BOHR International Journal of Finance and Market Research
2024, Vol. 3, No. 1, pp. 32–44
DOI: 10.54646/bijfmr.2024.27
www.bohrpub.com

RESEARCH

What lessons does the pandemic of COVID-19 teach us about banking liquidity and information share in the CEMAC zone?

Djimoudjiel Djekonbe[1*†] and Dany Dombou T. Rostand[2†]

[1]Laboratory for Analysis and Research in Mathematical Economics (LAREM), Center of Research in Economic and Inclusive Development (CREDI), University of N'Djamena, N'Djamena, Chad
[2]Independent Researcher, Cameroon, Paris, France

***Correspondence:**
Djimoudjiel Djekonbe,
djimoudjiel_djekonbe@yahoo.fr

†ORCID:
Djimoudjiel Djekonbe,
0000-0002-6967-1844

Dany Dombou T. Rostand,
0000-0001-7549-5966

Received: 02 December 2024; **Accepted:** 16 December 2024; **Published:** 31 December 2024

This paper examines how the COVID-19 pandemic has influenced both the prevalence of excess liquidity and the degree of information sharing within the CEMAC region's financial sector. Using monthly data from 2000 to 2023 and applying a Bayesian Vector Autoregression (BVAR) approach. Pandemic-related shocks reduced excessive liquidity by approximately 12% and deposit levels by 8% over a 6-month horizon. These liquidity disturbances were observed to persist over both short- and long-term periods, indicating systemic challenges linked to information asymmetry. Following the onset of COVID-19, there was an uptick in credit provision, coupled with a downturn in equity investment observed after the initial 6-month period of the outbreak. Likewise, in parallel with the decline in equity, the flow of banking information diminished during the pandemic, indirectly supporting an increase in indebtedness. To mitigate these effects, the study recommends addressing information asymmetry by introducing comprehensive credit registries and implementing borrower assistance measures.

Keywords: information sharing, excess of liquidity, COVID, BVAR, economic and monetary community of Central African States

JEL classification: C23, D82, E50, O55

Introduction

The COVID-19 pandemic represents an exceptional economic crisis, one that differs markedly from earlier global downturns and those that have impacted the CEMAC region. Two defining attributes set this crisis apart: it is rooted in non-economic factors, and it spans the entire globe. The subsequent economic repercussions have varied widely across regions, influenced by distinctive local conditions. As a result, the global economy has suffered substantial setbacks, and the financial sector, in particular, has experienced significant strain.

Financial market volatility, especially within equity segments, served as the principal conduit through which the pandemic's impact reverberated, ultimately affecting market liquidity (1, 2). Economists have focused attention on how the shock, together with policy responses, has altered firm valuations. For instance, Ramelli and Wagner (3) note that globally oriented companies saw substantial performance declines. Likewise, the importance of corporate debt and liquidity as determinants of firm value became more evident.

Binder and Thesmar (4) illustrate this by showing that early-pandemic revisions to analysts' forecasts were a major factor behind initial drops in corporate share prices (January to mid-May 2020). Further, Gormsen and Koijen (1) quantify investor expectations for economic expansion based on equity and dividend futures data, concluding that timely fiscal stimulus measures supported both stock markets and long-term growth prospects across Japan, the US, and the EU.

While Western financial systems clearly felt the pandemic's effects—most visibly in their stock markets—this pattern may not hold in the CEMAC sub-region. There, stock markets tend to be subdued and nearly stagnant (5). This lethargy partly reflects persistent asymmetric information issues, a known source of financial sector inefficiency (6–9). Even before the crisis, the CEMAC region's financial landscape was paradoxical, presenting both excess liquidity and notable credit rationing (10). This environment reveals the difficulties local banks face in effectively financing economic activities, unlike their Western counterparts before the pandemic. In advanced economies, regulatory authorities encouraged banks to draw on capital buffers and sustain lending during the crisis, avoiding abrupt monetary tightening (11). Thanks to healthier balance sheets, these strategies mitigated immediate liquidity strains, although defaults eventually rose, and rebuilding reserves became a paramount concern in advanced markets.

In contrast, within CEMAC, pandemic response efforts encountered entrenched structural problems, such as excess liquidity coupled with credit constraints, further weakening banking efficiency. With the goal of softening the economic blow, banks in the sub-region needed to maintain sustainable lending (11, 12). Monetary authorities responded with targeted interventions aimed at easing the sudden tightening of short-term funding and ensuring credit continued to flow. Measures ranged from employing reserve resources to supporting lending activity (13, 14).

Policy interventions introduced as early as March 2020 in CEMAC have since evolved—some persisted, others were withdrawn, and new ones emerged. Regulatory authorities instituted regular liquidity injections to shore up financial markets, extended maturities on certain operations for more stable liquidity conditions, temporarily paused the renewal of government security buyback programs, and refined the allocation of liquidity via BEAC's intervention mechanisms. Two immediate effects followed: lending standards grew more stringent as institutions anticipated deterioration in portfolio quality, potentially straining bank liquidity; and governments issued sizable quantities of securities to offset anticipated public revenue shortfalls and shrinking external financing opportunities (15). Given the distinctive features of local economies, the regulatory adjustments, and the complexities of the pandemic, investigating its impact on the region's excess liquidity scenario is both timely and necessary.

This study aims to investigate the intricate dynamics of excess liquidity and information sharing in the CEMAC banking sector, particularly in the context of the COVID-19 pandemic. Grounded in the central hypothesis that the pandemic-induced shock contributed to excess liquidity while enhanced information sharing could mitigate its effects, the objectives are as follows:

- To assess the impact of COVID-19-related shocks on excess liquidity within the CEMAC region: Using the Bayesian Vector Autoregression (BVAR) model, the study tests whether the pandemic exacerbated or alleviated liquidity imbalances across short- and long-term horizons.
- To evaluate the role of information sharing as a mitigating factor against excess liquidity: The hypothesis posits that increased transparency in borrower information can improve credit allocation efficiency and reduce systemic risks. This objective explores the extent to which information-sharing mechanisms influence liquidity trends during the pandemic.
- To provide empirical insights for policy development aimed at enhancing banking efficiency: The study examines how targeted interventions, such as the establishment of credit registries and borrower assistance programs, can address structural inefficiencies and improve resilience against future economic shocks.

Assessing COVID-19's impact on CEMAC banking sector: Transmission channels

In general, economists identify two primary sources of excess liquidity in CEMAC, varying by period. Government deposits were the main source of excess liquidity in this subregion during the 1999s. However, from the period 2000 to 2008, soaring oil prices fueled excess liquidity on the international market (16, 17). Nevertheless, it is important to note that the findings of the various historical cases of excess of liquidity in the CEMAC region depend on varying economic conditions during different periods. Between 1995 and 1999, government deposits represented the primary contributor to surplus liquidity. Later, from 2000 to 2008, skyrocketing oil prices on international markets led to another wave of excess liquidity (16, 17). Now, a plausible third factor appears in the 2020s: the COVID-19 pandemic.

