Financial stability and liquidity risks in the banking sector across the CEMAC region

Orta Afrika Ekonomik ve Parasal Topluluğu Bölgesi'ndeki (CEMAC) bankacılık sektöründe finansal istikrar ve likidite riskleri

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Abstract

How does credit from the financial sector and claims on the central government affect banking sector liquidity and financial stability risks? This paper constructs an algorithm, which investigates the impact of domestic credit from the financial sector, bank to capital assets ratio, claims on the central government on banking sector liquidity – a proxy for financial stability. The results show a positive and statistically significant impact of the capital assets ratio on the bank's liquidity of 3.1%. It equally finds that domestic credit and claims on central government hurt bank liquidity, notably of -0.15% and -2.5%, respectively. The study recommends that commercial banks invest in higher-value domestic projects to improve their profitability over the long-run, thereby boosting financial stability. Furthermore, the central bank should make additional liquidity for banks contingent on the amount of credit they provide to the real economy.

Keywords: Financial Stability, Economic, Domestic Credit, Bank Liquidity

Jel Codes: B22, B23, C01, C32, G21, E5, E51, E52

Öz

Finansal sektörden gelen kredi ve merkezi hükümetin istekleri, bankacılık sektörü likiditesini ve finansal istikrar risklerini nasıl etkiler? Bu makale, yurtiçi kredilerin finansal sektörde etkisini, bankanın sermaye varlık oranını, bankacılık sektörünün likiditesine ilişkin finansal istikrarın temsilcisi olan merkezi hükümete ilişkin istekleri araştıran bir algoritma oluşturuyor. Sonuçlar, sermaye varlık oranının bankanın %3,1'lik likiditesi üzerinde olumlu ve istatistiksel olarak anlamlı bir etkisi olduğunu göstermektedir. Aynı şekilde, yurtiçi kredinin ve merkezi hükümete ilişkin isteklerin, sırasıyla -0,15% ve -2,5% olmak üzere banka likiditesine zarar verdiğini tespit etmektedir. Çalışma, ticari bankaların, uzun vadede karlılıklarını arttırmak için yüksek değerli yerli projelere yatırım yapmalarını, böylece finansal istikrarı arttırmalarını önermektedir. Buna ek olarak, Merkez Bankası, reel ekonomiye sağladıkları kredi miktarına bağlı olarak bankalar için ek likidite sağlamalıdır.

Anahtar Kelimeler: Finansal Istikrar, Ekonomi, Yurtiçi Kredi, Banka Likiditesi

JEL Kodları: B22, B23, C01, C32, G21, E5, E51, E52

Introduction

Credit growth is a vital component of financial stability, as the former is indispensable to economic growth (Gersl and Seidler (2011). Meanwhile, the corporate sector and households equally rely on credit growth to create economic activity and support consumption (Lossifov and Khamis, 2009). Consequently, credit growth forms an integral part of the economic growth nexus, and their interactions with financial and macroeconomic variables are of particular concern to regulators and policymakers.

The 2008 Global Financial Crisis (GFC) and COVID-19 reiterate the need for solid liquidity management frameworks[1] in global capital markets as dollar shortages, precipitated by a flight to safety and capital flow reversals caused central banks to implement several liquidity operations to stave off a protracted financial crisis[2] ((Kouam (2020), Kouam and Kingsly (2020), BEAC (2020), FED (2020)). The flaws in said liquidity management frameworks caused the Basel Committee to propose a new set of liquidity requirements following the 2008 financial crisis. A more globalized and financial market has exacerbated cross-asset contagion, heightened mismatches in commercial banks' balance sheets, and increased dependence on central bank financing. To enhance the effectiveness of liquidity requirements, it is essential to understand the role of bank liquid assets and the central government claims.

The latter determines the amount of liquidity demanded from the central bank during periods of stress. While the banking sector in Cameroon and CEMAC are highly liquid, significant heterogeneity exists among domestic banks[3] and foreign banks. Domestic banks are more linked to state projects and loans, and more significant variability in interest payments has a more marked impact on their liquidity positions.

