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TECHNICAL NOTE ON SYSTEMIC RISKS AND MACROPRUDENTIAL POLICY FRAMEWORK

This technical note on Systemic Risks and Macroprudential Policy Framework was prepared by a staff team of the International Monetary Fund and World Bank in the context of a joint IMF-World Bank Financial Sector Assessment Program (FSAP). It is based on the information available at the time it was completed in September 2022.

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TECHNICAL NOTE

SYSTEMIC RISKS AND MACROPRUDENTIAL POLICY FRAMEWORK

Prepared By
Monetary and Capital Markets Department

This Technical Note was prepared by IMF staff in the context of the Financial Sector Assessment Program in West African Economic and Monetary Union. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at http://www.imf.org/external/np/fsap/fssa.aspx.

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Glossary

BCEAO	Central Bank of West African States (In French: *Banque Centrale des États de l'Afrique de l'Ouest*)
CBU	Banking Commission of the WAMU (In French: C*ommission Bancaire de l'UMOA*)
CCyB	Countercyclical Capital Buffer
CFAF	African Financial Community Franc
CPMP	Macroprudential Policy Committee (In French: *Comité de Politique Macroprudentielle*)
CSF-UMOA	Financial Stability Committee of the WAEMU (In French: *Comité de Stabilité Financière dans l'UEMOA*)
DFS	Decentralized Financial Systems
HQLA	High-Quality Liquid Assets
LCR	Liquidity Coverage Ratio
NPL	Non-Performing Loan
SIBI	Systemically Important Banking Institution
WAEMU	West African Economic and Monetary Union (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo)
WAMU	West African Monetary Union (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo)

EXECUTIVE SUMMARY

Since the 2008 Financial Sector Assessment Program (FSAP), the financial sector of the West African Economic and Monetary Union (WAEMU) has undergone major changes that have altered its risk profile. Three structural changes have played a key role since the 2008 FSAP: (i) the financial sector has grown significantly; (ii) regional banking groups have become dominant; and (iii) the high concentration of bank portfolios in sovereign exposures, which accounted for an average of 31 percent of banking assets at end-2020, are almost triple the level observed in 2004. These changes have altered the structure of systemic risks and vulnerabilities and raised the need for implementing reforms to strengthen the effectiveness of the macroprudential policy and banking supervision frameworks.

Cyclical vulnerabilities are contained, but the high concentration of bank credit portfolios and their growing exposure to sovereign risks require closer monitoring. The slowdown in credit growth in recent years points to weak cyclical pressures, with the FSAP's analysis showing no evidence of excessive credit growth. Despite the improvement in the quality of bank portfolios since 2008, credit risk remains a structural concern in the WAEMU due to the still relatively high levels of nonperforming loans and the high concentration of bank loan portfolios, both focused on a limited number of debtors, including sovereign borrowers, and on certain sectors of activity. The structure of banks and their large common exposures, both to private debtors and to sovereign borrowers, are important vectors of contagion and amplification of credit risk in the union.

The mission recommends introducing additional capital buffer requirements to cover concentration and contagion risks. The solvency of banks has improved over the last three years, in line with the increase in prudential requirements as part of the ongoing transition to the Basel II/Basel III standards. Their excess capital, however, remains limited, given the concentration and contagion risks in the system, in part linked to the high sovereign exposures. Additional capital surcharges should be structured as a nonlinear function of the degree of exposure and portfolio diversification to contain the highest risks. As a buffer requirement, these capital surcharges should be calibrated to ensure that they can be relaxed in periods of stress (to reduce potential procyclicality). They should apply to both government securities holdings and private sector credit, in addition to concentration limits for the latter, and should be introduced gradually, possibly over a three-year period. Additional capital buffer requirements for private credit concentration could factor in the correlations or sectoral risks.

The mission supports the authorities' efforts to encourage banks to manage liquidity risk internally. Regulators will need to choose objective and verifiable liquidity indicators to determine the high-quality liquid assets (HQLA) that are eligible to be treated as Level 1 assets, and the haircuts, including those for government securities (numerator of the short-term liquidity ratio). If the regulator does not wish to apply different haircuts for different sovereign issuers, a uniform haircut should at least be applied to reflect liquidity constraints across the market. Ultimately, the liquidity coverage ratio (LCR) should take into account the different risk profiles of bank funding

under Pillar 2 of Basel III. The mission supports a gradual increase in the requirement to 100 percent by 2028 to take into account the difficulties some banks may have in complying.

The mission recommends improving the monitoring of interest rate risk. The growth of portfolios of securities with relatively long maturities compared to bank resources could lead to an increase in maturity and interest rate mismatches. The monitoring of these risks requires regular reporting on the residual maturities of assets and liabilities, which will help establish a long-term liquidity ratio. The regulator should also introduce additional capital requirements based on the Pillar II supervisory approach of Basel III.

Since the 2008 FSAP, the Central Bank of West African States (BCEAO) has put into place the core elements of a macroprudential policy framework. The Financial Stability Committee of the West African Monetary Union (CSF-UMOA)—established in 2010 and tasked with safeguarding financial stability and strengthening cooperation in macroprudential oversight—plays a key role. The CSF-UMOA, chaired by the governor of the BCEAO, discusses facts relevant to financial stability and issues policy action recommendations, and warnings about financial stability risks. Significant efforts have been made to deepen the BCEAO's macroprudential surveillance framework. These include close monitoring of a wide range of macroprudential indicators, the development of frameworks for identifying systemically important banking institutions (SIBIs), and banking sector stress testing. The new prudential framework applicable to banks, in force since 2018, introduces important macroprudential instruments related to capital surcharges—countercyclical capital buffers (CCyB), capital conservation buffers, and systemic capital buffers—and borrower-based measures for real estate lending.

The BCEAO plays a central role in defining and implementing macroprudential policy. This is due to its statutory mandate on financial stability, its expertise in this area acquired over time, and the dominance of banks in the financial sector. Accordingly, the BCEAO provides analysis and monitors the main risks and vulnerabilities of the financial system for the CSF-UMOA chairman and secretariat. To strengthen its decision-making process, the BCEAO created a Macroprudential Policy Committee (CPMP) in 2018 composed of senior staff from the BCEAO and the Banking Supervisor (CBU). The CPMP monitors and conducts analysis of systemic risks and has competence to apply macroprudential instruments and implement CSF-UMOA recommendations on banking sector supervision.

Several aspects of the institutional framework should be revised to ensure the effectiveness of macroprudential policy. The CSF-UMOA has been successful in encouraging cooperation and coordination across different institutions. However, the framework's ability to act could be strengthened by introducing a comply-or-explain mechanism in the monitoring of the implementation of CFS-UMOA recommendations. This would increase the accountability of different institutional members of the CSF-UMOA. The decision-making process inside the CSF-UMOA could also be improved. To this end, the CSF-UMOA voting procedure should be modified to give each institutional member, including all state members collectively, a single vote to ensure a better balance of power in the decision-making process. Though the framework contains a clear mandate of financial stability, the objectives of macroprudential policy are not well-defined. Intermediate

macroprudential policy objectives should take into account specific aspects of the regional financial system (e.g., the predominance of regional banking groups and certain structural macroeconomic constraints, such as the weak diversification of economic activities) and regional financial sector development challenges (such as the limited access to financial services). The communication of the systemic risk assessment and of policy decisions in the macroprudential publications could also be improved. This would strengthen the transparency of macroprudential policy.

The systemic risk monitoring framework is well established but would benefit from closing gaps in data and in the monitoring of sectoral vulnerabilities. Improved monitoring of non-financial sector vulnerabilities could benefit from enhanced data collection, including data on credit quality, profitability, debt characteristics (by maturity, rating, and sector), and corporate balance sheets. The BCEAO could achieve this objective by drawing on the ongoing reforms of its public credit registries to establish a permanent system for collecting data on non-financial enterprises and households. Strengthening the collection of granular data on residential real estate will also be critical to identifying and assessing risks in this sector. Finally, the thresholds of the systemic risk indicators being monitored should be calibrated, drawing on the experience of instability in the banking sectors of peer countries and, on the judgement of experts.

Table 1. WAEMU: Main Recommendations		
Recommendations	**Authorities**	**Timeline[1]**
Monitoring of systemic risks		
Calibrate systemic risk thresholds for monitored macroprudential indicators, drawing on the experience of instability in the banking sectors of peer countries and on expert judgment.	BCEAO	ST
Improve the capacity to monitor vulnerabilities and risks in the non-financial corporate and household sectors.	BCEAO	MT
Fill in the remaining data gaps, including those for the non-financial corporate, household, and real estate sectors.	CSF-UMOA/BCEAO	ST
Operational framework for macroprudential policy		
Gradually introduce additional non-linear capital requirements to cover concentration, interest rate, and contagion risks arising from excessive concentration, including those for bank sovereign exposures.	BCEAO/CBU	ST
Introduce Basel-type liquidity ratios to strengthen resilience to liquidity shocks. Introduce a haircut for government securities, count banks' required reserves toward Level 1 high-quality liquid assets (HQLA), and consider bank funding stability to impose higher LCR requirements under Pillar 2 of Basel III.	BCEAO/CBU	ST
Improve the monitoring of maturity mismatches and interest rate risk based on regular reporting of the residual maturities of bank assets and liabilities, as well as their interest rates.	BCEAO/CBU	ST
Institutional framework for macroprudential policy		
Designate the BCEAO as the "macroprudential authority" responsible, inter alia, for activating the countercyclical capital buffer (CCyB), while introducing a suitable mechanism for national authorities to raise concerns if policies set by the BCEAO are ill-suited for their situation.	CSF-UMOA/BCEAO	I
Strengthen the implementation of CSF-UMOA recommendations by introducing a "comply or explain" mechanism in the follow-up to these recommendations; specify the deadlines within which institutional members of the Financial Stability Committee of the WAEMU (CSF-UMOA) are required to provide explanations for a failure to implement CSF-UMOA recommendations.	CSF-UMOA	I
Establish a comprehensive communication strategy for systemic risk assessments and macroprudential policy decisions.	CSF-UMOA/BCEAO	ST

[1] I – immediate (less than 1 year); ST – short term (1 to 2 years); MT – medium term (3 to 5 years).

INTRODUCTION[1]

1. Since the 2008 FSAP, the WAEMU financial system has undergone significant structural changes but continues to be dominated by the banking sector. Three changes are particularly noteworthy:

- The regional financial sector has doubled in size since 2008, with total assets representing 69.2 percent of regional GDP in 2020. Banks, which account for 75 percent of the financial system's assets, remain the main driver of the financial system's expansion. The nonbanking sector has experienced remarkable growth, driven by asset management companies and financial intermediaries, but remains non-systemic in terms of its relative contribution to the financial sector.[2]

- Regional banking groups have emerged as key players in the WAEMU banking system, with nearly 86 percent of banking assets.

- The rapid expansion of the regional government securities market—with a tenfold increase in outstanding securities between 2010 and 2020—has supported a sharp increase in bank sovereign exposures, thereby intensifying the linkages between governments and banks.

2. Bank solvency has improved but remains uneven; certain banks with chronic insolvency pose significant challenges to banking stability in some member countries. At end-2020, the region-wide capital adequacy ratio stood at 12.4 percent, above the minimum regulatory requirement of 8.25 percent and up 1.9 percentage points from 2018. This overall trend, however, masks significant disparities across countries, with some banks in Guinea-Bissau (average capital adequacy ratio of -3.6 percent in 2020) and Togo (average capital adequacy ratio of 7.4 percent) well below the minimum requirement of 8.25 percent. At end-2020, 19 banks, representing 12.2 percent of total bank assets, had solvency ratios below the regulatory minimum. Some of these (mainly government-owned) entities continue to have negative capital and have not been brought into compliance.

3. The changes in the financial sector have implications for the structure of systemic risks and pose challenges for macroprudential supervision. The rapid expansion of banking activities, which are mainly focused on lending to the private sector, can be a source of credit risk accumulation. This risk is notable due to the weak diversification of economic activities, persistent asymmetries of information on debtors, and structural constraints on the business environment.[3] The

[1] This report was prepared by Moustapha Mbohou and Alice Mugnier of the IMF's Monetary and Capital Markets Department.

[2] Asset management companies and financial intermediaries manage 15 percent of financial assets. Their development is supported by their regulatory monopoly on stock exchange operations, including exclusive access to government securities issued via syndication. Other financial institution exposures to asset management companies and financial intermediaries are marginal, as the latter's assets are comprised of third-party accounts.

[3] The introduction of a regional credit information bureau in 2016 and the development of various financial information clearinghouses by the BCEAO should help reduce asymmetric information on debtors.

predominance of regional banking groups and the rise in bank exposures to public debt instruments issued in the regional securities market increase the density and complexity of interconnectedness between banks and their counterparties in the interbank market, as well as between banks and governments.

4. Significant progress has been made in establishing a macroprudential policy framework and strengthening prudential supervision. The creation of the WAEMU Financial Stability Committee (CSF-UMOA) in 2010 and the Macroprudential Policy Committee (CPMP) in 2018 introduced a macroprudential policy framework. Gradual implementation of new prudential rules aligned with Basel II/Basel III standards has been underway since 2018.

5. This note assesses the key vulnerabilities of the WAEMU financial system and the strengths and weaknesses of its macroprudential policy framework, and provides recommendations. The first part analyzes the main financial sector vulnerabilities, including cyclical and structural factors. The second part assesses the macroprudential policy framework, identifying the progress made since 2010 (when it was first introduced) and the improvements needed to strengthen its capacity to effectively control systemic risks in the union.

SYSTEMIC RISKS

6. The effective implementation of macroprudential policy requires continuous preventive monitoring of systemic risks. The monitoring should cover the two main dimensions of systemic risks: the cyclical dimension related to the accumulation of risks over time and the structural dimension related to the interdependence across institutions and distribution of risks within the financial system at a given time. Over time, phases of excessive credit growth can lead to the accumulation of credit risks. Furthermore, a stronger reliance on less stable funding sources (e.g. wholesale or non-deposit funding) that are not offset by the accumulation of liquid asset buffers exposes financial institutions to the negative impact of sudden liquidity outflows. Structurally, a strong direct interconnectedness across institutions can transmit shocks across the financial system and amplify systemic risks. Indirect links, due to large common exposures, also carry contagion risks.

7. The BCEAO has introduced a framework for identifying SIBIs in the WAEMU. This framework, which takes into account the specific characteristics of the union, is designed around a multi-criteria approach based on Basel Committee recommendations. The identification of SIBIs is carried out by the CBU using a multi-indicator score of a bank's systemic importance that takes into account its size, degree of interconnectedness, substitutability, and complexity. A bank or a financial institution is designated as a SIBI based on whether its composite systemic importance score—an aggregate of its rankings in each of the four dimensions—is above a certain threshold value. The list of SIBIs published by the CBU is broken down into two categories of systemic importance: regional SIBIs and national SIBIs. The first list of SIBIs in the WAEMU, published in March 2020, includes six financial corporations in the regional SIBI list and 22 banks in the national list. The CBU reviews the SIBIs list once a year.

A. Cyclical Vulnerabilities

8. After a period of rapid growth in the decade to 2015, credit to the private sector has decelerated sharply over the past five years. Growth in private sector credit has slowed to an average of 6.5 percent, following average growth of 14.7 percent per year between 2006 and 2015. As a result, the "credit gap" (the deviation of the credit-to-GDP ratio from its estimated long-term trend), which averaged 2.5 percent over the 2006-2014 period, turned negative in 2015 (-0.8 percent) and has been steadily declining over the past five years (averaging -2.2 percent per year; Figure 1).

9. Bank credit quality has improved since 2008 but remains weak in some member countries and should be monitored closely. With average real GDP growth of 5.6 percent and growth in private sector credit of 12 percent per year during 2010-2019, the ratio of non-performing loans (NPLs) to total loans declined by an average of 0.6 percentage point per year since 2010 to 11.4 percent in 2021. NPLs in some jurisdictions (e.g., Benin, Guinea-Bissau, and Togo) have remained high, at 15 to 21 percent of total loans at end-2020.[4] Bank loan loss provisioning rates are relatively high (with a region-wide coverage ratio of 67.1 percent) and have improved over the past decade (from 63.7 percent in 2010 to 67.1 percent in 2020), but there is some cross-country dispersion (ranging from 61.5 to 72.4 percent).

10. The impact of the COVID-related economic deterioration on bank credit quality has been mitigated by loan restructuring and relaxation of repayment rules by the BCEAO. These rules were introduced on a temporary basis and allowed banks to reschedule 3.1 percent of their loans to the private sector, thereby providing financial relief to sectors affected by the pandemic. The rules were suspended in December 2020, and at end-June 2021, 22 percent of rescheduled loans were downgraded to "doubtful."

11. Bank profitability has declined in the context of increased competition. Bank profitability has declined over the past five years in line with the gradual narrowing of bank overall interest margins, partly associated with increased competition in the sector. Return on assets was stable at 1.2 percent between 2016 and 2020, but return on equity declined to 13.3 percent in 2020, below the 16.5 percent average for the previous four years and below banks in other developing countries (Figure 2).[5,6] Banks in Benin and Togo, in particular, are facing significant profitability pressures.

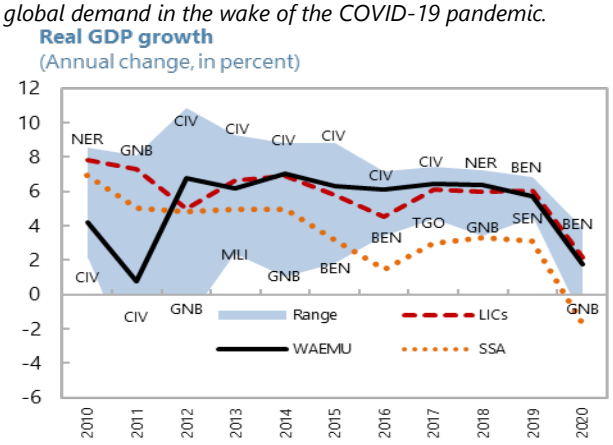
[4] NPL resolution mechanisms are left up to the individual member countries and are heterogeneous. In countries with chronic NPL issues, recovery rates appear low. For example, in Togo, the rate of NPL recoveries by state-owned collection company SRT (*Société de Recouvrement du Togo*) has been less than 10 percent over the last decade.