Looking beyond the immediate crisis, this surplus liquidity—despite current challenges—could offer avenues for economic revitalization. Measures such as bolstering financial inclusion, increasing credit accessibility, and stimulating private-sector financing remain possible pathways to recovery (18). Yet the pandemic has severely strained numerous firms, limiting their ability to honor obligations (19). Meanwhile, the share of non-performing

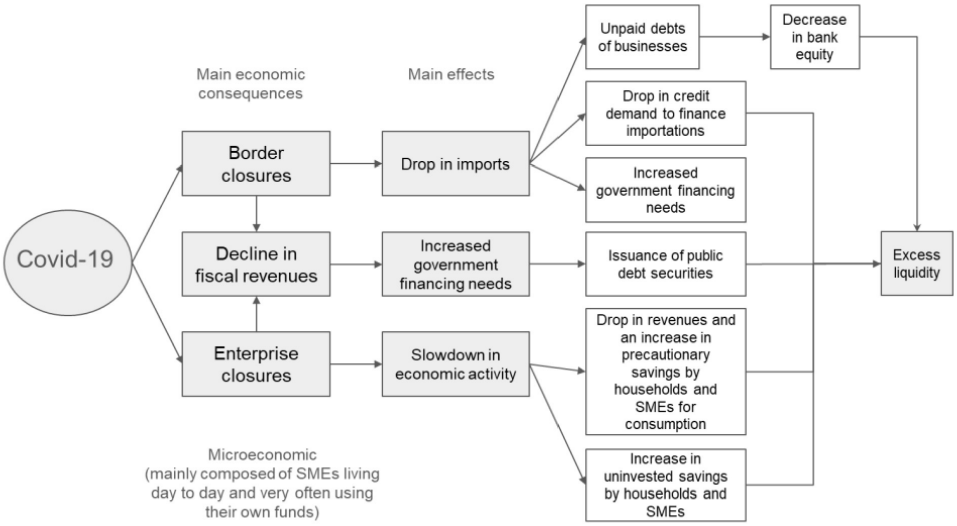


FIGURE 1 | How the pandemic economic shock contributes to excess bank liquidity in the region. Source: Authors.

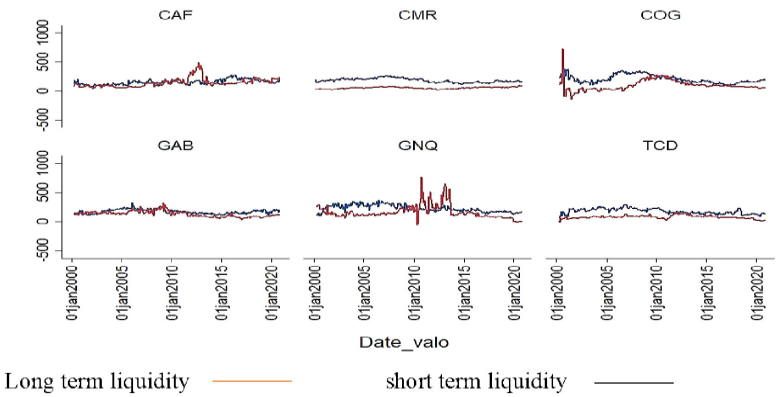


FIGURE 2 | Short and long terms liquidity trends leading during the COVID-19. Source: Authors.

loans decreased from 22.2% in December 2019 to 21.8% by March 2021, after peaking at 24.1% in June 2020. Such instability has intensified banks' risk aversion toward borrowers, leaving companies struggling to secure financing amid the crisis.

Figure 1 illustrates these dynamics. The COVID-19 shock prompted the Bank of Central African States (BEAC) to revise its monetary interventions. It halted certain liquidity drawdown operations introduced in early 2020, shifting instead toward strategies aimed at injecting liquidity into the system.

According to Bacale (15), the principal hazard now lies in persisting with expansionary monetary policies in an environment already awash with liquidity. Banks, confronted by high liquidity yet low demand and uncertain repayment prospects, adopt a cautious approach to lending. This situation, amid post-crisis recovery efforts, reflects a lingering lack of confidence in the region's borrowers.

This atmosphere of weak confidence underscores the degree of asymmetric information prevalent in the region's credit markets. Under such conditions, providing reliable data on borrowers can serve as a remedy against the entrenched information asymmetries (6, 7). Unfortunately, factors such as the expansive informal sector and the absence of a fully functioning private credit registry within CEMAC amplify the crisis's effects by deepening these information gaps. Consequently, these dynamics influence the accumulation of excess liquidity.

Furthermore, the limited coverage of public information-sharing platforms and the lack of private credit bureaus in CEMAC likely intensified credit risks during the COVID-19 pandemic (20, 21). The region's banking structure, predominantly oriented toward short-term liquidity, further constrains long-term financing strategies for the broader economy.

Figure 2 above demonstrates that short-term liquidity has generally outweighed long-term liquidity in the CEMAC region. Notably, the onset of the COVID-19 health crisis coincided with a decrease in long-term liquidity. This observation suggests that the pandemic's influence on liquidity depends on the specific forms it takes (as shown in Appendices 2 and 3 for further detail). Drawing upon the

FIGURE 3 | The connection between information asymmetry and excess liquidity. Source: Authors.

Stiglitz and Weiss framework, the present study emphasizes the significance of information sharing in mitigating excess liquidity within CEMAC banks during a COVID-19-driven environment. The goal is to illuminate one of the main pathways through which the crisis permeated the sub-regional financial system and to consider potential policy directions. The central hypothesis put forward is that the shock induced by the COVID-19 pandemic contributed to the region's excess liquidity conditions, while enhanced information sharing could have contained it (**Figure 3**).

Methodological approach

Econometric model

To investigate how the COVID-19 pandemic influenced the CEMAC financial system under conditions of information sharing, this research employs an autoregressive framework. By leveraging both the available data and established prior knowledge about the behavior of the studied excess liquidity variables, the estimation is conducted through a Bayesian Vector Autoregressive (BVAR) model, following the empirical methodology of Ghenimi and Brahim Omri (22). The priors are selected using the Minnesota approach, given the uniformity in monetary policy decisions and the simultaneous adoption of COVID-19-related measures across CEMAC. A Bayesian model is well-suited to capturing the complex, evolving interactions among financial macroeconomic indicators and health-related information—such as the presence of the COVID-19 virus—thus providing a more nuanced understanding of how these relationships shape excess liquidity.

Under the random shock framework, the classical VAR specification model can be expressed as:

$$e_t = A_0^{-1}\varepsilon_t \tag{1}$$

Here, A_0 is defined as the residual matrix for the reduced form of the model, and e_t is the residuals vector. In matrix form, the equation takes on the following structure:

$$e_t \cong \begin{pmatrix} e_t^{\text{debt}} \\ e_t^{\text{credit\_brut}} \\ e_t^{\text{liquidity\_short}} \\ e_t^{\text{liquidity\_long}} \\ e_t^{\text{deposit}} \\ e_t^{\text{equity}} \\ e_t^{\text{covid}} \end{pmatrix} = A_0^{-1} \begin{pmatrix} \varepsilon_t^{\text{debt}} \\ \varepsilon_t^{\text{credit\_brut}} \\ \varepsilon_t^{\text{liquidity\_short}} \\ \varepsilon_t^{\text{liquidity\_long}} \\ \varepsilon_t^{\text{deposit}} \\ \varepsilon_t^{\text{equity}} \\ \varepsilon_t^{\text{covid}} \end{pmatrix} \tag{2}$$

The central assumption in estimating the BVAR model is that the variables included are treated as endogenous. Unlike traditional VAR estimation, Bayesian methods determine parameter distributions assumed proportional to the likelihood of observed data to guide parameter estimation. Following the approach of Garchs and Odendahl (23), the BVAR model can be represented as:

$$y_t = B_o + \sum_{i=1}^{p} B_i y_{t-i} + A^{-1} \sum_{t}^{1/2} e_t \tag{3}$$

$$\sum t \equiv \text{diag}(\sigma_{1,t}^2, \ldots\ldots\ldots, \sigma_{k,t}^2) \tag{4}$$

$$\log \sigma_{k,t}^2 = \log(\sigma_{k,t-1}^2) + \eta_{k,t}, \text{ pour } k = 1, \ldots, K. \tag{5}$$

Stochastic volatility is taken into account, enabling us to significantly improve the BVAR model's density forecasts. By integrating the *dig* (.) operator, we generate the variance-covariance matrix according to the law $N(\mu, \phi)$. In this work, we assume a posteriori distribution of the parameters to be estimated according to Bayes' theorem:

$$f(\Phi, \Omega | Y_t) = \frac{F(Y_t | \Phi, \Omega) \times P(\Phi, \Omega)}{F(Y_t)} \tag{6}$$

Formally, the parameters are determined from the following specification:

$$y_t = B_o + \sum_{i=1}^{p} B_i y_{t-i} + \varepsilon_t \tag{7}$$

Z_t the $[(np+1)*1]$ is the vector of endogenous variables, including a constant term. In this study, the key variables are Debt, Credit_Brat, Liquidity_short, Liquidity_long, Deposits, Equity, and Covid[1]. Represented in matrix form, the equation is:

$$Y_t = \Phi' Z_t + \varepsilon_t \tag{8}$$

With:

$$Z_t \equiv \begin{pmatrix} 1 \\ y_{t-1} \\ y_{t-2} \\ \cdots \\ y_{t-p} \end{pmatrix} \quad \text{and} \quad \Phi \equiv \begin{pmatrix} c \\ \beta_1 \\ \beta_1 \\ \cdots \\ \beta_p \end{pmatrix} \tag{9}$$

εt denoting the vector of residuals. The variance-covariance matrix of these residuals characterizes their distribution.

