

African Department

Resolving Nonperforming Loans in Sub-Saharan Africa in the Aftermath of the COVID-19 Crisis

*Prepared by an IMF staff team led by Luc Eyraud and
comprised of Irina Bunda, Jehann Jack,
Tarak Jardak, Rasmane Ouedraogo,
Zhangrui Wang, and Torsten Wezel*

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Executive Summary

Compared to other regions, sub-Saharan Africa (SSA) has historically recorded high levels of nonperforming loans (NPLs) in the banking sector. NPL ratios have exceeded 10 percent on average since the mid-2010s. They have been particularly elevated in commodity producers and fragile states. The structurally high level of NPLs in SSA can be explained by a range of factors, including government arrears creating debt repayment difficulties for domestic suppliers, macroeconomic volatility, poor credit risk management practices, and a legacy of problem loans that remain unresolved or are not written off partly because of weak legal systems.

The COVID-19 crisis is expected to increase NPLs even further. Two waves of rising NPLs have already occurred in SSA in recent decades: one in the 1990s in the wake of commodity price shocks and fiscal crises and another following the global financial crisis (GFC). The COVID-19 pandemic is likely to mark the beginning of a third wave. The empirical analysis presented in this departmental paper demonstrates that NPL trends are highly correlated with macroeconomic conditions. If history repeats itself, the crisis experienced by SSA countries should lead to a large deterioration of loan portfolios, once regulatory forbearance and other exceptional support measures expire. Holding other factors constant, the 2020 growth collapse could trigger an increase in the average NPL ratio of the SSA region by up to one-third in the medium term.

High and rising NPL ratios can severely limit the ability of the banking sector to provide new credit and support the economy. Using both country- and bank-level data, this paper provides new evidence that NPLs in SSA hamper credit and growth. The negative effect of NPLs on credit to the private sector is observed at both banking system and individual institution levels, with banks that hold large NPL portfolios providing on average fewer loans. The

policy implication is clear: for banks to play a supporting role during the post-COVID economic recovery, they must clean up their balance sheets.

To deal with the expected impact of the COVID-19 crisis on credit quality, countries could contemplate a three-pronged sequential strategy focused on managing, resolving, and preventing problem loans:

- *Managing*. In the short term, banks should prioritize dealing with their customers' diminished capacity to repay. Banks should recognize the deterioration of their assets' quality by applying rules in force related to loan classification and provision. To address the negative impact of higher NPLs on banks' capital, supervisors should allow the use of capital buffers (where they exist) and monitor capital restoration plans for the banks that fall below regulatory norms.
- *Resolving*. Once the economic situation stabilizes and exceptional relief measures are gradually withdrawn, it will become possible to assess the full impact of the crisis on banks' portfolios. The recovery period will be the right time to shape and implement resolution strategies. Supervisory oversight and regulation should incentivize banks to reduce the size of their NPL portfolios. The experience of SSA countries with NPL resolution measures has been mixed, partly because of legal and financial constraints, inefficiencies in debt collection of asset management companies (AMCs), regulatory capture, and political economy factors.
- *Preventing*. Once countries have implemented comprehensive resolution strategies, they should shift their focus toward preventing a re-accumulation of new arrears, which could undo past efforts. This is most likely the area in which the SSA region needs to put the greatest effort. The range and effectiveness of preventive actions remain limited, in part because credit bureaus and collateral registries have a narrow coverage.

Expectations should be realistic about the NPL reduction targets and their payoff in terms of new credit. The task of cleaning up banks' balance sheets is a difficult one. Although previous episodes of rapid reductions have occurred, NPL ratios in SSA countries are generally highly persistent and slow moving. Large reductions have usually been achieved over several years in the context of accelerated write-offs, NPL sales to public entities, and other forms of bank restructuring operations. Simulations conducted in this paper suggest that removing 1 dollar of NPLs from banks' balance sheets in the region would create, on average, space for about 50 cents of new loans. Some policy measures can amplify the effectiveness of NPL resolution strategies, such as legal and regulatory reforms meant to lower the cost and duration of contract enforcement, targeted approaches that prioritize removing legacy NPLs, tax regimes that do not discourage NPL write-offs, as well as more-specific and better-designed rules for bank restructuring and resolution.

Sub-Saharan African countries are facing an unprecedented health and economic crisis that is likely to severely hurt credit quality and raise nonperforming loans from already high levels. Banks have a critical role to play not only during the crisis by providing temporarily relief to businesses and households, but also during the recovery by supporting economic activity and facilitating the structural transformations engaged by the pandemic.

Deterioration of Banks' Asset Quality during the Pandemic

The COVID-19 pandemic has triggered an unprecedented health and economic crisis in sub-Saharan Africa (SSA). The health shock has precipitated an economic crisis and upended the livelihoods of already-vulnerable groups (October 2020 *Regional Economic Outlook: Sub-Saharan Africa*). Containment and mitigation measures needed to slow the spread of the virus have severely impacted economic activity in 2020 and will continue to do so in 2021. Spillovers from a rapidly deteriorating external environment are compounding these economic challenges, with external demand plummeting due to a sharp growth slowdown among trading partners. Tighter global financial conditions have reduced investment flows and added to external pressures. Finally, a sharp decline in commodity prices in 2020, especially oil, has exacerbated challenges in the region's resource-intensive economies.

SSA GDP is estimated to have contracted in 2020—the worst reading on record in the region's history. Although the effect differs across countries, depending on factors such as the extent of economic diversification and dependence on tourism, no country in SSA has been spared during the pandemic. The economic recovery is projected to be very gradual, beginning in 2021. Permanent output per capita losses are expected in the medium term, relative to the pre-COVID outlook.

The COVID-19 crisis is beginning to impact financial systems across the region and deteriorate the quality of banks' balance sheets. The largest threat to banks comes from their loan portfolios because many borrowers have faced a collapse in their income and therefore have difficulty repaying their obligations as they come due. This is likely to lead to a sharp increase in nonperforming loans (NPLs) in the near future. In addition, some authorities have announced or incentivized loan repayment moratoria and other forms of loan restructuring, with the expectation that borrowers' repayment incapacity would be temporary. These measures could also contribute to further NPL increases, even though loans covered by the restructuring arrangements should not systematically be reclassified as nonperforming merely for the suspension or changes in the principal and interest payments (see Chapter 5).

The risk of an NPL surge is particularly elevated in the SSA region. Many SSA governments lack the fiscal space or access to funding necessary to provide sufficient support to the real sector. Furthermore, banks' asset and risk management practices are not as sophisticated as those of advanced economies, while weak banks may be unable to absorb even temporary repayment difficulties of their borrowers. Finally, about half of SSA countries are commodity exporters (including of agricultural products), and large parts of their economy depend directly or indirectly on commodity prices. For all these reasons, the COVID-19 shock is likely to aggravate the already high level of NPLs in SSA.

The Role of Banks during and after the Crisis

Credit institutions have an important countercyclical role to play to mitigate the impact of the COVID-19 crisis on firms and households. In all countries, banks are called to provide temporary relief to their customers by waiving interest payments, temporarily postponing repayments due, or reducing their amounts. In this process, lenders might exhaust their capital buffers, while experiencing a significant deterioration in asset quality. To help banks, most SSA supervisors have taken actions to temporarily relax certain requirements, for example, on the use of buffers, reporting, or treatment of past-due loans.

Credit institutions will also be instrumental in supporting the economy during the recovery phase. As the immediate health emergency is contained, banks will have to supply fresh credit for private and public investments that will power a job-rich recovery and allocate investment toward new drivers of growth. Companies need credit to ramp up production and hiring. The shock will also lead to some transformation and restructuring of economies, creating fresh opportunities for entrepreneurs (for example, digital commerce,

green economy). Thus, financial support from banks will be vital to enable banks' clients to rebound as rapidly as possible.

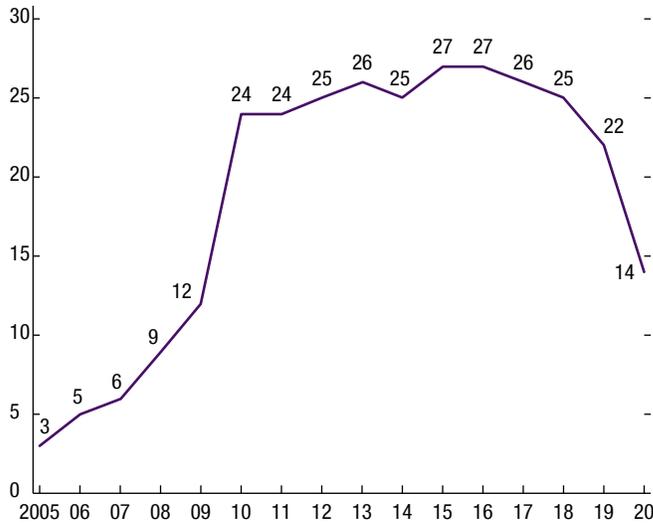
A balance needs to be found between these two roles, by allowing the immediate countercyclical role, while strengthening the banks' resilience to secure a strong recovery. Although easing financial conditions, preventing a credit crunch, and exercising some regulatory forbearance might be necessary as long as conditions remain difficult, this might have negative implications on financial sector stability in the medium term and undermine the banks' future ability to support the economy. Policy trade-offs may emerge. If banks are too severely hit by the crisis, this may compromise their actions in the recovery phase. This paper discusses ways to alleviate these trade-offs by timing and sequencing reforms appropriately.

Scope and Purpose of the Paper

This paper analyzes NPLs in SSA from both positive and normative perspectives. At the positive level, the paper analyzes the evolution of NPLs in SSA in the past decades. It identifies countries and banks wherein NPL ratios have been the highest. Various empirical analyses are conducted to identify the main drivers and channels of transmission of NPLs. At the normative level, the paper offers guidance on how to handle NPLs both during and after the crisis, separating various time horizons and distinguishing between NPL management, resolution, and prevention.

NPLs are defined and reported differently across countries. There is no international standard of definition. In countries reporting financial soundness indicators (FSIs) to the IMF, the FSI Compilation Guide recommends recording loans as nonperforming when (1) payments of interest or principal are past due by 90 days or more; or (2) interest payments equal to 90 days or more have been capitalized (reinvested into the principal amount), refinanced, or rolled over (payment delayed by agreement); or (3) evidence exists to reclassify them as nonperforming even in the absence of a 90-day past due payment, such as when the debtor files for bankruptcy or there are other signs of significant financial difficulty of the borrower (IMF 2019a). Once a loan is classified as nonperforming, it should remain classified as such until payments are received, or the principal is written off on this or subsequent loans that replace the original. Nonetheless, despite this broad guidance, important differences and discretion remain in the criteria and their implementation, making it difficult to compare NPL levels across countries and even among banks in the same country. Thus, cross-country and cross-region comparisons should be interpreted with caution, as countries may use different definitions and accounting norms. To the extent possible, this paper

Figure 1. NPL Ratios: Availability of FSIs for Sub-Saharan Africa
(Number of countries)



Source: IMF, Financial Soundness Indicators.
Note: Data are as of January 2021; 2020 as of the second quarter. FSIs = financial soundness indicators.

considers an unpaid loan in excess of 90 days to be nonperforming.

This paper collects data on NPLs in SSA from various sources. The two main data sources are country-level IMF FSIs and Fitch Connect bank-level data. The authors' *country-level* data set covers 2000–19 for 41 SSA countries. The data set augments the FSI (27 countries since 2005) with information received from country authorities and Article IV reports to fill missing data (for example, for WAEMU countries) as well as inputs from World Bank FinStats 2019. For *bank-level* data, the paper combines a quarterly 10-year repository (from Bankscope) with the annual 2008–18 Fitch Connect database. This allows using financial statements

data for 617 banks from 43 SSA countries during 1994–2018.

Nonetheless, important gaps remain in terms of data availability and quality. Only 27 out of the 45 SSA countries report NPL data to the IMF FSI database on a regular basis, sometimes with a lag exceeding one year. At the time of completing this report in January 2021, five countries (of these 27) had not reported NPL data for the end of 2019 and 13 countries for the end of June 2020. Moreover, the time coverage differs significantly across countries, with NPL data dating back to 2005 in some countries, while most started reporting in the 2010s (Figure 1). There are also concerns about data accuracy and cross-country consistency, which implies that the data may not be directly comparable across countries. To start with, although the databases used in this paper try to harmonize the definition of NPLs, some countries are still reporting data to the IMF with their national definitions. Consistency problems also affect the measurement of provisions. For example, the reported amount of specific provisions is unrealistically high in some countries, perhaps because specific and general provisions are not properly separated. Spurious numbers are occasionally observed, including zero provisions and very low values for gross loan stocks. Bank-level datasets are not immune to problems either. For instance, the Fitch Connect data set has a large disparity in its data coverage. Some countries, such as Kenya, Nigeria,

or Tanzania have a relatively comprehensive coverage of their banking sectors, but others report data for only a few banks over the period. For instance, 11 countries had fewer than 20 observations (bank-year) for NPL ratios during 1994–2018, while 10 countries had more than 100 observations. Finally, none of the international databases report NPLs by type of loans (for example, corporate and household NPLs).

The paper is structured into six chapters that explore the causes and consequences of NPLs, as well as policies to address them. Chapter 2 provides a comprehensive picture of NPLs in SSA and recent developments. Chapter 3 estimates the impact of NPLs on credit and other macroeconomic indicators. Chapter 4 examines the sources of NPLs. Chapter 5 discusses NPL management, resolution, and prevention options. Chapter 6 presents conclusions.

CHAPTER

2

Some Facts on Problem Loans in Sub-Saharan Africa

SSA as a region has the highest and most volatile NPL ratios in the world; however, some heterogeneity exists, with higher ratios among countries that are commodity exporters, fragile states, and currency union members. The evolution of NPLs in SSA can be considered in two distinct waves throughout recent history, with a possible third wave on the horizon because of the COVID-19 crisis.

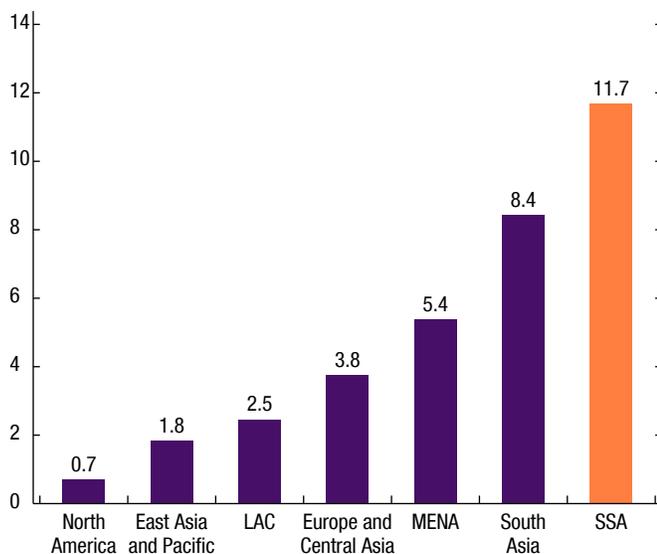
NPLs in Africa: Where Are They the Highest?

NPLs are high in SSA compared to other regions in the world. Using 2018—the latest year in which data were widely available across a majority of countries in the FSI database—the median NPL ratio in SSA (11.7 percent) was more than double that of other regions, the sole exception being South Asia (8 percent) (Figure 2).¹ Given that most SSA countries are either lower middle-income countries (LMICs) or low-income countries (LICs), the fact that the median NPL ratio in SSA exceeded those of all income groups (including those with its peers: LMICs, 9.3 percent and LICs, 11.1 percent) underscores just how elevated NPLs are in the SSA region (Figure 3).² In nominal terms, NPLs amounted to \$34.8 billion in 2018, using FSI data available for 25 SSA countries, which corresponds to a median of about 2 percent of GDP in this sample.

¹All the comparisons carried out in this section rely on 2018 data from the FSI database and country authorities, covering 41 countries. At the time of drafting this paper, the authors' country-level data set included only 31 countries for 2019. Preliminary calculations using the 2019 series confirm the validity of all the stylized facts presented in this section.

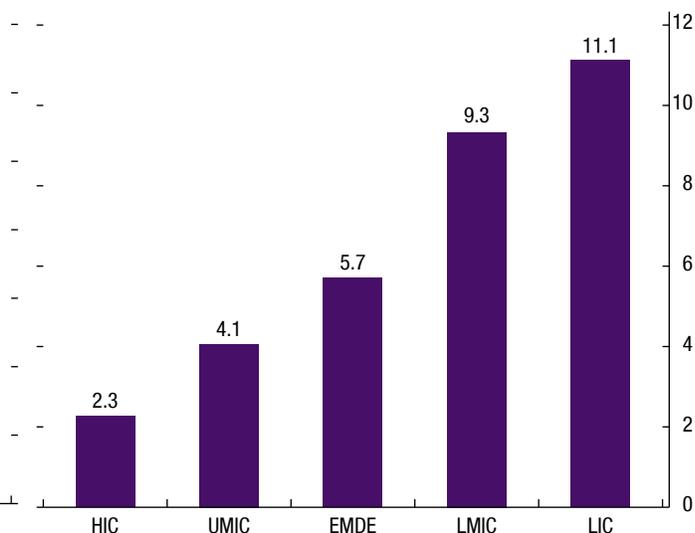
²The acronyms used in the regional groupings are LAC (Latin America and the Caribbean), MENA (Middle East and North Africa) and SSA (sub-Saharan Africa). The acronyms used in Figure 3 (from left to right) are HIC (high-income country), UMIC (upper middle-income country), EMDE (emerging market and developing economy), LMIC (lower middle-income country), and LIC (low-income country).

Figure 2. NPL Ratios by Region, 2018
(Percent, group median)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: LAC = Latin America and the Caribbean; MENA = Middle East and North Africa.

Figure 3. NPL Ratios by Income Group, 2018
(Percent, group median)

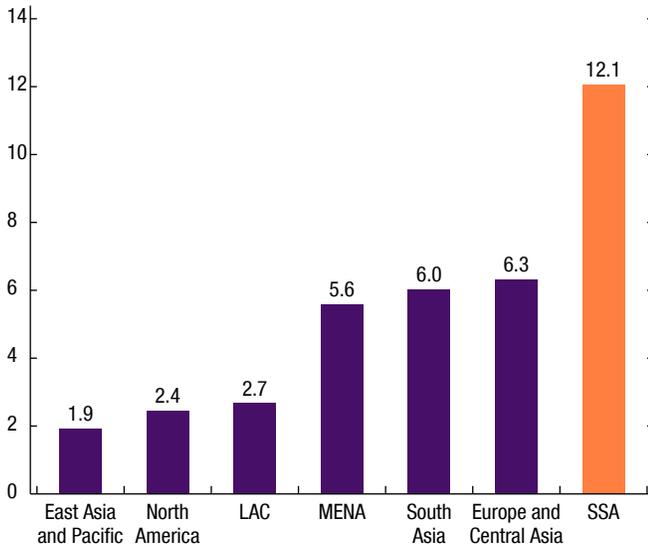


Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: EMDE = emerging and developing economies; HIC = high-income countries; LIC = low-income countries; LMIC = lower-middle income countries; UMIC = upper-middle income countries.

The volatility of NPLs in SSA is also relatively high. On average across countries, the amplitude of NPLs ratios seems higher in SSA, where the median minimum-maximum spread is the largest (12.1 percent) among all regions during 2005–18 (Figure 4). The average volatility in SSA is roughly twice that of Europe and Central Asia, South Asia, and MENA and more than quadruple the average volatility in other regions. However, some extreme values/outliers are recorded in Europe and Central Asia, and South Asia implying that total volatility, looking at the regions as a whole, is still higher in those two regions than in SSA—largely due to specific episodes of financial crises in the aftermath of the GFC (Figure 5). In any case, the volatility (average and total) in SSA ranks within the top three regions for high volatility.

