-5.242	26.170
INF	2.730	2.897	-4.9	15.1

Table 1 presents a summary statistic of the studied variables. Stability measured by Z-score has an average of 23.90%. Similarly, the Z-score range shows a high variability of banking risk. The minimum value is -0.25 and the max value is 21.46. These values are comparable to the minimum and maximum Z score value found by Shahriar (2023) for MENA countries but for the period 2012-2021 which are -3 and 66 respectively. The average values of the Catfat and Catnonfat measures are 22.40% and 8.6%, respectively. The large variation between the two measures shows that a large part of liquidity is created off-balance sheet. The mean of liquidity creation measured by catfat confirms the mean catfat found by Sahyouni and Wang (2019) which is around 39% and 26% for Islamic and conventional banks in MENA countries respectively. The high standard deviation and wide variation of minimum and maximum values of liquidity creation show that there is considerable variability in liquidity creation among banks. The diversification measure has an average of 24.83%.

African geopolitical risk exhibits moderate variability over the sample period, with a mean value of 0.0896 and a standard deviation of 0.0393. The minimum and maximum values indicate meaningful fluctuations in geopolitical conditions across time.

The huge gap between the minimum and maximum of equity to total assets is due to the fact that there exist banks in sample that are highly capitalized. These high values can be also attributed to the low values of their assets. Our sample indicate also the high gap in profitability across banks with -55% as lowest profitability and 88% as the highest profitability. The leverage measured by DTA has an average of 0.6 is an accordance with 0.7 found by Shahriar (2023) for MENA countries.

The study of correlation coefficients shows that all correlations are below 0.8 except correlation between Cat Fat (Cat non Fat) and Total LC. Accordingly, multicollinearity does not appear to pose a problem in this analysis. The table also reveals some notable initial findings: bank stability shows a negative association with overall liquidity creation, while it is positively linked to capital levels, profitability, income diversification, and GDP growth. In contrast, it is inversely related to leverage, bank size, and inflation.

Table 3. Correlation matrix results

	Z-score	Total LC	Cat Fat	Cat non Fat	Div	ETA	ROA	DTA	Size	Gdp	INF
Z-score	1.000										
Total LC	-0.175	1.000									
Cat Fat	-0.137	0.955	1.000								
Cat non Fat	-0.203	0.851	0.657	1.000							
Div	-0.086	0.113	0.077	0.150	1.000						
ETA	0.211	-0.626	-0.480	-0.741	-0.127	1.000					
ROA	0.251	0.159	0.127	0.178	0.132	-0.122	1.000				
DTA	-0.116	0.367	0.279	0.439	0.092	-0.514	0.077	1.000			
Size	-0.334	0.445	0.325	0.556	0.635	-0.597	0.135	0.358	1.000		
Gdp	0.007	0.054	0.039	0.068	0.007	-0.060	0.135	0.066	0.089	1.000	
INF	-0.012	0.075	0.067	0.072	0.072	-0.008	0.080	0.001	0.073	0.260	1.000

4.2 Estimation results

4.2.1 The impact of liquidity creation on financial stability

GCC countries are characterized by bank-based financial systems in which banks play a dominant role in corporate financing, in contrast to developed economies that rely more heavily on capital markets. Consequently, understanding how bank stability responds to liquidity creation is particularly relevant in the GCC context. Table 4 reports the estimated effects of liquidity creation on bank stability, as measured by the Z-score.

The results indicate a statistically significant and negative relationship between liquidity creation and bank stability across the different specifications. In column (1), higher liquidity creation is associated with lower financial stability, as reflected by a decrease in the Z-score. Similarly, column (2) shows that an increase in cat non fat is associated with a decline in bank stability, which is consistent with previous empirical findings.