[1] In the final segment of the analysis, we integrate an information-sharing index (info_share) to assess how it might mitigate the detrimental effects of the COVID-19 shock.

Functions F and P represent the likelihood and the assumed prior probability distribution of the parameters to be estimated. Thus, the posterior probability distribution emerges from combining the prior information with the observed data.

The prior of Minnesota, as suggested by Ghenimi and Brahim Omri (22) and building on the works of Gininone and Odendahl (24), is applied here to incorporate prior knowledge on model variables. These priors typically assume that any variable exhibits at most a unit root tendency, ensuring that the specification accounts for both stationary and potentially non-stationary behaviors of the data over time. The SIMS and ZHA priors may also be employed if required, depending on whether the data manifest non-stationary properties. Ultimately, chosen values for the hyperparameters (e.g., $\lambda_1 = 0,1$; $\lambda_2 = 0,99$; $\lambda_3 = 1$; $\lambda_4 = 100$) guide the shrinkage level and influence how each variable's historical values shape the posterior distributions.

To ensure the reliability of the outcomes obtained with the Minnesota prior, we will apply a cointegration test. The ARDL model will serve as the foundation for this staggered lag evaluation. Depending on the presence and order of stationarity and cointegration among the variables, the chosen model will be either an error-correction model (ECM) or a vector error-correction model (VECM).

Source of descriptive statistical data

As shown in Appendix 2, which summarizes the descriptive statistics, we analyzed 1488 observations. On average, permanent capital accounts for approximately 12.5% of banks' total assets. The equity risk coverage ratio averaged 13.16 points and ranged down to a minimum of 58.5 points. Non-performing loans, shareholders' equity, deposits, gross loans, and overdue loans constituted around 0.7%, 12.8%, 74.17%, 57%, and 0.9% of total balance sheet value, respectively. Both long- and short-term transformation capacities remained robust, reaching 109 points (long-term liquidity) and 186 points (short-term liquidity). The COVID severity index exhibited a notably high average of 97.22, with a minimum value of 27.78. Congo and Chad were the most affected countries. Meanwhile, the average information coverage rate—a measure reflecting the percentage of adults covered—stood at only about 8% across the CEMAC region (see Appendix 4).

Results

Impulse responses to the sharing information shocks

Figure 4 presents the initial impulse response results for the period before COVID-19 emerged. The goal here is to demonstrate how information sharing influenced liquidity conditions in CEMAC prior to the pandemic. Two primary scenarios can be distinguished.

The figure shows that a positive shock to information sharing enhances customer deposit variability, which subsequently increases gross credit availability around the fourth and sixth months. As banks in the sub-region

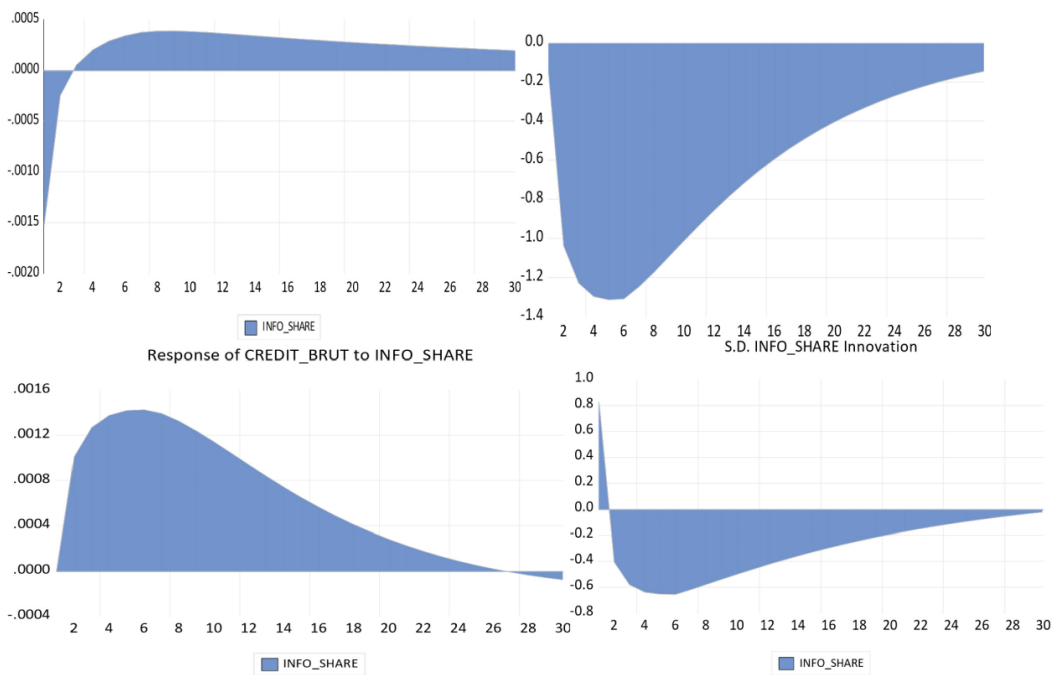


FIGURE 4 | Responses to information-sharing shocks. Source: Authors.

share information more effectively, credit access improves, buoyed by rising bank deposits. Consequently, as gross credit grows due to improved information exchange, both short- and long-term excess liquidity decline during the same timeframe. In other words, information sharing curtails excess liquidity (25) across the CEMAC zone.

Saxegaard (26) underscores that reliable, shared information can influence credit rationing practices. In a setting with lower levels of information asymmetry, financial institutions are less vulnerable to mounting bad debts and corresponding excess liquidity concerns. This environment enables banks to better calibrate their lending strategies, thereby expanding financing options through credit extension (7, 27, 28).

Severity of COVID-19 and banks impulse responses

At this juncture, our main objective is to examine how COVID-19-induced shocks have influenced banking behavior within the CEMAC sub-region. More specifically, we want to understand how banks respond by adjusting their short- and long-term liquidity positions and how they mobilize deposits and credit supply.

To address potential endogeneity issues among variables such as short- and long-term liquidity, we apply suitable shock constraints. These constraints provide an economic interpretation of the identified shocks. In other words, the pandemic is treated as an external impetus influencing financial indicators, not vice versa. Thus, we categorize and interpret pandemic-related shocks according to two criteria: those affecting banking activities and those influencing prudential, stability-oriented behavior. The rationale behind these choices is rooted in banks' roles in upholding financial stability chiefly through adherence to regulatory frameworks and by financing the region's economies.

By grouping banks based on whether they are public, small, or large, Demirgüç-Kunt et al. (13) observe that smaller institutions, in particular, experienced a drop in their returns during the COVID-19 period. However, liquidity enhancement measures in the market helped counter these effects, essentially ensuring that banks could protect their rent extraction capabilities.

The analysis of CEMAC countries presented in the subsequent figure sheds light on the shifting balance between short- and long-term credit transformation capacities. The results (see **Figure 5**) show that a positive shock to the severity of the COVID-19 pandemic simultaneously affects (in the short run) and diminishes excess liquidity conditions.