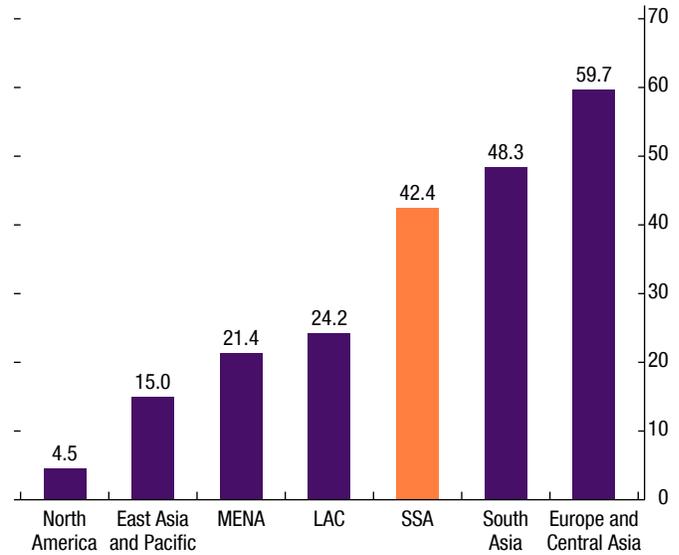
Within SSA, NPLs tend to be more elevated in commodity exporters, fragile states, and currency union members. While NPLs in SSA are problematic throughout the region, some country groups present a higher incidence (Figure 6). Commodity exporters are countries that generate a larger share (more than half) of their export revenue from primary commodities such as oil, gold, and precious metals. Within this group of SSA countries, the median NPL ratio was 12.4 percent in 2018, with the highest ratios generally observed in the Central African Republic and Ghana. On the other hand, the

Figure 4. Average Volatility in NPL Ratios by Region, 2005–18
(Spread between maximum and minimum ratios, percent, group median)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: The volatility is measured by calculating the spread between the maximum and minimum ratios for each country and then taking the median across countries.

Figure 5. Total Volatility in NPL Ratios by Region, 2005–18
(Spread between maximum and minimum ratios, percent)

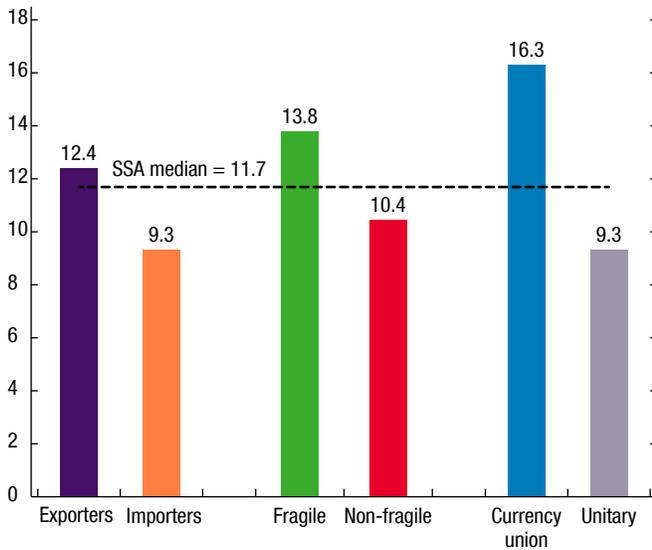


Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: The volatility is measured by pooling the NPL ratios over 2005–18 of all countries in the region and then calculating the spread between the maximum and minimum ratios.

median NPL ratio among commodity importers was 9.3 percent. Countries in fragile situations are generally understood to be those with the lowest capacity and development outcomes. The median NPL ratio in SSA fragile states was 13.8 percent, among which Guinea-Bissau, Chad, São Tomé and Príncipe, and Central African Republic had particularly high ratios. Conversely, the median NPL ratio in non-fragile states was 10.4 percent in 2018. SSA has two currency unions, the Central African Economic and Monetary Community (CEMAC) and West African Economic and Monetary Union (WAEMU).³ The median NPL ratio within SSA currency union members was 16.3 percent compared to the median NPL ratio of 9.3 percent in unitary states, a difference of 7 percentage points and the widest gap among qualifier groups. Within CEMAC, the highest ratios appeared for Equatorial Guinea, Chad, and Central African Republic (all resource-rich countries as well). Among WAEMU member states, Guinea-Bissau and Togo had the highest NPL ratios. Some currency union member states have repeatedly featured among the top five highest NPL ratios in SSA: Senegal and Côte d’Ivoire (pre-2010); Mali (2007–13); Central African Republic and Sierra Leone

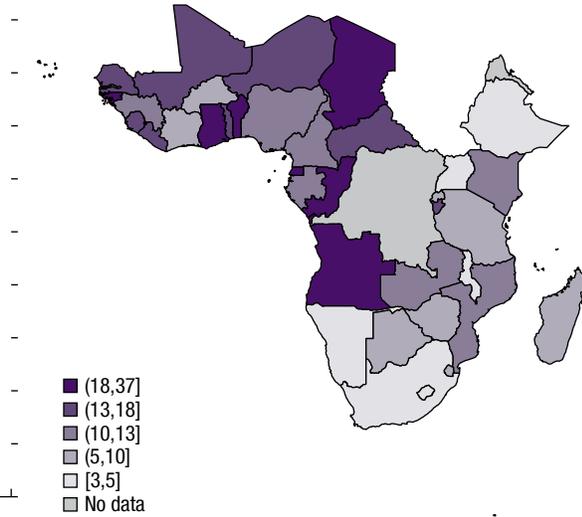
³CEMAC members are Cameroon, Chad, Central African Republic, Gabon, Equatorial Guinea, and Republic of Congo. WAEMU comprises Benin, Burkina Faso, Côte d’Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.

Figure 6. Sub-Saharan Africa: NPL Ratios
(Percent, group median, 2018)



Sources: Country authorities; and IMF, Financial Soundness Indicators.

Figure 7. Sub-Saharan Africa: NPL Ratios
(Percent, 2018)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: Excludes South Sudan; 2017 ratio is used for Burundi.

(since 2013). Geographically, SSA countries with the highest NPL ratios are primarily clustered in western and central Africa, consistent with the observation that the currency union members (WAEMU and CEMAC countries) tended to have higher NPL ratios (Figure 7).

Turning to individual institutions, NPL ratios tend to be higher in trading and investment banks as well as development banks. Using data from Fitch Connect with financial statement data for 617 institutions from 43 countries in SSA during 1994–2018, the samples across the entire time period as well as 2017⁴ show that trading and investment banks have the highest median NPL ratio, followed by development banks (Table 1).⁵ The data classification by bank type shows that universal commercial banks are the most dominant in SSA with median NPL ratios of 6–7 percent. About 40 percent of the bank data points are subsidiaries of foreign-owned banks.

In terms of characteristics, banks with high NPL ratios tend to accord to International Financial Reporting Standards (IFRS) accounting rules and be relatively small. High NPL ratios in 2017 were prevalent (with a median NPL ratio of 8.4 percent) among banks that follow the principles-based

⁴The bank-level analysis focuses on 2017 because the number of observations was too limited for 2018 at the time of drafting this paper.

⁵Although available as a separate category in the data set, bank holding companies were dropped from the comparison because they are a legal organization form that has no direct correlation with the NPL ratio.

Table 1. NPL Ratio by Bank Type
(Percent, group median)

Market Sector	2017		1994–2018	
	Median NPL ratio	No. of observations	Median NPL ratio	No. of observations
Trading and investment banks	29.5	5	12.5	59
Development banks	18.7	7	11.5	141
Islamic banks	11.4	1	3.0	5
Retail and consumer banks	10.8	19	7.5	270
Universal commercial banks	7.3	215	6.3	3,457
Private banks	6.1	2	6.9	27

Source: Fitch Connect.

Note: 2017 is used for the cross-section comparison as the number of observations in 2018 is limited. The NPL ratio is defined, at bank level, as nonperforming loans in percent of total gross loans.

Table 2. NPL Ratio by Accounting System
(Percent, group median)

Accounting System	2017		1994–2018	
	Median NPL ratio	No. of observations	Median NPL ratio	No. of observations
IFRS	8.4	211	6.1	2,376
IAS	7.5	17	7.2	361
Local GAAP	6.9	34	7.6	1,321
US GAAP	-	-	19.0	8

Source: Fitch Connect.

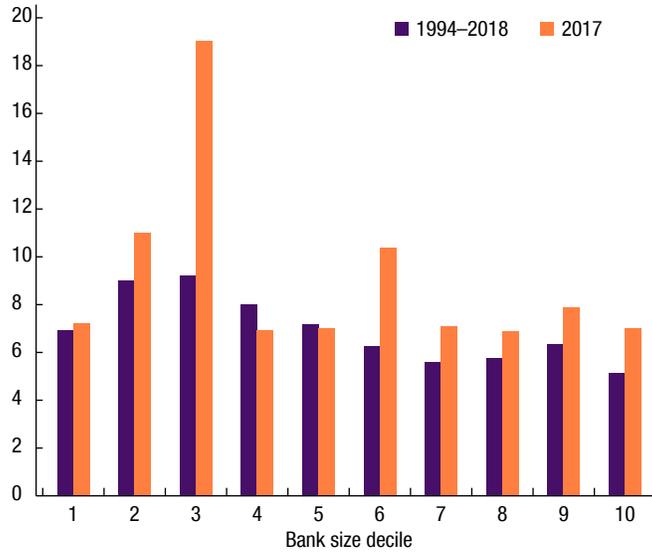
Note: 2017 is used for the cross-section comparison, as the number of observations in 2018 is limited.

GAAP = generally accepted accounting principles; IAS = International Accounting Standards; IFRS = International Financial Reporting Standards.

IFRS, which are the commonly used accounting standards in the SSA region (Table 2). During the entire period (1994–2018), banks that accorded with the rules-based US generally accepted accounting principles (GAAP) seemed to report a median NPL ratio (19 percent) that was more than double the median ratio for banks that followed local GAAP, the International Accounting Standards (IAS), or IFRS—although the result should be interpreted with caution, given that the number of observations is very small. In addition, higher NPL ratios, both in the full time series (1994–2018) and in the year 2017, are more common among smaller banks—most often within the second and third deciles on bank size distribution (Figure 8). This correlation may be due to the likelihood that smaller banks have fewer resources to allow them to address information asymmetries and handle credit risks efficiently (Curak, Pepur, and Poposki 2013).

Finally, banks that have high NPLs tend to display performance indicators denoting lower profitability and capital, and higher funding costs and provisions. These correlations, presented in Table 3, can reflect two-way relationships between NPLs and other financial indicators. On the one hand, a larger portfolio of NPLs can result into lower interest income, higher provisions, and higher funding costs, which should impact negatively on banks' profit-

Figure 8. NPL Ratios by Bank Size Decile
(Percent, group median)



Sources: Fitch Connect; and IMF staff calculations.
Note: 2017 is used for the cross-section comparison, as the number of observations in 2018 is limited.

Table 3. Bank Financial Indicators by NPL Ratio Level
(Percent, group median)

Indicator	2017		1994-2018	
	NPL ratio below median	NPL ratio above median	NPL ratio below median	NPL ratio above median
NPL to total gross loans	4.5	14.8	3.0	13.6
Operating ROA	2.9	0.9	3.0	1.8
Funding cost ¹	3.4	5.0	3.7	4.1
Loan loss provisions/gross loans	0.9	2.7	1.0	2.3
Tier 1 regulatory capital ratio	20.2	16.4	17.1	17.1
Total regulatory capital ratio	21.3	18.6	19.0	18.8

Source: Fitch Connect.

Note: The table shows the median of the various financial indicators in two groups of banks with NPL ratios above or below the median. 2017 is used for the cross-section comparison as the number of observations in 2018 is limited. ROA = return on assets.

¹Calculated as total interest expense/total deposits * 100.

ability and capital.⁶ On the other hand, lower-performing banks are more exposed to moral hazard issues because managers face incentives to pursue risky loans in the hope of extra profits from additional credit risk, which may translate into higher NPLs. Chapters 3 and 4 examine these causal relationships in greater detail through econometric analyses.

⁶Funding costs are often higher for banks with high NPL ratios because these banks are perceived as riskier. Increased provisions are usually required by the regulator for rising NPLs.

Past Evolution of NPLs

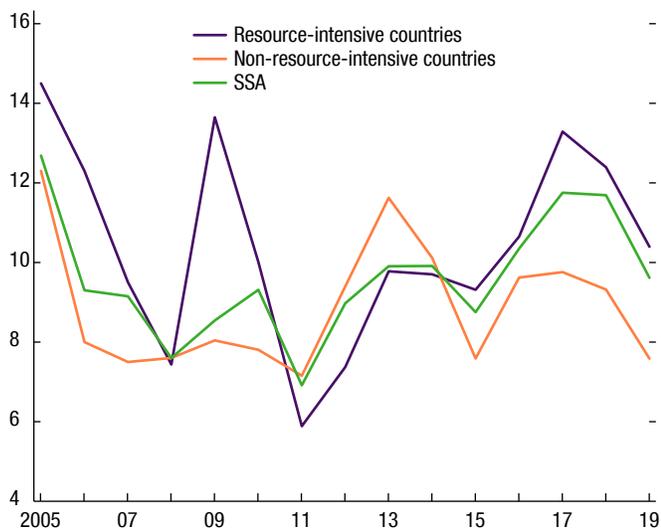
Available information on NPLs dates to the early 1990s. NPL surges in SSA have often followed credit booms and busts, as well as shocks—such as oil price crash, war, disease, pestilence, and adverse climate events. Broadly speaking, two distinct waves of rising NPL ratios are apparent in the 1990s and the 2010s, while a third wave could be expected following the COVID-19 crisis.

The first wave of rising NPLs occurred in the early 1990s. During the 1990s, NPLs had increased significantly in SSA and peaked in 1993 with an NPL ratio for the region of about 30 percent of total loans (Fofack 2005). Back then, it was reported that NPLs rose because of failed investment in speculative real estate and infrastructure projects, as well as defaults on credit facilities for trade and direct investment, which went bad when countries were hit by a sharp decline in commodity prices. Deterioration in the terms of trade and falling commodity prices led to economic and banking crises because banks had accumulated a significant share of impaired loans to agricultural and export sectors (for example, coffee and cocoa exporters) as credit facilities for trade and direct investment. Beyond the commodity price shock, other factors explain the rise in NPLs in the 1990s, including structurally weak fiscal positions (which translated into NPLs owed by public entities to banks)⁷ and maturity mismatches between banks' assets and liabilities (as banks had to resort to expensive short-term funding and charge clients prohibitively high loan rates). However, by the early 2000s, the SSA median NPL ratio had fallen back to a more manageable level of 10–15 percent and continued to fall to about 8 percent in the latter years of the 2000s.

A second wave of soaring NPLs occurred in the years following the GFC, with average NPL ratios exceeding 10 percent in the second half of the 2010s. The 2008 GFC marked a break in the trend of decline in NPLs ratios observed since the mid-1990s (Figure 9). Some countries, such as Ghana and Madagascar, saw their average NPL ratios increase in the wake of the GFC when demand softened and exports (including travel and tourism-related ancillary services) and commodity prices fell, affecting major industries and, as a result, the banking sector. NPLs continued to rise in later years from the middle of the decade until 2017, particularly in countries with already-elevated ratios (for example, CEMAC, Ghana). A principal driver of this evolution was the legacy of the oil price collapse of 2014–15. NPL ratios increased very significantly in resource-intensive countries, wherein weak economic activity translated into a decline in credit quality, for instance in Angola, Mozambique, and Republic of Congo, although weak risk manage-

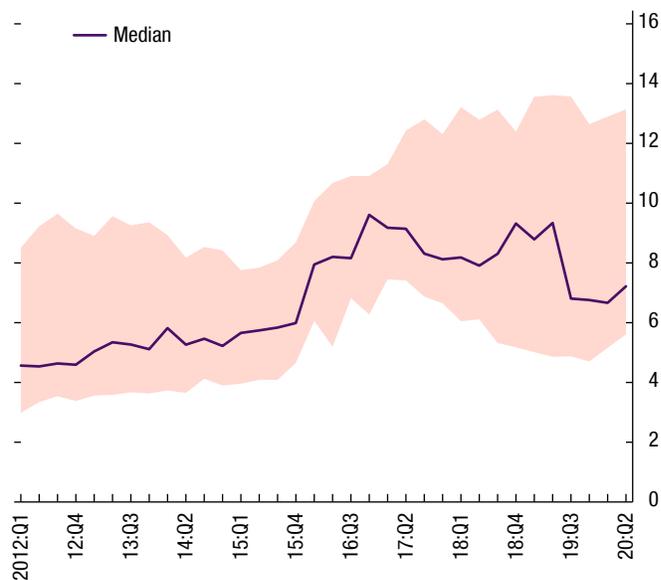
⁷In the 1980s and 1990s, commercial banks were largely involved in the financing of government fiscal deficits and loss-making public enterprises in SSA countries.

Figure 9. Sub-Saharan Africa: Evolution of NPL Ratios
(Percent, group median)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: Data for 2019 are preliminary with a smaller sample of 31 countries.

Figure 10. Sub-Saharan Africa: Evolution of NPL Ratios
(Percent)



Source: IMF, Financial Soundness Indicators.
Note: The figure uses a smaller sample of 20 countries for which the second quarter of 2020 data are available. The orange area excludes the top and bottom quartiles of the distribution. May 2020 data are used for Cameroon, Central African Republic, Chad, Republic of Congo, and Gabon.

ment practices and government arrears to suppliers also played a role in other countries (October 2019 *Regional Economic Outlook: Sub-Saharan Africa*).⁸ Preliminary data suggest that the average NPL ratio declined markedly in 2018 and 2019 before the beginning of the COVID-19 pandemic.

The COVID-19 economic and health crisis may trigger a third wave of NPL increases. Economic restrictions and other disruptions (including lockdowns, curfews, and physical distancing measures) that were put in place to stem the spread of the virus have led to lower demand, higher costs of doing business, and income losses, which have resulted in some firms and households defaulting on loan repayments. It is still too early to get a full picture of the NPL evolution since the onset of the pandemic, because many supervisory authorities do not report these indicators more frequently than quarterly or semi-annually. Preliminary data for the end of June 2020 suggest that NPL ratios have marginally increased in most SSA countries in the first months of the crisis (Figure 10). This is not surprising as it typically takes 90 days

⁸At the same time, NPLs in non-resource-intensive countries, which were beneficiaries of the oil price shock, went down in the second half of the decade. However, this was not enough to offset the general trend of NPL increase.

for delinquent loans to be reclassified as NPLs. In addition, loan repayment deferral schemes and other financial sector regulatory policy responses may have delayed reclassification of distressed assets for some time.⁹ Another mitigating effect could have been the large increase in fiscal deficits that countries experienced in 2020.¹⁰ All in all, widespread increases in NPL ratios may not be immediately evident, even if credit quality has deteriorated. The econometric results presented in Chapter 4 suggest that the economic growth collapse observed in 2020 could have lasting and protracted effects on NPL ratios throughout the region.

⁹Some central banks in the region have allowed commercial banks to relax some regulatory norms—for example, by extending the loan reclassification period—and permit debt moratoria or arrange for debt restructuring. Regulatory forbearance, including allowing banks to keep loans as performing, suggests that a widespread increase in NPL ratios may not be immediately evident, even if credit quality has deteriorated. See also Chapter 5 and Box 2.

¹⁰The combination of countercyclical fiscal policy and ample external financing may have supported credit quality at the onset of the crisis, as governments are likely to have remained current on their payments to suppliers (which are clients of banks).

Why Do NPLs Matter: Impact of NPLs on Bank Lending

NPLs are a burden for banks and their customers. They have a negative effect on both credit supply and demand. This chapter estimates the effect of NPLs on banks' lending activity, using country- and institution-level data. The main finding is that NPLs weigh significantly on credit in SSA countries. The principal channels of transmission are the increase in capital charges as well as the reduction in banks' income and capital accumulation.

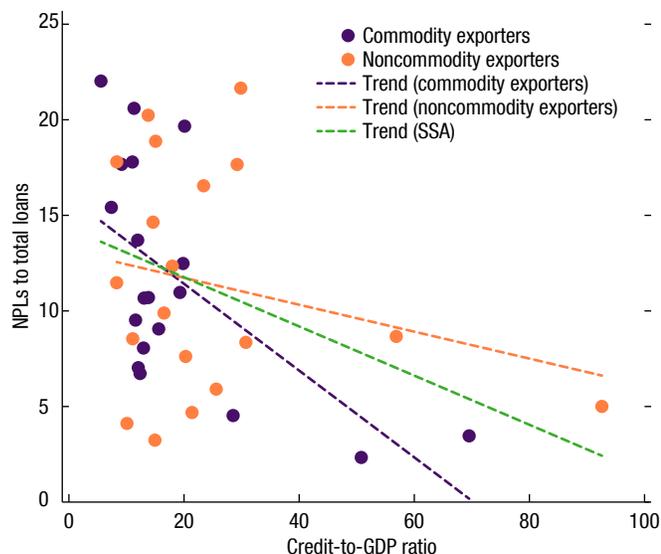
Legacy of Problem Loans and New Credit: Fraternal Enemies?

High levels of NPLs tend to be associated with lower credit to the private sector in SSA. Although it has doubled since early 2000s, credit to the private sector in SSA is relatively shallow compared to other regions, with a median of 15.9 percent of GDP in 2018. Countries with a high level of NPLs tend in general to display lower credit to GDP ratios.¹ The correlation is about -0.3 with some heterogeneity between commodity exporters and noncommodity exporters, the former country group showing higher correlation (Figure 11). Similarly, episodes of deterioration of asset quality in SSA coincide with a drop in the credit to GDP ratio (Figure 12).