From an economic perspective, these results strongly support the hypothesis that increased liquidity creation leads to lower bank stability. Liquidity creation inherently exposes banks to two interrelated risks: liquidity risk and bank run (panic) risk. On the asset side of the balance sheet, higher liquidity creation implies a larger share of illiquid loans, which increases banks' vulnerability to funding shocks. On the liability side, a higher reliance on deposits relative to total liabilities heightens sensitivity to sudden withdrawals and confidence shocks. When banks simultaneously expand illiquid assets and liquid liabilities to create liquidity, they amplify these risks, thereby undermining financial stability and potentially triggering a contraction in liquidity creation at the system-wide level.

These findings are consistent with the theoretical arguments of Allen and Gale (2004) and Berger and Bouwman (2011), who emphasize that financing illiquid assets with liquid liabilities increases the probability of financial instability. They also align with the empirical evidence of Berger et al. (2019), who document that higher liquidity creation is associated with lower bank stability. However, our results contrast with those of Gupta and Kashiramka (2020), who report a stabilizing effect of liquidity creation in the Indian banking sector, and with the nonlinear inverted U-shaped relationship proposed by Sissoko and Okonkwo (2025). These divergences suggest that the liquidity–stability relationship is highly sensitive to institutional and macroeconomic contexts.

The decomposition of liquidity creation provides additional insight into the sources of fragility within GCC banks. Both liquidity creation arising from on-balance-sheet activities (cat non fat) and from off-balance-sheet activities (cat fat) exert a negative effect on bank stability. Importantly, the

magnitude of the effect is substantially stronger for cat non fat, indicating that GCC banks' stability is more sensitive to direct balance-sheet exposures. cat non fat reflects liquidity creation driven by traditional maturity mismatches on the asset side, which represent the core source of classical banking risk. The pronounced negative association between cat non fat and stability therefore suggests that unmitigated balance-sheet liquidity risk constitutes the primary vulnerability of GCC banks. By contrast, liquidity creation through off-balance-sheet contingent liabilities, captured by cat fat such as loan commitments and guarantees exhibits a weaker negative effect. Although these contingent exposures can generate future liquidity demands, their destabilizing impact appears less immediate and may be partially mitigated by regulatory oversight and capital requirements.

Turning to the control variables, the results provide economically meaningful insights that extend beyond statistical significance. The negative and significant coefficient on bank size supports the Too-Big-To-Fail hypothesis in the GCC context. Larger banks may benefit from implicit government guarantees and closer links to public entities, which can weaken market discipline and encourage higher risk-taking. In addition, greater organizational complexity and higher agency costs in large banks may increase exposure to systemic risk, thereby reducing stability relative to smaller institutions (Tran & Nguyen, 2024; Ali & Puah, 2018).

The negative association between GDP growth and bank stability, although counterintuitive at first glance, can be explained by procyclical risk-taking behavior. In GCC economies, economic growth is closely tied to oil price cycles and fiscal expansion. Periods of strong GDP growth often coincide with rapid credit expansion, relaxed lending standards, and increased exposure to cyclical sectors. As a result, higher GDP growth may be associated with an accumulation of latent risks that weaken bank stability rather than strengthen it.

By contrast, capitalization and profitability contribute positively to bank stability. The equity-to-total-assets ratio plays a crucial role as a loss-absorption buffer, reducing insolvency risk and mitigating moral hazard (Tran et al., 2024; Wang & Lin, 2021; Maroun et al, 2025). Similarly, higher ROA enhances stability through endogenous capital generation, as retained earnings strengthen capital buffers and improve banks' capacity to absorb unexpected losses before the solvency threshold, as captured by the Z-score, is breached.