Examining the behavior of banks over both the short and long term, the first two quarters indicate that a positive COVID-related shock actually increased excess liquidity. These effects began to manifest starting around the fifth month. Under these conditions, where banks hold significant surplus liquidity, the overall transmission of lending shocks took on a positive trajectory. The subsequent reduction in excess liquidity can be attributed to an uptick in gross credit extended to the economy.

Within the same timeframe, the pandemic's favorable shocks on excess liquidity have implications for the growth of gross credit and deposits, as observed around the sixth and ninth months. The economic downturn triggered by pandemic-related health measures (such as quarantine and the suspension of business activities) prompted banks to concentrate more heavily on short-term domestic credit rather than allocating funds to investment or longer-term loans.

Referencing Pagano and Jappelli (7), as well as Mamatzakis and Kalyvas (29), who stress the link between bank

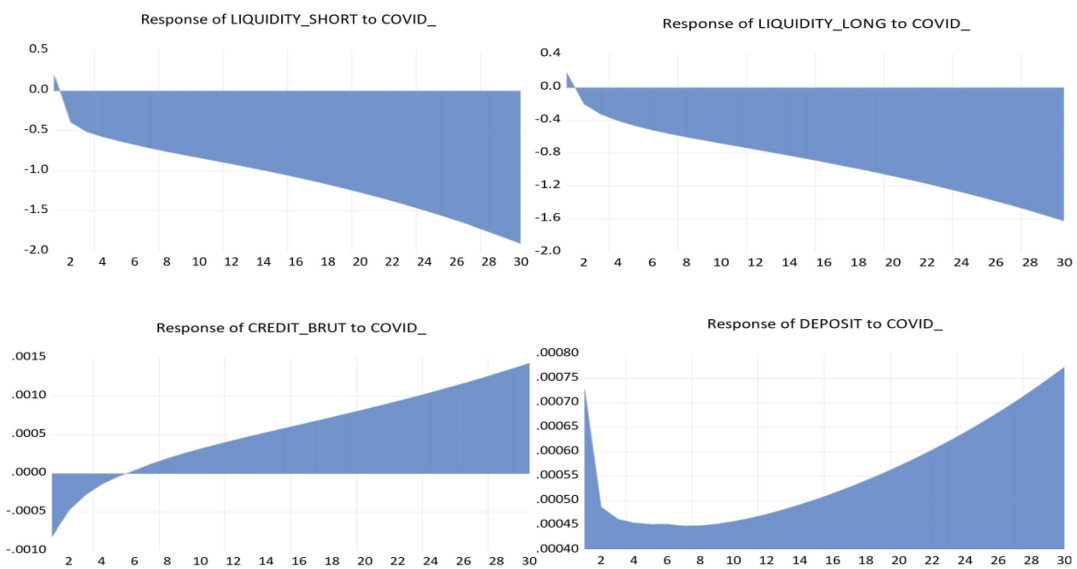


FIGURE 5 | Impulse responses following shocks to COVID-19. Sources: Authors.

excess liquidity and information asymmetries, the present circumstances bring these insights into focus. The pandemic, it appears, has helped mitigate excess liquidity within CEMAC's banking sector by facilitating greater access to short-term credit. This can be explained by the BEAC's decision not to reinstate liquidity drawdowns initiated in early 2020 (30). Despite the pandemic's severity and a decline in deposits at the start of the first 3 months, the trend remains unchanged. According to Andrianarison and Nguem (31), banks' involvement under these conditions is vital. It should enable firms to offset both income declines and various difficulties, including fulfilling their tax obligations, considering the drop in demand and other constraints on household income.

In developed economies, interventionist policies aimed at mitigating the implications of COVID-19 have included credit facilities for borrowers, a change in monetary policy strategies and borrower assistance (facilities), monetary policies, and in short, liquidity support based on prudential measures (13). In CEMAC, banks faced significant exposure to prudential measures. Beyond pandemic-related effects, compliance constraints influenced bank behavior and activity. The COVID-19's severity positively impacted systematical bank capital and particularly information sharing (see **Figure 6**). Initially (the first three (3) months), the pandemic's severity affected equity capital and information sharing. Despite deposit declines mentioned at the beginning of the month, shareholders' equity compensated for credit requests, aided by the BEAC's loan drawdowns. Contrary to existing literature (32), CEMAC made counter-cyclical adjustments to equity capital during the pandemic, rather than pro-cyclical adjustments observed in recessions. During an economic recession, banks typically ration credit to riskier agents (33, 34). The pandemic increased risk positively and affected past-due receivables from the second month onwards, following the positive shock of the COVID pandemic.

According to the Central African States Bank, the pandemic period of COVID-19 has not really reduced the risky context of the financial system positively and is highly correlated to the level of bad and doubtful debts. Similarly, in relation to the pandemic context, the health policies of containment and border closures in particular can be indexed to explain the decline in equity capital, the result of the ensuing recession.

The presence in the short and the long term of the cointegrated relationships between financial variables confirms once more the results obtained previously from the error-correction model (see appendices). It emerges that in the nonlinear effect or in the long term, the pandemic chock conducts to observe non-negligible implications on the liquidity of CEMAC banks both in the short and long term.

According to **Figure 1**, loan demand exhibited a notable increase during the initial phases of the COVID-19 pandemic. This rise can be attributed to firms and households seeking financial support to manage liquidity constraints amid economic disruptions caused by lockdowns and decreased revenue streams. The demand for loans was primarily concentrated in short-term credit facilities, reflecting an urgent need for working capital rather than long-term investments. However, banks exercised caution in their lending practices due to elevated credit risks and uncertainties surrounding borrower repayment capacity, exacerbated by widespread economic instability.

The increase in loan demand aligns with global patterns observed during economic crises, as noted by Demirgüç-Kunt et al. (13). However, the unique challenges within the CEMAC region, such as weak credit reporting systems

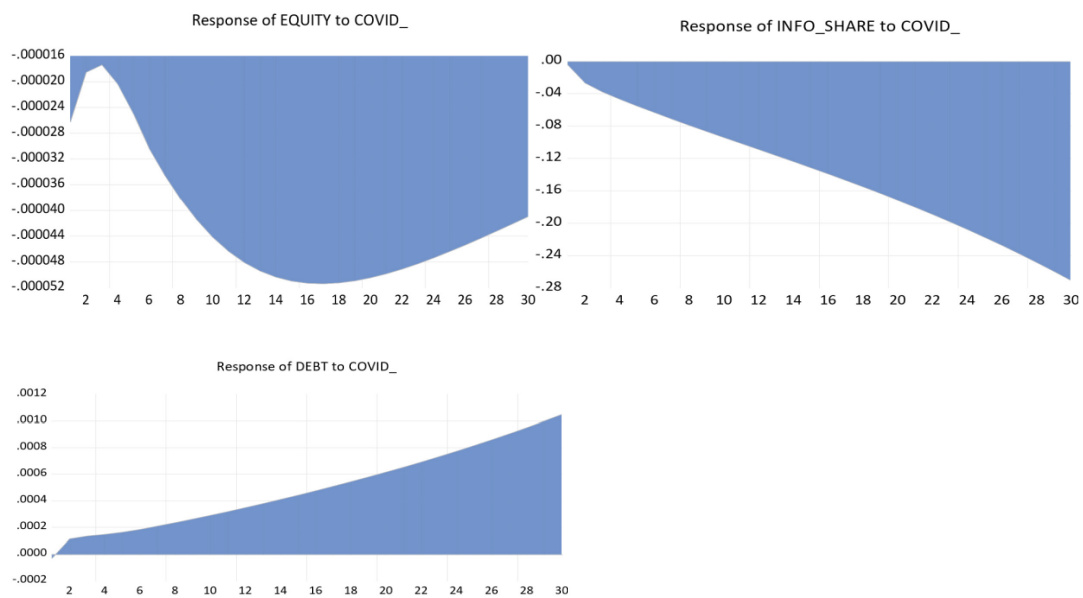


FIGURE 6 | Shock on prudential indicators. Source: Author.

and limited financial inclusion, amplified the effects of information asymmetry, constraining the effective allocation of credit. This underscores the importance of policy measures aimed at improving transparency and enhancing borrower information through credit registries.