Given endogeneity problems, further analysis is needed to test the causality from NPLs to credit. By itself, the strong correlation between the two variables means little as both dynamics could be driven by worsening economic activity (for example, demand effect) or pure accounting factors (with new credit raising the denominator of the NPL ratio faster than it raises the numerator, at least in the short term). It is therefore critical to identify

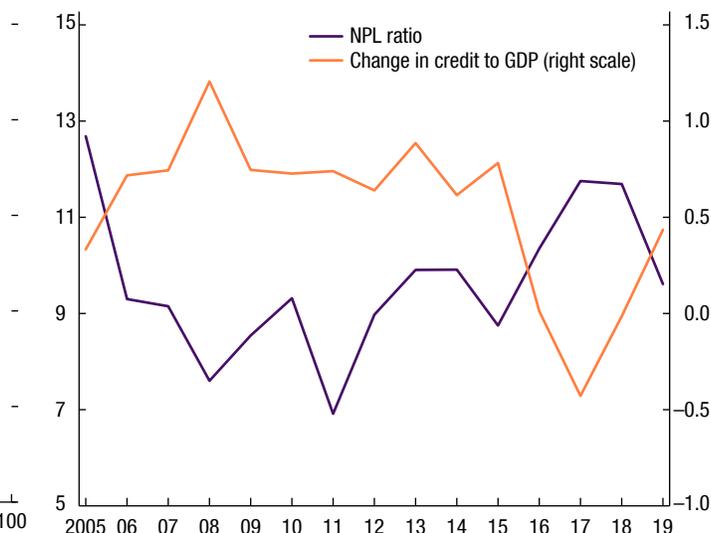
¹The preliminary median value for 2019 is close to 20 percent of GDP but based on an incomplete sample of countries (36 out of 41). Using the same 36 country sample, the median ratio was 18.3 percent of GDP in 2018.

Figure 11. Sub-Saharan Africa: NPLs and Credit-to-GDP Ratio
(Percent, 2005–19, country average)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: For each country, only years with both NPL ratio and credit-to-GDP available are included in the average calculation; credit refers to credit to the private sector.

Figure 12. Sub-Saharan Africa: NPLs and Credit-to-GDP Ratio
(Percent, group median)



Sources: Country authorities; and IMF, Financial Soundness Indicators.
Note: Credit refers to credit to the private sector; data for 2019 are preliminary with a smaller sample.

exogenous shocks to NPLs to measure the effect of changes in asset quality on credit supply.² To solve the identification problem, this paper, like several other studies for other groups of countries such as Espinoza and Prasad (2010), Nkusu (2011) and Klein (2013), uses a panel vector autoregression (VAR) model on country-level data, allowing for dynamic interactions between variables, with Cholesky decomposition to isolate structural shocks. To the authors’ knowledge, this is the first time that this methodology is used to assess the effect of NPLs in SSA countries.

A panel VAR confirms that NPLs have a relatively strong and persistent negative effect on credit supply in SSA. The VAR analysis, described in further details in Annex 1, estimates the empirical relationships between the NPL ratio, GDP growth, inflation, and credit to the private sector (percent of GDP), with data covering 2001–18 for 41 SSA countries. The impulse response functions point to a statistically significant effect of NPLs on credit to the private sector (Figure 13). Specifically, a 1 percent unexpected increase of the NPL ratio reduces private credit to GDP by about 1/4 percentage point in the medium term, with the maximum effect reached after

²Exogenous shocks to NPLs could be due to changes in regulation and/or definition, stricter enforcement of the regulation (for example, asset quality reviews), or resolution measures such as write-offs.

Figure 13. Responses of Credit-to-GDP to a One Standard Deviation Shock to NPL Ratio

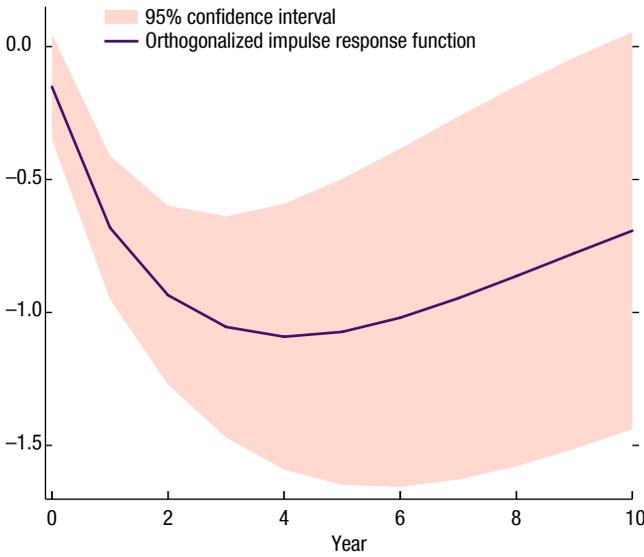
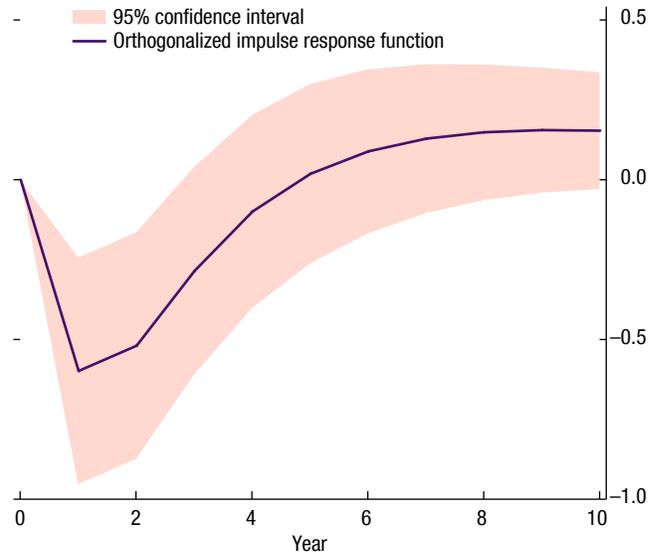


Figure 14. Responses of Real GDP Growth to a One Standard Deviation Shock to NPL Ratio



Source: IMF staff estimates.

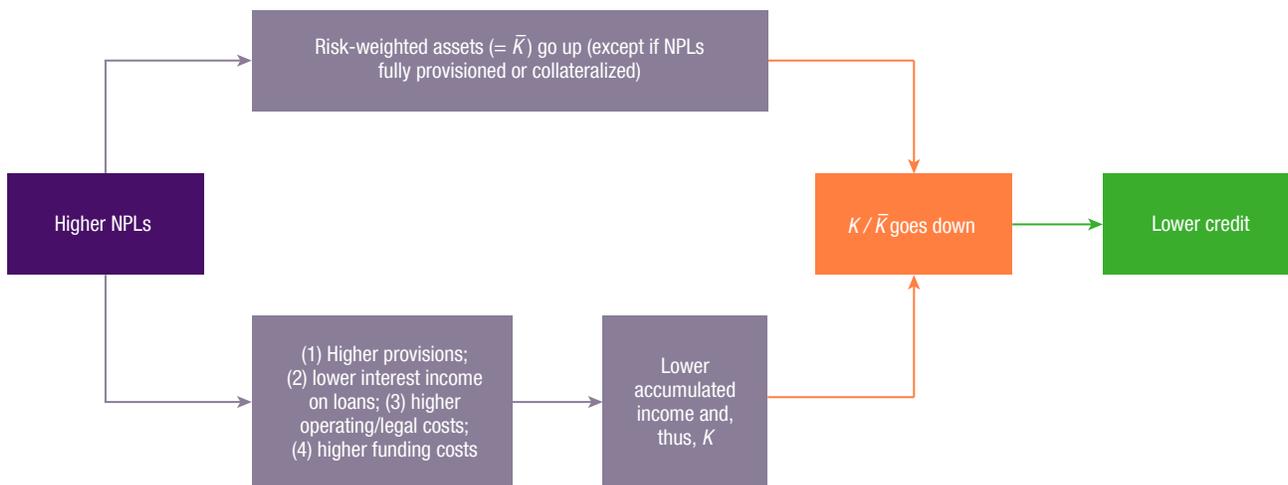
Note: A one standard deviation in the NPL ratio is equal to 4.1 percentage points in the sample.

four years.³ For a median SSA country exposed to an increase in its NPL ratio by one-third (equivalent to 4 percentage points)—a realistic order of magnitude as discussed in Chapter 4, this means that the credit ratio would decline by 1–1¼ percentage points in the medium term. This is a significant effect, given that the median private credit ratio stood at 16 percent of GDP in 2018. In addition, the variance decomposition shows that the NPL shock explains 30 percent of the credit-to-GDP variance.

NPLs also affect broader economic outcomes. The same model is also used to estimate the impact on GDP (Figure 14). It shows that a 4 percentage point increase in the NPL ratio (an increase by one-third for the NPL ratio of the median SSA country) would lead to lower economic growth by 0.5–0.6 percentage point a year, in the next two years following the shock. The effect is slightly larger and more protracted for non-oil GDP growth (0.6–0.7 percent per year), as the value added of the oil sector is less dependent on domestic financing and the soundness of the local banking sector. In both cases, the magnitude of the contractionary effect of NPLs is lower in SSA than in more advanced economies, which could be imputed to the lack of financial depth

³An alternative specification, based on credit growth rather than the credit ratio, shows that a 1 percentage point increase in the NPL ratio leads to a 1 percent drop in private credit growth after two years (relative to baseline) and by 2 percent cumulatively over 10 years.

Figure 15. Impact of NPLs on Capital Adequacy and Credit Supply



Source: IMF staff.

or misallocation of credit in SSA economies (see, for instance, Klein [2013] on Central, Eastern, and Southeastern European countries).

Why NPLs Impair Bank Credit: Investigating the Channels of Transmission

The effect of NPLs on credit can be attributed to various channels. To simplify, NPLs can affect banks’ supply of credit through two main transmission mechanisms—profitability and capital requirements.⁴ By reducing the capital adequacy ratio from the numerator and denominator sides, NPLs impact the ability of banks to provide new credit (Figure 15):

- NPLs can reduce banks’ profitability in the following ways: (1) NPLs require banks to raise provisions, which lowers net income (since provisions are an expense in the income statement); (2) NPLs carried on banks’ books do not generate income streams comparable to performing assets; (3) a deteriorating balance sheet may raise banks’ funding costs because of lower expected revenue streams and, hence, heightened risk perception on the part of investors; (4) a large NPL portfolio absorbs human and operational resources, which the bank could use instead to support more profitable lending; and (5) there are legal costs to complete bankruptcy and foreclo-

⁴NPLs can also negatively affect the demand for credit, for instance, when banks try to recoup their losses on NPLs by raising the marginal lending rate on new loans.

sure procedures. In turn, lower profitability translates into slower capital accumulation, which reduces the numerator of the capital adequacy ratio.

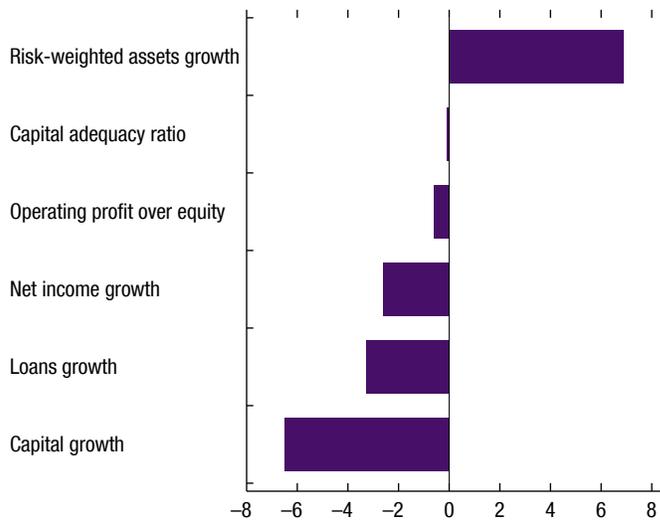
- NPLs, net of provisions, may also tie up larger amounts of regulatory capital due to higher risk weights on impaired assets under Basel II/III. For instance, for banks using standardized methods under Basel II/III, a performing loan has a risk weight in the range of 75–100 percent, while a higher risk weight (100–150 percent) is required on NPLs for the portion of NPLs that is not provisioned or collateralized. In turn, higher capital requirements deteriorate the capital adequacy ratio from the denominator side.

An econometric analysis is conducted on bank-level data to assess the relevance of these various channels. The analysis relies on a sample of 617 banks in 43 SSA countries (from Fitch Connect database) and covers 1994–2018. To estimate the impact of NPLs on the different transmission channels, the system generalized method of moments (GMM) estimator of Blundell and Bond (1998) is employed. This empirical strategy helps address endogeneity issues resulting from reverse causality, measurement errors, and omission of variables. The estimation, which combines both micro and macro determinants, also controls for the traditional determinants of bank lending, including real economic growth, terms of trade, real effective exchange rate, inflation, the fiscal balance, the quality of institutions, and bank deposits. Detailed results are presented in Annex 1.

The results show that NPLs reduce bank lending through both higher risk-weighted assets and lower capital. According to the bank-level analysis, an increase in a banks' NPL ratio (measured as the ratio of its NPLs to total loans) by 1 percentage point is associated with a decline in bank lending growth by about 3 percent, relative to baseline (Figure 16).⁵ The model highlights that higher NPLs translate into both a fall in banks' capital, resulting from the loss of income as well as an increase in risk-weighted assets, as the share of riskier loans increases. The results also point to a reduction in banks' operating profits, which is due to lower net interest income, higher administrative and staffing costs (proxied by non-interest expenses), as well as higher provisions. Quantitatively, an increase in the NPL ratio by 1 percentage point would increase risk-weighted assets by about 6.9 percent, while reducing banks' capital by 6.5 percent, all else being held constant. Consequently, the banks' capital adequacy ratios decline. However, the impact of NPLs on funding costs is not found to be statistically significant. This result could be due to the fact that interest rates on retail funding (deposits), which represent

⁵The effect on credit growth based on the bank-level analysis is stronger than the similar effect estimated in the previous section using macroeconomic data. A possible reason for this: at the macroeconomic level, some offsetting factors are at play, which dampen the negative impact of NPLs on credit, such as supportive policies by the central bank or the supervisor.

Figure 16. Estimated Impact of 1 Percentage Point Increase in NPL Ratio



Source: IMF staff estimates.

a large source of banks' liabilities in SSA, may be less sensitive to the quality of banks' balance sheets.

Understanding the Main Sources of NPLs in Sub-Saharan Africa

A thorough diagnosis of NPLs' root causes is a prerequisite for designing effective remedial plans. This chapter combines statistical estimations with a forensic analysis of past NPL surges to identify the main drivers of NPLs in the SSA context. Although some factors are outside the control of the authorities and the banks, several policy levers can have a material impact on the size and trajectory of NPLs, including bank supervision and regulation that promote sound bank risk management and good governance, as well as prudent fiscal policy and debt management to reduce the occurrence of government arrears.

An Empirical Analysis of Macro and Micro Determinants of NPLs

Although the empirical literature on determinants of NPLs is quite abundant for advanced and emerging market economies, few studies have focused on Africa. Investigating the leading causes of NPLs in SSA during the economic and banking crises of the 1990s, Fofack (2005) finds a strong causality from macroeconomic volatility to NPLs, reflecting the vulnerability of undiversified African economies to external shocks. Mpofu and Nikolaidou (2019) examine the macroeconomic determinants of credit risk in the banking system of SSA economies over 2000–16 and show that a deterioration in the economic environment leads to higher credit risk in the banking sector in the region. Using bank-level data over 2000–15, Brei and others (2018) study the impact of bank competition in SSA on NPLs and find that they are not only related to macroeconomic variables (growth, public debt, economic diversification, and financial deepening and inclusion) but also to the regulatory environment: bank competition may spur efficiency gains and thus translate into sounder bank credit portfolios with better credit quality; however, excessive competition can lead to higher NPLs, by eroding interest revenues (due to lower loan rates), increasing the likelihood of risk-taking

behaviors by banks, and making it more difficult for them to create enough buffers over the business cycle.

NPL determinants are both macroeconomic and microeconomic. In a recent review of this large literature, Manz (2019) distinguishes two broad categories of NPL determinants: macroeconomic factors and bank-specific variables. Macroeconomic factors encompass variables such as GDP growth, monetary aspects, price levels, and terms of trade. Bank-specific determinants include cost efficiency, capitalization, lending behavior, the economics of information (moral hazard, agency problems), and corporate governance. The rest of the section identifies and estimates the impact of these two sets of determinants using two econometric approaches (see Annex 2 for more detailed results).

Macroeconomic Determinants

A macro-econometric analysis is conducted to identify the main drivers of NPLs in a sample of 41 SSA countries over 2001–18. To account for persistence in NPLs, the authors run dynamic panel regressions using country-level data, as in De Bock and Demyanets (2012), where the NPL ratio depends on its lagged value and a vector of contemporaneous and lagged macroeconomic and financial variables, including GDP growth, inflation, credit growth, export deflator growth, change in the lending rate, and change in public debt to GDP ratio. The estimations use the system GMM estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998) to address dynamic panel bias and endogeneity. The authors check for possible time variation by estimating the same equation over the 2010–18 subsample.

The macroeconomic environment, banks' lending behavior, and the sovereign-bank nexus are found to affect significantly SSA countries' NPL ratios. At the country level, the aggregate NPL ratio is determined by a few key variables:

- A deteriorated *macroeconomic environment* is associated with lower asset quality. Specifically, a 1 percentage point decline in economic growth reduces the borrowers' capacity to service debt, increasing instantaneously the country NPL ratio by 0.2 percentage point at impact, and 0.4–0.6 percentage point in the medium term. The export deflator growth is also found to have a significant impact.
- Bank's *lending behavior* is also an important determinant of NPLs in SSA countries. In particular, a tightening of lending conditions in the form of

a 100 basis point increase in banks' average lending rates¹ (for example, following a monetary policy shock) has an immediate effect on systemwide NPL ratios (+0.2 percentage point). The effect is relatively large and could be due to the fact that a large part of credit to the private sector in SSA is at variable interest rates. Rapid credit growth, possibly reflecting banks' risk-taking behavior, is also found to be associated with a rise in NPLs with a one-year lag.

- An increase in *public debt* is found to lead to higher NPLs. This may be because higher public debt increases the sovereign risk premium, affecting banks' funding costs and lending rates. High debt could also increase the probability of government arrears accumulation, which would translate into NPLs. The effect is not statistically significant over the whole period. However, when the sample is shortened to 2010–18, the sovereign-bank nexus becomes stronger and statistically significant, while the coefficients associated with lending rates and credit become nonsignificant. This could be because financial deepening has strengthened the sovereign-financial nexus. Another explanation is that the crowding-out effect (which raises borrowing costs for the private sector and increases the likelihood of borrower's default) has been stronger over the more recent period, since many SSA banks had to face a decline in their excess liquidity after the commodity price shock of the mid-2010s.
- Finally, results point to a high *persistence* of NPLs with first-order autocorrelation of about 0.6, suggesting that a shock to systemwide NPLs takes time to fade.

The empirical analysis suggests that the COVID-19 crisis could have a significant effect on NPL ratios in SSA if there is no adequate policy response. Although point estimates should be treated with caution, they provide an order of magnitude of the broad correlations between series. The growth elasticity is particularly informative. A 1 percentage point growth slowdown is expected to cause the NPL ratio to increase first by 0.2 percentage points, with this impact rising over time up to 0.4–0.6 percentage points after five years given the persistent effect. On this basis, the drop in real GDP growth rate by about 6–7 percentage point experienced, on average, in SSA countries in 2020 (relative to 2019) would imply an increase in the NPL ratio of 3–4 percentage points in the medium term, which corresponds to a rise in the NPL ratio by one-quarter to one-third in an average SSA country, compared to precrisis.² This analysis, which focuses on the impact of the 2020 growth shock, considers all other factors are held constant relative to the baseline, including economic policies, the evolution of economic growth

²At the time of drafting the paper, the median NPL ratio was 11.7 percent in 2018 and, based on an incomplete country sample, 9.6 percent in 2019.

after the shock, and other economic factors. Future measures taken to address NPLs could reduce the size and duration of the crisis effects.