The drivers of bank liquid assets provide a gauge of the extent, if at all, of liquidity and capital mismatch that exacerbate credit-induced downturns. Munyambonera (2010), Olweny and Ongore and Kusa (2013), as cited in Lukorito et al. (2014), have identified profitability as a primary objective of commercial banks[4], but equally, recognize the role of liquidity in supporting commercial bank activity in an environment of stiff competition and increased dependence on central bank liquidity. As such, liquidity emerges as a critical element of financial stability as it determines the ability of commercial banks to service short-term liabilities and demands for central bank liquidity. To bolster financial stability, central banks have used a mix of monetary and non-monetary tools in the recent past. This spans low and negative interest rates, outright monetary purchases, and forward guidance. In the CEMAC region, the central bank has adjusted monetary policy to reflect domestic macroeconomic fundamentals, commercial bank liquidity needs, and macroeconomic stability. As the economic implications of COVID-19 became apparent, the central bank lowered the policy rate by 25 basis points to 3.25% and injected 500 million of liquidity into the banking system. Capital requirements have formed the financial stability debate's essence in the post-crisis years; they are complemented by liquidity requirements that bolster financial stability. While central bank liquidity credibly addresses liquidity shortages, they equally set liquidity standards to mitigate adverse systemic effects and equally yield substantial macroprudential benefits. In recent years, liquidity coverage ratios and net stable funding ratios have come to underpin financial stability in most economies.

Meanwhile, Loan et al. (2018) find that liquidity risks are more closely linked to a financial crisis, as seen in 2008 and, more recently, the COVID-19 pandemic[5]. The banking system may be highly liquid overall; such liquidity tends to dry up during periods of macroeconomic volatility.

To improve liquidity management frameworks - indispensable to the CEMAC vis-a-vis application of Basel III- it is indispensable for policymakers and practitioners to understand the contribution of the public and private sector to banking sector liquidity.

Rather than overemphasizes the role of profitability that may reflect an increase in the value of assets rather than a structural change in the interest payments linked to specific loan types, liquidity provides a better gauge of the banks' ability to clear its short-term liabilities; the latter is symptomatic of financial stability, that is of particular interest to policymakers and regulators.

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[1] FED. (2020). Coronavirus Disease 2019 (COVID-19); Funding, Credit, Liquidity, and Loan Facilities.

[2] Letter from Chair Powell to Secretary Mnuchin regarding emergency lending facilities (November 20, 2020)

[3] See IMF (2020). Domestic debt increased due to large issuances of treasury bills (BTA) and government bonds (OTA) to offset lack of budget support in H1, and SONARA's shift towards import financing using letters of credits from domestic banks (in place of external suppliers' credits)

[4] Ongore. V. O. (2020). Determinants of Financial Performance of Commercial Banks in Kenya. International Journal of Economics and Financial. Vol. (5), Issue 1. Pg. 23 - 43

[5] Kouam. H. (2020). Assessing the Economic and Financial Fallout from COVID-19; Implications for Macroprudential Policy. SSRN Electronic Journal. DOI: 10.2139/ssrn.3603625

However, the countercyclical buffer and net stable funding ratio are not currently implemented across the CEMAC region; hence the need to investigate the effect of lending activity on bank liquid assets, a proxy for banks' ability to cover short-term liabilities during periods of macroeconomic volatility. Some studies[6] find that banks that capital affect bank's performance (survival and market share) provide a more excellent rationale to investigate the implications of bank assets, credit, and central government claims on banking sector liquidity. This paper investigates the impact of domestic credit from the financial sector, bank to capital assets ratio, claims on the central government on banking sector liquidity – a proxy for financial stability. The study is separated as follows; Chapter 2 details a literature review. A methodology follows this in chapter three, which presents a different empirical framework and presents a rationale for the chosen approach. Chapter four outlines the results, grounding the findings in the literature. The study concludes in Chapter five, with recommendations designed to bolster financial stability.

Literature review

Financial stability and banking sector liquidity

There is broad literature on banking stability, pointing out that banking sector liquidity has stability implications by affecting the financial system's systemic risk. For example, banks' possibility to trade with each other can exacerbate the contagion precipitated by systemic risk (Aghion, Bolton, and Dewatripont, 2000). Banks' ability to sell assets may equally lead to a shift in systemic risk by making individual banks less risky and thus encourage banks to hold less liquidity (Wagner, 2005). This increases dependence on central bank liquidity[7] facilities increase financial stability risks over the long run (Valla, Escorbaic and Tiesset, 2007), not least contagion across the banking sector.