Classic decompositions

The analysis of the classical variance decomposition confirms some essential cases of the financial activity during the pandemic COVID-19 in the CEMAC zone. The variance of information sharing is at least 99% self-influenced in the short term and the long term. The COVID-19 effect on the variance of information sharing remains negligible, expressing a low level of information sharing between banks. Despite the strong variation in short-term liquidity explained by its own variance along the 10 periods studied, information sharing and the shock of the severity of the COVID pandemic contribute at least 0.76% and 0.11%, respectively, in the long term. As for the variance of long-term liquidity, it controls at least 90% of its variances through its own adjustments. At least 6% of the variance is explained by the level of bank deposits. Deposits drive long-term lending. While by considering the long term, the classic variance in equity is influenced by the gross credit from banks to the economy (at least 20%) influenced by overdue loans in the same time dimension.

Discussion and Policy implications

The findings of this study shed light on critical dynamics in the CEMAC banking sector during the COVID-19 pandemic. The observed reduction in excessive liquidity, approximately 12% over the initial 6 months of the pandemic, underscores the influence of pandemic-induced economic disruptions on banking activity (35, 36). This reduction aligns with increased credit provision and declining deposit levels, reflecting adjustments made by banks to address evolving liquidity conditions.

Key insights from the study emphasize the interplay between liquidity trends and information asymmetry. For instance, the observed downturn in equity investments and the corresponding decline in information sharing highlight structural inefficiencies that hindered optimal resource allocation during the pandemic. These inefficiencies further accentuate the critical role of robust information-sharing mechanisms in mitigating systemic risks.

The BVAR model results reinforce the need for policy interventions to address information asymmetries. By establishing comprehensive credit registries, policymakers can enhance the transparency of borrower information, thus promoting sustainable lending practices. Additionally, the integration of borrower assistance programs could mitigate the negative effects of economic downturns on the region's banking sector.

From a policy perspective, the findings also call for a reassessment of regulatory frameworks within CEMAC. As observed, the absence of functional credit bureaus exacerbated the challenges of liquidity management, particularly during periods of heightened uncertainty. Strengthening the region's financial infrastructure by prioritizing the development of information-sharing platforms could foster greater resilience against future economic shocks.

Finally, this study acknowledges certain limitations, such as its reliance on secondary data and the absence of real-time feedback mechanisms. Addressing these limitations in future research could further enrich the understanding of liquidity dynamics and policy impacts within the region.

The findings of this study highlight critical policy directions to address excess liquidity and improve information sharing within the CEMAC banking sector:

- Establishment of comprehensive credit registries: The study underscores the need for robust public and private credit registries to reduce information asymmetry. By improving borrower transparency, these registries would enhance credit allocation efficiency and reduce the accumulation of non-performing loans, which were exacerbated during the COVID-19 pandemic.
- Implementation of borrower assistance programs: The pandemic highlighted the vulnerabilities of borrowers and banks to liquidity shocks. Tailored programs that provide financial relief or restructure debt obligations could mitigate default risks and stabilize the banking sector during economic downturns.
- Strengthening monetary policy frameworks: The observed persistence of excess liquidity during the pandemic suggests a need for more targeted monetary interventions. Policy tools such as conditional liquidity provisions tied to lending targets or sector-specific credit allocation could address both short-term shocks and long-term structural inefficiencies.
- Promoting regional financial integration: The fragmented nature of information sharing within the CEMAC region hinders banking efficiency. Enhanced coordination between central banks and financial institutions is essential to harmonize credit reporting standards, thereby fostering a more integrated and resilient financial ecosystem.
- Enhancing financial inclusion: The study reveals that low levels of credit accessibility, particularly during periods of economic crisis, exacerbate systemic risks. Expanding access to financial services for underserved populations and SMEs can drive sustainable economic growth and strengthen the banking sector's foundation.

Conclusion

This study sheds light on the impact of COVID-19 on liquidity dynamics and information asymmetry in the CEMAC banking sector, revealing that pandemic-induced shocks exacerbated structural inefficiencies while highlighting the critical role of enhanced information sharing. By employing a Bayesian Vector Autoregression model and leveraging longitudinal data, the study aligns with prior research (6, 7) while offering novel insights specific to the region.

The findings underscore the need for actionable reforms, including the establishment of comprehensive credit registries, implementation of borrower assistance programs, and expansion of financial inclusion initiatives. Additionally, strengthening monetary policy frameworks and fostering regional financial integration can address systemic inefficiencies and enhance the sector's resilience to future shocks. Limitations of the study, such as reliance on secondary data and lack of real-time feedback, suggest opportunities for future research to incorporate more granular and dynamic datasets to deepen understanding.

Acknowledgments

This research is part of the Nkafu Policy Institute's reflections on strengthening the effectiveness of monetary policy in Francophone Africa, thanks to the financial support of the Templeton World Charity Foundation (TWCF). Grant ID#: TWCF 2022-30501.