Bank-level Determinants

To better understand the role of the banks' lending behavior in NPL dynamics, a micro-econometric analysis is carried out to identify bank characteristics that are highly correlated with the prevalence of NPLs. The bank-level analysis is based on financial statements data for 617 banks from 43 countries in SSA during the period 1994–2018 for which NPL data are available.³ The authors use the system GMM of Arellano and Bover (1995) and Blundell and Bond (1998) to address endogeneity problems, including reverse causality. The estimates also control for several macroeconomic variables.

At the level of individual SSA banks, indicators of risk-taking and risk-management seem to be key predictors of the quality of balance sheets. Besides the persistence effect, the level of NPLs in SSA banks tends to be linked to microeconomic determinants that are directly or indirectly related to their attitudes toward risk:

- *Efficiency and profitability.* Inefficient banks, as measured with profitability indicators such as the return on assets (ROA), the return on equity (ROE) or the net interest margins, tend to have higher NPL ratios, probably because they are poorly managed and unable to properly screen risks. On the contrary, banks evolving in more competitive environments, as measured by an adjusted Lerner Index, have lower NPLs, suggesting that bank competition may lower credit risk, as a result of more prudent risk management and efficiency gains that help lower the cost of credit for borrowers (Koetter, Kolari, and Spierdijk 2012; Brei, Jacolin, and Noah 2018). However, bank competition is found to have a nonlinear effect: beyond a certain threshold, competition increases NPL ratios, because the efficiency gains of more competition may be outweighed by financial instability effects.
- *Bank lending and moral hazard.* Banks with higher average interest rates on loans (measured as the ratio of interest income to gross loans) have higher NPL ratios, probably because of customers' difficulty in repaying more expensive loans and adverse selection effects. In addition, highly leveraged banks, as captured by the loan-to-deposit ratio, have higher NPL ratios, perhaps because they tend to take more risks.

³The data set includes several types of deposit-taking institutions, with the vast majority being commercial banks. About 40 percent of the bank data points are subsidiaries of foreign-owned banks.

- *Capital buffers.* More capitalized banks, as measured with the capital adequacy ratio (CAR), tend to have lower NPL ratios. While the reverse relationship is well understood (due to the effect of NPLs on provisions), the causal effect from banks' buffers to NPLs is less straightforward. This could be because lower capital buffers create risk-taking incentives, which would translate into higher NPLs.
- *Governance.* Bank NPLs seem to be positively linked to the degree of financial development and the quality of supervisory mechanisms, as measured by the IMF Financial Development Index⁴ and the Regulatory Quality variable of the World Bank's Worldwide Governance Indicators.

Looking Back at the History of Past NPL Surges in Sub-Saharan Africa

To complement the econometric analysis and add more granularity, this section performs a study of NPL surges in the past 15 years. The analysis covers 41 SSA countries since mid-2000s. Strong increases in the annual NPL time series are identified using a dual criterion based on both nominal NPL growth (above 20 percent) and NPL ratio (above 5 percentage points).⁵ About one-third of the observations (country-year data points) displayed NPL growth rates exceeding 20 percent in the sample excluding NPL ratios below 5 percent (Figure 17). This corresponds to 137 episodes of surges out of 366 observations. Fourteen countries experienced a doubling of the nominal level of NPLs or more in a particular year during the period. While the median annual growth rate of nominal NPLs was 13.0 percent during 2006–19, the median *maximum* growth rate per country stood at 75.7 percent (Figure 18).⁶

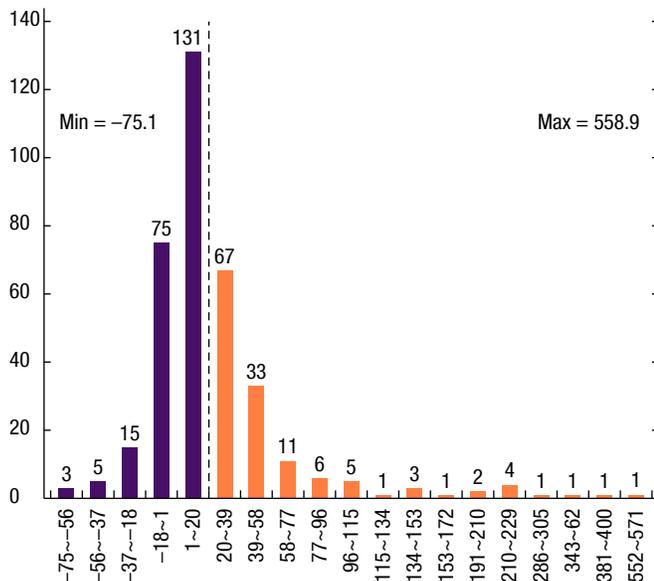
Several root causes of these surges can then be distinguished. IMF country reports are used to pinpoint the sources of the identified episodes. These causes can be loosely grouped into (1) adverse macro-financial shocks, (2) poorly conceived macroeconomic policies, (3) problems originating in the banking sector itself, and (4) other structural issues. In several countries more than one factor was perceived as having caused the run-up in NPLs.

⁴The IMF Financial Development Index Database contains annual data on depth, access, and efficiency of financial institutions and markets in 183 jurisdictions from 1980 to 2018. It is updated annually, building on data from the World Bank FinStats, IMF Financial Access Survey, BIS debt securities database, and Dealogic corporate debt database (see Svirydzenka 2016).

⁵Episodes of NPL surges were identified as an annual increase in the amount of NPLs (in nominal terms) by at least 20 percent and, at the same time, an end-year NPL ratio of at least 5 percent. The second criterion eliminates cases wherein large nominal increases reflect merely a base effect. Several countries did not report NPL figures for the entire period. Two consecutive increases are treated as two separate episodes. When nominal values are unavailable, NPL levels are estimated by multiplying the NPL ratio by total bank claims data from the IMF International Financial Statistics.

⁶Based on the sample that excludes cases wherein NPL ratios are below 5 percent, as in Figures 17 and 18.

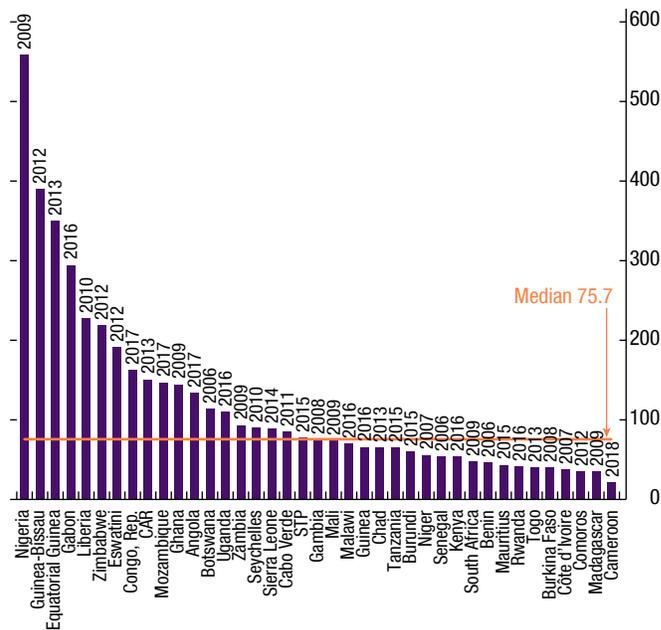
Figure 17. Sub-Saharan Africa: Distribution of Annual Growth in NPLs, 2006–2019
(Percent)



Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.

Note: The figure shows the distribution of annual NPL growth rates, with each case denoting one country, one year. For instance, 131 cases had an NPL growth rate of 1–20 percent from 2006 to 2019. The sample excludes cases where NPL ratios are below 5 percent.

Figure 18. Sub-Saharan Africa: Maximum Annual Growth in NPLs, 2006–2019
(Percent)



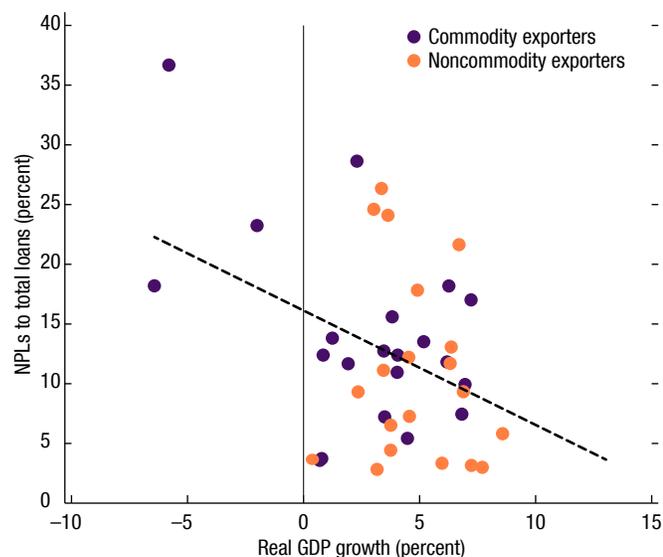
Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.

Note: The sample excludes cases where NPL ratios are below 5 percent.

NPLs frequently originate from exogenous macro-financial shocks. Banks' performance can be impaired by either negative domestic shocks or external shocks to export volumes and prices that filter through the domestic economy. First, *negative spillovers from abroad*, such as depressed exports and a fall in commodity prices, have been particularly relevant in countries with large export sectors—as illustrated by the NPL surges in the episodes of Cameroon-2016, Gabon-2016, Guinea-Bissau-2012 and 2014, Nigeria-2016, and Republic of Congo-2017. Second, *weak domestic economies and fragile businesses* have led to insufficient cashflows and, consequently, to corporate payment arrears with banks—with the difficulties sometimes concentrated in specific economic sectors (Cabo Verde 2011–13, Ghana 2009 and 2016, Tanzania 2015; Figure 19). *Shortages of foreign exchange* have occasionally impacted loan servicing, as in the case of Nigeria-2016. Finally, *weather-related shocks* impacted the macroeconomic situation and deteriorated credit quality in Malawi-2016.

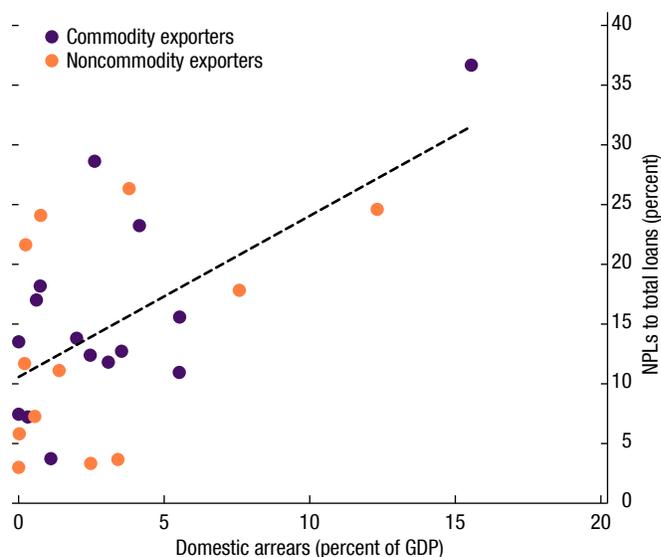
Even in the absence of exogenous shocks, banks can be affected by macroeconomic policies that are either misguided or have negative side effects.

Figure 19. Sub-Saharan Africa: NPLs and Real GDP Growth, 2018



Sources: Country authorities; IMF, Financial Soundness Indicators Database; and IMF, *World Economic Outlook*.
 Note: The analysis is based on 2018 data as there were fewer observations for 2019.

Figure 20. Sub-Saharan Africa: NPLs and Domestic Arrears, 2018



Sources: Country authorities; IMF (2019c); IMF, Financial Soundness Indicators Database; and IMF, *World Economic Outlook*.
 Note: Positive correlation is also observed with one lag in domestic arrears; the analysis is based on 2018 data as there were fewer observations for 2019.

These policies can be adopted by the government or the monetary and financial authorities. *Government arrears* and other fiscal issues led to NPL surges in some countries, at times through suppliers to government entities no longer able to service their bank debt (see examples of Burundi-2015, Central African Republic-2013, Chad-2015, Equatorial Guinea-2013, Eswatini-2010, Gabon-2016, Mozambique-2017, the Republic of Congo-2017 and 2018, and Uganda-2015–16; Figure 20).⁷ *Prudential actions* also caused an increase in measured NPLs, such as a harmonization of the NPL definition (Burundi-2014), tighter regulation on NPLs (Cameroon-2016, Kenya-2017), enhanced credit risk supervision (Mozambique-2017), a reassessment of collateral values affecting the perception of credit quality (Mali-2005), a reclassification of watchlist loans⁸ to NPL categories (Seychelles-2010), and a rescheduling of loans guaranteed by the central bank (Guinea-2016). More generally, the recent move to International Financial Reporting Standard 9 (IFRS9) accounting, starting in 2018, has also impacted NPL levels in many countries. Although these prudential actions do not change the level of NPLs in the economic sense, they impact official statistics by improving

⁷For more on the origins and consequences of domestic and government arrears, see Chapter 3 in IMF (2019c).

⁸Watchlist loans are one loan classification category below normal loans and one above substandard loans.

the accuracy of reporting. Finally, *tight monetary policy*, leading to excessively high interest rates, was flagged to be the cause of high NPLs in the case of Malawi-2012–13.

In addition, several NPL surges originated primarily in the banking sector itself. Bank-specific factors are related to two main developments. First, *credit booms*, often fueled by excessively loose lending standards, can eventually result in bust episodes marked by strongly rising NPLs (see, for instance, Comoros-2012, Equatorial Guinea-2013, and Mauritius-2015). In Nigeria-2009, the NPL surge was related to a credit-financed stock market boom that was followed by a bust. Second, *mismanagement at banks* such as weak risk management and, more generally, poor governance were cited as the cause of high NPLs among other issues in multiple episodes (see, for instance, the cases of Ghana-2009, Mauritius-2015, The Gambia-2008, Togo-2017, Uganda-2015–16, and Zimbabwe-2012).

Lastly, several other idiosyncratic factors have impacted NPL dynamics. *Health crises* have led to high NPLs, such as the Ebola outbreak stymying economic activity in parts of West Africa—as shown by outbreaks in Guinea, Liberia, and Sierra Leone in 2014–15. *Political crises and conflicts*, such as a coup d'état, have also crippled economic activity and thus increased NPLs (Guinea-Bissau-2012, for instance).

A Strategy to Deal with NPLs in Sub-Saharan Africa

This chapter proposes to address the high and rising level of NPLs in SSA through a three-pronged sequential strategy focusing on managing, resolving, and preventing NPLs. Regarding resolution, the authors estimate that removing 1 dollar of NPLs from the banks' balance sheets in the region would create, on average, space for about 50 cents of new loans, although some policy measures could significantly increase the leverage effect.

Past Experience of Sub-Saharan African Countries

SSA countries have used a wide range of measures to tackle NPLs. These measures can be classified as either preventive (ex ante) to forestall the emergence of new NPLs, or remedial (ex post) to resolve existing NPLs.¹ This section reviews the experience of SSA countries with such measures in the past decade, using information collected from IMF staff reports and other sources (see Annex 3).

While the use of preventive actions in the region seems relatively new and limited, remedial actions have been more prevalent, focusing primarily on accelerated write-offs and sales to public AMCs in addition to standard recovery practices. Curbing NPLs typically starts at the loan origination phase. Over time, SSA banks have improved their credit risk assessment capabilities (credit underwriting and portfolio monitoring), including with the use of AI/machine learning and other innovations (Sy and others 2019). The adoption of enhanced bank supervision has led to increased transparency and proper recognition of NPLs, while Basel III capital and liquidity regulations, IFRS9, and macroprudential tools may help prevent NPL surges. Nonetheless, most

¹There are various ways to classify the main policy options. For alternative typologies, see Baudino and Yun (2017) and ECB (2017).

of the preventive measures remain either relatively new or partially implemented across the SSA region. In their absence, and faced with NPLs build-ups, SSA countries have resorted more systematically to active NPL reduction strategies *ex post*. In addition to standard recovery practices, common strategies have proven to be accelerated write-offs of defaulted loans and setting up AMC— which are legally separated entities, typically public, entrusted with purchasing, managing, and disposing distressed assets from commercial banks. Other employed strategies have included clearing government arrears (to banks' clients) as well as bank restructuring/resolution, especially in the case of state-owned banks.² Also, especially during the COVID-19 crisis, banks in SSA countries have worked with affected borrowers to renegotiate and soften the terms of their loans—actions that have been encouraged by supervisors in several countries (see next section).

The track record of these NPL measures in SSA has been mixed. This is not overly surprising in view of specific legal and financial constraints that countries are facing. Although accelerated write-offs and NPL transfers to AMCs have helped lower NPL ratios in several countries, these strategies may not eliminate completely the asset quality problem; they merely change its manifestation. After the NPL is written off and the collateral is repossessed by the bank (instead of being immediately sold), the bank ends up owing a fixed asset in lieu of the NPL; the bank would typically try to sell the collateral at some point, which, in the absence of liquid market, may entail another loss. Transfer of defaulted assets to AMCs does lower the NPL ratio on impact but has turned out to generate losses to the AMCs or high fiscal costs for keeping them afloat (for example, in Angola, Nigeria, Togo, Zimbabwe).³ Problems with these AMC companies have also included inefficiencies in debt collection systems, legal obstacles to enforce creditor rights, insufficient financial and human resources, imperfect information about the level of banks' exposures to troubled assets, difficulties in establishing the transfer price from market observations, and lack of independence (Ingves, Seelig, and He 2004). Clearance of government arrears to suppliers can lower NPLs, assuming authorities have the fiscal space to make repayments on a larger scale. The remaining measures, while still potentially effective, typically require more time to gain traction due to necessary legal and organizational changes, which argue for pursuing them before NPLs reach critical levels. A particular problem surrounds bank restructuring and resolution, which have been politically contentious issues and present multiple obstacles—including political

²The primary purpose of bank resolution/restructuring is not to reduce NPLs. The NPL reduction can be seen as a byproduct of these actions.

³Often, the transfer of NPLs may prove to be costly due to asset transfers at excessive prices and lack of limitations on the types of assets and the lifetime of the AMC (for example, Nigeria's AMC has received airline companies; Cameroon's AMC has existed for about 30 years).

cost, issues with banks too-big- or too-influential-to-fail, hesitant supervisors, and legal and regulatory shortcomings.

A few countries in SSA have developed broader NPL management “strategies” or are in the process of doing so. These countries include Cameroon, Gabon, Ghana, Mali, São Tomé and Príncipe, and Tanzania. Typically, NPL resolution strategies are multipronged, specifying a range of measures to reduce existing NPLs and prevent new NPLs from arising. A few NPL strategies stand out because of their comprehensive approach (see Box 1 for a description of the strategies implemented in Ghana and Tanzania).

Options to Manage, Resolve, and Prevent NPLs in the Context of the COVID-19 Crisis

This section outlines a general strategy for dealing with NPLs that may emerge during the COVID-19 crisis. In practice, policy priorities will vary considerably across countries and depend on the source of NPLs, the extent to which borrowers are impacted by the pandemic, as well as the available policy space (including at the budgetary level) to respond to the economic downturn. A primary message of this chapter is that NPL strategies should be carefully designed and sequenced—focusing first on managing and accommodating the expected increase, then shifting to resolution, and finally emphasizing preventive measures to mitigate the risk of another round of NPL pickup. This section builds on various notes and papers prepared by the IMF Monetary and Capital Markets Department, including Monaghan and Saca Saca (2016), Awad and others (2020), Kongsamut, Monaghan, and Riedweg (2021), and Nelmes and others (2021).

Managing the Deterioration in Credit Quality during the Crisis

In the short term, the priority for banks is to handle the diminished ability of their customers to repay debt. Resolving NPLs is not the most pressing matter, as the situation is still very uncertain, and some difficulties faced by borrowers may be temporary. Once the exceptional relief measures are lifted, the economic outlook stabilizes, and a thorough diagnostic of banks’ loan portfolios is conducted, the impact of the crisis on NPLs will become more apparent and comprehensive resolution strategies could be contemplated. Box 2 describes some measures taken by SSA countries during the crisis in response to the difficulties encountered by borrowers and banks.

First, banks should recognize the deterioration of their assets’ quality by applying loan classification and provisioning rules in force. These rules should

not be relaxed during the crisis. Prudent loan classification and provisioning are at the core of banks' risk management and asset valuation processes. As asset quality deteriorates, having adequate provisions set aside will be essential to allow banks to proactively engage in NPL resolution. Proper loan loss provisioning ensures transparency and reduces moral hazard, which supports market trust and thus banks' ability to raise fresh private capital and continue to lend.