[5] The FSAP bank survey suggests that increased banking sector competition is seen as a key reason for the decline in bank interest margins over the past five years.

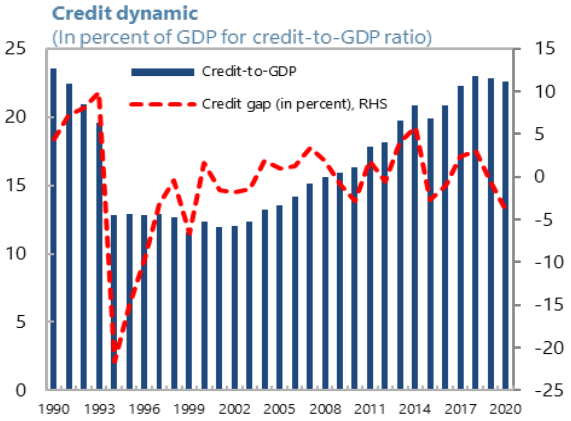
[6] For example, in 2020, the return on assets for banks was 1.9 percent in Botswana, 2.1 percent in Kenya, and 4.6 percent in Malawi. The return on equity of the banks in these countries was 15.9 percent, 14.5 percent, and 35.9 percent, respectively, over the same period.

Figure 1. WAEMU: Overall Macrofinancial Developments

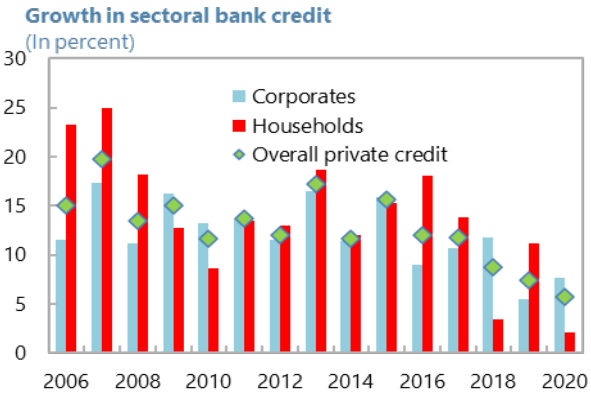
Economic growth contracted sharply in 2020 due to reduced global demand in the wake of the COVID-19 pandemic.



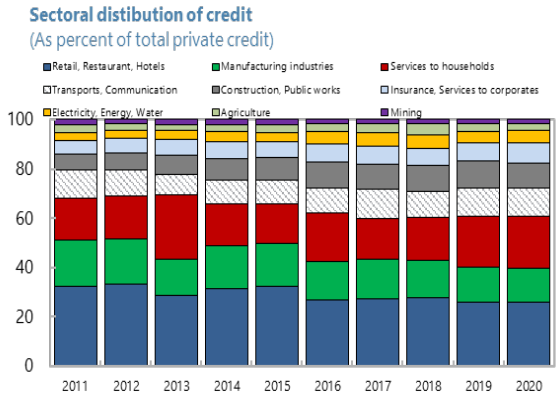
The credit-to-GDP ratio rose between 2010 and 2018 but has decelerated since, with the credit gap turning negative.



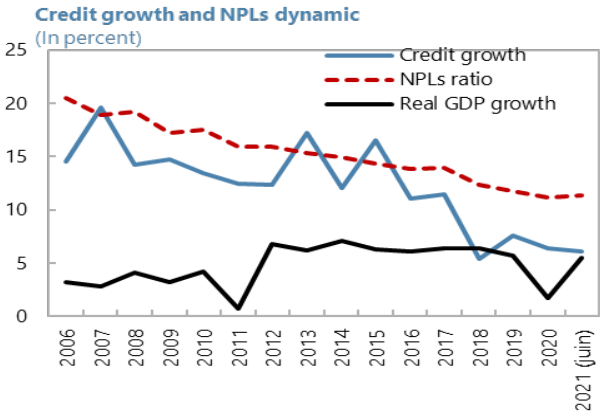
This decrease reflects a sharp slowdown in the pace of lending to businesses and households.



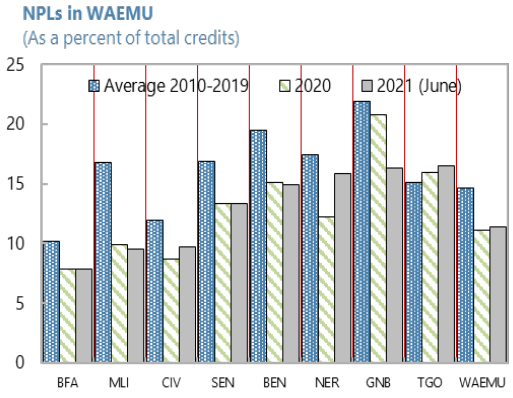
The sectoral distribution of lending has changed very little over the last decade.



The NPL ratio has declined, albeit slowly, despite the robust economic growth in the years prior to the pandemic.



Credit quality deterioration in some member countries is structural.

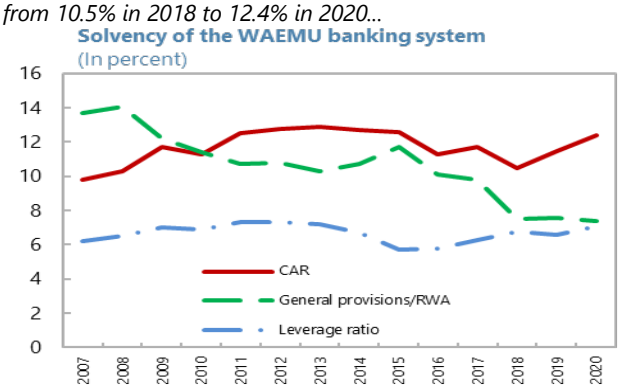


Sources: BCEAO; IMF *Financial Soundness Indicators*; and IMF staff calculations.

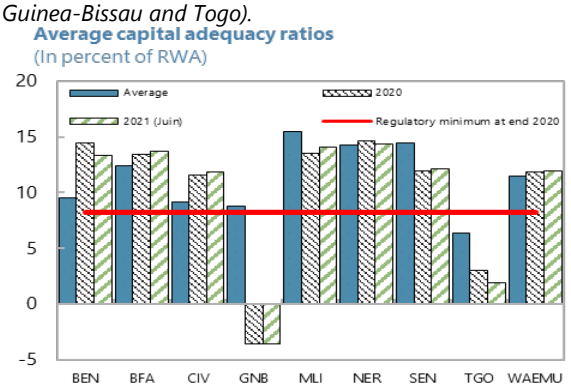
Note: LIC = Low-income country; SSA = Sub-Saharan Africa; BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

Figure 2. WAEMU: Banks' Solvency and Profitability

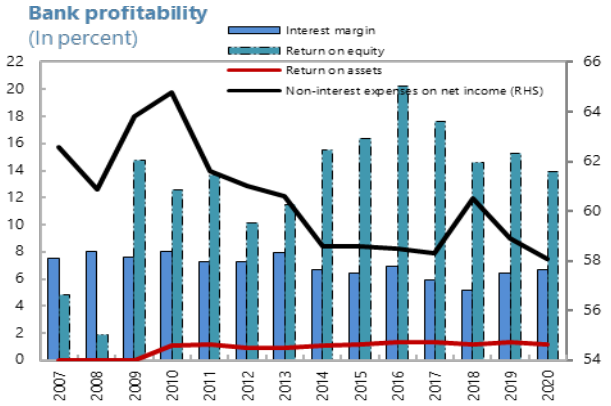
Under Basel II/III, the banking system has strengthened its capital buffers, with the overall capital adequacy ratio rising from 10.5% in 2018 to 12.4% in 2020...



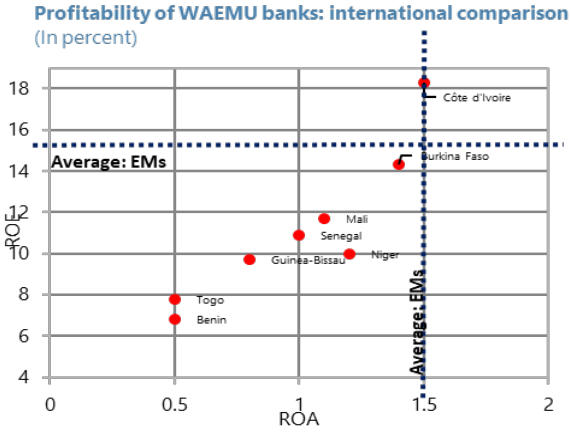
... but a few banks with negative capital continue to weigh on the average capital adequacy in some countries (e.g., Guinea-Bissau and Togo).

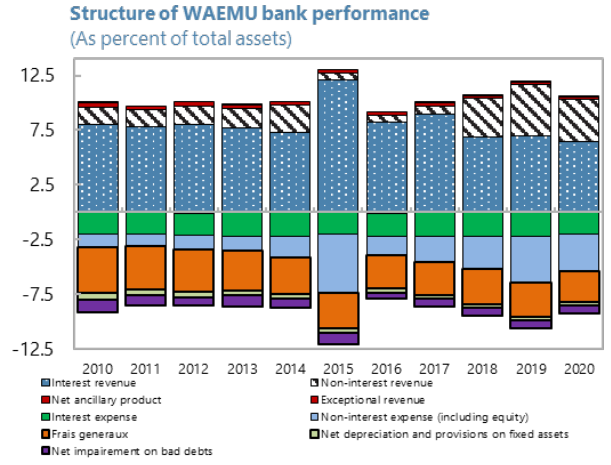


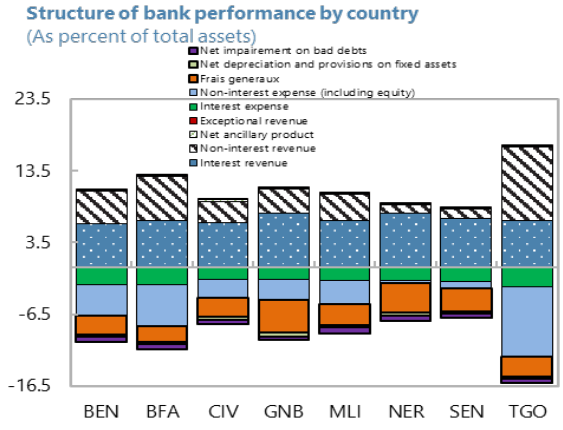
The profitability of banks—particularly their return on equity—has declined since 2017...



... with WAEMU bank profitability lower compared to banks in other emerging market countries.







Sources: BCEAO; IMF *Financial Soundness Indicators*; and IMF staff calculations.

Note: CAR = capital adequacy ratio; EM = emerging markets; RWA = risk-weighted assets; BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

12. The macrofinancial indicator dashboards developed by the FSAP team provide a useful holistic approach to identifying cyclical vulnerabilities in the banking system. Analysis of systemic vulnerabilities based on simple indicators does not always capture the cyclical characteristics of the various systemic risk factors and the complexity of the macrofinancial interrelationships underlying the dynamics observed. The development of systemic vulnerability dashboards is therefore a useful tool for summarizing developments across a broad spectrum of macrofinancial indicators and establishing a holistic view of cyclical vulnerabilities, which is essential for macroprudential policymaking. Two types of complementary dashboards, based on systemic risk thresholds, have been developed by the FSAP mission: a macrofinancial dashboard and a financial sector risk heatmap.[7]

- **The macrofinancial dashboard outlines the trends in a wide range of macrofinancial indicators.** In the case of the WAEMU, macrofinancial vulnerabilities are grouped around six key dimensions: (i) macroeconomic risk (reflecting macroeconomic performance and outlook, including political uncertainty); (ii) vulnerabilities to external shocks; (iii) credit risks; (iv) liquidity risks; (v) monetary and financial conditions; and (vi) risk appetite. The thresholds used are endogenous and based on the empirical distribution of individual indicators, with the upper 20th percentile values indicating high levels of risk (Figures 3 and 4).

- **The financial sector heatmap provides financial stability indicators, whose thresholds are exogenous and determined analytically.** The heatmap provides a synoptic view of the stability of the financial sector, combining both early warning indicators (e.g., indicator of credit cycle) and measures of financial system soundness (e.g., balance sheet strength and the existence of adequate capital buffers). The thresholds used to assess the risk level of each indicator are determined via empirical cross-country work and expert judgment and are thus not based on the individual indicator's empirical distributions. The use of such benchmark-based thresholds has a particular advantage for financial systems like WAEMU's, where the rare occurrence of extreme stress events reduces the ability to extract robust signals of rising systemic risk from indicator distributions. The deviations of indicators from the analytically obtained thresholds are used to determine the level of financial vulnerability, classified as high (H), medium (M), or low (L) (Figure 5).

13. The macrofinancial dashboard and its representation in "spidergrams" show an accumulation of macrofinancial vulnerabilities after the COVID-19 outbreak in 2020 (Figures 3 and 4). The rise in vulnerabilities reflects the economic consequences of the pandemic. Specifically:

- **Increased macroeconomic risk**. Macroeconomic performance deteriorated due to the sharp decline in domestic and global demand following the COVID-19 outbreak and the rising

[7] The thresholds presented here are illustrative and can be fine-tuned using complete data (including through more comprehensive data collection), other analytical work, and expert opinions. The threshold percentile (here the 20th percentile) may also be varied depending on the statistical impact deemed appropriate and the constraints of historical data availability.

uncertainty related to the growing security problems in the Sahel region, particularly in Burkina Faso, Mali, and Niger. The deterioration of public finances in 2020 reduced fiscal policy spaces. A prolongation of the crisis and an associated further deterioration of public finances could increase public debt levels and debt servicing costs – and put pressure on the external reserves and liquidity risk profiles of banks with significant sovereign exposures.

- **Easing monetary and financial conditions**. This reflects the policy rate decline and other accommodative monetary measures taken by the BCEAO to support the liquidity of the financial sector in the face of the COVID-19 crisis. Prolonging the accommodative monetary stance, however, could encourage excessive risk-taking by banks, particularly in the context of the stronger WAEMU-wide bank competition that has led to lower bank lending rates.

- **Stabilized credit risks at their 2019 level.** Credit risks seem to have stabilized after a period of deteriorating political stability in some member countries and following volatile COVID-related macroeconomic conditions. However, continued high NPL levels and the heavy concentration of bank credit portfolios in a relatively small number of borrowers continue to fuel credit risk uncertainty.

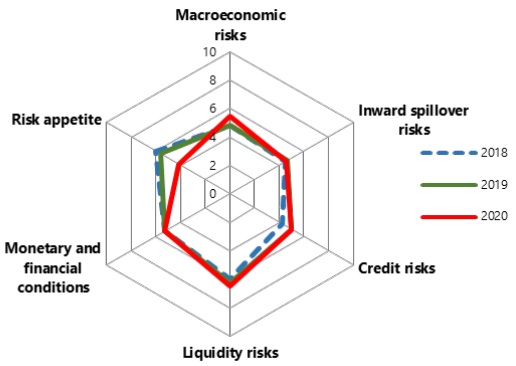
- **Mitigated risks of external shocks due to strong external buffers.** Despite a contraction in exports and external remittances, which contributed to a deterioration in the WAEMU's external position, the region's external buffers remained strong as measured by external reserve import coverage. Structural vulnerabilities due to limited export diversification and competitiveness constraints, however, limit the economy's capacity to absorb shocks.

14. The heatmap of the financial system confirms that despite an improvement in recent years, the low asset quality of banks continues to pose a significant risk (Figure 5). The heatmap shows that the banking system faces structurally high credit risks, with levels of delinquency remaining high despite recent moderate credit growth.

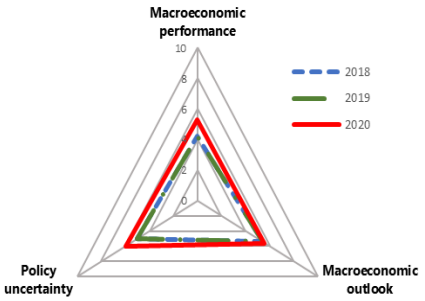
15. The inclusion of risk indicators for non-bank financial institutions would further refine the systemic risk signals provided by the macrofinancial dashboard and heatmap. The macrofinancial dashboard and the financial system heatmap were developed using only banking sector data. The lack of long-term reliable data series on the performance of decentralized financial systems (DFSs) and the absence of data on pension funds and insurance companies prevented including these types of entities in the dashboard and in the financial sector heatmap. The rate of growth in loans offered by DFSs and their financial performance should, however, be closely monitored to ensure that there is no transfer of risk from banking to non-banking institutions.