However, liquidity is indispensable to ensuring financial stability, even as the short-run effects on profitability might be muted due to capital misallocation latent in cash hoarding. Nimer et al. (2013) investigates 15 Jordanian banks and finds and concluded that liquidity has significant adverse effects on profitability as banks do not make productive investments.

Data from Eastern Europe by Munteanu (2013) over the period 2003- 2010 found a slight positive and negative impact of liquidity on ROE and ROA. As such, the non-linear relationship between profitability and liquidity exists, but banks' ability to clear short-term liabilities is contingent on the availability of sufficiently liquid assets (see Fig 1). Meanwhile, Ibe (2013) found a significantly positive relationship between cash and short-term funds and bank profitability, underscoring liquids assets' role as a source of revenues and an anchor for financial stability.

During periods of macroeconomic stability, banks tend to face serious liquidity issues stemming from increased exposure. At the time of financial difficulties, banks face serious difficulties for liquidity creation and can increase banks' exposure to liquidity risk. Simona & Eugenia (2010) note that sound management and planning reduce adverse trends linked to business and financial cycles. During such periods, banks reduce lending and hold more liquid assets; they equally increase reliance on equity capital and bank deposits Strahan (2012). However, the returns from deposits and credit-linked activity are an essential measure of financial stability. The reaction of bank liquid assets to changes in the level of public and private sector assets and such entities' ability to make interest payments affect risks to financial stability.

Saleh (2020), Cucinelli (2013), and Chen (2018) conducted a study on liquidity risks under different situations and found that high loan liquidity risk increase bank exposure to financial difficulties. During such periods, they contend, deposit plays a crucial role in ensuring banks remain liquid and can afford short-term interest payments.

Lou and Sadka (2011) study the performance of liquid and illiquid stocks during the financial crisis. The empirical study compares historical betas, controls for liquidity levels and finds no difference in stocks returns. The findings suggest the salience of addressing liquidity mismatches in bank lending activity as a hedge against crisis-driven liquidity constraints.

Berger and Bouwman (2011) measure bank performance against capital and find that small banks can maintain their market positions during volatile periods, as the linkages to the broader financial system are less intense compared to more established financial firms and intermediaries. Conversely, capital inflows increase larger banks' performance, underscoring the role played by the "breakdown" in credit

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[6] See Berger and Bouwman. (2020). First, capital helps small banks to increase their probability of survival and market share at all times (during banking crises, market crises, and normal times). Second, capital enhances the performance of medium and large banks primarily during banking crises

[7] As Farhi and Tirole (2012) argue, safety nets can perversely induce correlated behavior by banks that increases systemic risk.

between the public and private sectors. Arguably, liquidity ratios will better gauge the Bank's ability to service short-term liabilities, but this paper instead attempts to understand the drivers of liquidity over the long run. In so doing, prudential policies will be complemented by investment behaviour that reflects liquidity needs whilst simultaneously addressing the structural mismatch the increases the dependence on central bank financing.

Sovereign links equally play an important role in financial stability, working via the credit channel as government-linked liabilities are equally exposed to volatile oil prices and lower oil revenues. The World Bank [8] finds that three banks control 50% of assets in the CEMAC region, including assets driven by a credit to the public sector. As such, the concentration of assets reduces monetary policy transmission; while financial shocks have a more significant impact on the region, other banks do not possess the same levers of liquidity and access to capital markets endemic to financial stability.

Research methodology

The study constructs an algorithm to investigate the effect of financial sector domestic credit, bank capital and claims on the central government on bank liquid assets. The study applies a two-step regression, first an ordinary least square regression and a quantile regression, to understand the relationship of an individual's variables on commercial bank liquid assets. This research paper follows quantitative analysis. The quantitative analysis is significant in establishing the relationship between variables through statistical means. In other words, the relationship is expressed in the numeric, which is a common method in the social science research papers ((Faizan & Haque, 2019; Ślusarczyk & Haque, 2019; Gusakov, Haque, & Jogia, 2020; Haque, Sher, & Urbański, 2020; Haque, Yamoah, & Sroka, 2020; Kot, Haque, & Baloch, 2020; Rahman et al., 2020; Ślusarczyk et al., 2020; Urbański, & Haque, 2020).). The data was obtained from the World Bank, covering 2010 – 2018, culminating 216 data points for CEMAC member countries. In addition to an ordinary least square regression, a quintile regression was equally implemented to fit the conditional distribution of responses and yield valuable insights that are otherwise absent from an OLS regression (Givord and D'Haultfoeuille (2013)). The latter assume parametric distribution while the distribution for quintile regressions are agnostic, and the modelling is equally robust to outliers (Fig. 1).