Second, supervisors could encourage prudent loan restructuring to sectors or firms temporarily impacted by the crisis. By adjusting the terms of the contract, banks can help viable borrowers manage the temporary impact of the pandemic on their business and minimize their own losses. Restructuring can take the form of renegotiated terms (maturity, interest rates, fees), moratorium policies or grace periods. Irrespective of whether the loans are restructured or not, banks should follow the standard prudential requirements related to problem loans and classify them properly according to the revised likelihood of the borrower to pay.⁴

Third, banks with growing or high NPLs could be subject to more oversight. During the crisis, banks should closely monitor their credit portfolios for signs of distress, irrespective of possible relief measures, and supervisors should receive full reporting on the temporary arrangements granted to customers and their impact on banks' balance sheets. In the case of banks most impacted or more fragile, additional measures could be contemplated, including more frequent and detailed regulatory reporting for NPL portfolios, intensified on-site supervision, careful monitoring of bank capital and profitability, enhanced regulation, and guidance.

Fourth, supervisors should use the flexibility allowed by bank regulatory and accounting frameworks to accommodate the negative impact on banks' capital. The increase in NPLs may hurt the banks' capital position, as a result of the loss of net income. If this is the case and excess capital (above the minimum plus buffers) has been exhausted, capital buffers should be used, where they are in place. Banks could draw down on their capital conservation buffer to absorb the impact of those losses. In SSA countries transitioning toward the Basel III standards, a more gradual path for complying with capital requirements could also be envisaged.

Banks, where NPLs have increased significantly leading them to fall below capital requirements, should design capital restoration plans. These plans should be monitored by supervisors. Where banks are unable to submit a credible capital restoration plan and where the confidence in the banking

⁴Restructured loans should not be reclassified as NPLs merely because of the change or temporary suspension of principal or interest payments. Any reclassification should be based on evidence of permanent diminished ability to repay and reduced net present value of the claim.

system would be severely impaired and resolution cannot be effectively implemented, national authorities may need to consider providing public support in systemic cases (Dobler, Moretti, and Piris 2020).

Overall, a wide range of exceptional measures can help contain the negative impact of the pandemic on firms, households, and banks. Unprecedented actions are warranted by the severity and uncertainty of the crisis, but these measures could have distortionary effects if used over a prolonged period of time, undermining credit quality and resulting in a misallocation of resources (if unviable firms are kept on life support). Thus, as the impact of the crisis becomes clearer and the economic recovery takes hold, these measures should be progressively withdrawn, as discussed in detail in Kongsamut, Monaghan, and Riedweg (2021). Exit strategies could initially focus on replacing blanket support with more targeted and timebound measures. For instance, blanket freezes on debt repayments should be replaced with temporary support to distressed but viable borrowers. Exit should also be gradual with a sufficiently long transition period allowing economic agents to anticipate and adapt. The pace of exit, which depends on the specific measure considered and country circumstances, should strike the right balance between avoiding a premature lifting of the measures and mitigating the risk of long-term adverse impacts on financial stability if measures are kept in place for too long.

Resolving Legacy NPLs and Cleaning up Banks' Balance Sheets during the Recovery

SSA countries will need to implement comprehensive NPL resolution strategies when their economies stabilize. Once forbearance and other exceptional measures expire and economies recover, the impact of the crisis on banks' loan books and the related capitalization needs will become more apparent. A systemwide diagnostic can then be undertaken by the supervisors and the banks. This diagnostic, which estimates the extent of the credit quality deterioration, the factors behind the increase in NPLs, and policy priorities, is a prerequisite to comprehensive resolution strategies being undertaken. Where possible, conducting an asset quality review could also help establish a truthful picture of fundamental credit quality after the pandemic. The ability to conduct such assessments hinges on the quality of information available to supervisors. In this regard, the SSA region still faces important data quality challenges, as discussed in Chapter 1. SSA authorities should continue improving both data definitions and data availability for the purpose of strengthening financial system oversight. Access to information by NPL

segment is particularly important since legal instruments for resolution differ across types of loan.⁵

The responsibility of NPL resolution lies primarily with banks, which should have plans and adequate processes to tackle their problem loans. Although handling moderate volumes of NPLs is part of normal banking business, dealing with very large NPL portfolios is not a common core competency of banks or their managers, and it requires specialist skills. Strong asset management practices should involve separating NPL management from performing loans management; segmenting the NPL portfolio with specific strategies for each segment; adopting adequate IT systems; conducting organizational changes to achieve a clear governance structure, including clear responsibility at executive and board levels; and setting detailed operational targets aimed at increasing capacity and reducing NPLs (for example, by half) over the medium term (3–5 years).

Supervisory oversight and regulation should incentivize banks to reduce the size of their NPL portfolios. Authorities could start with forming a national committee with the mandate of undertaking a detailed assessment of the obstacles to effective NPL resolution and subsequently preparing a prioritized, coordinated, and timebound action plan (see Nelmes and others 2021). As part of this plan, supervisory measures could aim at fostering bank provisioning and more conservative valuation of collateral, introducing higher capital charges for impaired assets, and enhancing transparency and reporting requirements for NPL portfolios. Regulation, similar to that of the WAEMU, can force banks to write off long-defaulted loans (for example, after 3–5 years in default). A code of conduct to formalize borrower/lender interaction is often needed to foster negotiated solutions particularly with consumers and SMEs, while other instruments are necessary for large corporate debtors, such as guidelines for multi-creditor workouts. In some cases, supervisors could agree with banks on ambitious quantitative targets on operational metrics, such as cash collection, loan restructures, hiring special servicers and collection firms, signing joint ventures with specialist AMCs, and outright asset sales. Supervisors should challenge the credibility of banks' NPL reduction strategies, including through benchmarking against other banks, and closely monitoring performance against those targets. Finally, authorities can also take steps to ensure that the full bank resolution toolkit is in place, with solutions that are transparent, rapid, cost-effective, fair, and legally robust.

In addition, effective and prompt NPL resolution requires legal reforms to upgrade debt enforcement regimes and insolvency frameworks, which are still

⁵Separate information should be available on corporate and household NPLs, and, if possible, also SMEs, mortgage loans and consumer debt. Within broad categories, such as corporate NPLs, it is also important to distinguish between secured and unsecured loans.

inefficient in many SSA countries. Well-functioning legal, regulatory, and institutional frameworks are crucial for commercial banks to resolve NPLs, facilitate business exit and reorganization, settle commercial disputes, and collect debts. Countries experiencing high levels of NPLs should conduct a diagnostic of the legal tools that are available or necessary, with a view to tailoring solutions to their specific circumstances. Key reforms can include developing specialized commercial courts and judges; training legal professionals; and reducing legal procedure costs. Insolvency practice tends to be marginal in African countries.⁶ Thus, countries should primarily concentrate their efforts on improving debt enforcement, including in-court and out-of-court procedures, and the judicial infrastructure. The introduction of out-of-court workouts (informal negotiations framed by guidelines set by the central bank or banking associations) could help avoid the costs, slow pace, and complexity associated with legal proceedings (Baudino and Yun 2017).

In some cases, tax obstacles to NPL resolution should also be lifted. The tax regime should not penalize debt write-offs by making it excessively difficult for creditors to obtain tax relief or by imposing high tax burden on debtors.

Developing a market for distressed assets is an important but perhaps longer-term objective for SSA countries. Third-party private firms specialized in debt collection play a key role in recovering NPLs in some advanced economies, such as the United States. But they are mostly inexistent or marginal in low- and middle-income countries, although there are ongoing efforts supported by the IFC to create distressed assets in emerging economies through the DARP initiative (Cerrutti and others 2019; IFC 2020). To develop a market for distressed assets, a precondition is to facilitate the establishment and entry of these specialists. Measures could include creating a licensing and regulation framework for nonbanks that allows specialists to own and service NPLs; addressing issues with securitization, tax and debtor notification/approval rules to facilitate cost-effective disposal and transfer of NPLs; and overcoming information asymmetries between buyers of NPL and banks through the development of credit bureaus and other forms of standardization of information. State-sponsored AMC's can also help jump-start the market for distressed assets (Aiyar and others 2015). AMC's can indeed provide economies of scale by consolidating creditor claims and scarce expertise. They can also set benchmark prices and establish standard procedures for workouts and asset sales. But these companies should be carefully designed to mitigate fiscal costs and risks. In fact, public AMC's, which exist and have been used in some SSA countries, have had a mixed track record in the region, as discussed in the first part of this chapter.

⁶The main reason is the reduced availability of credit to enterprises. Insolvency is a collective debt enforcement procedure, which is essential in cases where enterprises have multiple creditors.

Preventing the Re-accumulation of New NPLs Postcrisis

Controlling NPL levels entails not only dealing with the existing NPL stock but also containing future flows. Banks will need to develop procedures to better manage their loan portfolios after the crisis. This is a long-term endeavor, which requires actions on both the bank and the customer sides.

Developing more robust bank underwriting criteria, policies, and procedures is essential to improving SSA banks' risk exposure. These criteria could include thresholds and limits around riskier lending, such as loan-to-value ratios (at the individual exposure and segment levels), leverage ratios, as well as sector, geographic, and product limits. Criteria, models, policies, and procedures need to be continuously reviewed and updated based on actual performance and adapted to economic conditions. In addition, the development of banks' early warning systems can help control future NPL flows. These systems identify individual exposures and risk segments in the portfolio for immediate attention and remediation, with the aim of preventing these loans from deteriorating into NPLs. Finally, improving the quality of debtor information (through land cadasters, asset registers, tax registers, and credit bureaus) and making these repositories electronically accessible to all credit institutions can support responsible lending and reduce credit losses. For corporate and SME loans, financial statements are the most important source of information, and there is ample work to be done to improve accounting and auditing practices in African countries.

Supervisors and regulators should support and encourage banks' efforts to improve their risk management practices. Actions should target the structural weaknesses that underly NPL accumulation. Instruments like the Basel III capital and liquidity regulations that constrain banks' ability to grant loans (for example, additional capital buffers, liquidity coverage ratio) and other macroprudential tools (loan-to-value and debt-to-income limits) may help contain NPLs. Much remains to be done in this area in SSA. The latest IMF survey of macroprudential measures shows that the SSA region has the lowest number of household sector tools per country and among the lowest number for corporate sector tools (IMF 2018b). There are some exceptions—Nigeria, Rwanda, Tanzania, and Uganda have relatively extensive macroprudential frameworks. Supervisors also need to keep up with changes in banking practices and business models in order to identify possible NPL triggers and adjust supervisory intensity and modalities accordingly. Incentives for banking sector consolidation (for example, by raising the statutory minimum level of capital per bank) could be provided where overbanking has been a problem causing loan quality to deteriorate. Finally, regulatory and supervisory changes could also be considered whenever permissive and easy-to-circumvent regulatory requirements have proven to be a driver of NPLs.

In addition to enhancing banks' asset management practices, measures should also be taken on the borrowers' side to address vulnerabilities that lead to NPLs. Maintaining a sustainable fiscal position and adopting sound public financial management practices (including in debt and cash management) can prevent the occurrence of government arrears to individuals, suppliers, and banks. For resource-rich countries, economic diversification, combined with a transparent, fair and efficient management of resource wealth (for instance, by establishing funds accumulating financial asset buffers and tailored fiscal rules), could contribute to lowering the exposure of economies to commodity price shocks. Strengthening corporate balance sheets is also important to ensure that the private sector can withstand the ups and downs of the business cycle without defaulting on its debt.

Bang for the Buck: How Much Fresh Credit to Expect from Cleaning Up Banks' Balance Sheets?

A simple model is used to assess the impact of NPL disposal strategies on credit supply in SSA.⁷ The purpose of the analysis is to quantify the space created by NPL sales and identify policy instruments that magnify the effect of NPL disposal on credit. The model, described in Annex 4 and in greater detail in Bunda, Eyraud, and Wang (How-To Note 2021/006), builds and expands on the work done by Jobst, Portier, and Sanfilippo (2015) on European banks.

The mechanism at the center of the model is the capital released following an NPL disposal operation. When NPLs are sold or written off, two main effects are at play. The first channel is the "capital requirement effect." NPLs tie up the banks' capital resources since bad assets have higher risk weights than cash. Thus, the disposal of NPLs should reduce the regulatory capital charge, freeing up resources that can subsequently be used to provide new loans. The second channel is the "capital resource effect." The NPL sale can reduce or increase the banks' capital depending on how the sale price compares to the value at which NPLs are recorded in the bank's balance sheet. If the NPL sale price is below the net book value,⁸ this "haircut" translates into a capital loss. On the other hand, if a bank sells NPLs at a price higher than what is accounted for in its balance sheet, there is a capital gain. All in all, the ability to free up capital depends on the combination of these two channels. If haircuts are small or inexistent, the first effect dominates, the capital relief is positive, and there could be a relatively strong impact on new credit. On the

⁷This section uses the term "NPL disposal" to refer to the various ways a bank can remove NPLs from its balance sheet. The model used in this section is based on sales. The write-off is considered a special case of sale where the sale price is zero.

⁸The net book value is the gross book value of the NPL minus the stock of provisions accumulated against this loan.

contrary, if there are large positive haircuts, the second effect can possibly offset the first one, which means that capital falls more than risk-weighted assets and the capital relief becomes negative. In this case, the ability of the bank to grant loans may decrease following the NPL resolution.⁹

Results should be treated as illustrative. Some caveats and limitations should be noted. First, the model simulates a specific NPL management strategy, which is the sale, but other options are available to manage NPLs, including ex ante measures—as discussed in the previous sections. Second, the model focuses on one key channel, which is the capital relief, but cleaning up banks' balance sheets can have other beneficial effects on credit, due, for instance, to higher efficiency or better profitability. Third, the analysis is conducted at the country level, which means that it is more relevant to describe systemwide strategies in response to financial crises. Finally, results are highly sensitive to calibration and model specification, although alternative parametrizations are used to assess the robustness of the findings.

The model is applied to all SSA countries and calibrated on the latest available year in the database, which is 2018.¹⁰ The baseline simulations assume that there is no haircut; thus, the effect on credit is solely caused by the decrease in capital requirements related to the disposal of bad assets. Alternative simulations account for haircut ratios, which are either set in an ad hoc way (for example, 10 percent of the value of net NPL sold) or based on key structural parameters (cost and length of resolution proceedings, share of NPLs that is collateralized, discount rates, etc.). Annex 4 gives an overview of the approach adopted to model haircut ratios.

On average, removing 1 dollar of NPLs from the banks' balance sheets in SSA is estimated to create space for about 50 cents of new loans. Depending on the risk weight on NPLs, the average effect ranges between 40 and 60 percent (Figures 21 and 22).¹¹ The multiplier's value is below 100 percent, because the capital relief is based on net NPLs, meaning NPLs net of loan loss reserves, in line with Basel rules. Net NPLs are significantly smaller than gross NPLs in SSA countries, where provisions cover on average two-thirds of NPLs. There is, nonetheless, some volatility across countries: the leverage effect increases to 80–120 percent in countries at the top of the distribution.

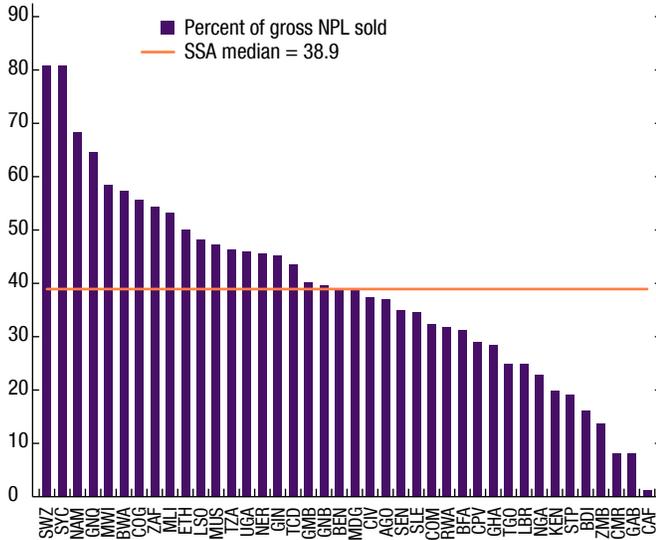
⁹A third case is the possibility of negative haircut, meaning that banks sell the NPLs at a price that is above their net book value. Then, the two effects compound each other and the capital relief is even larger than under a zero-haircut scenario.

¹⁰At the time of drafting the paper, 2018 was the last year available with comprehensive data on NPLs. The country sample for 2019 and the first half of 2020 was much smaller.

¹¹The risk weights used in the simulations for NPLs range between 100 and 150 percent, compared to 100 percent for performing loans. Baseline simulations assume no haircut. Results report median effects, but the findings do not change much when using simple averages.

Figure 21. Sub-Saharan Africa: Ratio of New Loans to Gross NPL Sold

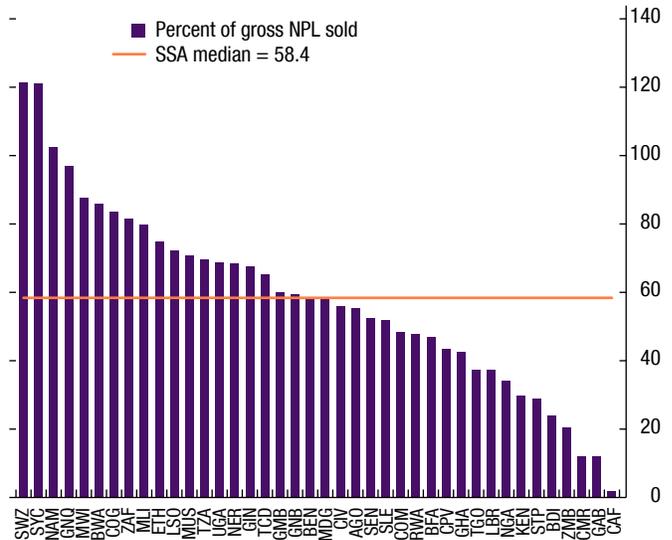
(Percent; assuming 100% risk weight on NPLs; no haircut)



Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.
 Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Figure 22. Sub-Saharan Africa: Ratio of New Loans to Gross NPL Sold

(Percent; assuming 150% risk weight on NPLs; no haircut)



Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.
 Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

On the other hand, a 10 percent haircut rate would lower the estimated effect to 5–25 percent, on average.¹²

To simulate the effect of a systemwide NPL disposal strategy, the authors consider a scenario wherein SSA countries’ NPL ratios would decline by half compared to their 2018 levels. Although a decline by half may seem quite high, it is not uncommon over a period of 2–6 years (Table 4). Since the mid-2010s, 29 episodes of large reductions in NPL ratios—defined as reductions of the ratio exceeding a third from peak to trough—have occurred in 23 SSA countries. Across these episodes, the median reduction of the ratios was close to 60 percent and the median duration was 4 years. Large continuous declines were observed in all parts of the continent, although Southeast Africa recorded more episodes.¹³

¹²The haircut rate is defined as the difference between the net book value of the loan and sale price, in percent of the net book value. The 5–25 percent interval refers to the range of median effects when the NPL risk weight varies between 100 and 150 percent.

¹³It is possible that some episodes of NPL decline reflect, in part, positive credit cycles leading to a faster increase in total assets than bad loans.

Table 4. Large Declines in NPL Ratios in SSA Countries since the 2000s
 (Percent)

Country	Years	Duration (years)	Peak	Trough	Average annual reduction (percent of peak)	Total reduction (percent)
Botswana	2007–12	5	6.1	2.6	11	57
Burkina Faso	2008–14	6	19.0	8.6	9	55
Central African Republic	2015–19	4	30.9	12.6	15	59
Côte d'Ivoire	2010–16	6	17.1	9.1	8	47
Gambia	2013–15	2	19.1	6.5	33	66
	2016–18	2	9.3	3.2	33	66
Ghana	2005–07	2	13.0	6.4	25	51
	2010–14	4	18.1	11.3	9	38
Guinea	2005–07	2	27.8	11.0	30	60
Guinea-Bissau	2005–07	2	12.8	6.6	24	48
	2014–15	1	43.4	8.4	81	81
Kenya	2006–11	5	19.4	4.4	16	77
Liberia	2006–07	1	42.4	16.4	61	61
Madagascar	2013–18	5	11.6	7.2	17	38
Malawi	2013–15	2	15.4	7.3	26	53
	2016–18	2	10.3	2.8	33	73
Mali	2016–19	3	16.7	10.4	19	38
Nigeria	2009–14	5	37.3	3.0	19	92
	2017–19	2	14.8	6.0	30	59
Rwanda	2005–12	7	29.0	5.1	12	82
Seychelles	2017–19	2	8.1	3.5	28	57
Sierra Leone	2007–12	5	31.7	14.7	11	54
	2014–18	4	33.4	12.7	16	62
South Africa	2009–17	8	5.9	2.8	7	52
South Sudan	2010–15	5	14.0	5.1	13	64
Togo	2005–11	6	33.5	10.9	11	67
Uganda	2016–18	2	10.4	3.4	33	67
Zambia	2010–14	4	14.8	6.1	15	59
Zimbabwe	2014–17	3	16.3	7.1	19	57
Median		4	16.7	6.6	19%	59%

Source: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.

