SCIENTIFIC CULTURE

www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 12, No. 2.1, (2026), pp. 628-649
Open Access. Online & Print

DOI: 10.5281/zenodo.122.12656

DISSECTING SOVEREIGN DEFAULT IN AFRICA: THE ROLE OF CREDITOR COMPOSITION AND REPAYMENT HIERARCHIES

Ichraf Ben Flah[1*], Aram Belhadj[2], Slim Souissi[3]

[1]Accounting Department, College of Business, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyad, Saudi Arabia; itbenflah@imamu.edu.sa
[2]Faculty of Economic Sciences and Management of Nabeul, University of Carthage, ENVIE Research Laboratory, Nabeul, Tunisia. University of Orléans, France, aram.belhadj@gmail.com; aram.belhadj@fsegn.ucar.tn
[3]Université de Caen Normandie, NIMEC, Caen Cedex, France, slim.souissi@unicaen.fr

Received: 29/11/2025
Accepted: 09/12/2025

Corresponding Author: Ichraf Ben Flah (itbenflah@imamu.edu.sa)

ABSTRACT

A sovereign government generally engages with multiple creditors and retains the discretion to decide both the timing of debt repayments and the prioritization among its various creditors. This paper investigates the determinants of sovereign default in a comprehensive sample of 52 African countries over the period 1970 to 2019. Drawing on a newly constructed dataset that distinguishes sovereign default events by creditor type, we find that defaults are not uniform across creditor groups. Rather, the occurrence and nature of sovereign default are closely linked to the specific economic and financial conditions prevailing at the time, as well as to the type of creditor involved. In particular, the likelihood and context of default differ significantly depending on whether the obligations are owed to banks, bondholders, International Financial Institutions (IFIs), or other sovereign governments. Our empirical analysis further reveals that bilateral creditors are more likely to be treated as subordinate in repayment hierarchies, especially when compared to multilateral institutions and holders of sovereign bonds. These findings underscore the importance of disaggregating creditor categories when assessing sovereign risk and highlight the need for more nuanced debt management strategies, particularly within the African context where the creditor landscape is diverse and evolving.

KEYWORDS: Sovereign Default, Africa, Creditor Group, Creditor Seniority

1. INTRODUCTION

1. Debt Default in Africa: Some Stylized Facts

The covid-19 pandemic has fueled doubts about the risks of increasing sovereign debts and their sustainability all over the world. In Africa, these risks remain amplified since many countries of the continent suffered from weak macroeconomic policy frameworks and lower economic diversification that caused a huge rise in debt after the pandemic shock. And worse still, they suffer from engaging growth-enhancing reforms to broaden their exports, reinforce their fiscal discipline, and deepen their financial systems (Chervalier, 2011). The continent is already home to most low-income countries, the bulk of which are classified as Heavily Indebted Poor Countries (HIPC).

In recent years, a growing body of research restarted tackling important questions pertaining to sovereign default debt issues, such as: why do some countries have differential debt tolerance? How are debts sustainable for some countries and not for others? How do debt levels affect the scope for countercyclical policy in recessions and financial crises? How costly are sovereign defaults in different countries? Is restructuring debts a good idea and, if yes, how shall it be implemented?

While recent literature has expanded to examine the political, economic, financial, and external drivers of sovereign debt crises—along with the global consequences of widespread defaults—the body of work focused specifically on African countries remains limited . Yet, in the African context, at least four distinct dimensions make the investigation into the determinants of sovereign defaults particularly urgent .

Firstly, African countries account for the highest proportion of external debt in default owed to official creditors, as opposed to private sector lenders (Oberdabernig, 2018). Notably, whereas the volume of sovereign debt in default has declined in many other developing regions since 2012, it has continued to rise significantly across African countries (see Figure 1, upper panel). In recent years, governments across the continent have struggled to reverse this upward trend in defaults—an outcome that contrasts with the trajectory observed in other developing economies.