Table 1: Descriptive statistics

	Bank_Liquid_Assets	Fin_sector_domestic_credit	Bank_capital_to_assets_ratio	Claims_on_Central_Government
count	54.000000	54.000000	54.000000	54.000000
mean	34.500705	14.776259	12.897817	2.083660
std	25.410797	12.221188	4.651122	10.193855
min	7.526639	-16.134292	6.408675	-24.120462
25%	18.386963	8.055995	9.438747	-2.622891
50%	27.633869	15.737071	11.726966	1.622263
75%	39.411981	22.917353	15.756428	10.085285
max	145.528865	36.308332	23.677498	19.133093

To capture complementarities and improve the predictability of the regression model, the study constructs and tests an algorithm via artificial intelligence. The latter comprises the isolation of a particular information process problem, the formulation of a computational theory, and an algorithm's construction (Ndikum, 2020)). The problem of empirical testing can be classed as a "supervised learning problem". This paper constructs a supervised learning model designed to extract historical data patterns, although the constructed algorithm's performance is evaluated via a process known as testing.

A supervised learning algorithm is given a set of inputs-outputs (i, θ)

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[8] World Bank. (2020). Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS). Strengthening Financial Regional Institutions and Intermediation in the CEMAC Region (P161368)

$$\sum_{t+1} N(i, \theta) \quad = \quad (x_1, y_1), (x_2, y_2), (x_3, y_3), \dots . (x_n, y_n) \qquad \textbf{(i)}$$

Assuming y is generated by a random walk or unknown function modelled by a supervised learning algorithm

$F(x) = y$

Where $x = (x_1, x_2 \dots . x_n)$

Where $y = (y_1, y_2 \dots . y_n)$

A batch prediction with multiple inputs

$X = \quad x_1^i + x_2^i + x_3^i \dots x_n^i$

The performance of the algorithm is evaluated via an accuracy measure. The performance metric is labelled as follows:

$$P (\bar{y} - y) \text{ where } y : \Delta(x_1^i + x_2^i + x_3^i \dots x_n^i) \qquad \textbf{(ii)}$$

$$\text{if } \sum_{t+1} xi \quad = \quad (\theta_n)_{t+1}$$

$$P ((x_1^i + x_2^i + x_3^i) - y)) \; : \; f(x) = (\theta_n)_{t+1} \qquad \textbf{(iii)}$$
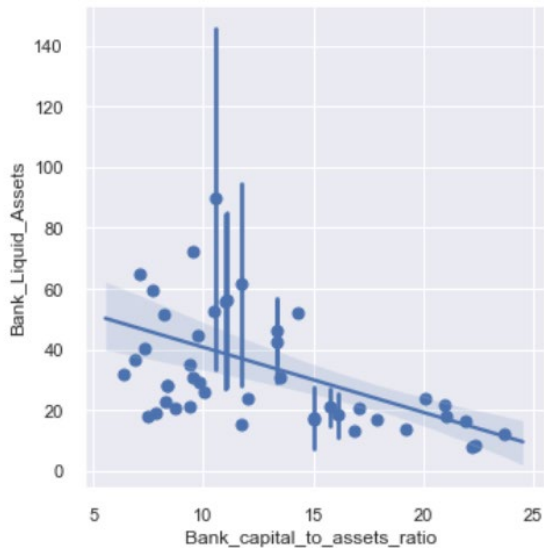
A logical exclusion of y from the data set culminating x_n^i and y_n proves equation 8

$(x_n^i) - y_n$

If $x = x_n^i.\text{drop} (\text{"y"})$

$Y = [[y_{t+1}]]$

$$P ((x_1^i y_1 + x_2^i y_2 + x_3^i y_3)) \qquad \textbf{(IV)}$$

Figure 1: The variables are evenly distributed around the mean

Source: Author's calculations

While the variables included in the study are evenly distributed around the mean, the presence of multicollinearity disrupts the predictability of a traditional OLS regression. To improve the robustness of the results, the study implements the Bruesch-Pagan tests and employs a quant regression on individual variables to gauge their effect on bank liquid liabilities.