Figure 3. WAEMU: Macrofinancial Dashboard – Spidergrams

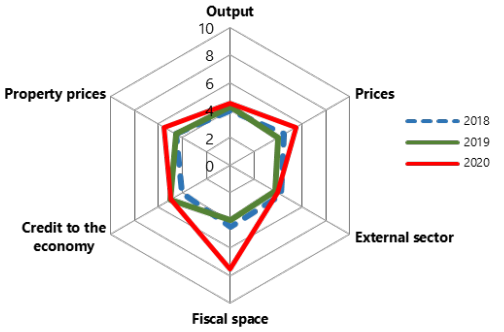
Overall risks



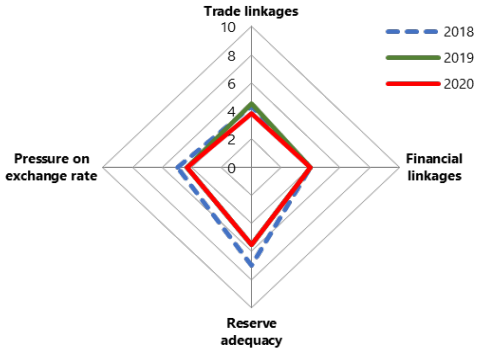
Macroeconomic risks



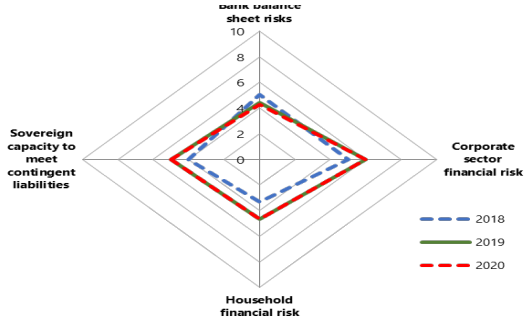
Macroeconomic performance



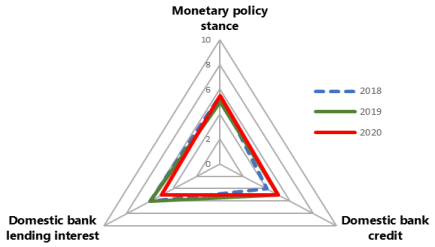
International contagion risk



Credit risks



Monetary and financial conditions



Sources: BCEAO; IMF *Global Economic Indicators* and *Financial Soundness Indicators*; and IMF staff calculations.
Note: Values further away from the center indicate higher risk, easier monetary and financial conditions, or a higher risk appetite. The historical series of indicators used cover the period 1989-2020.

Figure 4. WAEMU: Macrofinancial Dashboard – Heatmaps

	2017	2018	2019	2020
Macroeconomic risks	**5.2**	**4.8**	**4.8**	**5.4**
Macroeconomic performance	**5.1**	**4.3**	**4.2**	**5.3**
Output	4.5	4.0	4.3	4.5
Prices	4.5	4.5	4.0	5.5
External sector	5.3	4.3	3.8	4.0
Fiscal space	5.0	4.5	4.0	7.5
Credit to the economy	6.0	4.0	5.0	5.0
Property prices	5.0	4.5	4.5	5.5
Macroeconomic outlook	**5.4**	**5.4**	**5.4**	**5.6**
Output	5.0	5.0	5.0	5.0
Investment	5.7	5.7	5.7	5.3
Foreign trade	6.0	6.0	6.0	6.0
Political uncertainty	5.0	5.0	5.0	6.0
Inward spillover risks	**4.5**	**4.7**	**4.7**	**4.6**
Exposure to international shocks	4.2	4.2	4.3	3.9
Trade linkages	4.3	4.3	4.5	3.8
Financial linkages	4.0	4.0	4.0	4.0
Capacity to absorb external shocks	7.0	6.0	5.5	5.5
Adequacy of foreign reserves	7.0	6.0	5.5	5.5
Impact of external shocks	5.0	3.3	4.3	4.3
Pressure on the exchange rate	5.0	3.3	4.3	4.3
Credit risks	**4.3**	**5.0**	**5.0**	**5.0**
Bank balance sheets	5.0	4.0	4.4	4.3
Bank credit	6.0	4.0	5.0	5.0
Profitability of banks	3.0	4.0	4.5	4.0
Quality of bank portfolios	5.7	2.7	3.7	3.0
Solvency of banks	5.5	5.5	4.5	5.0
Corporate sector financial risks	5.0	5.0	6.0	6.0
Corporate sector bank commitments	5.0	5.0	6.0	6.0
Household financial risks	3.3	4.0	4.7	4.7
Household bank commitments	2.0	5.0	6.0	5.0
Financial security of households	4.0	4.0	4.0	5.0
Household income	4.0	3.0	4.0	4.0
Sovereign capacity to meet liabilities	4.0	4.0	5.0	5.0
Sovereign bank liabilities	4.0	4.0	5.0	5.0
Liquidity risks	**6.0**	**6.0**	**6.3**	**6.5**
Bank exposure to liquidity shocks	**6.0**	**6.0**	**6.3**	**6.5**
Liquidity of bank assets	6.0	6.0	6.3	6.5
Monetary and financial conditions	**4.5**	**5.3**	**5.3**	**5.3**
Monetary policy stance	**4.0**	**5.5**	**5.0**	**5.5**
Short-term real interest rate	4.0	4.0	2.0	6.0
Money supply	4.0	7.0	8.0	5.0
Credit costs and conditions	**5.0**	**5.0**	**5.5**	**5.0**
Volume of bank credit	6.0	4.0	5.0	5.0
Bank lending rates	4.0	6.0	6.0	5.0
Risk appetite	**6.0**	**5.9**	**5.5**	**4.1**
Risk assessment	**5.5**	**5.3**	**4.0**	**4.3**
Sovereign debt spread	7.0	6.0	4.0	1.0
Sovereign rate volatility	4.0	4.5	4.0	7.5
Investment decisions	**6.5**	**6.5**	**7.0**	**4.0**
Portfolio investment flows	9.0	9.0	5.0	4.0
Foreign direct investment flows	4.0	4.0	9.0	4.0

Sources: BCEAO; IMF *Global Economic Indicators* and *Financial Soundness Indicators*; and IMF staff calculations.
Note: High values indicate higher risks, easier monetary and financial conditions, or a higher risk appetite. The historical series of indicators used cover the period 1989-2020. Each item in blue shows the average for the risk indicators immediately below it.

Figure 5. WAEMU: Financial System Heatmap

Cyclical vulnerabilities	L	L	L	L	L	L	L	L	L	L	L
Change in credit/GDP ratio (ppt, annual)	0.9	1.1	0.3	1.8	0.8	-0.9	0.7	1.1	-0.4	0.3	0.6
Rate of growth in credit/GDP ratio (%, annual)	5.4	6.3	1.4	9.6	3.9	-4.1	3.2	5.0	-1.8	1.2	2.6
Credit gap (std. dev.)	0.5	0.0	0.2	-0.4	0.8	0.1	-1.0	0.1	0.4	-0.5	-0.1
Soundness of bank balance sheets	M	M	M	M	M	M	M	M	M	M	M
Structural imbalance of balance sheets	L	L	L	L	L	L	L	L	L	L	L
Credit/deposit ratio	142.4	144.0	141.1	134.2	140.4	142.7	143.2	137.5	144.2	147.2	138.4
Absorption of balance sheet risks	M	M	M	M	M	M	M	M	M	M	M
Leverage	M	L	L	L	M	M	M	M	M	M	M
Leverage ratio (%)	6.9	7.3	7.3	7.2	6.7	5.7	5.8	6.3	6.8	6.8	6.4
Profitability	L	L	L	L	L	L	L	L	L	L	L
Return on assets	1.1	1.2	0.9	0.9	1.1	1.2	1.3	1.3	1.2	1.2	1.2
Return on equity	12.6	13.7	10.1	11.5	15.5	16.4	20.2	17.6	14.6	13.4	13.3
Quality of bank assets	H	H	H	H	H	H	H	H	H	H	H
Non-performing loans ratio (% of total loans)	17.6	15.9	16.0	15.3	14.9	14.4	13.8	13.9	12.5	11.8	10.9
Change in non-performing loans ratio (%, annuel)	2.2	-9.4	0.3	-3.9	-2.7	-3.9	-3.6	0.5	-10.1	-5.6	-7.6

Sources: BCEAO; IMF *Global Economic Indicators* and *Financial Soundness Indicators*; and IMF staff calculations.
Note: L = low; M = medium; H = high.

B. Concentration Risks

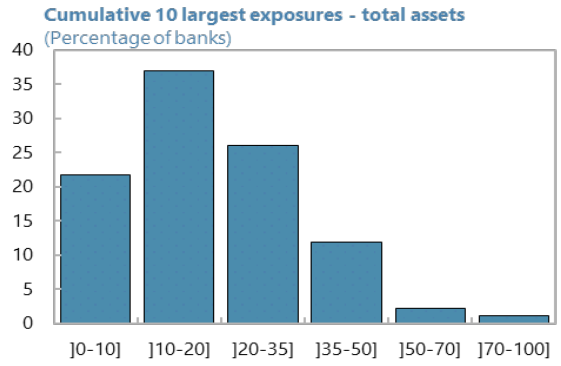
16. WAEMU bank balance sheets are characterized by high concentration of assets both to a limited number of private debtors and to sovereign borrowers. The regional market provides an opportunity to diversify sovereign exposures, which banks have begun to utilize.

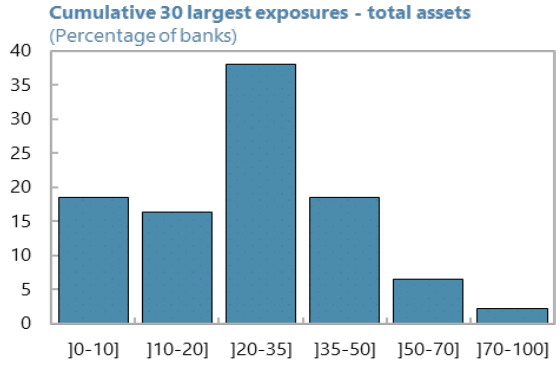
Concentration of Private Sector Loan Portfolios

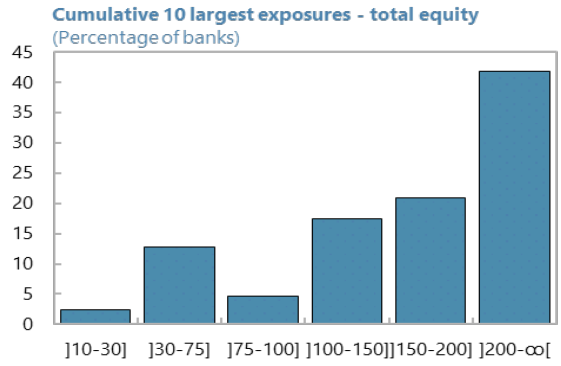
17. Credit risks in the WAEMU are amplified by balance sheets' heavily concentration in large exposures to individuals and sectors. The concentration of bank exposures to individual borrowers has declined since 2017 but remains high, with an average concentration ratio of 78.1 percent of capital in 2020. For more than half of WAEMU banks, the ten largest exposures on average represent 20 percent of assets. A high concentration of exposures to a very small number of sectors, as is the case in Guinea-Bissau (and to some extent in Burkina Faso, Niger, and Togo), heightens the banking sector's vulnerability to sectoral risks. Sectoral exposures in Côte d'Ivoire and Senegal appear to be more diversified, reflecting the greater diversification of their economies (Figure 6).

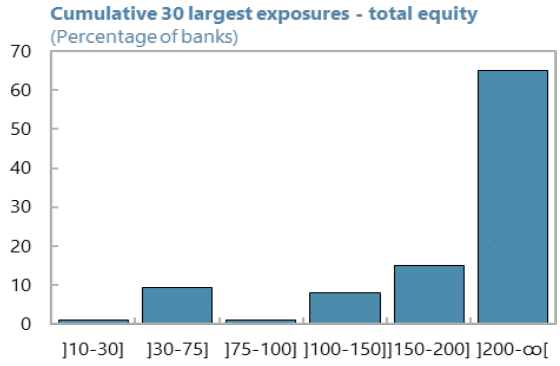
18. Few banks have a sufficient capital buffer to cover their large exposures. The ten largest exposures are larger than the total capital for 80 percent of WAEMU banks. Also, more than 60 percent of banks do not have sufficient surplus capital to address the credit risk associated with a potential failure of their largest debtors (Figure 6).

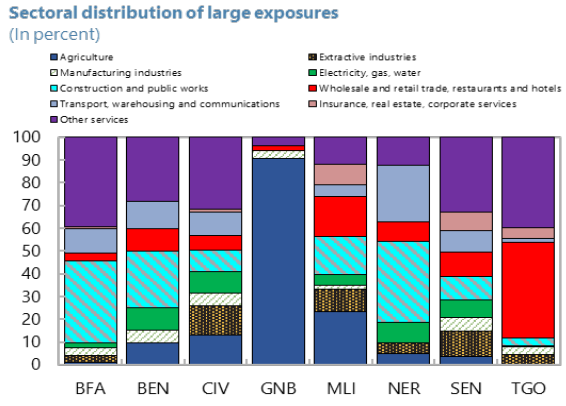
Figure 6. WAEMU: Concentration of Bank Exposures, End-2020

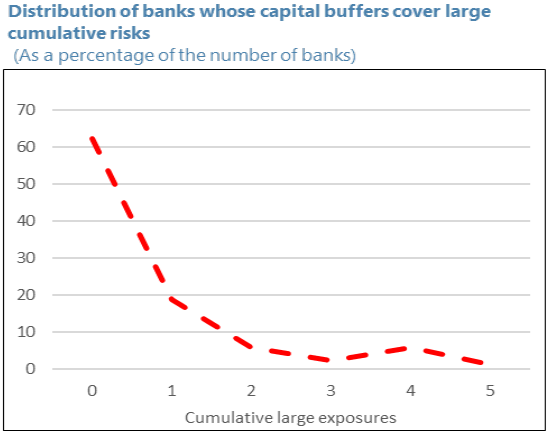












Source: BCEAO; and IMF staff calculations.

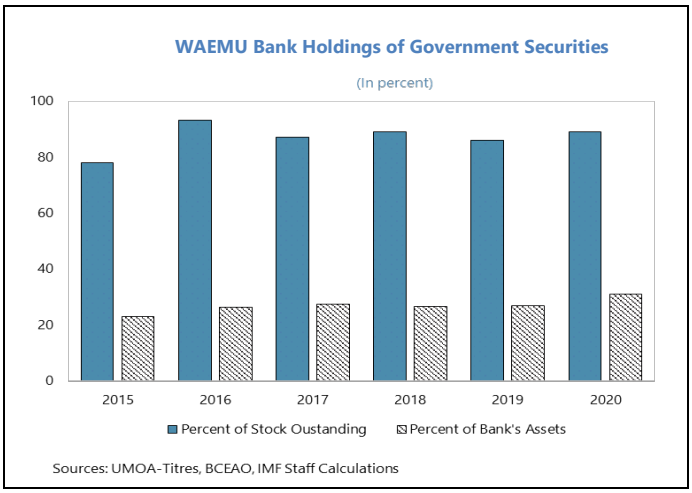
Note: BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

19. The BCEAO has adopted measures to limit the concentration risk, but their application could prove difficult. The reduction in the aggregate large exposure limit to 25 percent of bank

Tier 1 capital under Basel II/III should be implemented by 2023.[8] Due to the moderate diversification of the region's economies, banks are struggling to meet the current 55 percent concentration limit and need to further increase their capital by almost 5 percent of regional GDP to meet the 25 percent limit, which is required by 2023. A support plan for compliance with the new limit will thus likely be required.

Concentration of Sovereign Exposures

20. The increase in bank sovereign exposures in recent years is a major vulnerability. The degree of interconnectedness between banks and governments—measured in terms of the share of member state debt in bank portfolios—more than quadrupled in 15 years, reaching an average of 31 percent at end-2020, up from 7.1 percent at end-2004 (Figure 7). The share of sovereign exposures in WAEMU bank portfolios is, on average, higher than the average for low-income developing countries. This sharp increase reflects the concurrent rapid expansion of the government securities market, whose development has been supported by bank securities purchases, which account for about 85 percent of outstanding government securities.[9] The resulting high concentrations in bank portfolios pose a significant banking sector vulnerability.



21. High government securities holdings are strongly concentrated at medium-sized banks with low capital buffers, raising the sovereign risk vulnerability of the banking sector. Banks whose government securities holdings account for more than 20 percent of their assets have on average the lowest solvency ratios (Figure 7). The high concentration of sovereign risk at banks with low capital buffers exacerbates the bank-sovereign nexus as it increases the likelihood that shocks in government securities markets would have a pronounced widespread impact on banks.

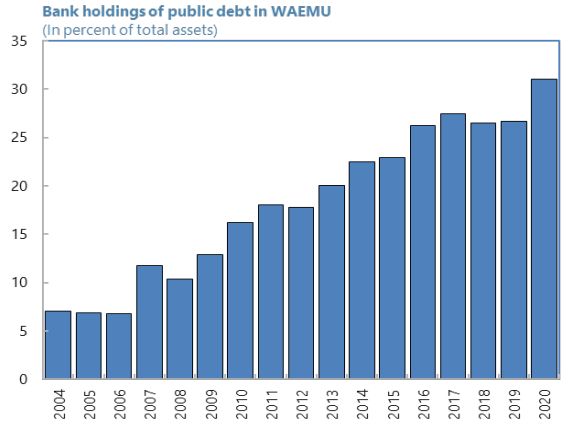
22. The sustainability of the public debt of WAEMU member countries is a growing concern. WAEMU member countries are at medium or high risk of debt distress according to published IMF debt sustainability analyses; sovereign ratings are below BB. Nevertheless, some of these countries (Benin, Côte d'Ivoire, and Senegal) have access to international capital markets, with average spreads in the performing bond category (Figure 7).

[8] Originally scheduled for 2022, the year for application of the 25 percent concentration limit has been postponed to 2023, as part of the BCEAO's 2020 COVID-19 mitigation regulatory measures.

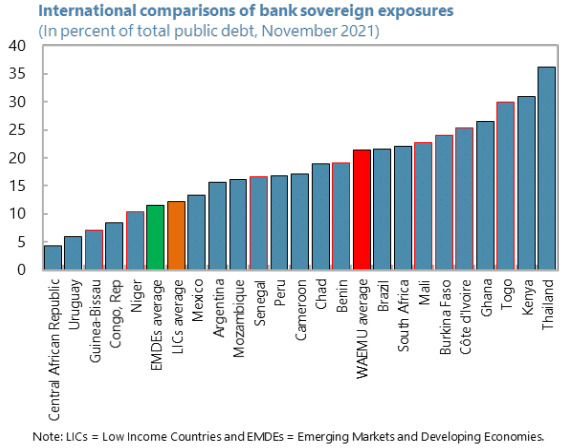
[9] WAEMU banks account for around 90 percent of issuances via auctions and 75 percent of the syndication placements. In the absence of a more liquid secondary market, banks also have a buy and hold investment strategy. The remaining government securities holders are pension funds, insurance companies, and investments funds. The participation of international investors from outside the WAEMU remains negligible in the regional security market.