References

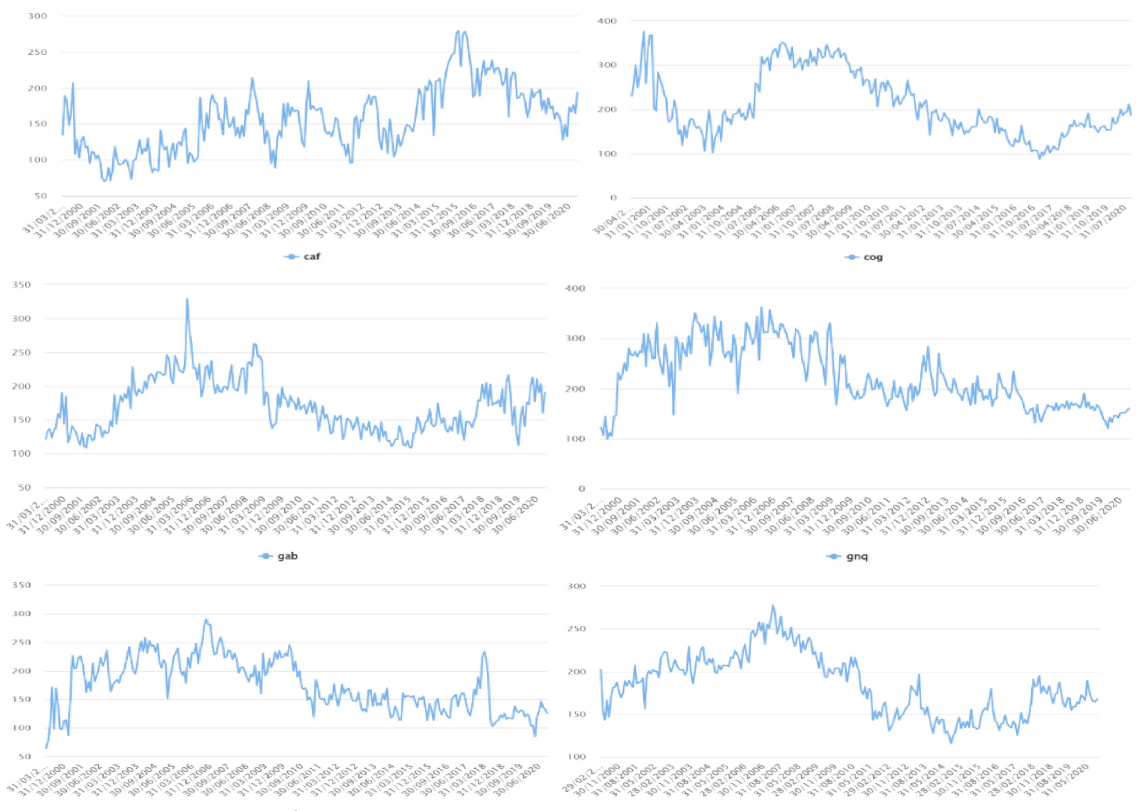
1. Gormsen NJ, Koijen RS. Coronavirus: impact on stock prices and growth expectations. *Becker Friedman Institute for Economics Working Paper, 22* (2020).
2. Thévenot R. COVID-19 and financial markets. *J Econ Stud.* (2020) 47(3):122–35.
3. Ramelli S, Wagner AF. Feverish stock price reactions to COVID-19. *Rev Corp Fin Stud.* (2020) 9(3):622–55.
4. Thesmar D. Economic consequences of the pandemic. *Rev Corp Financ Stud.* (2020) 9(2):88–101.
5. Nzomo J, Dombou D. Stock markets, volatility and economic growth: evidence from Cameroon, Ivory Coast and Nigeria. *Panor Econ.* (2017) 12(24):145–75.
6. Stiglitz J, Weiss A. Credit rationing in markets with imperfect information. *Am Econ Rev.* (1981) 71(3):393–410.
7. Pagano M, Jappelli T. Information sharing in credit markets. *J Fin.* (1993) XLVIII(5):1693–718.
8. BEAC. *Situation du système bancaire de la CEMAC au 31 Décembre 2016*. Yaoundé: Bank of Central Africain States (BEAC) (2016).
9. Bikaï JL, Essiane PND. Monetary policy, monetary stability and economic growth in CEMAC: a Bayesian SVAR approach. *BEAC Working Paper, 08(17)* (2017).
10. Avom D, Eyeffa ESL. Fifteen years of banking restructuring in CEMAC: what have we learned? *Rev Econ Fin.* (2007) 89:183–205.
11. Borio C. *The Prudential Response to the COVID-19 Crisis*. Basel: Bank of International Settlements (2020).
12. Acharya V, Steffen S. The risk of being a fallen angel and the corporate dash for cash in the midst of COVID. *Rev Corp Fin Stud.* (2020) 10:430–71.
13. Demirgüç-Kunt A, Pedraza A, Ruiz-Ortega C. Banking sector performance during the COVID-19 crisis. *J Bank Fin.* (2021) 133:106305.
14. Doumbia S. Surliquidité bancaire et "sous financement de l'économie" une analyse du paradoxe de l'UEMOA. *Revue tiers monde.* (2011) 205:151–70.
15. Bacale I. BEAC's monetary policy tested by the crisis: some risks to face. In: *BEAC Lettre de la Recherche* (2021).
16. Calvin A. *Surliquidité des banques dans la CEMAC et rationnement du crédit aux PME: que faire face à ce paradoxe?* Ngaoundéré: BEAC - Université de Ngaoundéré (2008).
17. Danielson M, Scott J. Bank loan availability and trade credit demand. *Fin Rev.* (2004) 39:579–600.
18. African Development Bank. *Economic Outlook for Africa*. Abidjan: ADB (2021).
19. Onomo J. *Non-performing Loans as Indicators of Financial Stability in the CEMAC Zone*. Yaoundé: BEAC (2021).
20. Triki T, Gajigo O. Credit bureaus and registries and access to finance: new evidence from 42 African countries. *African Development Bank Working Paper Series (154)* (2012).
21. World Bank. *Doing Business*. Washington: World Bank (2020).
22. Ghenimi A, Brahim Omri MA. Determinants of liquidity risk in Islamic banks: the case of the MENA region (Elsevier, Ed.). *Rev Gest* Organ. (2018) 10:127–36.
23. Garchs F, Odendahl F. Bayesian VAR models in practice. *Econ Rev.* (2019) 38(7):745–67.
24. Gininone M, Odendahl F. *Economic Forecasting with Bayesian Models*. Paris: Editions Economica (2019).
25. Ganics G, Odendahl F. Bayesian VAR forecasts, survey information and structural change in the euro area. *Banque de France, Working paper N° 733* (2019).
26. Saxegaard M. Excess liquidity and effectiveness of monetary policy: evidence from Sub-Saharan Africa. In: IMF, editor. *IMF Working Paper (WP/06/115)* (2006).
27. Jappelli T, Pagano M. Information sharing, lending and defaults: cross-country evidence. *J Bank Fin.* (2002) 26:2017–45.
28. Djankov S, McLiesh C, Shleifer A. Private credit in 129 countries. *J Fin Econ.* (2007) 84:299–329.
29. Mamatzakis E, Kalyvas A. Liquidity risk and bank behavior. *J Bank Finance.* (2017) 85:124–37.
30. BEAC. *Lettre de Recherche*. 2nd semestre. Yaoundé: BEAC (2021).
31. Andrianarison F, Nguem BE. Potential socioeconomic effects of COVID-19 in Cameroon: a summary assessment. *UNDP Report* (2020).
32. Pessarossi P, Weill L. Do capital requirements influence bank efficiency? Lesson from a natural experiment in China. *Econ J Syst Risk Policy.* (2015) 66(3):505–20.
33. Claessens S, Dell'AAriccia G, Laevens L. Lessons and policy implication we have learnt from the global financial crisis. *Economic policy fiftieth panel meeting*. University Van Tilburg (2009). p. 23–4.
34. Ouédraogo S. *Impact de la réglementation bancaire sur le comportement des banques de l'Union Economique et Monétaire Ouest Africaine (UEMOA)*. Burkina Faso: Doctoral thesis, Université Ouaga II (2014).
35. Landier A, Thesmar D. Earnings expectations in the COVID crisis. *HEC Paris Research Paper (1377)* (2020).
36. Valla N, Saes-Escorbiac B, Tiesset M. Bank liquidity and financial stability. *Fin Stab Rev.* (2006) (9):93–110.