Results and discussions

The OLS regression finds that claims on central banks have a strong negative effect on bank liquid assets. A one percentage point increase in claims on central government reduces bank liquid assets by -2.5%. Similarly, domestic credit to households and businesses provided by the financial sector equally has a negative, albeit marginal, effect on liquidity. Conversely, bank capital to assets ratio positively impacts bank liquidity, underscoring risk-centric capital requirements for commercial banks in the region. These findings chime with the empirical literature, where bank capital is associated with greater bank resilience during periods of macroeconomic volatility ((e.g., Cole and Gunther (1995), Estrella, Park, and Peristiani (2000), Wheelock and Wilson, (2000)).

Table 2: Results of OLS regression

```
                          OLS Regression Results
==============================================================================
Dep. Variable:     Bank_Liquid_Assets   R-squared (uncentered):        0.789
Model:                          OLS     Adj. R-squared (uncentered):   0.777
Method:               Least Squares     F-statistic:                   63.73
Date:              Sat, 11 Jul 2020     Prob (F-statistic):         2.88e-17
Time:                      03:36:18     Log-Likelihood:              -237.30
No. Observations:                54     AIC:                           480.6
Df Residuals:                    51     BIC:                           486.6
Df Model:                         3
Covariance Type:          nonrobust
==============================================================================
                              coef    std err      t      P>|t|    [0.025   0.975]
------------------------------------------------------------------------------
Fin_sector_domestic_credit   -0.1524    0.477   -0.320    0.751   -1.110    0.805
Bank_capital_to_assets_ratio  3.1375    0.502    6.252    0.000    2.130    4.145
Claims_on_Central_Government -2.4930    0.488   -5.113    0.000   -3.472   -1.514
==============================================================================
Omnibus:                     35.665   Durbin-Watson:                  1.532
Prob(Omnibus):                0.000   Jarque-Bera (JB):             138.236
Skew:                         1.661   Prob(JB):                    9.61e-31
Kurtosis:                    10.100   Cond. No.                        6.77
==============================================================================

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
```

It is important to note that variable significance misdescribes as model significance provides a better gauge of independent variables' predictability. Bank liquid liabilities to capital ratios is a robust measure for banks' ability to afford short term interest payments (Kenkuo, 2020), as liquidity constraints are usually rampant amongst CEMAC member banks as the highly liquid banks are equally foreign-owned.

Meanwhile, while the lack of data lessens the ability to identify sovereign linkages, the noticeable relationships between claims on central governments and bank liquidity provide a gauge for their role in enhancing financial stability. Admittedly, crude oil and petroleum products account for 29% of regional GDP and 54% of government revenues; thus, volatile oil prices affect banks' credit ratings, and sovereign links can exacerbate liquidity constraints during periods of stress as missed payments have a direct effect on bank profit margins. Not only do such outcomes increase the cost of monetary policy, but they also equally exacerbate the structural mismatch that once leads to sudden increases in bank leverage at the detriment of a credit-driven recovery. Such an outcome is particularly dire for CEMAC member countries that are increasingly reliant on oil prices, contributing 20% of regional GDP and covering roughly 75% of regions' exports. In other to understand the relationship between the oil sectors, one must first make a distinction between the arrangements. The industry is organized around two typical arrangements.

In a Profit-Sharing Agreement (PSA), the state (generally through a state-owned enterprise-SOE), and a foreign private company (generally through a resident subsidiary), set up a partnership for the extraction and export of oil and agree on a profit-sharing scheme (IMF 2020). Furthermore, a certain amount of oil (cost-oil) is used to pay the cost incurred in the exploration and extraction process. Domestic banks sometimes face significant arrears from the public sector, which hurts their liquidity. The relationship between domestic sovereign debt and banking sector liquidity has significant implications for financial stability. Admittedly, sovereign links cannot be disentangled across the banking sector due to data synchronicity and varying lending and borrowing profiles from the public sector; even so, the results, at this moment presented, attest to the linkages that inevitably determine the ability of liquidity requirements to wade off credit-linked or exogenous risks.