Figure 7. WAEMU: Banks' Sovereign Exposures and Associated Risks

Bank exposures to government securities have risen sharply as a proportion of their total assets...

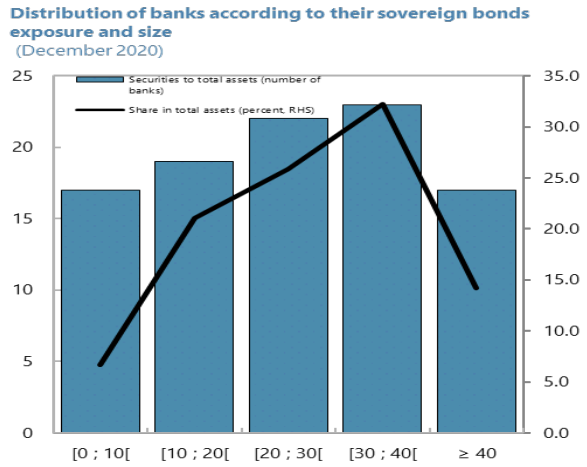


...reaching high levels compared to other developing or emerging market countries.

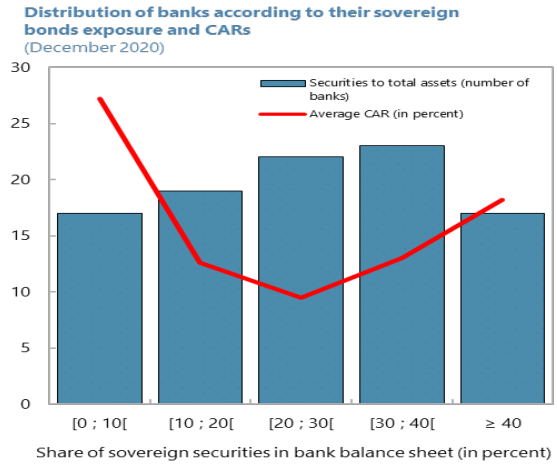


Note: LICs = Low Income Countries and EMDEs = Emerging Markets and Developing Economies.

Sovereign exposures are heavily concentrated in medium-sized banks...



... whose capital buffers are low.



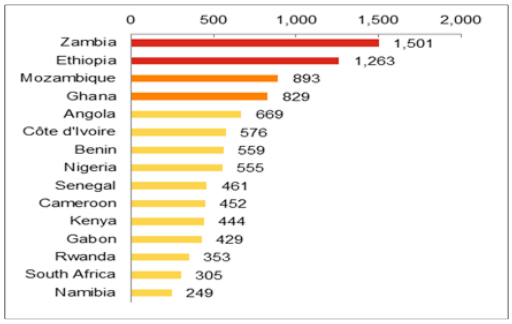
Assessment of the risks to debt sustainability of WAEMU countries

(Updated August 9, 2021)

Country	LIC DSA rating	Country rating							
		Moody's		S&P			Fitch		
		Rating	Outlook	Rating	Outlook		Rating	Outlook	
		2016	2017	2018	2019	2020	2021	2022	2023
Benin	Moderate	...	...		B+	Stable		...	Pos
Burkina Faso	Moderate	...	...		B	Stable		...	...
Cote d'Ivoire	Moderate	Ba3	Stable		BB-	Stable		BB-	Stable
Guinee-Bissau	High	...	...		...	...		...	...
Mali	Moderate	...	Stable		NR	...		WD	...
Niger	Moderate	...	Stable		...	...		...	...
Senegal	Moderate	Ba3	Neg		B+	Stable		...	...
Togo	Moderate	...	Stable		B	Stable		...	...

Weighted average spreads of international issues

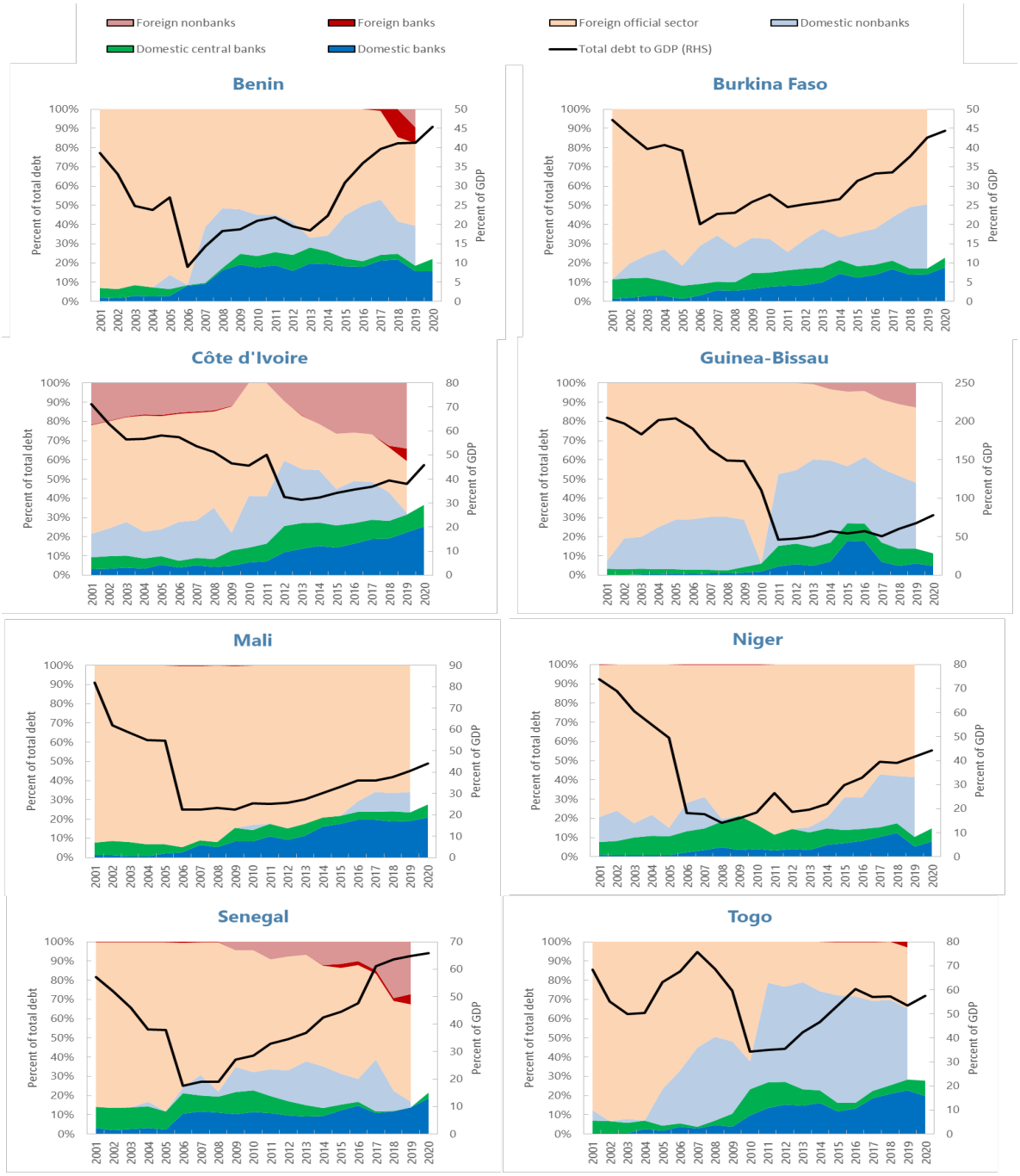
(In number of basis points)



Sources: Arslanalp and Tsuda (2014, updated in April 2021); BCEAO; UMOA-Titres; IMF *Debt Vulnerability Monitor* and *Sovereign Spread Monitor*; and IMF staff calculations.

Note: CAR = capital adequacy ratio. In the middle two charts, the sample covers 98 banks.

Figure 8. WAEMU: Structure of Public Debt Holders in WAEMU Member States[1]



Sources : Arslanalp and Tsuda (2014 updated April 2021); Sovereign Debt Investor Base; IMF.
Note: "Total debt" refers to general government gross debt on a consolidated basis, which excludes intergovernmental holdings. "Domestic banks" are depository corporations residing in the country (IFS definition). "Foreign banks" are BIS reporting banks residing outside the country. "Foreign official sector" includes foreign central bank holdings as foreign exchange reserves, SMP holdings of foreign central banks, and foreign official loans. "Foreign nonbanks" and "domestic nonbanks" are imputed from external and total debt. For 2020, only data on domestic banks and domestic central banks is available.

[1] Foreign holders include those residing in other WAEMU countries.

C. Contagion Risks Due to Interconnections and Large Common Exposures

23. Several transmission channels for contagion risks have been identified. Contagion risks in the WAEMU financial sector are related to: (i) direct interbank exposures, the volumes of which have steadily increased over the past five years; (ii) regional and cross-border interconnections via bank capital structures, which provide a perspective on cross-border interbank contagion risks via the bank capital holdings channel; and (iii) large common exposures of banks, mainly to member governments and certain large private sector debtors. Given data availability constraints, shock simulations were focused mainly on the first and third contagion channels.

Contagion Due to Interbank Interconnections

24. In the WAEMU, where most banks are part of transnational groups, bank cross-border exposures are a key channel of risk transmission. At end-2020, 109 of the 149 banks operating in the WAEMU (78 percent of total assets) were affiliated with 32 banking groups. The capital of these banking groups is mainly held by domestic shareholders (36.4 percent of assets) or by parent banks established in North Africa (28 percent of assets) and Europe (13.1 percent of assets). The dominance of regional and foreign banking groups exposes the banking system to idiosyncratic or systemic disruptions that affect parent banks and are transmitted to local subsidiaries. In addition, the expansion of the regional government securities market has intensified the bank-sovereign nexus in recent years, increasing the risks of cross-sector contagion.

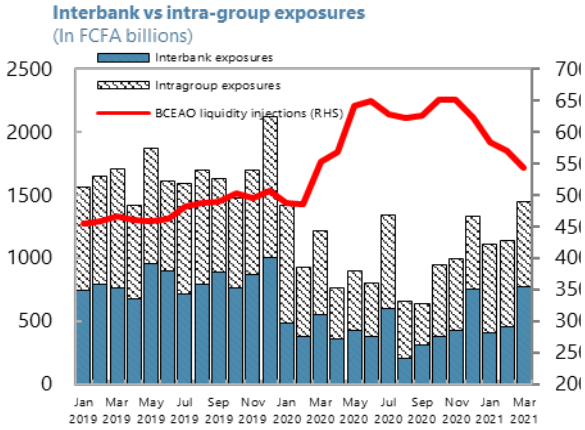
25. The prevalence of intra-group (mainly cross-border) exposures may be a source of regional credit risk contagion. The close ties of banks to parent banking entities can have both stabilizing and destabilizing effects. On the one hand, intra-group flows have a stabilizing effect on the liquidity of banks belonging to a group in the event of a loss of confidence in the interbank market. The relative stability of intra-group flows, in contrast to the contraction of interbank flows to third-party banks after the onset of COVID-19, clearly demonstrates this. In 2020, while the direct interbank transactions dropped by 40.5 percent, the share of cumulative interbank transactions between banks belonging to the same group (in overall interbank lending) increased to 56.2 percent from 51 percent in 2019 (Figure 9). The slowdown of interbank transactions in 2020 reversed the rapid expansion of the interbank exposure network in the preceding years (Figure 10). On the other hand, the prevalence of intra-group exposures can be a source of credit risk in the event of solvency difficulties of the parent company or a subsidiary.

26. The predominance of unsecured interbank operations suggests that interbank defaults would have a severe adverse impact on the banking system. Most lending and borrowing in the region, even across banks that do not belong to the same banking group, is unsecured (Figure 9). A survey of banks conducted by the FSAP found that collateralized transactions, on average, accounted for 20 to 30 percent of the cumulative volume of interbank transactions in 2021. Treasury bills and bonds are the only assets accepted as collateral in collateralized interbank transactions, mostly via repos. Yet, the potential scope of collateralized transactions remains limited, as almost 41 percent of banks do not have repo framework agreements with counterparties and few have signed such

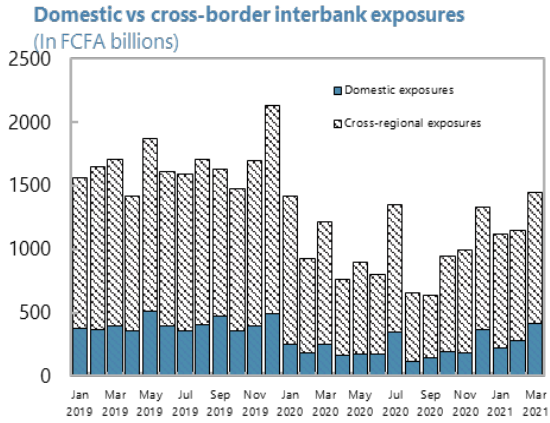
agreements with more than four counterparties. With little collateral used in interbank transactions, lending institutions are thus exposed to maximum losses in the event of counterparty defaults.

Figure 9. WAEMU: Direct Bank Interconnectedness

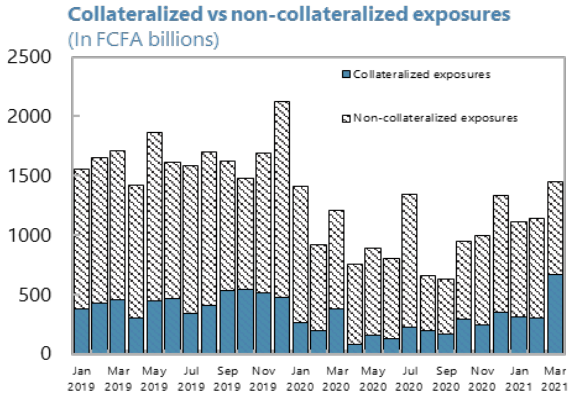
The fall in interbank financing after the COVID-19 onset raised the relative importance of intra-group exposures.



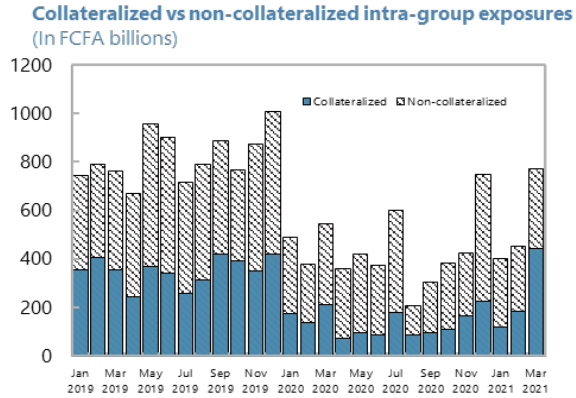
These are now responsible for the large share of cross-border exposures in the region.



Interbank transactions are mainly unsecured …



…even when they involve banks that do not belong to the same group.



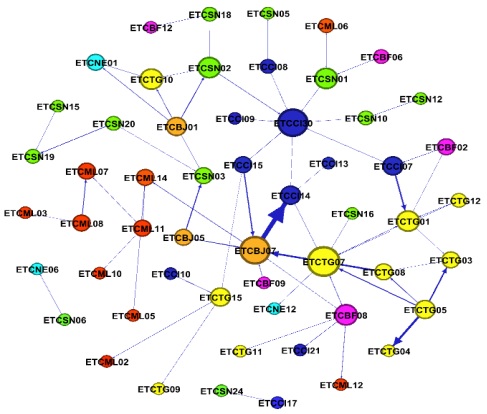
Sources: BCEAO; IMF staff calculations.

Figure 10. WAEMU: Development of the Interbank Exposure Network (2015-2020)

Although interbank exposures have most recently been down, there has been significant growth since 2015.

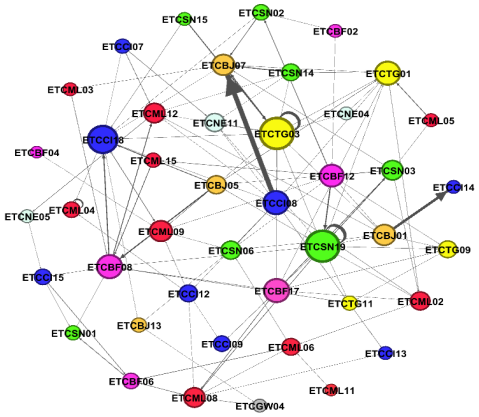
2015

Nodes: 55; Connections: 71



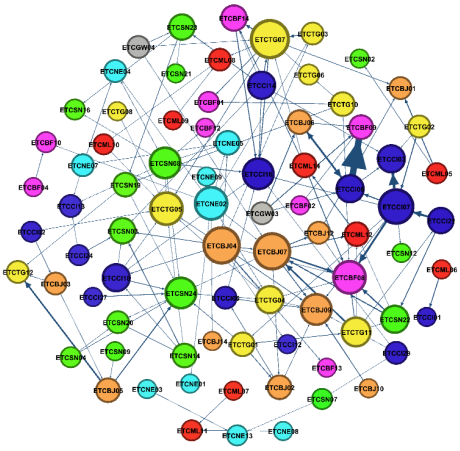
2017

Nodes: 43; Connections: 119



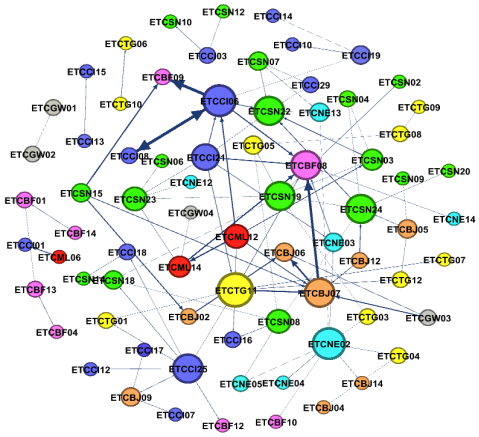
2019

Nodes: 81; Connections: 150



2020

Nodes: 75; Connections: 98



Sources: BCEAO; IMF staff calculations.