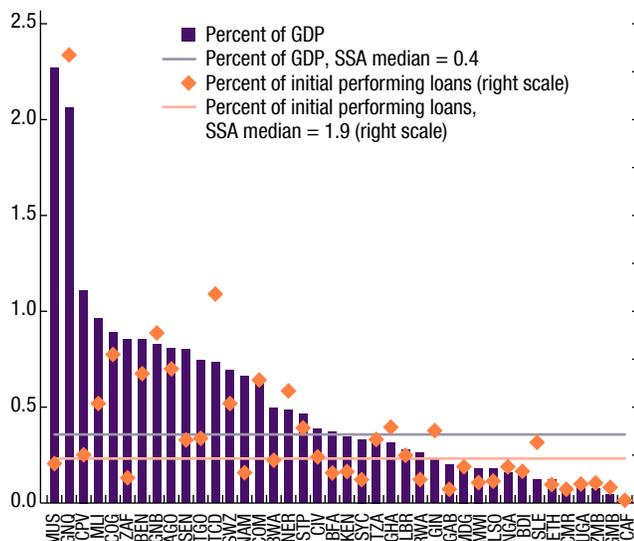
Note: First year is the peak year.

This comprehensive NPL disposal strategy would create about half a percent of GDP of new credit, on average in SSA countries. Halving aggregate NPL ratios (using 2018 as the starting point) would generate 2 to 3 percent of new loans (relative to the initial performing loan portfolio), equivalent to 0.4–0.5 percent of GDP for a median SSA country, depending on the value of NPL risk weights (Figures 23 and 24). The impact remains relatively moderate not only because NPLs are highly provisioned, as explained earlier, but also because the simple model does not capture all beneficial effects of NPL disposal on credit. There is significant dispersion across countries. Countries in the upper bracket could expect additional loans in the range of 5–10 percent of their performing loan portfolio, corresponding broadly to 0.7–1.3 percent of GDP.

Some policy measures could significantly raise the effect of NPL disposal on new credit. Three policy experiments are carried out using the template of Bunda, Eyraud, and Wang (How-To Note 2021/006). All results reported below describe the amount of *additional* new loans, coming on top of those

Figure 23. Sub-Saharan Africa: New Loans Created from Halving 2018 NPL Ratio

(Assuming 100% risk weight on NPLs; no haircut)

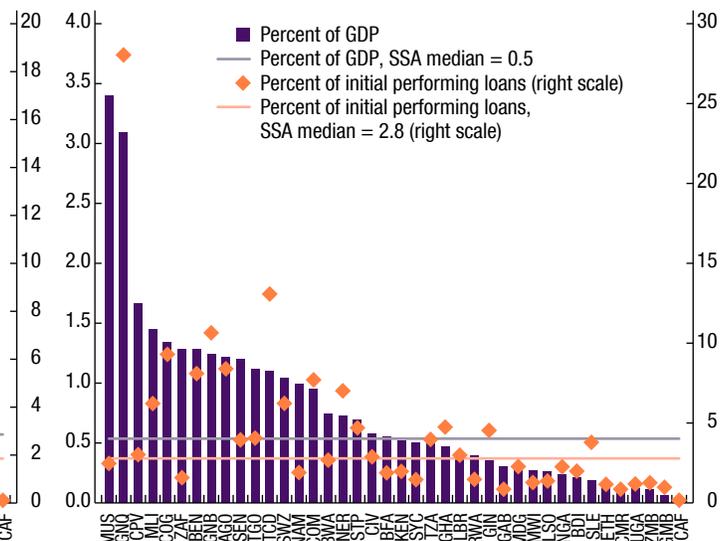


Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.

Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Figure 24. Sub-Saharan Africa: New Loans Created from Halving 2018 NPL Ratio

(Assuming 150% risk weight on NPLs; no haircut)



Sources: Country authorities; IMF, Financial Soundness Indicators; and IMF staff calculations.

Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

already generated under the baseline scenario (that is, a range of 0.4–0.5 percent of GDP)¹⁴:

- The first experiment assumes an ad hoc 10 percent negative haircut,¹⁵ meaning that the sale price of NPLs would exceed their net book value by 10 percent. This outcome could be triggered by two types of policies: (1) measures that improve the market value of NPL portfolios, such as developing a market for distressed assets, improving collateral valuation and registry, and establishing specialized NPL collection agencies that boost repayment prospects; and (2) public support provided to systemically important banks in situations wherein their liquidation could threaten financial stability.¹⁶ In this scenario, the effect on new credit would increase, on average, by 0.3 percent of GDP relative to the baseline.

¹⁴The shock continues to be a decline in countries' NPL ratios by half compared to 2018 levels.

¹⁵Haircut ratios are expressed in percent of net NPL sold.

¹⁶Use of public resources to recapitalize a private bank should be a last-resort measure, used exclusively when financial stability is threatened. It should occur only after loss absorption by the bank's owners and alongside time-bound restructuring plans that address the bank's underlying weaknesses and help restore its long-term viability (Dobler and others 2020).

- The second experiment simulates reforms of the legal system that reduce enforcement costs and duration. The model finds a stronger effect of measures that tackle costs rather than duration, probably because the time to enforce is not significantly longer in SSA than in other comparator regions.¹⁷ For instance, if enforcement costs were halved, this would generate an additional two-thirds of a percent of GDP in new loans, relative to the baseline scenario. Furthermore, aligning the costs with best performers in the region would add another quarter of a percent of GDP (that is, together a total of almost 1 percent of GDP relative to baseline).
- The third experiment conducts a more targeted NPL resolution strategy by selling as a priority legacy (loss) loans first, then turning to more recent (doubtful) loans when the stock of loss NPLs is exhausted and, if there are still NPLs to sell, cover the residual with substandard NPLs. The effect on new credit is, in principle, ambiguous. On the one hand, the higher provisioning rates on legacy loans should reduce the amount of net NPLs sold and thus the capital released by the disposal strategy. On the other hand, higher provisioning reduces the likelihood and size of positive haircuts: net NPLs are already valued at close to zero on banks' balance sheets, increasing the chance of windfall when these loans are sold.¹⁸ Overall, the model finds a positive impact on new credit, averaging up to half a percent of GDP (relative to baseline)—although results are very sensitive to the assumption made on the collateralization of these loans.¹⁹

¹⁷According to World Bank (2019), the time to enforce contracts in courts was, on average, 655 days in SSA, compared to 496 days in Europe and Central Asia, 581 days in East Asia and Pacific, 622 days in Middle East and North Africa, 768 days in Latin America and Caribbean, and 1,102 days in South Asia in 2018.

¹⁸This could even lead to negative haircuts.

¹⁹Annex 4 provides the parameter calibration used for the targeted NPL disposal strategy.

Box 1. NPL Management Strategies in Ghana and Tanzania

Ghana and Tanzania are among the SSA countries with elaborated comprehensive NPL resolution and prevention strategies. These two national strategies focus on both dealing with legacy NPLs and reducing the inflow of new NPLs. To this end, they prescribe a variety of actions that banks need to take to lower their NPLs significantly (in the case of Tanzania to a recommended threshold of 5 percent of total loans in the medium term). Many of these measures conform broadly to best international practices as laid out by the BCBS (2017) and the ECB (2017), although a few of them are somewhat less stringent in comparison.

Ghana's strategy has three pillars: strengthening and enforcing the supervisory framework, strengthening the credit infrastructure, and facilitating loan and collateral recovery. The first pillar of the 2018 strategy document includes better enforcement of the existing write-off requirements (including banks developing and disclosing their policies); implementation of regulation on single obligor limits and related party transactions to promote prudent underwriting practices as well as application of directives on good governance and risk management; and the requirement for banks to establish dedicated loan recovery units. The second pillar consists of changes to acts aimed at improving loan recovery and reporting to the credit bureau as well as developing a market for distressed debt, including, possibly, private AMCs. The third pillar aims at facilitating debt workouts and enforcement of creditor rights through insolvency and debt enforcement reforms (as well as a more efficient court system). These measures were supplemented by a consolidation of failed banks into a bridge bank following an asset quality review, also helping to reduce NPLs (Verkoren 2019).

Tanzania's strategy is similarly broad-based but its orientation differs somewhat from Ghana's. The 2018 circular also requires banks to establish loan workout units, engage in prudent credit risk management, write off loss loans more quickly, and make better use of the credit bureau, but it puts special emphasis on developing NPL management policies, including NPL monitoring, debt recovery, resolution of syndicated NPLs, and an early warning policy (BoT 2018). Consistent with the stated 5 percent target for the NPL ratio, the strategy also requires banks to establish key performance indicators for recovery and to submit progress reports on the implementation of the strategy. Another focus is on providing regulatory relief concerning NPL classification, notably doubling the number of times a loan can be restructured, permitting renewal of overdue overdraft facilities while capitalizing unpaid interest, and granting quick reclassification of restructured loans to performing status, which deviates from best international practice (World Bank 2018a). However, this strategy is still lacking more structural reforms that would facilitate NPL reduction, like the insolvency reform or modalities of accelerated NPL workout, among others (IMF 2018a).

Box 1. NPL Management Strategies in Ghana and Tanzania (*continued*)

Both strategies would benefit from including some specific measures, and their success in reducing NPLs has been uneven. Ghana's strategy could profit from the closer monitoring features in Tanzania's strategy, while the latter could focus more on measures to deal with legacy NPLs. In Ghana, the system's NPL ratio fell from above 20 percent in mid-2018 to 13.9 percent at the end of 2019, with additional write-offs accounting for about 3 percentage points according to the Bank of Ghana (2018). However, in Tanzania, the NPL ratio has declined only moderately in the short term, from 11½ percent in March 2018 to 9.6 percent at the end of 2019, as banks have struggled with containing NPLs. This illustrates that while such strategies should be a cornerstone of NPL resolution, they are not a panacea, because other external factors continue to affect credit risk and increase incoming NPLs—notwithstanding the authorities' and banks' best intentions.

Box 2. Selected Measures Taken by SSA Countries during the COVID-19 Crisis

This box describes some measures taken in 2020 and in the first quarter of 2021 to address the worsening in credit quality—both from the lenders’ and borrowers’ perspectives. The information is collected from the IMF COVID-19 policy tracker, which has a broader focus and lists all the measures taken in response to the crisis.¹

Moratorium on debt repayments for exposed firms or individuals (Angola, Cabo Verde, Lesotho, Malawi, Mauritius, Namibia, São Tomé, The Seychelles, WAEMU). For instance, the Central Bank of the West African Economic and Monetary Union (BCEAO) set up a framework inviting banks and microfinance institutions to accommodate demands from customers with COVID-related repayment difficulties to postpone for a three-month renewable period debt service falling due. In Mauritius, commercial banks provided a six-month moratorium on capital repayment for existing commercial loans of households and economic operators affected by the pandemic, with the central bank subsidizing the interest payments for low-income households.

Encouragement of banks to restructure loans, especially for small and medium-sized enterprises (Congo DRC, Malawi, Mozambique, Nigeria, Tanzania, Uganda, Zambia).² For instance, in Zambia, financial service providers were encouraged to renegotiate the terms of credit facilities with borrowers affected by the pandemic. In Mozambique, the central bank encouraged prudent loan restructuring by introducing a foreign currency credit line for institutions participating in foreign exchange markets for a period of nine months and waiving the constitution of additional provisions by credit institutions and financial companies in cases of renegotiations of the terms and conditions of loans for affected clients.

Easing of prudential norms on capital (Botswana, Congo DRC, Guinea, Lesotho, São Tomé and Príncipe, South Africa, WAEMU). For example, the WAEMU authorities extended by one year the five-year period initiated in 2018 for the transition to Basel II/III bank prudential requirements. In Congo DRC, the central bank postponed the adoption of new minimum capital requirements. In Botswana, the adoption of the 25 percent single borrower limit and concentration risk limit was postponed. In South Africa, a temporary relief on bank capital requirements was put in place, while the liquidity coverage ratio was reduced from 100 to 80 percent to provide additional liquidity and counter financial system risks.

¹The tracker is available at <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.

²Restructuring of loans involves a negotiation and a modification of contractual terms (typically, to extend maturities), whereas a moratorium is a public decision that affects the repayment of debts (which does not involve a change in terms beyond the flexibility provided under the moratorium).

Box 2. Selected Measures Taken by SSA Countries during the COVID-19 Crisis (continued)

Use of capital buffers (CEMAC, Ghana, Namibia). In the CEMAC, for instance, banks were informed that they could use their capital conservation buffers of 2.5 percent to absorb pandemic-related losses. In Ghana, the central bank lowered the capital conservation buffer from 3 to 1.5 percent. In Namibia, it was reduced to 0 percent for at least 24 months to support banking institutions to supply credit.

Easing of supervisory guidelines on handling credit impairments, by revising or suspending provisioning and classification rules for specific loan categories (Ghana, Guinea, Mozambique). For example, in Guinea, the central bank announced flexibility to banks regarding loan classification and provisioning for loans that were performing before the pandemic struck but were restructured due to the pandemic. In Mozambique, the constitution of additional provisions by credit institutions and financial companies was waived in cases of renegotiations of the terms and conditions of the loans, before their maturity, for affected clients.

Suspension of negative credit information. For instance, in Kenya this suspension affected borrowers whose loans became nonperforming after April 1, 2020, for a six-month period.

Issue guidance on dividend and cash bonuses distribution to ensure bank capital preservation (CEMAC, South Africa, Uganda, WAEMU). In South Africa, for instance, banks were directed to defer dividend payments and bonuses for at least 90 days to ensure capital adequacy. CEMAC banks were prohibited from distributing dividends for the three-year period 2019–21. In December 2020, the BCEAO instructed WAEMU banks to refrain from distributing dividends with a view to strengthening their capital buffers in anticipation of the impact of the crisis on asset quality.

Credit support by encouraging banks to continue to lend to the private sector (through public guarantees on bank loans or the provision of term funding to banks that provide credit to businesses) and by allowing public institutions such as central banks or development banks to lend directly to the private sector (Angola, CEMAC, DRC, Kenya, Lesotho, Mauritius, Niger, Uganda, WAEMU, Zambia). In Lesotho, for example, the authorities have expanded their credit guarantee facilities during the crisis. In DRC, the Central Bank has created a new collateralized long-term funding facility for commercial banks to support the provision of new credit for import and production of food and other basic goods. The Development Bank of Mauritius provided Rs10.2 billion (2.3 percent of GDP) in credit to distressed enterprises and cooperatives.

Conclusion

High NPLs have been a lingering problem for banks in SSA, exceeding 10 percent on average since the mid-2010s. Historically, NPL ratios have been particularly elevated in commodity producers and fragile states. The structurally high level of NPLs in the region is explained by various factors, including macroeconomic volatility, a legacy of problem loans that are not written off, government arrears, and poor credit risk management practices.

The COVID-19 crisis is likely to aggravate the NPL problem even further. Although the effect may not be immediately noticeable due to regulatory forbearance and other exceptional support measures, the quality of banks' portfolios is bound to deteriorate during the crisis because many borrowers have faced a collapse in their income. This paper estimates that the 2020 growth collapse could raise the aggregate NPL ratio in SSA by up to one-third in the medium term, holding other factors constant.

High system NPLs could jeopardize the economic recovery. Empirical evidence shows that NPLs have a negative impact on credit volumes and loan pricing, as banks tighten their credit supply and raise lending rates to offset credit losses, while overleveraged borrowers tend to postpone their new credit applications. These dynamics can trigger a vicious cycle, wherein an adverse economic shock lowers banks' asset quality, eroding their profitability, and, in turn, hampering their capacity to provide new loans and kick-start the economy.

Dealing with the deterioration of credit quality during the COVID-19 crisis entails a sequential strategy focused on managing, resolving, and preventing problem loans. In the short term, the priority should be for banks to deal with the diminished capacity of customers to repay, including by recognizing possible losses and restructuring loans. Supervisors should use the flexibility allowed by bank regulatory and accounting frameworks to accommodate the

likely decline in banks' capital. SSA authorities should also continue improving both data definitions and data availability to strengthen financial system oversight. When the recovery firmly takes hold, it will become possible to assess the full impact of the crisis on banks' portfolios. Temporary measures will need to be gradually unwound and SSA countries should embark on comprehensive NPL resolution strategies. Experience of SSA countries with NPL resolution measures has been mixed, partly because of legal and financial constraints, inefficiencies in debt collection of AMCs, regulatory capture, and political economy reasons.

Expectations should be realistic about the NPL reduction targets and their payoff in terms of new credit. The task of cleaning up banks' balance sheets is a difficult one. Although episodes of rapid reductions have occurred in the past, NPL ratios in SSA are generally highly persistent and slow moving. Large reductions have usually been achieved over several years in the context of accelerated write-offs, NPL sales to public AMCs, and other forms of bank restructuring operations. Simulations suggest that removing 1 dollar of NPLs from the banks' balance sheets in the region would create on average space for about 50 cents of new loans. Some policy measures can improve the leverage effect of NPL resolution strategies, such as targeted approaches focusing on legacy NPLs, reforms of the legal system to reduce the cost and duration of enforcing contracts, or better-designed rules for bank restructuring and resolution.

Annex 1. Empirical Analyses of the Effects of NPLs

Macro-econometric Approach

To assess the feedback effects of NPLs on the real economy, the authors use a panel VAR approach (as Love and Zicchino 2006), treating all variables as endogenous, while allowing unobserved heterogeneity across countries. Impulse response functions are computed to assess the dynamic interactions between NPLs and other macro-financial variables. The sample covers annual data from 2000 to 2019 for a sample of 41 SSA countries (including both commodity exporters and noncommunity exporters).¹ The panel is unbalanced due to the unavailability of long time series of NPLs in some countries.

The following model is estimated:

$$Y_{i,t} = u_i + \theta(L)Y_{i,t} + \vartheta(L)X_{i,t} + \varepsilon_{i,t} \quad (\text{A1.1})$$

in which $Y_{i,t}$ is a vector of four endogenous variables including the growth of real GDP in country (alternatively non-oil GDP growth), the inflation rate, the NPL ratio in the entire banking system of a given country, and the ratio of credit to the private sector to GDP. $X_{i,t}$ is a vector of exogenous variables including the GDP growth rate in advanced economies and the growth rate in the export deflator for each country as SSA countries are assumed to be price takers. u_i captures country-specific effects and $\varepsilon_{i,t}$ the

¹The NPL data used in this analysis rely mostly on the IMF Financial Soundness Indicators database, supplemented with additional data from country authorities, Article IV reports, and World Bank FinStats 2019. Other macroeconomic variables come from the IMF *World Economic Outlook* and IMF Monetary and Financial Statistics.

shocks. Given the length of the sample and the low frequency of the data, the number of lags is restricted to 1. To identify the shocks, the authors use a Cholesky decomposition wherein the variables ordered first are considered more exogenous. It is assumed that the GDP growth and inflation affect NPLs contemporaneously, while NPLs affect credit to GDP ratio only with a lag.

Results show that rising NPLs cripple economic performance for several years following a shock to NPLs (Annex Figure 1.1). This shock is found to have a significant large impact on credit to the private sector, with a one standard deviation (corresponding to a 4.1 percentage point) increase in the NPL ratio leading to a 1.1 percentage point drop in the credit-to-GDP ratio after four years.² GDP growth is also affected, declining by 0.5–0.6 percentage point on average in the two years following the shock, all else being equal. Variance decomposition analysis reveal that the NPL shocks explain 30 percent of credit-to-GDP ratio variance, but only 5 percent of GDP growth variance.