As illustrated below, the relationship is more complicated than econometric modelling suggests, and bank liquid assets sometimes react with a lag. It is noteworthy that increases equally follow increases in the short-term liquidity in total bank assets. It is, therefore, imminent to understand the impact of claims on the central government on liquid assets as sovereign spillovers latent in the former have a greater than a marginal effect on the bank liquid assets to capital. The latter has been little covered in the literature but remains vital to financial stability outcomes.

During periods of macroeconomic stability, the banking sector plays an increasingly vital role in facilitating the transmission mechanisms from monetary policy and central bank liquidity infusions, while the extent of the recovery hinges on the ability of credit growth to serve as an anchor for money supply (Shaheen, 2020; Omodero 2019).
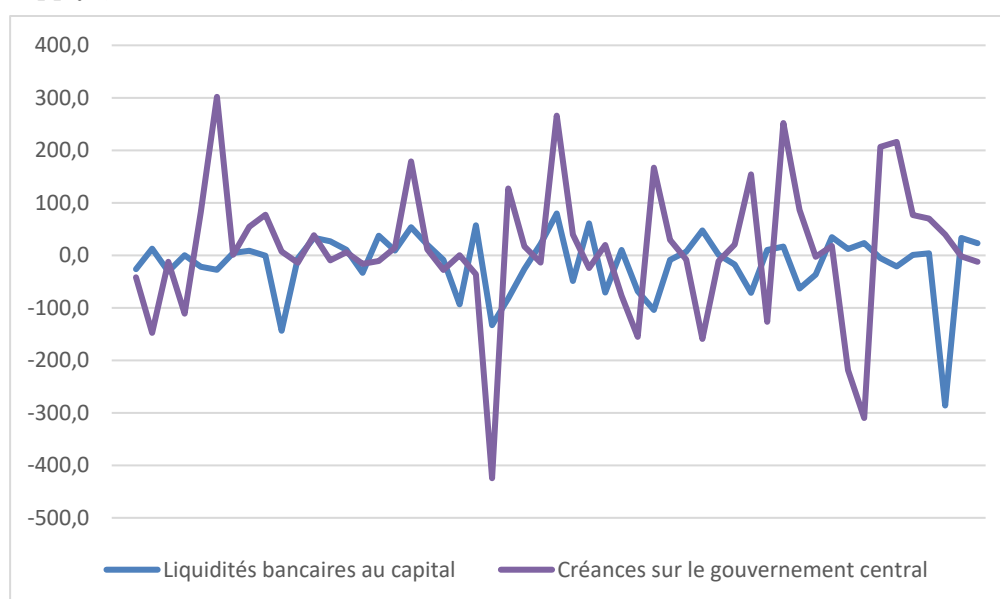
Figure 2: Bank Liquid Assets and Claims on Central Government are inversely related

Source: World Bank & Author's calculations

It is equally important to note the impact of central government claims in bank liquid assets to GDP as a proxy for sovereign linkages from financial and deposit institutions. The heterogeneity that has come to characterise the CEMAC region, of course, determines the extent of said linkages as debt holders reflect risk-free global rates, macroeconomic stability, interest rate differentials and oil prices. It is now clear that the linkages between banks and sovereigns persist, and however different, they play a vital role in the post-shock credit response to monetary policy but equally have a more significant than a marginal effect on bank liquid holdings. This outcome should serve to inform current thinking on sovereign links, bank liquidity and financial stability.

It can be argued that capital and liquidity requirements are designed to cater to such needs that at once determine the viability of the banking systems in the face of exogenous shocks and global spillovers (Blum, 1999). Bank to capital asset ratio – liquidités bancaires au capital- has no discernable relationship with claims on central government – creance sur le gouvernent.