Note: Bank color codes: orange (Benin), purple (Burkina Faso), blue (Côte d'Ivoire), gray (Guinea-Bissau), red (Mali), turquoise (Niger), green (Senegal), and yellow (Togo).

27. The analysis of interbank contagion risk tracks the domino effects triggered by hypothetical credit and funding shocks to each bank in the interbank network. This analysis was conducted based on the methodology of Espinosa-Vega and Sole (2010). It considers two types of shocks: (i) a credit shock, meant to assess the domino effects triggered by the default of a bank's interbank obligations; and (ii) a funding shock, where the default of an institution also leads to a liquidity squeeze for institutions funded by the defaulting institution. To address an unforeseen withdrawal of interbank funding, banks may be forced to sell a part of their assets below market

value to restore their balance sheets, leading to further capital losses and potential further failures across the network.[11] Consideration of this second shock is particularly relevant in the context of the WAEMU, as the region is characterized by the absence of a BCEAO framework for providing emergency liquidity and by low secondary market liquidity in government securities markets, which limits the ability of banks to sell assets in the event of a liquidity shock.[12]

28. The simulations are based on a combination of credit and funding shocks. The credit shock scenario assumes that the insolvency of a bank, following an idiosyncratic shock, would lead to its default on all its interbank loans. This would result in capital losses for all banks that are direct creditors of the failing bank and would precipitate a chain of defaults in the interbank market. For the funding shock, the illiquid secondary securities market and the relative fragmentation of the interbank market have a sizable impact. Banks would, on average, face a discount of 50 percent on selling assets in the secondary market and that an average of 42 percent of lost interbank funding lines are not replaceable.[13,14]

29. The simulations are based on interbank exposure data available as of end-March 2021. After a significant decline in 2020, interbank transactions experienced a clear upturn in early 2021, in line with the economic recovery across the region. The cumulative volume of interbank transactions at end-March 2021 stood at nearly CFAF 1,450 billion, very close to the average pre-pandemic levels of CFAF 1,500 billion to CFAF 2,000 billion in 2019. The data cover 70 banks across the eight WAEMU member countries, representing nearly 86.5 percent of bank total assets.

30. Contagion due to combined credit and funding shocks in the interbank market would lead to capital losses of up to 0.7 percent of 2021 GDP for the region's banking system.[15] These results underscore the systemic importance of banking group subsidiaries from the point of view of contagion risk (Figure 11).

31. Further capital needs to cover losses from interbank exposures were estimated at 0.3 percent of 2021 regional GDP. Banks requiring an injection of additional capital are grouped into

[11] Espinoza and Sole's framework excludes the possibility of institutions raising new capital and assumes that the loss induced by a funding shortfall is absorbed by the bank's capital. Therefore, a bank's vulnerability stems not only from its direct credit exposures to other institutions but also from its inability to roll over (part of) its funding in the interbank market, thus having to sell assets at a discount to restore its balance sheet balance.

[12] See Bricco and Xu (2019) for a review of the interconnection and contagion models used in the IMF's FSAP work.

[13] Data on secondary market transactions in government securities in 2019 and 2020 show that the cash equivalents of the transactions on average stand at 88 to 108 percent of the par value of the traded securities, corresponding to a maximum discount of 12 percent applied in "normal" situations.

[14] The correspondent values of the model's parameters are $\delta=0.5$ and $\rho=0.42$, where ρ is the share of lost interbank funding lines that cannot be replaced. The ρ is approximated as the share of non-intra group interbank transactions, based on data that intra-group transactions, which are more likely to be recurrent, represent 58 percent of total transactions. The loss given default is assumed to be 80 percent ($\lambda=0.8$), in line with the predominance of unsecured transactions (78 percent of total interbank transactions in 2019). See Espinosa-Vega and Sole (2010) for further details.

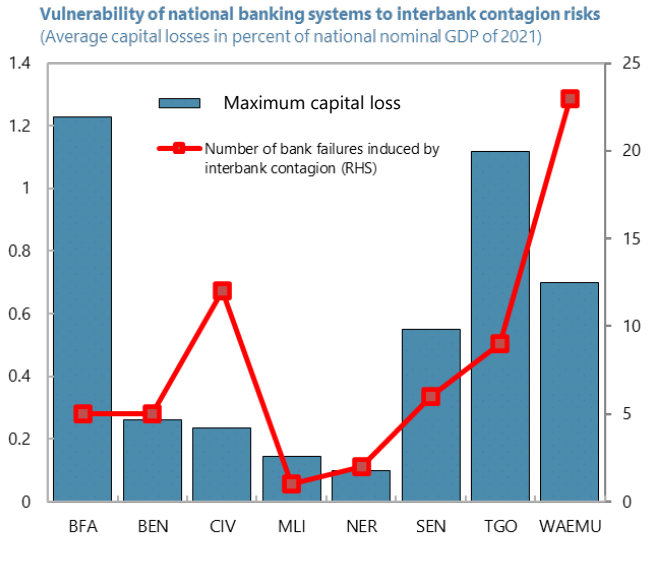
[15] Table 3 in the Annex summarizes the assumptions and results of the contagion risk stress tests (direct interbank contagion, contagion due to large common private exposures, and contagion due to sovereign exposures).

three categories: (i) banks with small capital buffers, with a capital adequacy ratio of less than 12 percent; (ii) undercapitalized banks, with a capital adequacy ratio below the regulatory minimum of 8.25 percent; and (iii) small banks with significant exposures to interbank counterparties.

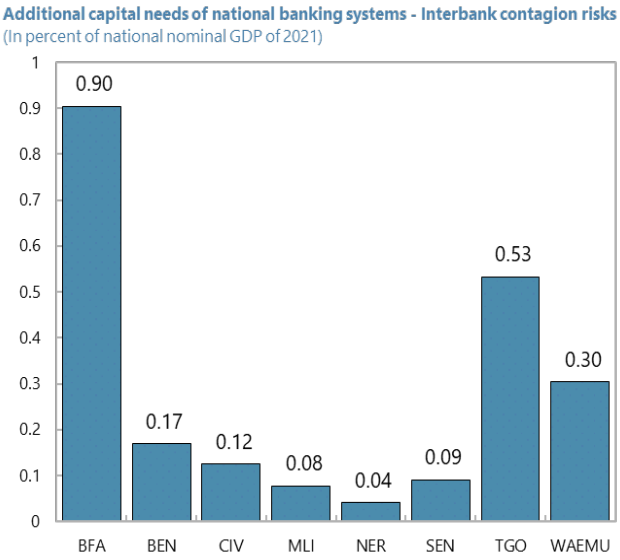
32. The banking systems of Burkina Faso, Senegal, and Togo are particularly exposed to interbank contagion risk. Burkina Faso's banking system is the most vulnerable, with a maximum capital loss estimated, on average, at 1.2 percent of the country's 2021 GDP. The banking systems of Togo and Senegal face maximum capital losses of 1.1 percent and 0.6 percent of national GDP, respectively, on average. In contrast, Côte d'Ivoire's banks would, on average, suffer a maximum loss of only 0.2 percent of national GDP, even though 12 banks fail in the event of interbank contagion (Figure 11).

Figure 11. WAEMU: Results of the Interbank Contagion Risk Simulations

Banks in Burkina Faso, Togo, and Senegal are the most vulnerable to interbank contagion.



The additional capital needed to deal with interbank contagion amounts to 0.3 percent of regional GDP.



Source: BCEAO; and IMF staff calculations.
Note: BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.
Due to data limitation banks in Guinea-Bissau are not included in the simulation.

Contagion Due to Large Common Exposures

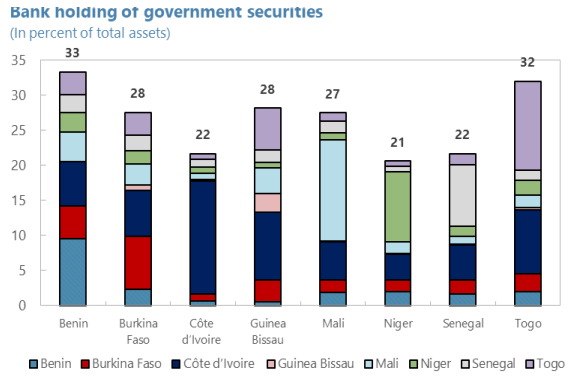
33. Banks in the region share reasonably high exposures to the same entities, which increases their credit risks. These exposures include investments in government securities across the region and loans to a limited number of large private debtors.

34. Government securities holdings of banks are characterized by a national bias and a high concentration in bonds issued by Côte d'Ivoire (Figures 12 and 13). On average, a significant

portion of the securities held by banks (between 8 and 16 percent of assets, depending on the country) are issued by the state in which banks reside. Notwithstanding this national bias, banks tend to diversify their securities portfolio by also holding debt instruments issued by almost all WAEMU member countries. The one exception is Ivoirian banks, which hold almost exclusively securities issued by the Côte d'Ivoire government. Overall, Côte d'Ivoire securities account for a prominent share of the securities portfolios of banks across the Union. This suggests steady demand for these securities, which may make them more liquid (i.e., having a higher likelihood of finding a buyer in the secondary market) than the securities issued by other member governments.

Figure 12. WAEMU: Banks' Sovereign Exposures and Risks to Government Debt Sustainability

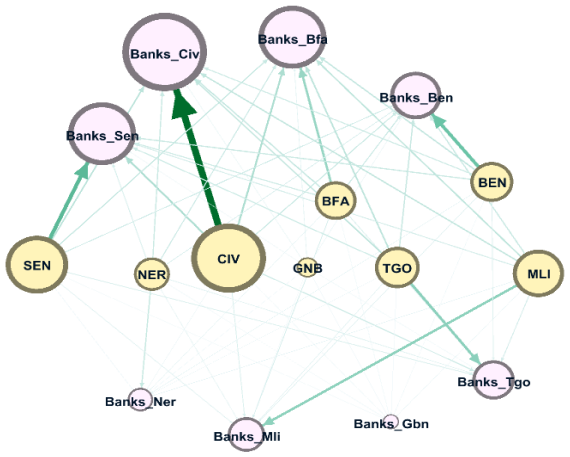
Bank sovereign exposures are heavily concentrated in the debt issued by the state in which they are located; securities issued by the government of Côte d'Ivoire are the next largest.



Note: Only banks that reported having a government securities portfolio are included in this graph, namely, 11 banks in Benin, 16 banks in Burkina Faso, 22 banks in Côte d'Ivoire, 3 banks in Guinea-Bissau, 13 banks in Mali, 10 banks in Niger, 20 banks in Senegal, and 13 banks in Togo.

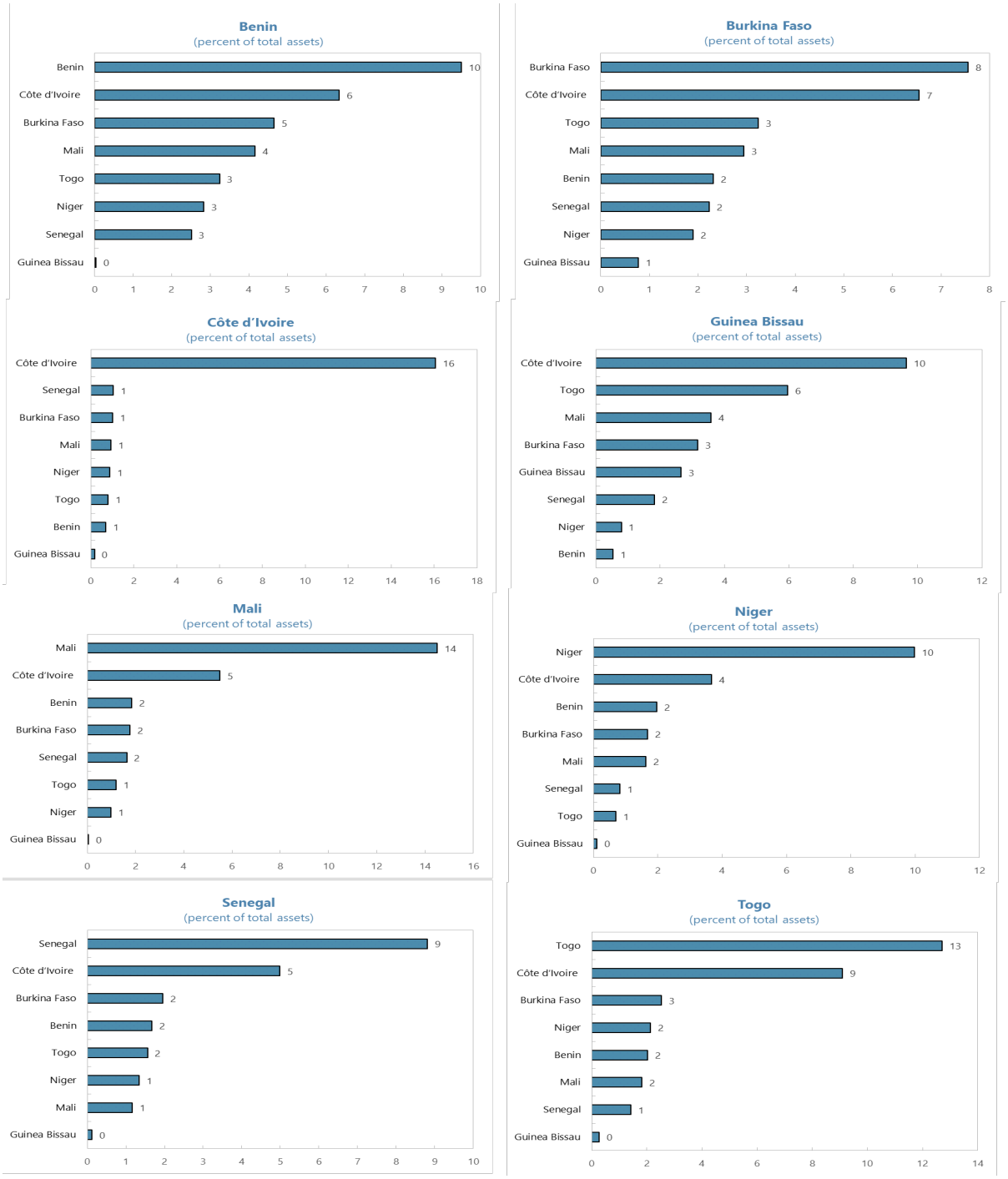
The banking systems of countries that most actively issue government securities are most exposed to sovereign risk.

Network representation of the sovereign-bank relationship in the WAEMU (end-2020)[1]



Sources: BCEAO; UMOA-Titres; and IMF staff calculations.
Note: BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

Figure 13. WAEMU: Banks' Sovereign Exposures, by Country



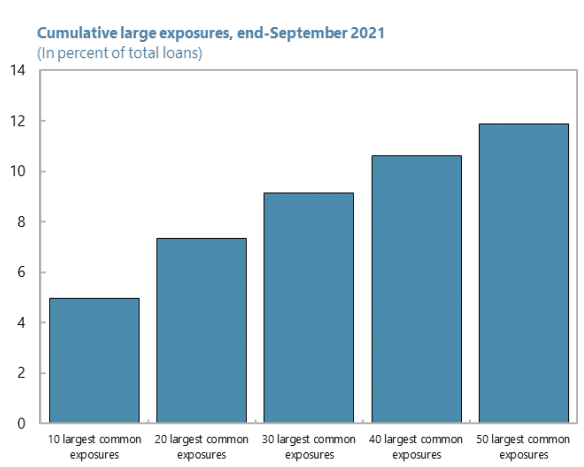
Sources: BCEAO; WAMU-Securities; and IMF staff calculations.

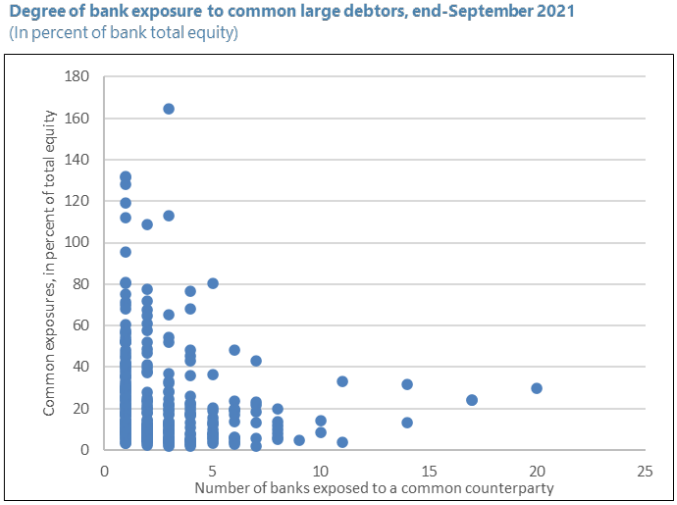
Note: This figure includes only banks that reported having government securities portfolios, namely 11 banks in Benin, 16 banks in Burkina Faso, 22 banks in Côte d'Ivoire, 3 banks in Guinea-Bissau, 13 banks in Mali, 10 banks in Niger, 20 banks in Senegal, and 13 banks in Togo.

35. The high concentration of bank loan portfolios in a limited number of large (and sometimes related) borrowers exacerbates contagion risks. The 50 largest common exposures of WAEMU banks accounted for 12.1 percent of bank loans at end-September 2021 (Figure 14). These exposures are mostly to relatively big companies in the construction and public works; telecommunications; and water and energy sectors. The strong sectoral concentration of bank common exposures does increase the banking sector's vulnerability to contagion risk.

36. Despite large volumes of syndicated loans, risk sharing among banks remains inadequate. On average, syndicated loans are issued by only a few banks. For most large common exposures, participation in syndicated loans is limited to less than five banks. Only the eight largest debtors in the banking system have liabilities that spread across more than 10 banks, representing on average 20 to 40 percent of the capital of the banks in question (Figure 14, right panel). Because of their low dispersion across institutions, these common exposures account for a large share of the capital of the banks involved.

Figure 14. WAEMU: Banks' Common Exposures





Sources: BCEAO; and IMF staff calculations.