Table 4. The impact of liquidity creation on financial stability

	Z-score	Z-score
Cat Fat	-0.0985***	
	(0.000)	
Cat non Fat		-0.1320***
		(0.000)
ROA	0.0534***	0.0535***
	(0.000)	(0.000)
ETA	0.0010***	0.0008***
	(0.000)	(0.000)
DTA	0.0913***	0.0836***
	(0.000)	(0.000)
Size	-0.1391***	-0.1396***
	(0.000)	(0.000)
Gdp	-0.0053***	-0.0053***
	(0.000)	(0.000)
INF	-0.0001	0.0001
	(0.843)	(0.850)
Constant	0.4261***	0.4368***
	(0.000)	(0.000)
Wald chi2	160295.11	500213.02
Prob > chi2	0.0000	0.0000

T-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%

4.2.2 The moderating effect of diversification

Bank operating in emerging markets tends to generate income from multiple sources rather than relying solely on traditional interest-based income from lending activities. It is an important aspect of risk management and financial performance for banks. Thus, in this study we test the moderating effect of diversification on the relationship between LC and stability. Table 5 presents the results of these estimates.

The results presented in Table 5 show that bank diversification has a statistically significant positive impact on the Z-score, indicating that greater diversification is associated with reduced banking risk. This finding aligns with Markowitz's (1968) portfolio theory, which suggests that diversification can lower overall risk. Our evidence supports the notion that diversification enhances bank stability by enabling the joint provision of multiple financial services and generating additional income through the cross-selling of fee-based products, often referred to as range economies. The positive outcome of diversification on stability confirms Markowitz's portfolio theory and confirms the empirical results of several studies, including those of Adem (2022), which explored the effects of diversification on corporate performance and stability.

Our findings further indicate that banks engaged in diversified activities tend to achieve better returns, which can be attributed to stronger market positioning and increased efficiency stemming from range economies. Moreover, diversification may contribute to enhanced financial stability by fostering the co-provision of multiple services and boosting income through the bundling and sale

of fee-generating products (Klein & Saidenberg, 2000). These outcomes align with prior studies (Gallo et al., 1996; Kwast, 1989) that suggest diversification helps mitigate risk, thereby lowering the potential consequences of financial distress (Froot & Stein, 1998).

Table 5. The impact of diversification on the relationship between liquidity creation and financial stability

	Z-score	Z-score
cat fat	-0.1339***	
	(0.000)	
Div	0.0054***	
	(0.00079)	
Div * cat fat	0.0333***	
	(0.000)	
cat non fat		-0.1332***
		(0.000)
Div		0.0073***
		(0.002)
Div * cat non fat		0.0399***
		(0.000)
ETA	0.0516***	0.0523***
	(0.000)	(0.000)
ROA	0.0003***	0.0003***
	(0.340)	(0.000)
DTA	0.0243	0.0162
	(0.414)	(0.570)
Size	-0.1585***	-0.1601***
	(0.000)	(0.000)
Gdp	-0.0034***	-0.003***
	(0.000)	(0.000)
INF	-0.0011	-0.0017***
	(0.223)	(0.000)
Constant	0.5435***	0.5403*
	(0.000)	(0.062)
Wald chi2	99444.12	339517.47
Prob > chi2	0.000	0.000

T-statistics are reported in parentheses. *,** , and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The interaction coefficients reported in Table 3 are significantly positive, indicating that banks engaged in more diversified operations tend to weaken the impact of liquidity creation on their financial stability. The result highlights that diversification has a more favorable impact on stability. The interaction term is high in catnonfat liquidity creation measure. Diversification play an important moderating role in reducing the negative effect of liquidity creation on bank stability. This result may be explained by the fact that income diversification may reduce the level of liquidity creation. Indeed,

Hou et al. (2018) and Van Hoanga et al. (2020) find that the increased level of bank diversification implies a reduction of the level of liquidity creation since diversification strategies may consume management resources leading to the decrease of liquidity creation. This result confirms the second hypothesis that LC moderates the relation between LC and bank stability.

We can conclude that there is strong evidence that diversification is associated with more stability through its direct effect or indirect effect through the creation of liquidity. This result is consistent for all measures of liquidity creation. However, the effect is higher for the liquidity creation measure that only considers balance sheet items in other words without taking into account off-balance sheet items.

4.2.3 The moderating effect of African geopolitical risk

The estimation results indicate that liquidity creation remains negatively associated with bank stability in GCC countries, as evidenced by the significantly negative coefficients on cat fat and cat non fat. This finding confirms that higher levels of liquidity creation, whether arising from balance-sheet activities or broader intermediation including off-balance-sheet items, increase bank fragility by intensifying maturity mismatches and liquidity risk.