The credit provided by the financial sector negatively affects the marginal effect on bank liquid assets to capital ratio. This suggests the propensity for short-term liquidity mismatches that are not uncharacteristic of cash-strapped banks that increase their liability positions in an attempt to boost medium-term liquidity. However, the creation of deposits from the credit-linked activity will inadvertently impact short-term liquidity as the amount of claims from borrowers has a direct, if not noticeable, impact on bank liquid positions. Interest payments are equally linked to the quality and size of loans; they are a more significant determinant of solvency in CEMAC banking institutions.

Rather than create a disincentive for credit-linked growth, a credible path towards financial stability will entail prioritising investable projects that can ensure sustained returns independent of macroeconomic outcomes. Such an outcome will be market-driven rather than directed by the central bank, but communication plays a vital role in insulating short and medium-term returns on bank lending activity.

Meanwhile, Bank capital to asset ratio positively impacts bank liquid assets to capital ratio and ensures banks can perform vital functions during periods of financial volatility. As a regulatory and crises-averse regulatory requirement, it improves banks' resilience to credit shocks. During periods of macroeconomic volatility, central banks add liquidity into capital or financial markets in other to ensure that banks are sufficiently capitalised and do not experience shocks to liquidity.

Admittedly, the model's significance is ensured via the Breusch-Pagan tests, where the p-value stood at 0.00219. As such, we reject the null hypothesis, as there is no heteroscedasticity. In other to better gauge the effect of the independent variables, the study implements quantile regression to determine the impact of financial sector credit, bank to capital assets ratio, claims on central government and bank liquidity.

Table 3: Quant regression for financial sector domestic credit

```
                    QuantReg Regression Results
================================================================================
Dep. Variable:     Bank_Liquid_Assets   Pseudo R-squared:              0.3134
Model:                        QuantReg   Bandwidth:                      13.60
Method:                  Least Squares   Sparsity:                       30.76
Date:                 Sun, 12 Jul 2020   No. Observations:                  54
Time:                         16:49:32   Df Residuals:                      52
                                         Df Model:                           1
================================================================================
                          coef    std err          t      P>|t|      [0.025      0.975]
--------------------------------------------------------------------------------
Intercept               47.7047      3.302     14.446      0.000      41.078      54.331
Fin_sector_domestic_credit  -1.0616      0.173     -6.142      0.000      -1.409      -0.715
================================================================================
```

The coefficient for financial sector domestic credit is more damaging, but there are significant differences across the 35th and 75th percentile, with the outcome ranging between -0.94 and -1.75, with less adverse outcomes in the upper bound (See Figure 3).
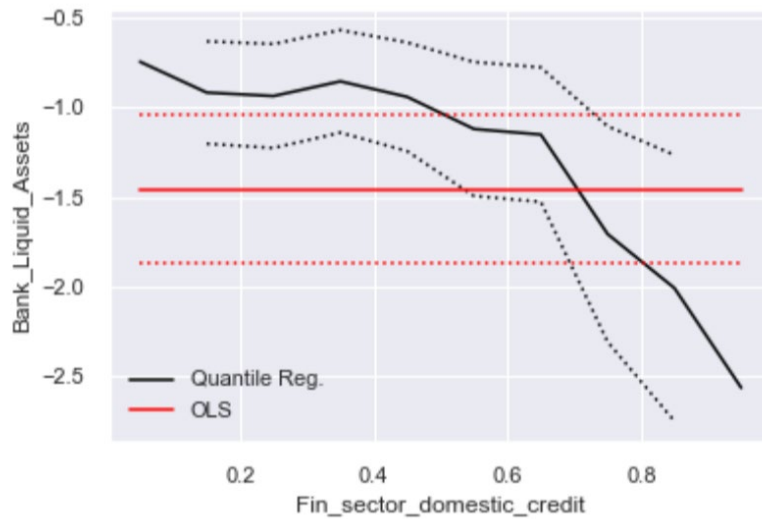
Figure 3: Upper and lower bounds of financial sector credit and bank liquid assets