37. An analytical approach was used to assess the potential contagion effects associated with the default of one or more large common bank exposures. The approach is based on the network analysis framework of Espinosa-Vega and Sole (2010) and consists of expanding the initial matrix of interbank exposures to include common exposures of banks to non-financial entities (governments or private debtors). This approach thus captures the amplifying effect of the interbank market in the contagion related to common non-financial exposures. Thus, the default of one or more common exposures would lead to direct capital losses for the banks with outstanding loans to the common exposures, and indirect losses for the other banks via the interbank exposure channel.

38. Under the two scenarios that combine credit and funding shocks discussed above, the losses and capital requirements of the banking sector are as follows.

- ***Capital losses from the default of large common non-financial private exposures would range from 1.6 to 3.2 percent of 2021 regional GDP.*** Direct and indirect capital losses would range from 1.6 percent of GDP (given the default of the 10 largest common exposures) to 3.2 percent of GDP (given the default of the 50 largest exposures) (Figure 13). These losses would amount to 2.7 percent of GDP in the event of the default of the 30 largest common exposures in the region.

- ***Capital needs would be between 0.8 and 2.1 percent of 2021 GDP.*** In the event of the default of the 10 largest common exposures, 38 banks would have capital ratios that fall below the regulatory threshold of 8.25 percent, representing capital needs equal to 0.8 percent of regional GDP. In the event of the default of the 50 largest common exposures, 60 banks would be affected, and the capital needs would amount to 2.1 percent of GDP (Figure 15). The banking systems of Togo, Senegal, and Burkina Faso are the most vulnerable to contagion risks from common exposures, with capital losses of 3.0 percent, 1.6 percent, and 1 percent of their respective 2021 national GDPs in the event of the default of the 10 largest regional common exposures.

39. Contagion risk simulations were also performed for bank common sovereign exposures. These simulations are based on a scenario of default by sovereign issuers on their short-term domestic debt maturities (i.e., the outstanding maturities due by end-2022). For all WAEMU countries, the outstanding debt maturing by 2022 represents on average 20 to 37 percent of total outstanding securities at end-September 2021 (see Figure 20 in the annex).

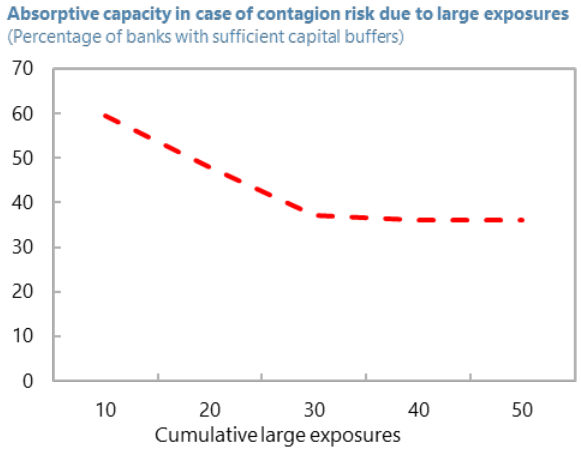
40. The regional banking system is particularly vulnerable to a default by Côte d'Ivoire. Almost 50 banks would not have sufficient capital buffers to cope with a default by Côte d'Ivoire on its short-term maturities in the WAEMU government securities market, reflecting the high concentration of bank portfolios in the country's debt instruments. The results also highlight the low impact of default by issuers with a less concentrated debt amortization profile (Senegal and Togo), thus underscoring the importance of a sound debt management strategy for financial stability. The defaults of Senegal and Togo, which are among the largest issuers of securities in the regional market, had only a limited impact on the banking system, causing the failure of 7 and 11 banks, respectively. On the other hand, the default of smaller issuers with a more concentrated short-term debt repayment profile had a more severe impact on the banking system. This is the case with Mali, where a default on short-term maturities led to the failure of 13 banks (Figure 15).

41. Bank capital losses due to contagion from a sovereign default in the WAEMU could reach 1.7 percent of 2021 regional GDP (lower-right panel of Figure 15)**.** Banks in Burkina Faso, Togo, and Côte d'Ivoire would be the most affected, with maximum losses of 2.8, 2.4, and 1.9 percent of their respective national GDP, followed by banks in Mali and Senegal, whose maximum losses would be around 1.7 and 1.6 percent of their respective national GDP (Figure 20 in the annexes). Bank capital loss profiles reflect the national bias in the holdings of government securities and the concentration in Ivoirian debt instruments, with the maximum losses incurred by the banks associated with the default scenario of Côte d'Ivoire and the issuing country in which they are located.

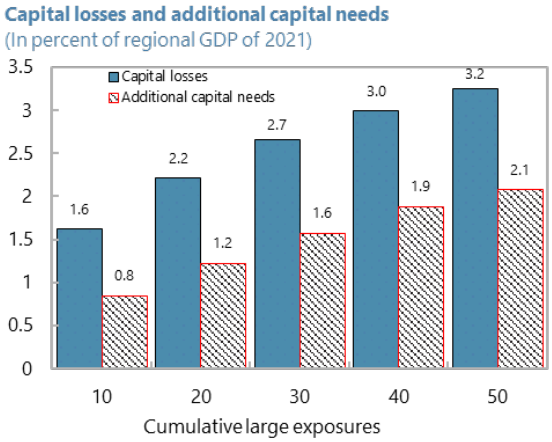
42. The capital needed to cover contagion risk from common sovereign exposures ranges from 0.04 to 0.8 percent of 2021 regional GDP (lower-right panel of Figure 15). Depending on the sovereign default scenario, the additional capital needs are as high as 0.8 percent of regional GDP in the event of a default by Côte d'Ivoire (the largest issuer in the region) and only 0.04 percent of regional GDP in case of a default by Guinea-Bissau (one of the smallest issuers in the regional securities market).

Figure 15. WAEMU: Simulations of Contagion Risk Related to a Sovereign Default

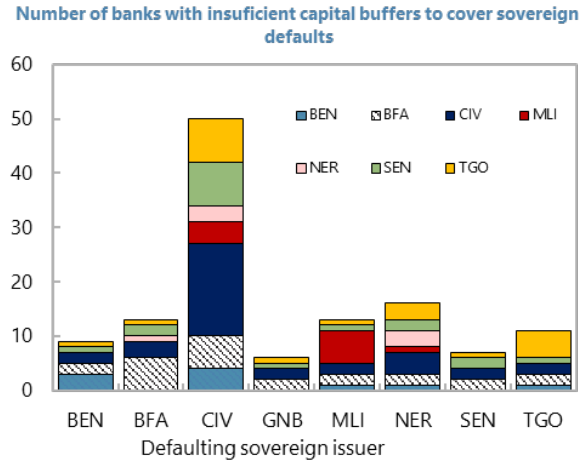
Less than a third of the zone's banks have sufficient capital buffers against contagion from the default of the 30 largest common exposures.



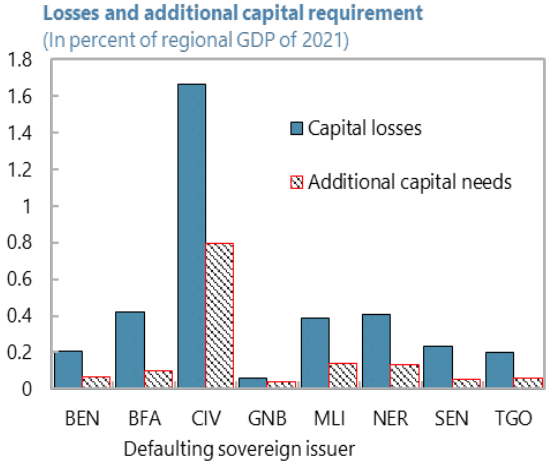
Additional capital needs would reach 1.6 percent of regional GDP in the event of a default of the banking sector's 30 largest common exposures.



Almost half of the banks would not have sufficient capital buffers to cope with a default by Côte d'Ivoire (the largest regional issuer).



Additional capital needs would be at up to 0.8 percent of 2021 regional GDP in the event of a default by Côte d'Ivoire on its upcoming short-term maturities.

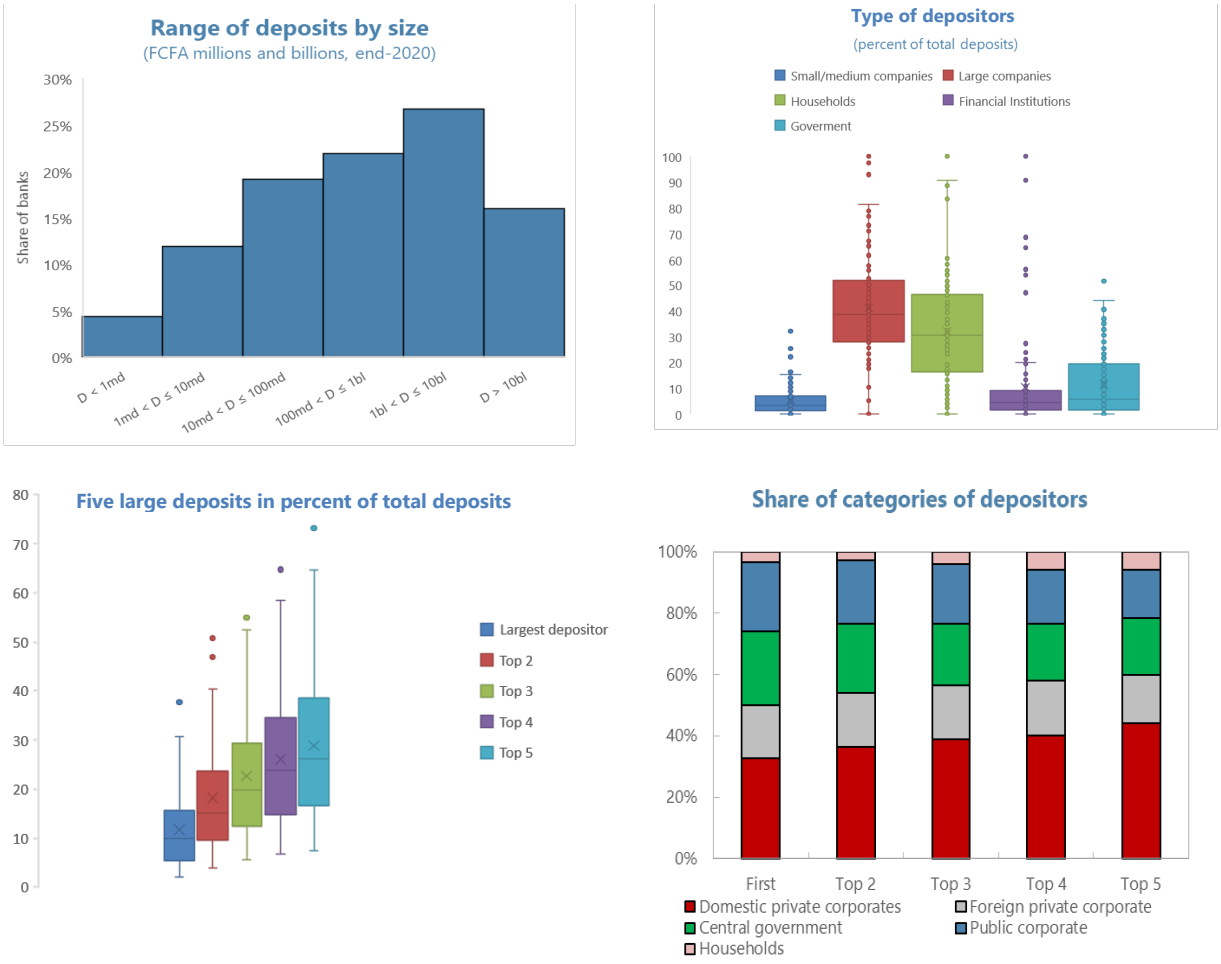


Sources: BCEAO; and IMF staff calculations.
Note: BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

D. Liquidity Risk[16]

43. Liquidity risks in the region are exacerbated by limited market liquidity and high deposit concentration. Apart from bank reserves at the BCEAO, other bank assets have either zero market liquidity (e.g., non-marketable debt) or limited liquidity (e.g., government securities). Estimating the stability and residual maturity of bank funding in the region is not trivial since these deposits do not have contractual maturities. The benchmarks provided by the Basel standards need to be refined based on analysis of historical data. A concern in the WAEMU context is the high concentration of deposits, which exacerbates liquidity risk. The five largest depositors, including non-financial corporations, account for an average of 26 percent of total deposits, and the largest depositor accounts for an average of 10 percent of total deposits (Figure 16).

Figure 16. WAEMU: Concentration of Bank Deposits



Sources: BCEAO; and IMF staff calculations.
Note: Due to data availability constraints, the sample sizes used are variable. Specifically, top left = 87 banks, top right =126 banks, bottom left and bottom right = 57 banks.

[16] This issue is explored in more depth in the technical note "Analysis of Systemic Liquidity" produced by this FSAP, which also includes stress tests of liquidity risks.

44. Maturity and interest rate mismatches are an emerging risk. The growth in the financial sector, in particular the considerable expansion of government securities holdings with long maturities relative to bank' resources, suggests an increase in maturity mismatches and interest rate risk. The FSAP was unable to measure the extent of this risk because of the lack of granular information on the residual maturities of bank assets and liabilities and on their rates.

SYSTEMIC RISK MONITORING AND MACROPRUDENTIAL INSTRUMENTS

45. Systemic risks monitoring and calibration of macroprudential instrument requires a carefully designed macroprudential policy framework. Easy access to high-quality data is a prerequisite for effectively monitoring financial system vulnerabilities, which in turn should be carried out via a well-defined process involving analysis of a sufficiently wide range of indicators. The analysis of financial stability risks should also be supported by use of various empirical methods, including econometric models. Finally, the deployment of macroprudential instruments should be based on thorough cost-benefit analysis and regular evaluation of the results of their implementation.

A. Monitoring of Systemic Risks

46. The BCEAO plays a pivotal role in systemic risk monitoring, and benefits from the contributions of other financial sector regulators and supervisors as part of the work of the CSF-UMOA. The BCEAO has a financial stability department that is responsible for the analysis and regular monitoring of systemic risks. This involves developing and updating financial stability indicators. In practice, the monitoring of systemic risks mostly supports the work of the CSF-UMOA, which meets at least twice a year. The CSF-UMOA is chaired by the BCEAO's governor and provides a forum for the exchange of views and analyses among the BCEAO and other financial regulators.

47. Since the 2008 FSAP, the BCEAO has made considerable progress in developing indicators and analytical tools for systemic risk monitoring. The BCEAO uses various analytical methods to assess vulnerability levels and inform macroprudential policy. It periodically monitors macroeconomic and financial sector developments via a broad set of individual macroprudential indicators, presented in the form of a financial stability dashboard and discussed during CSF-UMOA sessions. The BCEAO also uses simulation and stress testing approaches to assess financial institution vulnerability to macrofinancial shocks, including the impact of such shocks on the quality of bank credit portfolios and bank sensitivity to liquidity and market risks, among others. The BCEAO's stress testing framework relies on satellite models to calibrate the shock scenarios that link macroeconomic factors (e.g., GDP and inflation) to bank-specific variables (e.g., profitability, credit growth, and asset quality deterioration). To improve transparency, the BCEAO should publish the financial stability dashboard or the results of its stress testing exercises.

48. The BCEAO's macroprudential decision-making would benefit from identifying appropriate systemic risk thresholds within its monitoring framework. At present, the BCEAO's macroprudential monitoring framework tracks movements of macrofinancial indicators but does not take into account thresholds for systemic risk. The absence of systemic risk thresholds and an early warning system limit the framework's ability to extract signals of a potential rise in financial sector vulnerabilities. The calibration of early warning thresholds would improve the quality of the macroprudential indicators used by the BCEAO to monitor the accumulation of systemic vulnerabilities. Ideally, the calibration of early warning thresholds requires long statistical series of macrofinancial data, including banking crisis episodes. The rarity of past banking sector disruptions, however, as well as data constraints in the region, pose a considerable challenge for the effective calibration of such thresholds. The BCEAO should hence rely more extensively on expert judgment about the extent of various systemic risks. It could also work on constructing threshold benchmarks based on other countries' experience with banking sector instability and the opinions of regional experts.

49. The monitoring and analysis of certain risks and vulnerabilities—notably in the corporate, household, and real estate sectors—should be enhanced. The BCEAO's systemic risk monitoring efforts should ensure close and comprehensive coverage of corporate debt, which accounts for about two-thirds of bank loan portfolios, and of corporate repayment capacities. The analysis of real estate-related risks should also be deepened in view of the sector's increasingly important role in the transmission of financial sector risks. The ability to provide timely vulnerability analysis would require addressing existing gaps and collecting more disaggregated indicators on corporate and household balance sheets, profitability and debt repayment capacity, as well as property prices. This could be achieved by drawing on several ongoing BCEAO initiatives to develop public credit registers (e.g., the corporate balance sheets database and credit and payment registers).[17] To this end, the BCEAO should accelerate the overhaul of its credit register and reorient it to focus primarily on macroprudential surveillance (e.g., in terms of structure of the data to be collected and parameterization of outputs). The corporate balance sheets database and the regional credit bureau also offer considerable opportunities to increase the granularity of household and corporate loan-level data. The collection of granular residential real estate data will also be critical to identify and assess the risks associated with rising common exposures to the real estate sector.

B. Macroprudential Instruments

50. The new macroprudential framework has introduced several macroprudential instruments applicable to the banking sector. As part of the upgrade of its macroprudential framework to meet Basel II/Basel III standards, the BCEAO has instituted new bank capital requirements designed to mitigate systemic risks. Three capital buffer standards have been introduced since 2018: (i) the CCyB, with a fixed ceiling of 2.5 percent of risk-weighted assets; (ii) the capital conservation buffer, with a fixed ceiling of 2.5 percent of risk-weighted assets; and (iii) the

[17] The reforms focus on improving the coverage, quality, and timeliness of available data in line with the requirements of monetary policy implementation and macroprudential supervision.

systemic buffer, which is calibrated based on the systemic importance of each SIBI. The new prudential framework also introduces credit containment measures, including caps on loan-to-value and debt service-to-income ratios for real estate-backed loans, which can be calibrated to reduce excessive credit expansion.