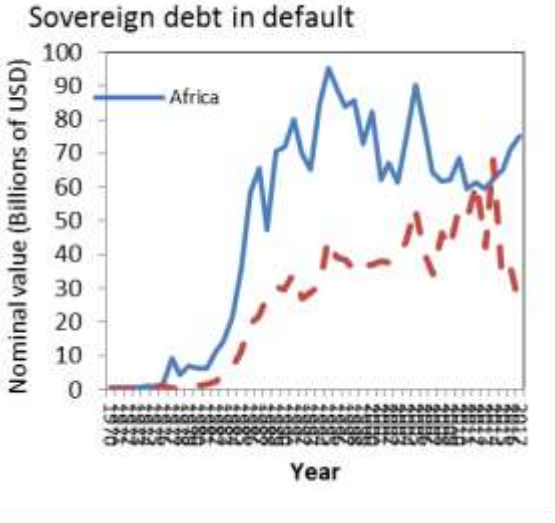
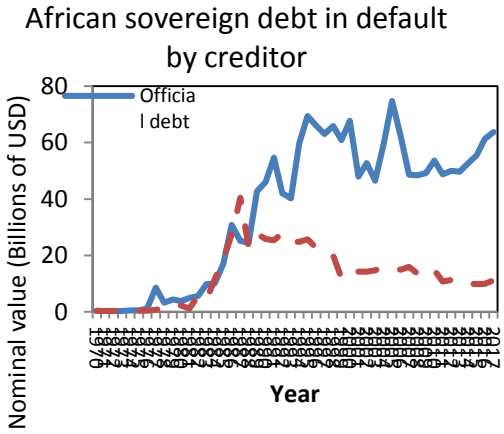


Figure 1: Sovereign Debt in Default.

See, among others, Manasse and Roubini (2009), Reinhart and Rogoff (2011), Furceri and Zdzienicka (2012), De Grauwe and Li (2013), Catao and Milesi-Ferretti (2014), Jeanneret and Souissi (2016), Reinhart et al (2016), and Amstad et al. (2020). Abdilahi and Katsushi (2015), Oberdabernig (2018), Mpapalika and Malikane (2019).



Secondly, the African region has long been affected by conflicts and political instability, with many countries continuing to rely heavily on external debt to finance growth and development. Even in states that have transitioned from authoritarian rule to democratic governance, a resurgence of sovereign debt levels and an associated rise in default risk have been observed. This suggests that, irrespective of political regime type, policymakers across the continent consistently face the challenge of managing sovereign risk by addressing its underlying drivers.

Thirdly, existing empirical research on sovereign debt defaults has largely centered on high-income countries with stable macroeconomic frameworks or

on emerging economies with relatively advanced capital markets. In contrast, most African countries remain heavily dependent on commodity exports and possess underdeveloped financial systems. This structural context underlines the importance of identifying the key determinants of sovereign default in Africa to better equip these countries to build economic resilience and mitigate the adverse effects of external shocks, even in the absence of sophisticated financial buffers.

Finally, since the late 1980s, while defaults on commercial debt have shown some signs of stabilization, defaults on official debt have involved considerably larger volumes and have proven far more complex to manage (see Figure 1, lower panel). In essence, African countries have encountered greater challenges in servicing official debt obligations compared to their commercial counterparts. These dynamics highlight the critical need to empirically investigate the region-specific factors contributing to debt accumulation and default risk in one of the world's most economically vulnerable regions.

An important yet underexplored question in the context of African sovereign debt is whether sovereign risk differs depending on the type of creditor. The existing literature rarely distinguishes, in the case of African countries, between defaults on official debt and those on commercial debt. This distinction is particularly critical given that the maturity periods, loan amounts, and borrowing conditions differ significantly across creditor groups—such as international financial institutions (IFIs), the Paris Club, commercial banks, and bond market investors. Furthermore, the implications of defaulting vary depending on the creditor type, potentially leading to divergent economic and political consequences for the debtor country. As such, investigating the key determinants of sovereign default in Africa—while accounting for the composition of creditor groups—represents a significant empirical challenge. Nonetheless, doing so could provide valuable insights into creditor selection strategies, a matter of strategic importance for African policymakers.