Bank-level Econometric Approach

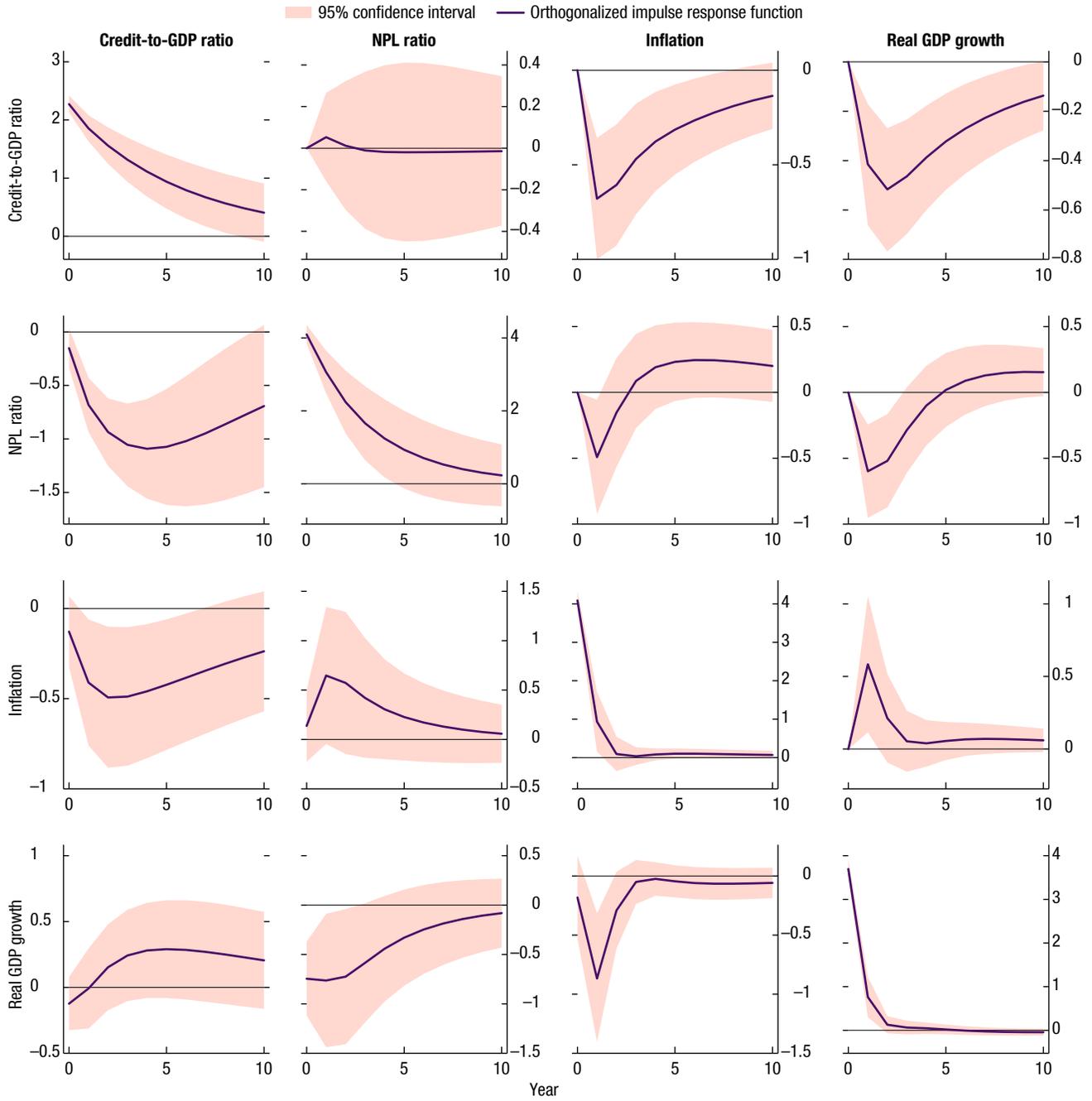
A complementary empirical analysis explores the channels through which NPLs affect bank lending using bank-level data from Fitch Connect. The sample covers 617 banks from 43 sub-Saharan countries during 1994–2018. The following regression equation is estimated:

$$Dep. variable_{i,j,t} = \alpha + \beta NPLs_{i,j,t-1} + \theta X'_{i,j,t-1} + v_i + \varphi_t + \delta_j + \varepsilon_{i,t} \quad (A1.2)$$

in which $Dep. variable_{i,j,t}$ represents each of the dependent variables considered in Annex Table 1.1 for country i , bank j , in time t . $NPLs_{i,j,t-1}$ denotes the ratio of nonperforming loans over gross loans. The dependent variables cover various indicators of bank's performance, including loans growth, risk-weighted assets growth, banks' capital growth, capital adequacy ratio, operating profit over equity, total net income growth, non-interest expenses over assets, net interest income on loans over gross loans, and provisions to loans. These data are from the Fitch Connect database. $X'_{i,j,t-1}$ is a vector of other controls, and v_i , φ_t and δ_j are country, time and bank fixed effects, respectively.

²An alternative specification is also estimated using the change in the NPL ratio and the growth of credit to the private sector. Following a 1 percentage point shock to the NPL ratio, credit growth drops by about 1 percentage point after two years.

Annex Figure 1.1. Feedback from NPLs to the Economy
(Response to one standard deviation shock on each variable)



Source: IMF staff estimates.

The control variables include the traditional determinants of bank lending such as real economic growth, terms of trade, real effective exchange rate (REER), inflation, the fiscal balance as a share of GDP, the quality of institutions captured by the index of law and order, and bank deposits. All these variables come from the IMF World Economic Outlook, World Bank's Worldwide Governance Indicators, and Fitch Connect databases. To estimate equation (A1.2), the authors use the system GMM of Blundell and Bond (1998) to deal with issues of endogeneity stemming from possible reverse causality, the omission of variables and measurement errors. In the system GMM estimator, both level and first-difference versions of equation (A1.2) are used in a system that allows the use of lagged differences and lagged levels of the explanatory variables as instruments.

The results are shown in Annex Table 1.1. The coefficients associated with NPLs are strongly significant in all columns. The results highlight that NPLs are negatively associated with loan growth (column 1), suggesting that the higher the level of NPLs ratio, the lower banks' lending. Across all specifications, the analysis shows that a 1 percentage point increase in the NPL ratio at the bank level would decrease the loan stock by 3 percent after one year. Looking at the different transmission channels in columns 2–9, the results show that NPLs are positively associated with risk-weighted assets, banks' provisions and non-interest expense, while being negatively correlated with the capital adequacy ratio, banks' capital, operating profit (over equity), total net income, and interest income on loans. These findings imply that an increase in NPLs ratio could result in lower bank capital, profit, and income and higher risk-weighted assets, provisions, and administrative costs (proxied by non-interest expenses).

Annex Table 1.1 Impact of NPLs on Lending and Transmission Channels (GMM)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variables	Loans growth	Risk-weighted assets growth	Capital growth	Capital adequacy ratio	Operating profit (ROE)	Net income growth	Net interest income on loans over gross loans	Non-interest expense over assets	Provisions to loans
Dependent var., $t-1$	0.0001*** (0.000)	0.0830*** (0.003)	-0.0980** (0.039)	0.4056*** (0.037)	0.0162*** (0.006)	0.0705* (0.038)	0.8263*** (0.015)	0.4862*** (0.022)	0.6758*** (0.027)
NPLs, $t-1$	-3.3392*** (0.232)	6.9682*** (1.606)	-6.5246** (2.948)	-0.1154** (0.046)	-0.5520*** (0.094)	-2.5846*** (0.314)	-1.4160*** (0.187)	0.0350*** (0.005)	0.0723*** (0.022)
REER, log, $t-1$	0.1952*** (0.070)	3.5310*** (0.327)	-0.0176 (0.575)	0.0293** (0.012)	-0.1545*** (0.034)	-0.1033 (0.078)	-0.1396*** (0.051)	0.0083*** (0.003)	-0.0115* (0.006)
Terms of trade, $t-1$	0.1482*** (0.030)	7.8005*** (0.538)	4.3687*** (0.678)	-0.0131 (0.014)	0.1862*** (0.019)	-0.0235 (0.035)	0.2451*** (0.043)	0.0015 (0.001)	-0.0003 (0.003)
Inflation, $t-1$	-0.7323*** (0.048)	-1.3375 (0.825)	-23.4408*** (6.243)	0.4824*** (0.048)	-0.0762*** (0.026)	-0.1437*** (0.048)	0.0653 (0.092)	0.0086*** (0.002)	0.0009 (0.004)
GDP growth, $t-1$	0.9359*** (0.197)	-19.7282*** (1.544)	-2.8229 (2.010)	0.1805*** (0.037)	0.2650** (0.111)	0.3246* (0.192)	0.7161*** (0.139)	-0.005 (0.008)	-0.0012 (0.026)
Bank deposits, log, $t-1$	10.8390*** (1.982)	-275.1579*** (18.292)	-43.9900** (21.273)	1.7236*** (0.496)	1.9573 (1.216)	34.8190*** (3.544)	10.8410*** (2.356)	-0.0651 (0.138)	0.6519** (0.265)
Law and order index, $t-1$	8.2901*** (1.232)	-103.3578*** (23.243)	-62.5300*** (13.718)	0.6075** (0.254)	2.0715 (1.609)	-0.61 (2.350)	-4.6212 (3.550)	-0.2916*** (0.083)	-0.0675 (0.114)
Fiscal deficit (% of GDP), $t-1$	0.2866 (0.204)	14.8512*** (1.808)	-6.4891** (2.855)	-0.4529*** (0.065)	-0.1898* (0.106)	-0.1409 (0.269)	0.3164*** (0.112)	-0.0207*** (0.007)	-0.0313** (0.014)
Observations	2,580	1,104	1,276	1,233	2,490	2,593	1,854	2,440	2,370
No. of banks	354	219	235	234	352	354	311	351	333
No. of countries	28	23	23	22	28	28	27	28	28
AR(2)	0.88	0.09	0.15	0.36	0.51	0.54	0.34	0.46	0.77
Hansen test	0.32	0.01	1	0.07	0.11	0.23	0.11	0.51	0.17
No. of instruments	114	127	135	130	130	113	117	113	112
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: IMF staff estimates.

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Annex 2. Empirical Analyses of the Determinants of NPLs

Macro-econometric Approach

Following the literature on the determinants of NPL, for example Espinoza and Prasad (2010) and Klein (2013), the authors use a dynamic panel regression, which includes the lag of the NPL ratio to account for persistence along with a set of explanatory variables identified in similar studies. Estimations use the system GMM developed by Arellano and Bover (1995) and Blundell and Bond (1998) to address dynamic panel bias arising from the large autoregressive component in small time-dimension samples and endogeneity. The authors rely on the collapse approach to reduce the number of instruments and use the Hansen test to detect overidentification. The baseline specification uses annual data, covering 41 SSA countries during 2001–18. Robustness checks are done through fixed effects estimations and regressions of changes instead of levels.

The model is specified as follows:

$$NPL_{i,t} = u_i + \theta(L)NPL_{i,t} + \vartheta(L)Y_{i,t} + \varepsilon_{i,t} \quad (\text{A2.1})$$

in which $NPL_{i,t}$ refers to the level of the NPL ratio in the entire banking system, $Y_{i,t}$ is a vector of explanatory variables including the growth of real GDP, inflation, first difference of interest rates (lending rate), growth rate of the export deflator, growth of credit to the private sector and change in public debt to GDP ratio.¹ u_i captures country-specific effects and $\varepsilon_{i,t}$ is a disturbance vector. The authors have estimated different specifications with different lags and retained those that are consistently significant and robust.

¹An extended specification also includes the interest rate spread as an endogenous variable.

Annex Table 2.1 Determinants of Nonperforming Loans

Dependent variable Estimation method Sample period	(1)	(2)	(3)
	Nonperforming loans to total loans		
	Sys GMM 2000–18	Sys GMM 2010–18	Fixed effects 2000–18
L. Nonperforming loans to total loans	0.57525*** (0.0000)	0.68165*** (0.0000)	0.57728*** (0.0000)
Real GDP growth	-0.19315** (0.0301)	-0.19427* (0.0557)	-0.19324** (0.0221)
D. Average lending rate	0.23227** (0.0297)	0.23812 (0.1075)	0.19726* (0.0685)
LD. Average lending rate	0.00934 (0.9246)	0.05675 (0.6053)	0.00726 (0.9480)
Export deflator, percent change	-0.05927** (0.0301)	-0.07018** (0.0130)	-0.04696** (0.0197)
L. Inflation	0.06141 (0.3668)	0.12312 (0.1975)	0.02568 (0.7077)
L. Credit, percent change	0.02554* (0.0525)	0.00225 (0.9494)	0.02219 (0.2482)
LD. Public debt, percent of GDP	0.03273 (0.1371)	0.05447* (0.0561)	0.00274 (0.8080)
D. Public debt, percent of GDP			-0.02563 (0.2232)
Constant	6.12973*** (0.0000)	4.38456** (0.0189)	6.08369*** (0.0000)
No. of observations	450	310	450
R-squared	-	-	0.457
No. of instruments	24	24	-
AR(1), <i>p</i> -value	0.01177	0.00732	-
AR(2), <i>p</i> -value	0.36590	0.33597	-
Hansen test, <i>p</i> -value	0.74814	0.41217	-

Source: IMF staff estimates.

Note: *p*-values in parentheses, * *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01; L = one lag; D = first difference; LD = $\chi_{t-1} - \chi_{t-2}$.

Results highlight the countercyclical nature of NPLs as well as the important effect of lending behavior toward credit risk (Annex Table 2.1):

- A 1 percentage point slowdown in economic growth and a 1 percentage point decline in export deflator growth instantaneously reduces the borrowers' capacity to service debt increasing the NPL ratio (by 0.2 percentage point and 0.06 percentage point, respectively). The coefficient of inflation has the right positive sign, but is not statistically significant.
- A tightening of lending conditions through a 100 basis point increase in lending rates (for example, following a monetary policy shock) has an immediate effect on the NPL ratio (+0.2 percentage point). The effect is relatively large and could reflect that a large part of credit to the private sector is at variable interest rate. Rapid credit growth, possibly reflecting banks' risk-taking behavior, is also found to be associated with a rise in NPLs with a one-year lag.

- An increase in the public debt to GDP ratio leads to higher NPLs but the effect is not significant over the entire period. However, when the sample is shortened to 2010–18, the sovereign-bank nexus becomes stronger and statistically significant while the coefficient associated with lending rates and credit becoming nonsignificant. This could suggest that more depth of financial markets and greater recourse to non-concessional debt and domestic markets by the public sector in the past decade have strengthened the sovereign-financial nexus. Another explanation is that the crowding-out effect has become stronger recently, since banks' excess liquidity observed in some SSA countries has diminished in the wake of the mid-2010s commodity price shock.
- Finally, results point to a high persistence of NPLs with first-order autocorrelation of about 0.6, suggesting that a shock to NPLs takes a long time to dissipate.

Bank-level Econometric Approach

A second and complementary empirical analysis is conducted to investigate the role of bank-specific characteristics in explaining NPLs. This analysis uses financial statements data from Fitch database for 617 banks from 43 countries in SSA during 1994–2018 for which NPL data are available. The authors use a dynamic panel regression, which includes the lag of the NPL ratio to account for persistence along with a set of bank-specific indicators that have been highlighted in the empirical literature as important drivers of credit risk. Estimations use the system GMM developed by Arellano and Bover (1995) and Blundell and Bond (1998) to address the endogeneity resulting from reserve causality, measurement errors, and omission of variables. The model is specified as follows:

$$NPL_{i,j,t} = \alpha + \beta NPL_{i,j,t-1} + \theta X'_{i,j,t-1} + \varepsilon_{i,t} \quad (\text{A2.2})$$

in which $NPL_{i,j,t}$ is the nonperforming loans over gross loans ratio for country i , bank j , at time t . The dependent variables $X'_{i,j,t-1}$ cover various indicators and characteristics that can be grouped into four categories: (1) *efficiency and profitability*: operating return on average assets (ROA); return on equity (ROE); net interest margin (NIM) (calculated as the ratio of gross interest and dividend income minus total interest expenses to total assets); and bank competition measured by the Lerner index (Brei, Jacolin, and Noah 2018) adjusted for profit and cost efficiencies (Koetter and others 2012);²

²The basic index is a measure of a bank's market power and defined as the markup ratio (which is the difference between price and marginal cost, expressed in percent of price). It should be zero in perfect competition, but will increase in less competitive banking markets. The square is included to detect any nonlinear

(2) *capitalization level*: total regulatory capital ratio; (3) *bank lending policy and risk behavior*: effective interest rate on loans (measured as the interest income on loans divided by the average gross loans); loan-to-deposit ratio; and the degree of income diversification (measured by non-interest income as a proportion of total assets); (4) *variables related to the broader financial system*: degree of financial development (measured with the IMF Financial Development Index developed by Svirydzenka (2016)); supervisory quality (measured by the World Bank Worldwide Governance Indicators, Regulatory Quality Index); occurrence of banking crises (from Laeven and Valencia 2018); and bank ownership dummies (development bank, domestic banks). The instrumental variables include traditional determinants of bank lending such as real economic growth, inflation, public debt to GDP ratio, and, depending on the specified model, other exogenous variables. Year fixed effects are also controlled for. In the system GMM estimator, both level and first-difference versions of equation (A2.2) are used in a system that allows the use of lagged differences and lagged levels of the explanatory variables as instruments.

Results confirm the role of bank-level determinants in driving NPLs in SSA, in particular, those related to the existence of buffers, efficiency, profitability, moral hazard, and regulatory environment (Annex Table 2.2).

- *Capital buffers*. More capitalized banks, as measured with the CAR, tend to have lower NPL ratios (a 1 percentage point increase in CAR is associated with about 0.1–0.2 percentage points decline in banks' NPL ratio).
- *Efficiency and profitability*. Inefficient and less profitable banks, as measured with various profitability indicators, such as the ratio of ROA, the ratio of ROE, or the NIM, tend to have higher NPL ratios, perhaps because they are less well managed and unable to properly screen risks. The coefficient on ROE is significant and negative, as expected. To a lower extent, ROA is significant (column 2), also suggesting that less profitable banks may have higher NPL ratios. NIM is significant in two out of seven models, the positive coefficients suggesting that higher margins are associated with lower NPLs (a 1 percentage point increase in NIM is associated with about 0.4 percentage point decline in the NPL ratio). Income diversification is also significant, with a 1 percentage point increase in the non-interest income to gross revenue ratio being associated with 0.4–0.9 percentage point decline in the NPL ratio. Finally, bank competition (as captured by the estimated adjusted Lerner-Kotter index, which enters with a positive and significant coefficient) tends to improve the quality of the portfolio,

and U-shaped effects; that is, beyond a certain threshold, efficiency gains of more bank competition may be outweighed by financial instability effects.

Annex Table 2.2 Drivers of Nonperforming Loans to Total Loans

Dependent: Nonperforming loans to total loans								
Estimation method:								
System GMM	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonperforming loans to total loans, $t-1$	0.7808*** (0.0689)	0.7730*** (0.0661)	0.7938*** (0.0762)	0.8090*** (0.0579)	0.7739*** (0.0728)	0.7744*** (0.0761)	0.7525*** (0.0700)	0.7907*** (0.0774)
Total regulatory capital ratio, $t-1$	-0.1374*** (0.0446)	-0.1123*** (0.0410)	-0.1239*** (0.0446)	-0.1637** (0.0707)	-0.1596*** (0.0487)	-0.1800*** (0.0566)	-0.1961*** (0.0551)	-0.1652*** (0.0520)
Adj competition index, $t-1$	7.1353** (2.9913)	5.6189* (3.2478)	1.0226 (4.1036)	7.0261** (2.8363)	6.0155* (3.6222)	8.0769** (3.7453)	8.4891** (3.5353)	5.9243 (3.8340)
Adj. competition index ² , $t-1$	-6.0705* (3.5202)	-6.3268** (3.2164)	-4.6636 (4.9297)	-2.6737 (3.5989)	-5.3975 (3.4173)	-4.0635 (3.7985)	-3.8074 (3.3547)	-5.8645* (3.4059)
ROE, $t-1$	-0.0067*** (0.0025)	-0.0070*** (0.0023)	-0.0065*** (0.0021)	-0.0081* (0.0041)	-0.0079*** (0.0024)	-0.0092*** (0.0031)	-0.0091*** (0.0029)	-0.0083*** (0.0028)
Loans/deposits & ST funding, $t-1$	0.0065*** (0.0017)	0.0061*** (0.0015)	0.0061*** (0.0015)		0.0061*** (0.0016)		0.0067*** (0.0012)	0.0063*** (0.0012)
Income diversification, $t-1$	-0.2903** (0.1391)	-0.2821* (0.1523)	-0.5892* (0.3367)	-0.5326* (0.3094)	-0.2579 (0.1671)	-0.9291*** (0.2800)	-0.2669** (0.1293)	-0.7866** (0.3761)
Net interest margin, $t-1$	0.1945 (0.1915)	0.1520 (0.1487)		0.2756 (0.2248)	0.2084 (0.1931)	0.4943** (0.2410)	-0.0185 (0.1994)	0.4065* (0.2390)
Regulatory quality, $t-1$	-0.8458** (0.3865)	-0.8609** (0.4358)	-1.3599* (0.7976)		-0.3269 (0.6453)	-1.9751*** (0.5735)	-0.2007 (0.5497)	-1.6968** (0.7873)
ROA, $t-1$		-0.1913* (0.1079)						
Effective interest rate on loans, $t-1$			0.1886** (0.0943)					
Financial development index, $t-1$				-5.4459** (2.5788)				
Domestic bank, $t-1$					2.7021* (1.5235)			
Development bank, $t-1$						16.6425** (7.3182)		
WAEMU							-2.7691* (1.4158)	
CEMAC							8.5931*** (2.7464)	
SACU							-2.9798*** (0.9294)	
EAC							-0.1660 (0.5107)	
Banking crisis, t								4.0819*** (1.3408)
Banking crisis, $t-1$								-5.2937*** (1.7363)
Constant	2.5171 (2.0974)	3.6409* (2.0984)	3.9147 (3.2397)	4.2766* (2.4752)	1.9355 (2.2667)	2.6912 (2.7442)	4.7149* (2.5468)	3.8324 (2.3334)
No. of observations	1525	1525	1395	1473	1525	1525	1525	1470
No. of groups	283	283	275	272	283	283	283	274
No. of instruments	166	199	125	133	166	133	170	159
AR(2), p -value	0.42	0.38	0.34	0.72	0.42	0.32	0.46	0.48
Hansen test, p -value	0.75	0.91	0.80	0.31	0.79	0.51	0.64	0.73

Source: IMF staff estimates.