51. The macroprudential authority responsible for activating the CCyB has not been designated, and modalities for implementing the buffer have yet to be defined. Since its introduction in 2018, the CCyB has still not been activated, mainly because the macroprudential authority responsible for activating this instrument has not been designated. In the current context of moderate cyclical vulnerabilities in the financial sector—with the last five years marked by a deceleration in credit growth and a negative credit-to-GDP gap—the failure to activate the CCyB does not pose a problem from a macroprudential policy standpoint. That said, to ensure the availability of this instrument in case of a rise in cyclical risks, the authorities should designate the responsible macroprudential authority and finalize the procedures for the CCyB's activation and implementation. In particular, the regulatory framework should establish a coherent implementation strategy, including appropriate triggers and implementation scope (i.e., at the regional or national level), considering possible credit cycle differences across the region.

52. The WAEMU's SIBIs are now subject to capital surcharges. The systemic buffer is set at one percent of risk-weighted assets, subject to transitional provisions, but the CBU has flexibility to adjust this surcharge based on an individual SIBI's systemic importance. Its introduction was postponed by a year to June 2021 due to the onset of the COVID-19 pandemic. In addition to higher capital requirements, SIBIs are also subject to more intensive CBU supervision meant to contain the accumulation of risks. Additional monitoring and regulatory requirements are an option when perceived risk if the perceived risks increase.

53. Measures should be adopted to mitigate concentration-related systemic vulnerabilities. As highlighted in the section on the monitoring of systemic risks, the high concentration of bank loan portfolios and sovereign exposures is a major source of vulnerability for the WAEMU banking system, requiring close monitoring and appropriate macroprudential measures. A diversification of the securities portfolios across all issuing member states could mitigate this risk. Yet, the diversification effects may be limited by the similarity of member state debt sustainability profiles and bank tendencies to hold mostly securities issued by the state in which they are located (and Côte d'Ivoire securities). Without an appropriate framework to address risks from excessive concentration of bank assets in sovereign debt, the current rapid expansion of the share of bank holdings of government securities could also lead to the crowding out of private sector credit.

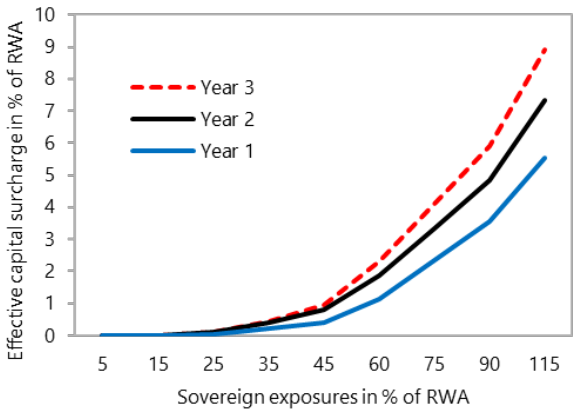
54. Additional capital buffer requirements should be imposed on banks to cover concentration and contagion risks. This capital surcharge should be calibrated for the specific asset class (e.g., government securities and private sector loans) as a non-linear function of the degree of portfolio concentration above a certain exposure threshold for each debtor. It should be based on Basel Pillar 2 or, alternatively, on Pillar 1 with a corresponding macroprudential rule. The main differences between the two approaches relate to the regulatory authority responsible for its implementation (the macroprudential authority under Pillar 1 or the banking supervisor under Pillar

2) and the degree of transparency in the communication of the requirements (e.g., the macroprudential approach entails publication of the regulation applicable to all regulated entities). And as a buffer requirement, this capital surcharge should be calibrated to ensure its relaxation in periods of stress, to reduce potential procyclicality.

55. The calibration of the additional capital buffer requirement for concentration and contagion risks should be introduced gradually, possibly over a three-year period. Figure 17 shows an example of calibration of the additional capital buffer requirement for concentration and contagion risks based on a non-linear approach and using WAEMU bank data. The marginal coefficients used to determine the capital surcharge were calibrated above a minimum threshold of sovereign risk concentration, so that banks were not penalized for holding certain levels of sovereign securities, notably to meet liquidity needs. Beyond this minimum threshold, the marginal increase in the capital buffer requirement should be gradual and in line with the marginal rise in bank sovereign exposures. A calibration of this approach on data for 82 banks (70 percent of total sectoral assets) suggests that banks are undercapitalized; at the current level of concentration of sovereign exposures, bank additional capital needs to cover such risk would be at 0.4 percent of 2020 GDP.

Figure 17. WAEMU: Gradual Approach to Calibrating Additional Capital Requirements for Concentration Risk of Sovereign Exposures[1]

Example of calibration of additional capital to cover risks related to high concentration of portfolios on sovereign exposures



Calibration of additional capital to cover risks related to the high concentration of portfolios on sovereign exposures					
Sovereign Exposures in % of RWA					
Marginal capital add-on	<20	20-30	30-45	45-60	>60
Year 1	0	1%	2%	5%	8%
Year 2	0	2%	4%	7%	10%
Year 3	0	2%	5%	9%	12%

[1] This is an illustrative example. If needed, further technical assistance could be provided to the authorities to proceed with the calibration of additional capital requirements.

Source: IMF staff calculations.

56. The non-linear approach to calibrating capital buffer requirements could be extended to bank loan portfolios. While maintaining the concentration limits, the calibration used to determine the additional capital requirements (under the supervisory Pillar 2 approach or the macroprudential Pillar 1 approach) can be extended to account for concentrations in private exposures. Compared to exposure diversification, this approach has the advantage of requiring both additional capital buffers at an earlier stage and more refined concentration factors, such as the correlation of risks between debtors and sectoral exposures. It could complement risk sharing in the likely event that many banks, particularly smaller ones, cannot meet the 25 percent limit by 2024.

57. Additional capital buffer requirements should also be imposed on banks to cover interest rate risk. The capital surcharge (Pillar 2) should be proportional to each bank's specific interest rate and maturity mismatches, measured regularly.

58. The calibration of the CCyB range should be revised to ensure flexibility in considering the potential heterogeneity of credit cycles across the Union. The introduction of the CCyB is intended to provide the banking system with the necessary capital buffer to maintain the flow of credit into the economy in the event of successive adverse shocks during a period of excess credit growth (Basel Committee on Banking Supervision 2010). To achieve this objective, the calibration of the CCyB range should at least reflect the estimated average loss of capital experienced by the banking system following adverse changes in macroeconomic and financial conditions, typically manifested by reversals in the credit cycle. In the context of a currency union like WAEMU, potential differences in the magnitude and duration of credit cycles pose a challenge for the uniform application of a CCyB to all banks. For WAEMU, some flexibility in the calibration of the CCyB to account for differences in the credit cycles of member states are necessary. Except for Mali, an analysis of the synchronization of credit cycles between 1990 and 2020 shows that the credit cycles of WAEMU member countries are broadly synchronized with the regional cycle (see Figure 19). A calibration of the CCyB at the regional level is therefore currently appropriate without risk of bias.

59. The mission supports the authorities' efforts to enhance bank internal liquidity risk management.[18] The BCEAO plans to soon introduce the short-term liquidity coverage ratio (LCR) under Basel III and move gradually toward 100 percent by 2028. Specifically:

- *Short-term LCR*
    - *Numerator:* The regulator will need to choose objective and verifiable liquidity indicators to determine Level 1 eligible HQLA (numerator of the LCR) and appropriate haircuts, including for government securities. If the regulator does not want to differentiate the haircuts for individual sovereign issuers in the region, a uniform haircut should, at the very least, be applied to account for the limited liquidity of the regional government securities market. The

[18] For detailed analysis of liquidity-related issues, see the technical note "Analysis of Systemic Liquidity" produced by this FSAP.

FSAP team also suggests counting bank required reserves toward Level 1 HQLA, albeit without a haircut, since they are available to absorb temporary liquidity needs.

- *Denominator:* Differences in deposit stability should be considered when determining LCR requirements (Pillar 2 of Basel III). To impose a higher requirement on banks that have experienced significantly larger withdrawals than others, the regulator should improve its tracking of the historical distribution of monthly changes in each bank's funding sources.

- *Long-term liquidity ratio*. The supervisor will also need to strengthen the requirement for regular reporting of the residual maturities of bank assets and liabilities to monitor maturity mismatches and be able to enforce the ratio.

INSTITUTIONAL FRAMEWORK FOR MACROPRUDENTIAL POLICY

60. A strong and functional institutional framework is essential for effective macroprudential policymaking. The institutional framework should clarify the missions and objectives of macroprudential policy, while creating the conditions for the adoption and implementation of macroprudential measures to address the emergence of systemic risks. To this end, the framework should set out a clear division of responsibilities among the key stakeholders in macroprudential policy. This would help limit the risks of inaction that might arise from difficulties in assessing the benefits of macroprudential action or from political pressures. The framework should also enable authorities to quickly respond to changing systemic risks. Appropriate access to information and the availability of a sufficiently broad set of macroprudential tools is essential. Given the often cross-cutting nature of systemic risks, the institutional framework should promote effective cooperation on risk assessment and mitigation across institutions with mandates on ensuring financial stability. Finally, the framework should provide appropriate mechanisms for authorities to report on the implementation of their financial stability mandate, including regular reporting on key vulnerabilities in the financial system and the macroprudential measures adopted to mitigate them.

A. Willingness to Act: Financial Stability Mandates

61. Since the 2008 FSAP, the BCEAO has put into place the core elements of a macroprudential policy framework. The CSF-UMOA, which was created in 2010 and chaired by the BCEAO's governor, plays a key role and is charged with safeguarding financial stability and strengthening cooperation in macroprudential oversight. It conducts regular discussions on issues related to financial stability, issues alerts about financial stability risks, and makes macroprudential recommendations. It also promotes policy coordination and cooperation on financial stability issues across different institutions.

62. The institutional framework contains a clear financial stability mandate for the BCEAO (Figure 18). The BCEAO's financial stability mandate is defined in its statute.[19] Financial stability is defined as a state in which "*the financial system, which includes financial intermediaries, markets, and market infrastructures, is able to withstand shocks and correct financial imbalances.*"

63. Intermediate macroprudential policy objectives should be defined. The current framework does not provide guidance on the intermediate objectives of macroprudential policy. The BCEAO planned to fill this gap as part of its 2019-2021 strategic action plan for financial stability, which explicitly defined such objectives. Clearly defined intermediate macroprudential policy objectives are essential in order to establish a basis for the operational assessment of the macroprudential authority's financial stability mission. A clear definition also ensures consistency between the institutional framework and the operational arrangements for monitoring and managing systemic risks and vulnerabilities.

64. The intermediate objectives should meet broad financial stability goals. These include: (i) increasing the system's resilience to shocks, thereby supporting the continued availability of credit across the economic cycle; (ii) containing the accumulation of systemic vulnerabilities over time and limiting excessive growth in leverage and volatility of systemic liquidity; and (iii) containing the structural risks associated with the interconnectedness of the financial system.[20] The definition of these intermediate objectives should take into account the specificities of the regional financial system (e.g., the predominance of regional banking groups and certain structural macroeconomic constraints, such as the lack of diversification in the production base) and regional financial sector development challenges (e.g., the limited access of the private sector to bank financing).

65. With eight out of the thirteen seats on the CSF-UMOA, government representatives have a dominant position on the Committee. Government representatives account for more than half of CSF-UMOA membership and can therefore significantly influence macroprudential measures taken in the Union. In the absence of an institutional mechanism to ensure balanced decision-making within the CSF-UMOA, the numerical overrepresentation of individual state members may influence the ability of this body to take macroprudential measures that are necessary but incur costs for the states.

66. Going forward, the decision-making process within the CSF-UMOA should be revised to better balance powers in its decision-making process. The limited scope of CSF-UMOA powers and organizational structure, and the predominance of the banking system in WAEMU countries, poses no immediate threat to CSF-UMOA decision-making power. In the long run, however, with the development of non-bank financial institutions, it will become crucial to establish a macroprudential authority with enhanced decision-making powers that is capable of covering all segments of the financial system. To this end, and if the CSF-UMOA is called upon to play this role, the voting procedure within the committee should be reformed to ensure a more balanced decision-making

[19] The BCEAO's mandate in the area of financial stability is defined in Article 9 of its Statutes, which stipulates that the BCEAO shall ensure the stability of the financial and banking system of the WAMU.

[20] See IMF (2014).

approach among the regulators. In particular, the procedure should give each institutional member of the CSF-UMOA, including all member states, a single vote. This would be an important step in balancing the voting process in this deliberative body and would reduce the influence of the states.

B. Ability to Act: Financial Stability Decision-Making

67. The CSF-UMOA has powers to recommend policy actions but lacks adequate powers to ensure their implementation. Based on proposals formulated by the Group of Experts [21], the CSF-UMOA identifies the main systemic risks and issues macroprudential policy recommendations that regulators need to consider implementing. The institutional framework does not, however, specify whether regulators are required to implement the recommendations of the CSF-UMOA, does it provide a timeframe for explaining delays.

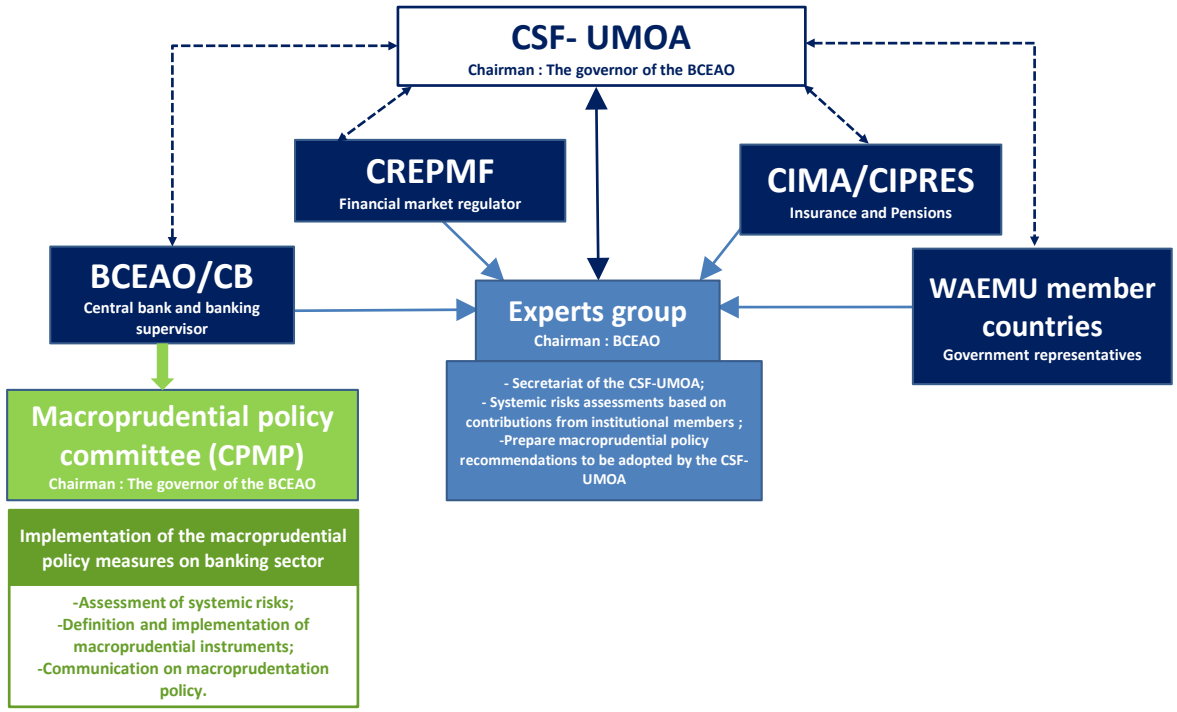
68. The framework for monitoring CSF-UMOA recommendations should be strengthened by introducing a "comply-or-explain" basis for recommendations. In this regard, it is necessary to develop clear timeframes for CSF-UMOA's regulatory members to explain any failure to implement the proposed measures (e.g., if they consider them to be unworkable).

69. The BCEAO plays a central role in defining macroprudential policy and should hence assume the role of macroprudential authority responsible for activating the CCyB. This is motivated by its statutory mandate for financial stability, its considerable expertise, and the dominant role of banks in the financial sector. Accordingly, the BCEAO holds the Chairmanship and Secretariat of the CSF-UMOA and is responsible for the analysis and monitoring of the key risks and vulnerabilities in the financial system. To strengthen its decision-making process, in 2018, the BCEAO created CPMP, composed of senior staff from the BCEAO and the Banking Supervisor (CBU). The CPMP monitors and conducts analysis of systemic risks and is responsible for applying macroprudential instruments and implementing CSF-UMOA recommendations related to the banking sector. Given the potential heterogeneities across WAEMU economies, the macroprudential framework should also incorporate a mechanism permitting national authorities to raise any country-specific concerns related to the impact of current regional macroprudential policies.

70. The CSF-UMOA and the BCEAO, through CPMP, have not been very active in introducing macroprudential measures. Since its establishment in 2010, the CSF-UMOA—which has not always met at the minimum frequency prescribed by the regulations—has not often come up with recommendations on the implementation of macroprudential instruments. The CPMP, which was established in 2018, did not hold its first meeting until March 2020.

[21] The CSF-UMOA is assisted in its mission by a Group of Experts composed of the Executive Secretary of the Inter-African Conference on Social Welfare, the Secretaries General of the Inter-African Conference on Insurance Markets, the CBU, and the Regional Public Savings and Financial Markets Board (*Conseil Régional de l'épargne publique et des marchés financiers*), as well as the Director in charge of Financial Stability at the BCEAO.

Figure 18. WAEMU: Architecture of the WAEMU's Macroprudential Institutional Framework



Sources: BCEAO; and IMF staff.
Note: CREPMF refers to the Regional Public Investment and Financial Markets Board. CIMA/CIPRES refers to the Inter-African Conference on Insurance Markets and the Inter-African Conference on Social Welfare.