Turning to geopolitical risk, the direct effect of African geopolitical risk on bank stability is statistically insignificant across specifications. This suggests that geopolitical tensions originating in Africa do not directly weaken the stability of GCC banks in isolation. Instead, their impact materializes through interaction effects, by conditioning how banks' liquidity creation translates into stability outcomes. This result is consistent with the view that geopolitical risk primarily operates as a state variable that alters banks' behavior and risk transmission mechanisms rather than exerting an immediate, standalone effect (Bryant, 1980; Diamond & Dybvig, 1983; Diamond & Rajan, 2000, 2001).

The interaction between liquidity creation and African geopolitical risk provides key insights. The coefficient on the interaction term is positive and statistically significant. Economically, this implies that when African geopolitical risk increases, the negative effect of total liquidity creation on bank stability is attenuated. In other words, geopolitical risk dampens the destabilizing impact of liquidity creation. This finding supports the precautionary behavior hypothesis, according to which banks respond to heightened uncertainty by adopting more conservative intermediation strategies.

In periods of elevated geopolitical risk, banks tend to hoard liquidity, tighten lending standards, and reduce exposure to long-term illiquid assets. As argued by Diamond and Rajan (2000, 2001), banks' liquidity provision critically depends on confidence in asset values and funding conditions. Heightened uncertainty weakens this confidence and induces banks to scale back aggressive liquidity creation. Similarly, Shleifer and Vishny (2010) emphasize that declines in market liquidity and collateral values under uncertainty constrain banks' ability to expand balance sheets, thereby limiting fragility. Phan et al. (2022) and Fianto and Ibrahim (2025) document that higher geopolitical risk in the MENA and GCC regions leads banks to adopt a "wait-and-see" strategy, characterized by reduced credit growth and increased liquidity buffers.

The positive but statistically insignificant coefficient suggests that this moderating effect is weaker for liquidity creation arising purely from balance-sheet activities. This result indicates that traditional loan–deposit intermediation remains inherently risky even under heightened geopolitical uncertainty, as balance-sheet maturity mismatches cannot be easily adjusted in the short run. In contrast, off-balance-sheet and broader intermediation activities, captured by cat fat, offer banks greater flexibility to scale back commitments and manage risk exposure when uncertainty rises, thereby explaining the stronger and significant moderating effect observed for cat fat.

These findings are consistent with the evidence reported by Sabani (2025), who shows that geopolitical uncertainty reduces liquidity creation across different components, and with Olalere and Mukuddem-Petersen (2024), who find that geopolitical risk amplifies financial fragility primarily

through interaction channels rather than direct effects. Moreover, Saha et al. (2024) demonstrate that regulatory strength can mitigate uncertainty-induced liquidity contractions, which may further explain why the direct effect of geopolitical risk on stability is muted in GCC countries with relatively strong regulatory frameworks.

From a regional perspective, the results highlight the importance of African geopolitical spillovers for GCC banking systems. Geopolitical tensions in Africa may raise regional risk perceptions, affect trade and investment flows, and increase uncertainty surrounding cross-border exposures. Rather than triggering immediate instability, these tensions induce precautionary adjustments in banks' liquidity creation behavior, thereby moderating the transmission of liquidity-related risk into bank stability. This channel is particularly relevant for GCC countries given their growing economic and financial linkages with African economies.

Overall, the results support Hypothesis 3 by demonstrating that African geopolitical risk conditions the relationship between liquidity creation and bank stability in GCC countries. Importantly, the moderating effect operates by constraining aggressive liquidity creation during periods of heightened uncertainty, thereby reducing its destabilizing impact rather than exacerbating fragility.