In addition, a substantial portion of the existing literature fails to adequately identify the specific drivers that lead African governments either to fall into recurrent defaults or to successfully emerge from debt crises. Addressing this gap is essential for enhancing the ability of African governments to design more effective, forward-looking policies aimed at reducing sovereign default risk.

The remainder of this paper is structured as follows. Section 2 provides a literature review of the sovereign default and the principal determinants of sovereign default in Africa, drawing on both empirical studies and historical case evidence. Section 3 presents a descriptive overview, including the classification of debt types, data sources, and the key features of sovereign defaults in African countries. Section 4 reports the main empirical findings along with a robustness analysis. Finally, Section 5 concludes the study and offers policy recommendations.

2. LITERATURE REVIEW

A broad and well-established theoretical literature seeks to explain the conditions under which sovereigns choose to default or repay their debts. Four main strands of explanation can be identified within this literature.

First, one strand emphasizes international reputation as a determinant of sovereign repayment behavior. In this framework, the fear of reputational damage can outweigh even the debtor's repayment capacity. Eaton and Gersovitz (1981) argue that sovereign borrowing is primarily motivated by consumption smoothing and concerns over reputation. They suggest that legal enforceability or external threats are largely irrelevant. According to their model, sovereigns borrow in bad times and repay in good times; however, default may still occur during favorable periods if the consumption-smoothing mechanism no longer holds.

Extending this line of reasoning, Tomz (2007) explores how creditors' observed reactions update beliefs about a sovereign's likelihood of default, thereby shaping the debtor's reputation. He also highlights the role of domestic politics in shifting the priorities of governments, and thus their perceived commitment to debt repayment. In a similar vein, Alfaro and Kanczuk (2005) construct a model in which some equilibria imply delayed default, particularly when governments seek to preserve their reputation. They show that a "good" government may endure a recession to credibly signal its type and improve future borrowing conditions.

Second, another theoretical strand emphasizes direct punishment as a deterrent to default. Bulow and Rogoff (1988, 1989) argue that sovereigns repay not merely out of goodwill, but because failing to do so triggers substantial penalties. These can include legal restrictions on trade, seizure of assets, or other forms of economic retaliation.

Supporting this view, Mitchener and Weidenmier (2010) demonstrate that extreme sanctions, or

"supersanctions," were not rare and often proved effective in disciplining defaulters. Other studies find evidence of indirect punishments following default, such as reductions in foreign direct investment (Fuentes and Saravia, 2010), disruptions to trade (Rose, 2005), and deteriorating trade credit terms (Borensztein and Panizza, 2009).

Third, a growing body of work focuses on governance and institutional quality as key determinants of debt repayment. This literature, rooted in the work of North and Weingast (1989) and Schultz and Weingast (2003), links repeated defaults to weak institutional frameworks.

Archer et al. (2007) demonstrate that countries imposing constitutional constraints on executive authority tend to benefit from enhanced debt credibility, as evidenced by lower bond spreads and higher credit ratings. Similarly, Scholl (2017) models the dynamic interplay between sovereign default risk and political turnover, while Hatchondo and Martinez (2010) establish a relationship between political instability and financial crises.

Fourth, Recent theoretical work highlights the role of economic and financial spillovers in sovereign default. In globally integrated markets, distress in one country can propagate to others. Elliott et al. (2014) show how financial interdependence can generate "cascades of failures," while Cole et al. (2016) demonstrate how "information cascades" in bond markets amplify sovereign risk across countries.