C. Information Sharing, Interaction, and Coordination

71. The institutional framework encourages cooperation and coordination across different institutions. Risks monitoring and analysis are centered around the preparations for the CSF-UMOA and CPMP meetings. The preparation process is well organized and structured, and is led by the BCEAO, in close collaboration with other institutions and financial sector regulators.

72. Cooperation and data-sharing arrangements among regulators involved in systemic risk oversight is working well but remain focused on preparation of the work of the CSF-UMOA. Financial stability interactions and cooperation among regulators are promoted at the strategic and operational levels. At the strategic level, this role is explicitly assigned to the CSF-UMOA, which provides an important forum for the exchange of views on financial stability issues among the regulatory authorities responsible for the different segments of the financial system. The "Note on Recent Developments in the WAMU Macrofinancial Environment" is the main document analyzed by participants at the CSF-UMOA meetings. The authorities' contributions cover developments in their respective sectors, key risks, and the measures needed to manage these risks. At the operational level, the CSF-UMOA's regulatory members have signed a cooperation charter, which (since December 2014) provides a framework for the exchange of information and for mutual assistance in the context of their common mission for monitoring systemic risks and their individual

missions for supervising the different segments of the financial system. In practice, this information exchange remains limited and is mostly geared toward supporting the preparation of the CSF-UMOA's work.

73. Significant progress has been made on coordinating the monitoring of cross-border contagion risks via the establishment of supervisory boards for certain WAEMU-based banking groups. The WAEMU's banking system is particularly exposed to contagion risks from foreign banking systems, given the strong presence of regional banking groups that have subsidiaries or parent companies based outside the WAEMU (sub-Saharan and North Africa, and Europe). Over the past ten years, the CBU has entered into about 10 agreements with supervisors in several jurisdictions to establish information-sharing arrangements, supervisory boards, and crisis committees to strengthen the supervision and resolution of financial institutions located in multiple jurisdictions. These arrangements are generally working well in practice, with the CBU having organized and participated in several supervisory boards and in joint supervisory reviews of certain banking groups.

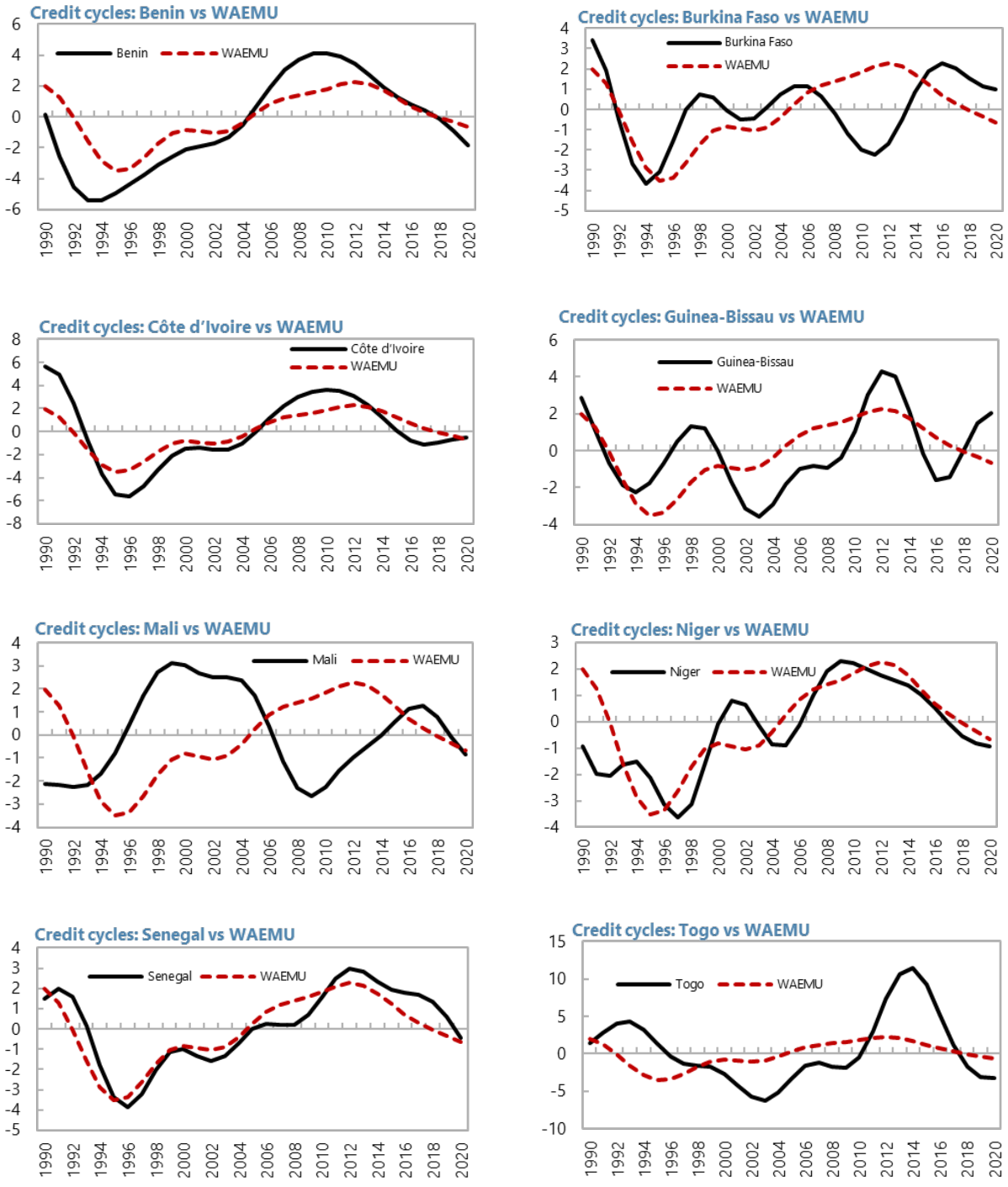
D. Transparency and Communication

74. Despite the broad range of available communication tools, the implementation of macroprudential policy in the WAEMU still lacks transparency. The systemic risk assessments and macroprudential policy actions adopted by the authorities are not published. The latest annual financial stability reports and reviews published by the BCEAO date back to 2008, however press releases from CSF-UMOA and CPMP meetings are not published regularly.

75. The communication of systemic assessments and policy decisions in macroprudential publications could be improved to strengthen transparency. The BCEAO has established an appropriate mechanism for systematically publishing the minutes and press releases of CSF-UMOA meetings. Systemic risk assessment reports should also be produced and published regularly. CSF-UMOA and CPMP publications (press releases and annual reports) could be more risk focused and provide prescriptive comments on the development of key risks since the last assessment. To better inform the public about CSF-UMOA decisions, a core set of indicators could be used more frequently in financial stability communications.

Annex

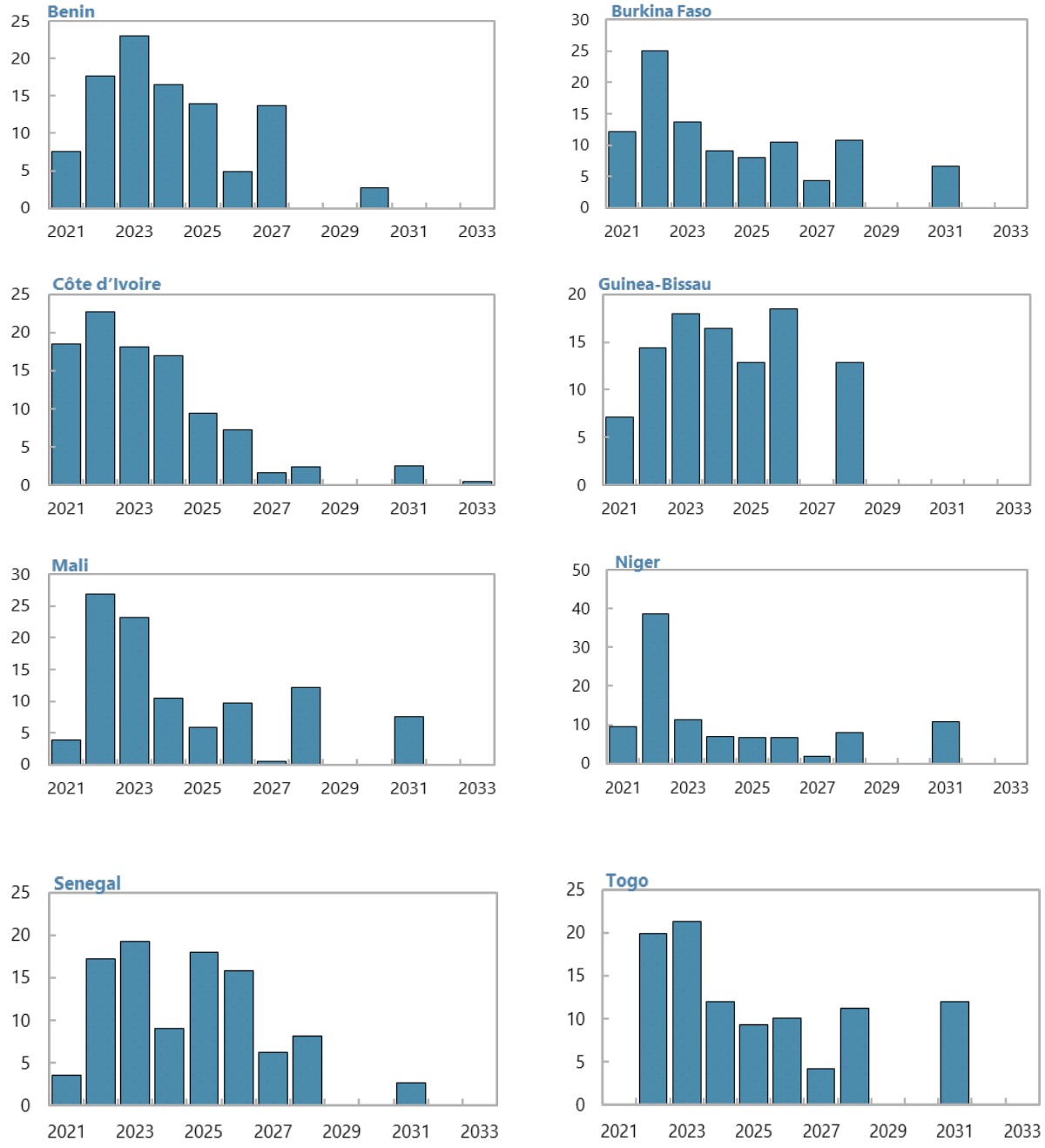
Figure 1. WAEMU: Credit Cycles in WAEMU Member Countries



Source: IMF staff calculations based on data provided by the BCEAO.
Note: The y-axis of the charts measured the cyclical credit components of credit/GDP series (1971-2020), extracted using the Christiano-Fitzgerald (2003) band pass filter.

Figure 2. WAEMU: Redemption Profiles of WAEMU Member Country Public Securities
(In percent of total outstanding public securities at end-September 2021)

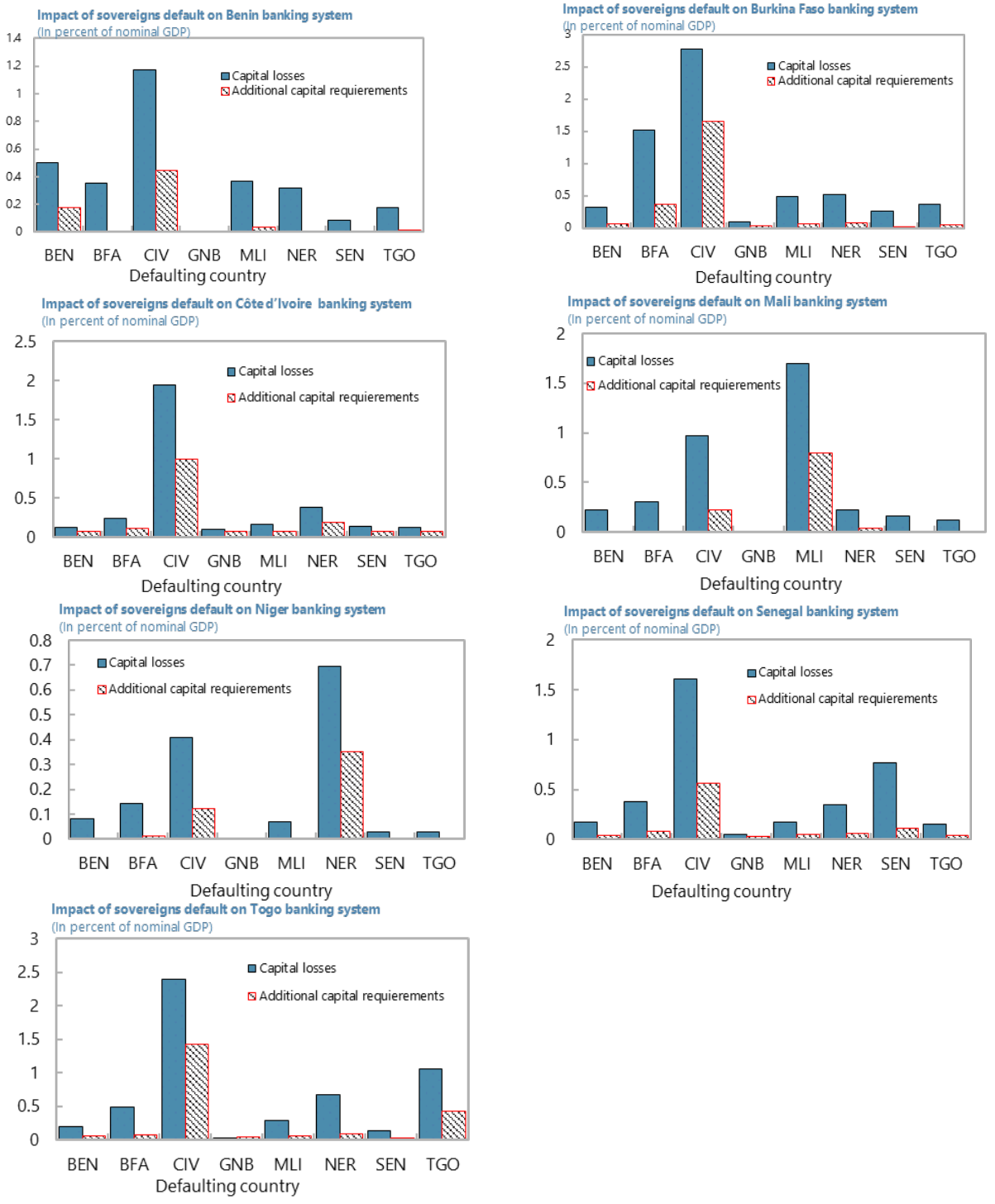
Redemption profiles for government securities are highly concentrated in the short term, with the exception of Senegal and Togo.



Sources: UEMOA-Titres; IMF staff calculations.

Note: The charts are showing redemption profile for government securities in percent of total outstanding bonds at end-September 2021.

Figure 3. WAEMU: Losses and Additional Capital Needs of National Banking Systems Due to Contagion from Sovereign Defaults in the Regional Market



Sources: BCEAO; and IMF staff calculations.

Note: BEN = Benin, BFA = Burkina Faso, CIV = Côte d'Ivoire, GNB = Guinea-Bissau, MLI = Mali, NER = Niger, SEN = Senegal, TGO = Togo.

Table 1. WAEMU: Cross-Correlation Matrix of Credit Cycles of Member Countries

	WAEMU	Benin	Burkina Faso	Côte d'Ivoire	Guinea-Bissau	Mali	Niger	Senegal	Togo
WAEMU	1.0000								
Benin	0.7545*	1.0000							
Burkina Faso	0.5645*	0.3081*	1.0000						
Côte d'Ivoire	0.8647*	0.5928*	0.3944*	1.0000					
Guinea-Bissau	0.5054*	0.3680*	0.1066	0.4614*	1.0000				
Mali	0.1000	-0.2670	0.2501	-0.0458	-0.3116	1.0000			
Niger	0.6503*	0.8969*	0.1654	0.4801*	0.1904	-0.3723*	1.0000		
Senegal	0.9157*	0.6808*	0.4069*	0.7532*	0.5094*	-0.0456	0,6579*	1.0000	
Togo	0.5325*	0.2618*	0.2580*	0.3991*	0.4962*	-0.0924	0.2509	0.5949*	1.0000

(*) Significant at 5 percent.

Table 2. WAEMU: Summary of Assumptions and Results of Contagion Risk Simulations

Assumptions and shock parameters	
Credit shock:	
Loss given default	100%
Funding shock:	
Share of lost interbank funding lines that cannot be replaced	42%
Discounts applied to securities in case of urgent sale on the interbank market	50%
Provisioning rate	100%

Results of shocks and simulations		
1/ Contagion due to direct interbank exposures		
National banking systems	Maximum capital losses (as a % of national GDP in 2021)	Additional capital needs (as a % of national GDP in 2021)
Benin	1.2	0.9
Burkina Faso	0.3	0.17
Côte d'Ivoire	0.2	0.12
Mali	0.1	0.08
Niger	0.1	0.04
Senegal	0.6	0.09
Togo	1.1	0.5
WAEMU	0.7	0.3
2/ Contagion due to large common private exposures		
Cumulative large exposures	Capital losses (% of regional GDP in 2021)	Additional capital needs (% of regional GDP in 2021)
10 largest common exposures	1.62	0.85
20 largest common exposures	2.21	1.22
30 largest common exposures	2.66	1.57
40 largest common exposures	2.99	1.88
50 largest common exposures	3.25	2.07
3/ Contagion due to sovereign exposures		
Issuing country defaulting in the regional securities market	Capital losses (% of regional GDP in 2021)	Additional capital needs (% of regional GDP in 2021)
Benin	0.2	0.06
Burkina Faso	0.4	0.1
Côte d'Ivoire	1.7	0.8
Guinea-Bissau	0.1	0.04
Mali	0.4	0.15
Niger	0.4	0.13
Senegal	0.2	0.05
Togo	0.2	0.06

Sources: BCEAO; IMF staff calculations.

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