Appendices

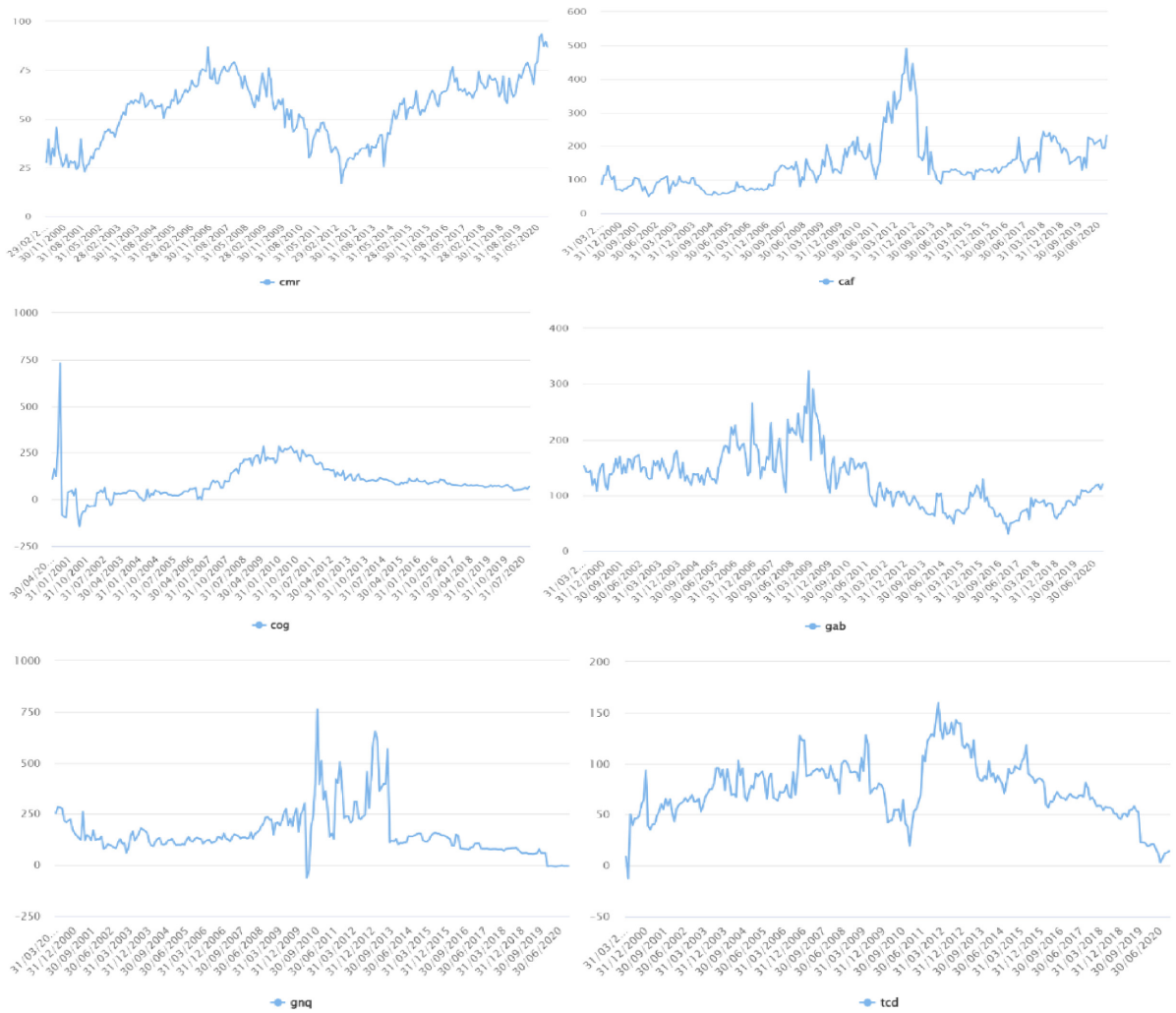
APPENDIX 1 | Variable definitions and expected results and signs.

	Meaning or definition	Data source	Sign
Cap_Per	Shareholders' ratio of equity to total assets	BEAC	−/+
Covid	Monthly index of COVID-19 severity. This index is calculated by considering the number of cases of infection, the total deaths by COVID, the total number of people vaccinated, the percentage of population density, the GDP per capita, etc.	Stringency Index (SI) available at https://ourworldindata.org/covid-stringencyindex	+
Coverage_Risks_P	Ratio of net bank capital to risk-weighted assets.	BEAC	-/+
Debt	Ratio of doubtful loans to total assets.	BEAC	-/+
Liquidity_Long	Ratio of customer deposits to the bank's total assets.	BEAC	-/+
Liquidity_Short	Short-term liquidity ratio, used to assess the 30-day liquidity situation.	BEAC	-/+
Equity	Percentage of total assets of shareholders.	BEAC	-/+
Deposit	Deposit of the bank is divided by the total bank balance sheet.	BEAC	-/+
Credit_Brut	Credit is offered to the private sector by banks in the total assets.	BEAC	-/+
Creanc_Souff	Receivables in distress to the bank's total assets.	BEAC	-/+
Info_Share	It captures the rate of coverage of public credit registers concerning credit offers.	Doing business	-/+

Source: Authors.



APPENDIX 2 | Trends in short-term liquidity in CEMAC countries.



APPENDIX 3 | Trends in short-term liquidity in CEMAC countries.

APPENDIX 4 | Data descriptive statistics table.

	Mean	Max	Min	Std. deviation	Observations
Cap_Per	0.125	0.259	0.018	0.045	1488
Covid	64.31	97.22	27.78	15.43	40
Liquidity_Long	109.27	761.73	-144.29	80.720	1488
Liquidity_Short	186.34	375.55	64.32	56.51	1488
Equity	0.128	0.285	0.018	0.047	1488
Deposit	0.7417	0.9087	0.2406	0.0876	1488
Credit_Brut	0.576	1.135	0.101	0.169	1488
Debt	0.097	0.402	0.000	0.078	1488
Info_Share	8.106	53.80	0.00	12.56	94

Source: Authors.

APPENDIX 5 | Decomposition of variances.

Classic decomposition

Variance decomposition of INFO_SHARE:

Perio..	S.E.	DEBT	CREDIT_B	LIQUIDITY_..	INFO_SHAR_..	LIQUIDITY_	DEPOSIT	EQUITY	COVID–
1	1.931059	0.001217	0.004898	0.004486	99.98940	0.000000	0.000000	0.000000	0.000000
2	2.648348	0.017792	0.031987	0.005675	99.94098	0.000701	0.002354	0.000452	6.43E−05
3	3.193935	0 025930	0.052610	0.007302	99.90928	0.000809	0.003450	0.000332	0.000285
4	3.644340	0.035549	0.077297	0.008960	99.87096	0.001394	0.004925	0.000259	0.000656
5	4.032276	0.046270	0.104531	0.010623	99.82810	0.002635	0.006478	0.000216	0.001151
6	4.374884	0.058290	0.134327	0.012269	99.78075	0.004245	0.008180	0.000211	0.001729
7	4.682557	0.071648	0.166288	0.013871	99.72949	0.006114	0.010002	0.000246	0.002344
8	4.962178	0.086375	0.200103	0.015415	99.67478	0.008112	0.011946	0.000320	0.002949
9	5.218598	0.102481	0.235461	0.016892	99.61707	0.010148	0.014008	0.000435	0.003504
10	5.455393	0.119968	0.272076	0.018292	99.55676	0.012150	0.016188	0.000588	0.003977

Variance decomposition of LIQUIDITY_SHORT:

Perio..	S.E.	DEBT	CREDIT_B	LIQUIDITY_..	INFO_SHAR_..	LIQUIDITY_	DEPOSIT	EQUITY	COVID–
1	22.62931	3.008531	18.82552	0.001616	0.092317	78.07201	0.000000	0.000000	0.000000
2	27.05332	2.899567	19.74181	0.005524	0.101169	77.24455	0.006540	0.000148	0.000686
3	31.11313	2.837783	19.92606	0.008277	0.148097	76.99119	0.081643	0.003862	0.003091
4	34.05728	2.779867	20.14662	0.011577	0.205764	76.65232	0.186682	0.009043	0.008124
5	36.47713	2.727408	20.25942	0.015217	0.276861	76.34459	0.342042	0.017985	0.016479
6	38.47175	2.678180	20.33062	0.019195	0.358247	76.02110	0.534476	0.029439	0.028544
7	40.16352	2.631661	20.35777	0.023524	0.448758	75.68795	0.762570	0.043393	0.044381
8	41.62039	2.587532	20.35041	0.028177	0.546985	75.34312	1.020640	0.059387	0.063751
9	42.89431	2.545600	20.31297	0.033142	0.651717	74.98875	1.304528	0.077113	0.086174
10	44.02224	2.505733	20.25001	0.038396	0.761816	74.62690	1.609907	0.096238	0.110998

Variance decomposition of LIQUIDITY_LONG:

Perio..	S.E.	DEBT	CREDIT_B	LIQUIDITY_..	INFO_SHAR_..	LIQUIDITY_	DEPOSIT	EQUITY	COVID–
1	40.30514	4.067175	0.050971	95.88185	0.000000	0.000000	0.000000	0.000000	0.000000
2	48.24213	4.671372	0.039635	95.16916	1.48E−06	0.109720	0.000997	0.009089	2.46E−05
3	54.17595	4.987521	0.032935	94.82482	0.002509	0.089024	0.001844	0.061153	0.000193
4	58.10358	5.276838	0.028898	94.46117	0.006928	0.082019	0.002433	0.141255	0.000461
5	60.95226	5.532906	0.027069	94 06441	0.014287	0.100545	0.003452	0.256519	0.000812
6	63.05340	5.767195	0.026287	93.63740	0.024299	0.137325	0.004709	0.401606	0.001182
7	64.64937	5.982422	0.026362	93.17825	0.037006	0.193654	0.006424	0.574369	0.001512
8	65.88897	6.180310	0.027093	92.69312	0.052246	0.265923	0.008637	0.770916	0.001755
9	66.87426	6.362026	0.028411	92.18694	0.069856	0.351854	0.01 1457	0.987572	0.001889
10	67.67501	6.528549	0.030264	91.66543	0.089632	0.448703	0.014959	1.220536	0.001924