Compared to the OLS regression, claims on central government had a less marked effect on bank liquid assets, but the relationship remains significant, suggesting that sovereign links, however disparate, play a significant role in determining bank liquid assets. Hence, a 1 point increase in central government claims reduces bank liquid assets by 1.4%.

```
                      QuantReg Regression Results
==============================================================================
Dep. Variable:     Bank_Liquid_Assets   Pseudo R-squared:              0.3069
Model:                       QuantReg   Bandwidth:                      13.15
Method:                 Least Squares   Sparsity:                       28.32
Date:                Sun, 12 Jul 2020   No. Observations:                  54
Time:                        15:36:54   Df Residuals:                      52
                                        Df Model:                           1
==============================================================================
                        coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
Intercept             32.1340      1.968     16.331      0.000      28.186      36.082
Claims_Central_Government -1.3557   0.191     -7.105      0.000      -1.739      -0.973
==============================================================================
```

Figure 4: Quant regression of Central government claims and bank liquid assets to profit ratio

Meanwhile, bank capital to assets ratio hurt bank liquid assets as they emphasise long-term solvency and resilience over short-term liquidity. However, the marked divergence likely denotes an error term's absence, and the variables positively affect financial stability (Anjan, 2013).

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                      QuantReg Regression Results
==============================================================================
Dep. Variable:     Bank_Liquid_Assets   Pseudo R-squared:              0.1146
Model:                       QuantReg   Bandwidth:                      14.50
Method:                 Least Squares   Sparsity:                       33.68
Date:                Sun, 12 Jul 2020   No. Observations:                  54
Time:                        16:14:49   Df Residuals:                      52
                                        Df Model:                           1
==============================================================================
                        coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
Intercept             46.6436      6.812      6.847      0.000      32.974      60.313
BankCapital_AssetRatio -1.4658     0.497     -2.947      0.005      -2.464      -0.468
==============================================================================
```

Figure 5: Quant regression of Bank Capital Assets ratio and bank liquid assets to profit ratio

Conclusion

The 2008 GFC and Coronavirus have exposed vulnerabilities in risk management frameworks and the need for macroprudential frameworks to ensure solvency and liquidity to bolster financial stability. Whilst regulatory requirements are implemented to a varying extent across jurisdictions, liquidity has come to form an essential tool in ensuring banks remain solvent during stressful periods.

The bulk of research in this field has emphasized capital requirements that protect equity values, reduce the uncertainty linked to the credit rating and ensure the financial system remains solvent. Meanwhile, bank profitability has become increasingly central to financial stability discourse.

This paper takes a novel approach by investigating the prevalence of sovereign links and regulatory requirements on bank liquid assets. The latter not only determines the ability of banks to afford short-term interest payments, it equally determines the extent to which such institutions are reliant on central bank financing. It finds that claims on central governments in the CEMAC region harm bank liquidity, hence the need for banks to address the liquidity mismatch by making investments that improve long-term profitability. Such an outcome will reduce the reliance on central bank liquidity and create a distinctive moral hazard.

This paper constructs an algorithm that investigates the impact of domestic credit from the financial sector, bank to capital assets ratio, and claims on the central government on banking sector liquidity – a proxy for financial stability. The results show a positive and statistically significant impact of the capital assets ratio on the bank's liquidity of 3.1%. It equally finds that domestic credit and claims on central government harm bank liquidity, notably of -0.15% and -2.5%, respectively.

Recommendations

To bolster financial stability, commercial banks should invest in projects that will support liquidity in the medium term and profitability over the long run. While the study finds a negative relationship between domestic credit and claims on the central government,' the study recommends that commercial banks invest in projects with a sustainable economic dividend. This will ensure that sustainable infrastructure, energy, and manufacturing and higher value-added services are prioritized, supporting financial stability and facilitating economic development in CEMAC member countries.

Furthermore, commercial banks should rethink their current approach to debt issuances and investments and central bank financing. Rather than use debt issuances to cover short-term liabilities, debt issuances should be used to boost the investment, the quality of assets, and commercial banks' equity. This will improve banking sector resilience and reduce the reliance on central bank financing and FX risk linked to exogenous shocks or banking sector liquidity constraints.

The findings equally suggest a need for regulators to continue the effective monitoring and reporting of the bank to capital asset ratios as an anchor for financial stability. Meanwhile, commercial banks should join the global movement – Taskforce for Climate Change Disclosure – to harmonize reporting standards and enable regulators to identify climate risks in their portfolios. Finally, this paper recommends that commercial banks should invest in projects that will insulate their results over the long run; while this should and cannot be dictated by the central bank, liquidity infusions could be made contingent on the amount of credit provided to the real economy.

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