Table 6. The moderating effect of African geopolitical risk

	Z-score	Z-score
cat fat	-0.088***	
	(0.000)	
Cat non fat		-0.1380***
		(0.000)
AGPR	0.0163	0.0522
	(0.810)	(0.199)
cat fat * AGPR	0.2549**	
	(0.028)	
Cat non fat * AGPR		0.1504
		(0.145)
ROA	0.0532***	0.0536***
	(0.000)	(0.000)
ETA	0.0016***	0.0009***
	(0.000)	(0.000)
DTA	0.097***	0.0839***
	(0.000)	(0.000)
Size	-0.1392***	-0.1373***
	(0.000)	(0.000)
Gdp	-0.0056***	-0.0053***
	(0.000)	(0.000)
INF	0.4028***	0.4210***
	(0.000)	(0.000)
Wald chi2	142940.71	471368.07
Prob > chi2	0.0000	0.0000

4.2.4 Robustness analysis

In this study, system GMM estimations are employed as a robustness check to account for the dynamic nature of bank stability and to mitigate potential biases arising from reverse causality and unobserved heterogeneity. The results confirm that liquidity creation measured by cat fat remains negatively associated with bank stability, indicating that broader liquidity creation continues to undermine stability even after controlling for persistence and endogeneity. The dynamic specification therefore reinforces the baseline evidence that excessive liquidity creation weakens bank stability in GCC countries.

As an additional robustness exercise, bank stability is proxied by the logarithm of total loan loss provisions. The results show that both cat fat and cat non fat are positively and significantly associated with provisions, indicating higher expected losses and increased risk exposure as liquidity creation intensifies. This outcome is fully consistent with the baseline estimations using the Z-score, which indicate a destabilizing effect of liquidity creation. Overall, the robustness analysis confirms that the main conclusions are not sensitive to the estimation method or the choice of the stability proxy.

Table 7. Robustness analysis

	Robustness analysis: Z-score as measure of bank stability (GMM estimation)		Robustness analysis: Loan loss provision as a measure of bank stability (EGLS estimation)	
	Z-score	Z-score	Bank loan loss provision	Bank loan loss provision
L.Zscore	0.6024***	0.5974***		
	(0.000)	(0.000)		
cat fat	-0.083***		1.9772***	
	(0.003)		[0.000]	
cat non Fat		-0.1943***		1.6133***
		(0.000)		[0.000]
ROA	0.0036***	0.003***	0.4449***	0.4186***
	(0.000)	(0.000)	[0.000]	[0.000]
ETA	-0.0003	-0.0005	0.0080	0.0025
	(0.532)	(0.351)	[0.49]	[0.871]
DTA	-0.1198**	-0.0517	4.9414	-4.7777***
	(0.048)	(0.405)	[-5.13]	[0.000]
Size	-0.2186***	-0.2131***	3.2595***	3.3566***
	(0.000)	(0.000)	[0.000]	[0.000]
Gdp	0.0034***	0.003***	-0.0363	-0.0354
	(0.007)	(0.003)	[0.199]	[0.183]
INF	-0.008	-0.008***	-0.0223	-0.0613
	(0.000)	(0.000)	[0.688]	[0.222]
Constant	0.9089***	0.8564***	1.1227	1.1832
	(0.000)	(0.000)	[0.98]	[0.251]
Wald chi2	5264.88	5280.05	1152.10	1306.94
Prob > chi2	0.0000	0.0000		

4.2.5 Propensity score matching

This study assesses the causal effect of bank liquidity creation on financial stability by applying Propensity Score Matching (PSM). Three specifications are estimated to distinguish how different

components of liquidity creation affect bank soundness, proxied by the Z-score. First, we evaluate the impact of cat fat. Second, we analyze liquidity creation from non fat assets (cat non fat). Banks in the treatment group exhibit higher liquidity creation relative to matched counterparts with similar profitability, leverage, size, capital structure, and macroeconomic exposure. The post-matching balanced sample is then used to estimate the stability effect of liquidity creation while controlling for key bank-specific and macroeconomic variables.