Variance decomposition of CREDIT_BRUT:

Perio..	S.E.	DEBT	CREDIT_B	LIQUIDITY_..	INFO_SHAR_..	LIQUIDITY_	DEPOSIT	EQUITY	COVID–
1	0.034155	12.21252	87.78748	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.043203	13.05450	86.91685	9.83E−05	0.000226	0.018923	0.005742	9.04E−06	0.003646
3	0.051145	13.56894	86.35019	0.026147	0.001318	0.014066	0.030716	7.85E−06	0.008607
4	0.057607	14.05859	85.77985	0.062463	0.002969	0.012602	0.069618	9.43E−06	0.013891
5	0.063233	14.51860	85.20712	0.112941	0.005353	0.015422	0.122227	1.69E−05	0.018319
6	0.068209	14.96452	84.62741	0.171201	0.008413	0.020217	0.186808	3.69E−05	0.021399
7	0.072686	15.40014	84.04177	0.234817	0.012163	0.026179	0.261861	7.63E−05	0.022986
8	0.076761	15.82780	83.45253	0.301318	0.016593	0.032311	0.346080	0.000143	0.023229
9	0.080502	16.24852	8286177	0.369042	0.021699	0 038008	0.438257	0.000242	0.022455
10	0.083960	16.66278	82.27133	0.436758	0.027472	0.042854	0.537334	0.000382	0.021092

Variance decomposition of EQUITY:

Perio..	S.E.	DEBT	CREDIT_B	LIQUIDITY_..	INFO_SHAR..	LIQUIDITY_	DEPOSIT	EQUITY	COVID–
1	0.008649	5.384348	21.67140	0.545069	0.007836	1.233370	0.026216	71.13176	0.000000
2	0.010915	5.131724	21.01819	0.360270	0.036992	1.296760	0.033505	72.12163	0.000936
3	0.012887	5.113596	21.27837	0.285995	0.038357	1.270095	0.032193	71.97864	0.002750
4	0.014497	5.107465	21.47384	0.340070	0.038350	1.253844	0.030982	71.74964	0.005804
5	0.015902	5.123725	21.70853	0.495594	0.036997	1.234491	0.029039	71.36169	0.009935
6	0.017153	5.151577	21.93236	0.721569	0.035318	1.217471	0.026894	70.89985	0.014962
7	0.018287	5.189282	22.14688	0.996052	0.033568	1.202440	0.024669	70.38651	0.020593
8	0.019327	5.235403	22.34977	1.300809	0.031880	1.189680	0.022509	69.84343	0.026514
9	0.020289	5.289215	22.54201	1.622286	0.030306	1.179097	0.020527	69.28415	0.032416
10	0.021187	5.350194	22.72471	1.950318	0.028862	1.170584	0.018825	68.71848	0.038026

APPENDIX 6 | Stationarity tests.

Variable	Level		Primary difference		Stationarity
	ADF	Phillippe-Perron/PP	ADF	Phillippe-Perron/PP	
Cap_Per	20.15 (0.06)				I(0)
Covid	107.066 (0.000)				I(1)
Liquidity_Long	26.63 (0.00)				I(0)
Liquidity_Short	20.23 (0.06)				I(0)
Equity	28.71 (0.00)				I(0)
Deposit	38.37 (0.00)				I(0)
Credit_Brut	19.10 (0.08)				I(0)
Debt	3.87 (0.98)		274.05 (0.00)		I(1)
Info_Share	2.21 (0.99)		123.36 (0.00)		I(1)

APPENDIX 7 | Cointegration test.

Test de cointégration

Series: D(COVID_) D(DEBT) CREDIT_BRUT LIQUIDITY_LONG D(INFO_SHAHE)
LIQUIDITY_SHO Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace statistic	0.05 critical value	Prob.**
None*	0.293008	1311.330	143.6691	0.0000
At most 1*	0.257503	803.7072	111.7805	0.0001
At most 2*	0.135296	367.8208	83.93712	0.0000
At most 3*	0.051753	155.0015	60.06141	0.0000
At most 4*	0.034746	77.20379	40.17493	0.0000
At most 5*	0.010030	25.43120	24.27596	0.0356
At most 6	0.006806	10.67311	12.32090	0.0930
At most 7	0.000461	0.675587	4.129906	0.4708

Résultats normalisés de la cointégration

1 Cointegrating Equation(s)	Log likelihood	3770.425								
Normalized Cointegrating coefficients (standard error in parentheses)										
LIQUIDITE	LIQUIDITE_L	COVID	CAP_PER	COUVERTU	D(CREANCE)	D(CREANCE)	CREDIT_BRUT	DEPOTS	FONDS_PR	D(INFO_SHARE)
1.000000	0.476874	9.074634	−1717.105	−14.92918	−333528.2	329429.7	0.349131	411.2528	3338.201	177.4624
	(0.59812)	(4.28659)	(3381.99)	(7.37571)	(15779.7)	(12227.9)	(330.266)	(648.617)	(3148.22)	(34.6229)

Annexe rappel:

Error correction	D(LIQU IDITE..	D(LIQU IDITE L...	D(COVID)	D(CA P_PER)	D(COU VERT...	D(CRE ANCE..	D(CRE ANCE..	D(CRE DIT_..	D(DEP OTS)	D(FON DS_..	D(INF O_SH...
CointEq1	0.000446	0.000582	−0.000270	4.56E−07	−2.61 E−05	4.71 E−07	−3.74E−06	9.20 E−07	−2.08E−07	3.37E−07	−0.000169
	(0.00057)	(0.00104)	[8.6 E−05)	(2.3E−07)	(6.3E−05)	(1.9E−07)	(2.5E−07)	(8.6E−07)	(6.2E−07)	(2.2E−07)	(5.7E−05)
	[0.77967]	|0.55826|	[−3.14359]	[1.97008]	[−0.41729]	[2.44362]	[−14.9193]	[1.06438]	[−0 33694]	[1.53079]	[−2.97864]
D(LIQUIDITE_ COURT(−1))	−0.389636	−0.129436	−0.003095	−6.94E−06	−0.010866	−8.60E−06	9.30E−06	6.01E−05	−9.30E−06	2.22E−06	0.001029
	(0.03054)	(0.05574)	(0.00460)	(1.2E−05)	(0.00335)	(1.0E−05)	(1.3E−05)	(4.6E−05)	(3.3E−05)	(1.2E−05)	(0.00304)
	[−12.7562]	[−2.32220]	[−0.67316]	[−0.56088]	[−3.24542]	[−0.83509]	[0.69405]	[1.30011]	[−0.28237]	[0.18855]	[0.33865]
D(LIQUIDITE COURT(−2))	−0.180214	0.174108	0.003048	−431E−06	0.000182	−2.14E−05	−2.43E−05	−5.51 E−05	3.85E−05	−7.99E−06	−0.000449
	(0.03072)	(0.05605)	(0.00462)	(1.2E05)	(0.00337)	(1.0E−05)	(1.3E−05)	(4.6E−05)	(3.3E−05)	(1.2E−05)	(0.00306)
	[−5.86721]	[3.10632]	[0.65926]	[−0.34627]	[0.05393]	[−2.06248]	[−1.79988]	[−1.18549]	[1.16144]	[−0.67464]	[−0.14702]