Notes: Robust standard errors; p -values in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Instrumental variables: years 1996–2018; L1.inflation_avg; L1.Debt_to_GDP; L1.realGDP_growth (all specifications); and L1.Regulatory_quality (all except model (4)); L1.Financial_Dev_Index (model (4)); region (model (7)); Banking_crisis, t and $t-1$ (model (8)). CEMAC = Central African Economic and Monetary Community; EAC = East African Community; SACU = Southern Africa Customs Union; WAEMU = West African Economic and Monetary Union.

in part because of better risk management practices. The positive effects are partly offset by adverse effects of excessive competition (lower profit margins, increased risk incentives), in line with Brei, Jacolin, and Noah (2018)—as captured by the significant negative coefficient on the square index. Effective lending rates enter with a positive and significant sign (column 3), suggesting that a loosening of lending conditions is associated with lower NPL ratios in bank balance sheets.

- *Bank lending policy and moral hazard.* Banks with higher effective interest rate on loans have higher NPL ratios, probably because of difficulties for customers to repay more expensive loans and also because of adverse selection effects. In addition, highly leveraged banks, as captured by their loan-to-deposit ratio, have higher NPLs, perhaps because they tend to loosen risk screening. The occurrence of banking crises is associated with an increase in NPL ratios in the same year, and a reduction in the following year (column 8).
- *Governance.* Bank NPLs seem positively linked to the degree of financial development and the quality of supervisory mechanisms (columns 1–4). The bank's ownership structure also matters in the SSA, with domestic and development banks having higher NPL ratios, all else equal (columns 5 and 6).
- Results point to a high *persistence* of NPLs, with first-order autocorrelation of about 0.8.

Annex 3. NPL Measures Adopted in SSA Countries

This annex reviews selected measures taken in SSA countries over the past decade or so, based on a review of IMF staff reports and other sources. The options presented below are not mutually exclusive.

Preventive Measures

- *Banks' credit risk assessment.* This measure prevents new NPLs by improving the credit risk assessment of banks and providing better information on borrowers via credit and collateral registries. For instance, Kenya has three credit reference bureaus, all regulated by the Central Bank of Kenya, with the oldest one licensed in the 1990s. According to the World Bank, private credit bureaus covered only 11 percent of the adult population in SSA countries in 2019, broadly similar to the coverage rate of the Middle East and North Africa region (12 percent), but below East Asia and Pacific (16 percent), South Asia (21 percent), Europe and Central Asia (44 percent), and Latin America and Caribbean (49 percent).¹ Moreover, as discussed in Sy and others (2019), banks across Africa have implemented a wide range of credit underwriting innovations in recent years, the most common being machine learning to establish borrowers' credit worthiness from several sources of data (for example, Branch and Tala in East Africa, Lulalend in South Africa). Banks have also entered partnership agreements with telecom operators to gather additional data on their customers' credit-worthiness and improve their credit underwriting.
- *Enhanced bank supervision.* Stricter off- and on-site bank supervision aims at improving transparency and adequacy of loan classification and provi-

¹All country groups refer to International Development Association and International Bank for Reconstruction and Development countries, as defined by the World Bank World Development Indicators.

sioning, thus assuring proper and timely recognition of the deterioration in credit quality. For instance, the 2015 FSAP assessment of the financial sector in South Africa noted significant progress between 2010 and 2015 (IMF 2015). Over this period, the Bank Supervision Department increased supervisory staff by almost 50 percent, and it now includes a corps of risk specialists to complement the analysis teams and additional on-site inspectors, thereby enabling the Department to have more direct interaction with the banks and place less reliance on external auditors.

- *Regulatory and macroprudential tools.* Instruments like the Basel III capital and liquidity regulations that constrain banks' ability to grant loans (for example, additional capital buffers, leverage ratio, liquidity coverage ratio) and other macroprudential tools (loan-to-value, and debt-to-income limits) may help mitigate NPL surges. For instance, the eight WAEMU countries are transitioning toward Basel II/III standards by 2023. Since 2017, banks and financial institutions in Tanzania are required to maintain a capital conservation buffer of 2.5 percent of risk-weighted assets and off-balance sheet exposures, as part of the move to Basel III. However, the most sophisticated tools have not yet been applied widely in SSA. The latest IMF survey of macroprudential measures (IMF 2018b) shows that the SSA region has the lowest number of household sector tools per country and among the lowest number for corporate sector tools. There are some exceptions, such as Nigeria, Rwanda, Tanzania, and Uganda, which have relatively advanced macroprudential frameworks.

Remedial Actions and Mechanisms

- *Portfolio monitoring and recovery.* The bank may first follow up with the distressed borrower on an in-house basis and turn over later to a specialized collection agency. For instance, faced with rising NPLs, Standard Bank of South Africa improved risk performance and enhanced collection strategies across the portfolio (Standard Bank 2018). In an attempt to reduce the high rate of defaults of borrowers, enhance loan recovery by financial institutions, and generally improve creditor confidence, the Central Bank of Nigeria released in July 2020 Guidelines on Global Standing Instruction, which authorize financial institutions in Nigeria to recover borrowers' debt from other existing accounts through a direct set-off from deposits/investments held in those financial institutions.
- *Loan relief.* This type of measure is a standard practice when borrowers face temporary difficulties (due to natural disasters, economywide, or sectoral shocks, etc.). The objective is to ease the payment burden of a debtor in difficulty via loan restructuring, moratoriums, as well as other forms of out-of-court arrangements. For instance, in Nigeria, about 40 percent of the loans to businesses and individuals were restructured by June 2020 in

the context of the COVID-19 crisis. In Kenya, almost half of commercial banks' loan books were restructured between the beginning of the pandemic and November 2020.

- *Clearance of government arrears to banks' clients.* This is not a commonly used measure around the globe but has been prevalent in SSA. Repayment to government contractors or suppliers allows these agents to clear their overdue loans with banks. In 2018, the Gabonese authorities put in place a repayment plan to clear domestic arrears to creditors (especially small and medium enterprises) under the Club de Libreville arrangement. Other examples can be found in Chapter 3 of IMF (2019c).
- *Accelerated write-off of defaulted loans.* New regulation can force banks to swiftly write off long-defaulted loans (for example, after three years in default). Banks often shy away from writing off legacy NPLs due to the lack of proper provisioning. But, even if they are well-provisioned, NPLs may be kept on banks' balance sheets, to avoid creating the impression that debtors are let "off the hook." Other reasons include a slow and unpredictable judiciary and lack of a proper insolvency regime. The write-off of long-defaulted loans has an immediate impact on the gross NPL ratio. For instance, in Malawi, beginning in 2017, a new regulation has forced banks to step up loan recovery and write off NPLs from their balance sheets. The NPL ratio declined from 15.7 percent at the end of 2017 to 3.6 percent in September 2019, largely due to write-offs and loan recovery as well as overall growth in bank lending.
- *More efficient legal enforcement mechanisms.* Weak and lengthy debt enforcement procedures, as well as weak creditors' rights hamper banks' ability to resolve NPLs. Some SSA countries have taken various steps to reinforce their judicial system (World Bank 2018b). First, to facilitate the enforcement of credit claims, measures in recent years have included expanding court automation by introducing electronic payment or by publishing judgement decisions (Rwanda, Zambia); adopting electronic filing (Namibia); introducing or expanding specialized commercial courts (Ethiopia); and establishing collateral registries (Zambia). Second, some countries have also made progress to facilitate corporate and personal insolvency. This can accelerate and improve the value of claims that banks try to recover from businesses and individuals. Measures have included introducing or upgrading insolvency procedures (Cabo Verde, Liberia, Malawi) and regulating the insolvency administrator profession to facilitate rapid rehabilitation or liquidation (Liberia, Malawi). A pan-African insolvency regime is also contemplated for the effective operation of the African Continental Free Trade Area.
- *Sale of NPLs to an asset management company (AMC).* AMCs buy bad assets from problem banks and are tasked with managing the NPL portfolio,

including loan recovery and liquidation of the collateral. In most cases AMC are government-owned. AMCs in SSA have been found in Angola, Cameroon, Guinea-Bissau, Nigeria, and Zimbabwe. For instance, in 2016, Angola set up Recredit, a state-owned AMC, to acquire distressed assets from commercial banks. Recredit was initially set up as a conduit for the disposal of about one-third of system NPLs, which were on the balance sheet of one systemic state-owned bank. Its mandate was expanded in late 2016 to acquire impaired but recoverable loans from the entire banking system to free up lending capacity. At the end of 2016, Recredit purchased NPLs from one bank associated with six large borrowers for a total amount of Kz 480 billion or about 3 percent of GDP.

- *Securitization through a special purpose vehicle (SPV).* This can facilitate banks' offloading by turning NPLs into more marketable, liquid, and financially attractive instruments, which helps widen the pool of potential buyers. Faced with mounting banking sector difficulties, in 2010, the central bank of Nigeria set up a market-financed SPV meant to acquire NPLs of Nigerian banks and replenish the capital of some weak banks, thus boosting confidence and the liquidity of the banking sector. The SPV acquired NPLs and gave, in exchange, government securities to the banks. Afterward, NPLs were pooled and tranching and thereafter sold on the market by the SPV. Following the transfer and securitization of NPLs, the country NPL ratio dropped from 38 percent at end-2010 to below 5 percent at the end of 2012.
- *Bank restructuring and resolution.* Failing banks can be propped up and reorganized or be closed, sold, and transferred to a receiving agency. This may reduce the NPL level, if loans are written down or otherwise removed in the process. For instance, the Bank of Ghana engaged in a large cleaning up of the banking sector in 2017–19, which resulted in several mergers and exits. In the meantime, the NPL ratio declined from 22 percent at the end of 2017 to 18 percent at the end of June 2019. Another example is provided by Togo in the second half of the 2000s. In the 2000s, following a domestic crisis, the Togolese banking system became nearly completely insolvent, with elevated levels of NPLs in several state-owned and private banks. Over the following years, the government proceeded to securitize the bulk of NPLs by replacing them with bonds eligible for refinancing at the BCEAO (Central Bank of the West African Economic and Monetary), to be recovered by a newly-established state-owned entity. Only one large bank underwent restructuring at the time. As a result, the NPL ratio declined from 33.5 percent in 2005 to 10.9 in 2011 (IMF 2019b).

Annex 4. Assessing the Impact of NPL Disposal on New Lending

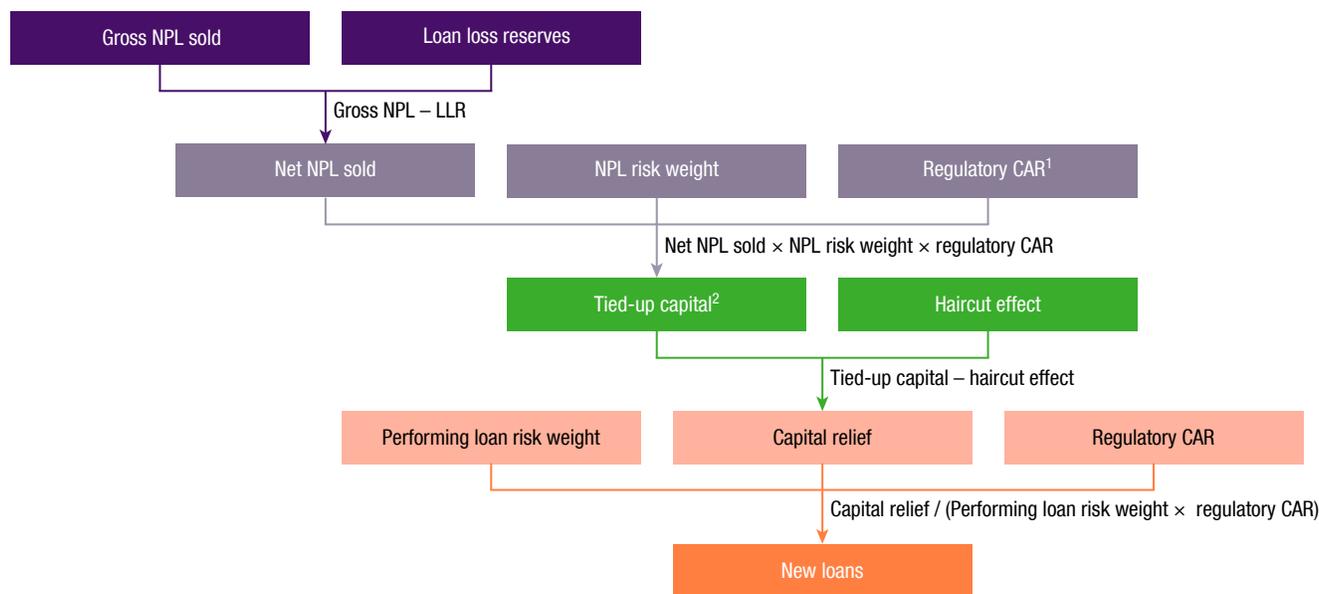
A simple framework is used in Chapter 5 to assess the space for new loans created by NPL disposal strategies. The template is described in more detail in Bunda, Eyraud, and Wang (How-To Note 2021/006). It is based on annual country-level data, although some simulations also use bank-level data—in particular, to get the split between different categories of NPLs (loss, doubtful, and substandard).

The computation of the capital relief and new credit entails three main steps (Annex Figure 4.1). In the first stage, the template computes the capital tied up by NPLs. The bank is indeed required to put capital aside in line with the regulatory capital requirement and the risk-weighted assets of NPLs, which can be higher than for cash and performing loans. In line with the standardized method under the Basel II/III regulatory framework, the capital requirement ratio applies to net NPLs, that is gross NPLs minus loan loss reserves (LLR). In the second stage, the capital relief is computed as the tied-up capital minus a possible haircut, which is defined as the difference between the net book value of the NPL and its sale price. The haircut can be set in an ad hoc way (for instance, at 10 percent of the net book value) or computed from a quantitative loan valuation model (see below). In the third step, the amount of new loans is estimated as a function of the capital relief, the regulatory capital requirement on performing loans and the risk weight of new loans.

The haircut can be computed with a simple valuation model, which quantifies the effect of key structural parameters. The haircut is proxied by the amount of “unprovisioned” losses on the loan, that is, the amount of future losses beyond what the bank has already provisioned for.¹ Total projected

¹From the bank’s perspective, the total projected loss on the loan (in net present value at the time of the sale) can be approximated by the shortfall of the sale price relative to the gross book value of the loan. Therefore, the haircut (which is defined as the difference between the net book value and the sale price) is approximately equal to the difference between total losses and cumulated provisions.

Annex Figure 4.1. Main Steps of the Calculations



Sources: Bunda and others (How-To Note 2021/006); and IMF staff.

Note: CAR = capital adequacy ratio; LLR = loan loss reserves.

¹Statutory capital requirement ratio (percent).

²Tied-up capital = capital that the bank needs to set aside (proportional to the risk-weighted assets).

losses are then estimated, at the time of the sale, under two alternative recovery routes: a consensual approach with probability (p), and legal enforcement with seizure of the collateral with probability ($1-p$), assuming that the uncollateralized portion of the loan is fully lost. A fraction of the loan α can be recovered during the resolution process under the consensual route. The net present value of the collateral reflects the discount rate (r , which is the expected return expected by the entity owning the NPL), the average remaining duration of the resolution process in years (t), and the rate of decay of the collateral asset (δ). The costs under the legal proceeding route include management/servicing fees and legal fees; they are denoted, respectively, m_cost and l_cost , expressed in percent of the gross loan value, and defined in bulk at the initial period. Finally, the loan loss reserves llr (expressed in percent of NPL unit) are deducted from the total projected loss to get the “unprovisioned” loan loss. Therefore, the formula, expressed per unit of gross NPL is:

$$\begin{aligned}
 &\text{Unprovisioned loan loss} \\
 &= p(1 - \alpha) + (1 - p)(1/(1 + r)^t - collat * (1 - \delta)^t/(1 + r)^t + m_cost + l_cost) - llr = \text{Haircut}
 \end{aligned}$$

The baseline calibration of the model is tailored to the situation of African countries. More details and justifications on calibration are provided in Bunda, Eyraud, and Wang (How-To Note 2021/006). For baseline scenarios, the following parameters are used:

- It is assumed that the NPL ratio is halved relative to its 2018 value, which is the latest year with available data at the time of drafting this paper.
- The regulatory CAR is set at 12 percent for all countries.
- NPLs are weighted at either 100 percent or 150 percent in the risk-weighted assets. This is consistent with prudential standards and SSA practice. Performing loans are weighted at 100 percent.
- Provisioning rates are estimated at the country level using the ratio of total provisions to total NPLs from the FSI database.
- The discount rate is set at 10 percent, which is the assumed expected return for the owner of the NPL.
- 80 percent of the NPLs are assumed to be collateralized ($\text{collat} = 0.8$); that is 20 percent of the principal value is unsecured ($\text{uncollat} = 0.2$). The collateral value decays over time at rate $\delta = 0.05$ per year.
- Management fees m_cost are set at 5 percent, while legal costs l_cost are proxied by the costs of enforcing a contract through courts taken from the 2018 *World Bank Doing Business* report.²
- The time to resolution is proxied by the time to enforce contracts sourced from the 2018 *World Bank Doing Business* report. For robustness, simulations are also conducted with time to resolve insolvency from the same report, although insolvency procedures are not common in the SSA region.
- Given that legal frameworks are often weak and inefficient in Africa, the authors assume that $p = 0.67$, meaning that the NPL recovery takes consensual forms in two-thirds of the cases, and legal proceedings in one-third.
- $\alpha = 0.35$ is the net present value that can be recovered through the consensual route. Bunda, Eyraud, and Wang (How-To Note 2021/006) provide a justification for this calibration, based on assumptions by types of loans (viable, marginally viable, and nonviable).

For the policy experiment with targeted NPL disposal strategy, the parameters must be adjusted to account for the fact that the sale focuses mostly on loss NPLs. In this particular experiment, banks are assumed to sell their

²The *World Bank Doing Business* indicator on “enforcing contracts” is used as a proxy in the absence of better alternative. It is important to note that this indicator does not refer to the recovery of bank loans, but a hypothetical case where a commercial debt is recovered through the court system. Bank loans may have different procedures available, and most importantly, the indicator does not refer to the recovery of secured loans.

oldest NPLs first—starting with loss NPLs and, after exhausting the loss NPL portfolio, moving to doubtful ones before finishing, if necessary, with substandard loans. To account for the specific characteristics of loss NPLs, the parameters have to be modified:

- The provisioning rate is computed as weighted average of the provisioning rates for the various buckets of NPLs using data from the World Bank's Bank Regulation and Supervision Survey database.³ The weights for the different NPL categories are taken from the Fitch Connect bank-level database.
- Management fees are increased by 1 percentage point to 6 percent.
- The probability of consensual route is lowered from 67 percent to 50 percent to account for the higher likelihood of legal proceedings in the case of loss NPLs.
- α , the net present value that can be recovered through consensual approach, is lowered from 35 percent to zero percent given the low quality of the loans and the fact that they have remained unperforming for a long time.
- The discount rate is lowered to 5 percent given lower expected returns on legacy NPLs.
- The collateralized portion of the loan is reduced from 80 percent to 60 percent because of a selection bias effect (one of the reasons why legacy NPLs stay on banks' balance sheets for so long is because they are under-collateralized, reducing incentives for banks to try to resolve them). Results are very sensitive to this assumption. If the collateralized part declines to around 40 percent, all the gains from the targeted disposal strategy would disappear, on average.

³The database is available at: <https://www.worldbank.org/en/research/brief/BRSS>.

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