The Liquidity Creation on Bank Stability, PSM

	Z-score	Z-score
cat fat	-0.03278***	
	(0.00618)	
cat non fat		-0.03337***
		(0.00610)
ROA	0.05369***	0.05366***
	(0.00033)	(0.00033)
ETA	0.00203***	0.00204***
	(0.00023)	(0.00023)
DTA	0.10476***	0.10587***
	(0.01845)	(0.01805)
Size	-0.14953***	-0.14924***
	(0.00488)	(0.00489)
Gdp	-0.00638***	-0.00643***
	(0.00064)	(0.00064)
Inflation	-0.00059***	-0.00055
	(0.00078)	(0.00079)
Constant	0.42693***	0.42638***
	(0.02438)	(0.02397)

***p < 0.01, **p < 0.05, *p < 0.10

Across all specifications, the results consistently show that higher liquidity creation reduces bank stability, as indicated by the negative and highly significant treatment coefficients in each model. This effect holds whether liquidity creation stems from traditional fat-based assets, the full balance sheet, or non-fat assets such as fee-based and off-balance-sheet activities.

5. Conclusion

Banks in GCC countries play a critical role in financing firms, reflecting the region's strong reliance on bank-dominated financial systems and the relatively limited development of equity and bond markets. As primary financial intermediaries, GCC banks support corporate investment and economic activity, while increasingly expanding into non-interest income activities to diversify revenue sources and reduce dependence on traditional lending. In such an environment, understanding the conditions under which liquidity creation supports growth or undermines stability is particularly important,

especially as GCC countries pursue economic diversification and financial sector reforms.

This study examines the relationship between liquidity creation and bank stability in GCC countries over a 22-year period. The results show that both on-balance-sheet and off-balance-sheet liquidity creation are negatively associated with bank stability. Bank stability in GCC countries thus depends significantly on the level of liquidity creation. These findings confirm that excessive liquidity creation exposes banks to heightened risk by amplifying maturity mismatches on both sides of the balance sheet. On the asset side, higher liquidity creation increases the share of illiquid loans and sensitivity to funding shocks. On the liability side, greater reliance on deposits raises vulnerability to confidence shocks and potential banking panics. By simultaneously expanding illiquid assets and liquid liabilities, banks may unintentionally amplify financial fragility and weaken overall stability.

The analysis further highlights the role of income diversification as a stabilizing mechanism. The results indicate that diversification into non-interest income activities has a positive effect on bank stability in GCC countries. This suggests that diversification strategies are effective in reducing bank risk, possibly because non-traditional activities in the GCC context are not inherently high-risk and may provide more stable revenue streams. These findings are consistent with portfolio theory, which predicts that income diversification reduces both idiosyncratic and systemic risk by smoothing earnings volatility.

Importantly, the study shows that income diversification moderates the negative effect of liquidity creation on bank stability. By reducing reliance on traditional lending, diversification can limit excessive liquidity creation and dampen its destabilizing effects. At the same time, diversification may introduce greater uncertainty and complexity, which can constrain banks' incentives to expand liquidity creation. This moderating role underscores the importance of banks' business models in shaping the liquidity–stability nexus.

In addition, the findings suggest that external conditions, including geopolitical risk, influence how liquidity creation affects bank stability. While geopolitical risk does not directly undermine stability, it conditions banks' behavior by encouraging more cautious liquidity management under heightened uncertainty. This highlights the relevance of regional and external risk factors for GCC banking systems, particularly given their growing economic and financial linkages with neighboring regions.

Overall, this study contributes to the literature by emphasizing the moderating role of income diversification in the relationship between liquidity creation and bank stability, an aspect that has received limited attention. By focusing on GCC banks, the analysis extends existing evidence to emerging, bank-based financial systems with distinct institutional characteristics. From a policy perspective, the results suggest that regulators should encourage prudent revenue diversification while closely monitoring liquidity creation dynamics. For bank managers, adopting a balanced approach that combines controlled liquidity creation with diversified income sources can enhance resilience and support sustainable banking stability in the GCC region.

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