Empirical studies generally classify default determinants into macroeconomic, institutional, and external factors. Macroeconomic vulnerabilities—including fragile policy frameworks in FCAS economies (Megersa, 2019), inefficient public spending (IDA, 2019), hyperinflation (Reinhart and Rogoff, 2011), and declining reserves (Ouyang and Rajan, 2014)—increase default likelihood. Slowdowns and external imbalances have triggered defaults in Madagascar, Niger, Ethiopia, and Burundi (Panizza et al., 2009; Swamy, 2015), while trade deficits and currency depreciation, particularly in CFA franc countries, have worsened debt distress (Gu, 2021; Bayale, 2020). Balance-ofpayments pressures—exacerbated during COVID-19 (Reinhart et al., 2016)—and high external debt stocks in Congo, Sudan, and Libya remain strong predictors of sovereign crises (Kohlscheen, 2010; Manasse and Roubini, 2009; Catao and Milesi-Ferretti, 2014). Serial defaulters like Zimbabwe exhibit persistently elevated default risks.

Institutional weaknesses—corruption, limited accountability, and governance failures—further heighten debt distress (Reinhart and Rogoff, 2009; Caldes Montes et al., 2016). Corruption is positively associated with rising public debt in Africa (Owusu-Nantwi and Owusu-Nantwi, 2023), while lack of transparency, such as in Mozambique (2013–2014) and Togo (2016), increases the probability of default (IDA, 2019). Weak debt management and legal systems contribute to debt accumulation (Abotsi, 2023), and rising debt-service burdens in Angola, Sudan, Tunisia, and Egypt have rendered debt unsustainable. Fragile financial systems and banking crises often precede sovereign defaults (Reinhart and Rogoff, 2011; Bayale, 2020). Low-income countries also face fiscal pressures from weak healthcare systems (Fosu et al., 2025).

External shocks play a critical role. Global crises have repeatedly tightened financing conditions, including during 2008–2009 (Hernández and Gamarra, 2011). Monetary tightening by the Fed and ECB raised repayment difficulties in Angola, Mozambique, and Chad, and rising real rates threaten sustainability (Ncube and Brixiova, 2015). Commodity price volatility and capital-flow reversals remain key predictors of default (Sturzenegger and Zettelmeyer, 2006; Hamann et al., 2018). Remittances can mitigate default risk by strengthening liquidity buffers (Chami et al., 2005).

Despite extensive evidence on these determinants, no study differentiates default behaviour across creditor groups—commercial (bank loans, bonds) versus official (bilateral, multilateral). This paper addresses this gap by combining creditor-specific information with the sovereign default database of Beers and de Leon-Manlagnit (2019).

3. DESCRIPTIVE ANALYSIS

The main purpose of this study is to identify the determinants of sovereign defaults in Africa through an in-depth investigation of default events observed over the period 1970-2019 for 52 African countries. To this end, we start by defining the types of sovereign debt, present our database and study the African countries' sovereign default characteristics.

3.1. Sovereign Debt and Creditor Groups

In this paper, we focus on sovereign debt which is a debt issued or guaranteed by the public sector of sovereign countries. Such debt may be owed to an official agency acting on behalf of another government, in which case it is referred to as bilateral debt. Moreover, the debt could also be owed to official agencies governed by several countries that provide loan financing. Those agencies include IFIs such as the World Bank, regional development banks

and other intergovernmental agencies such as the African Development Bank (AfDB). In this case, the debt is called Multilateral Debt. These two types of sovereign debts (Bilateral and multilateral) make up the Official Debt.

Sovereign debt could also be a Bank Loan that is owed to banks that provide loans and other financial services. It could also be Sovereign Bonds which is a debt issued or guaranteed by public debtors on financial markets. Finally, it could be owed to trade creditors and suppliers. These three types of sovereign debts make up the Commercial Debt.

In this paper, we focus on sovereign debt and separate defaults on Official, Bilateral and Multilateral Debt, on the one hand. On the other hand, we distinguish between defaults on commercial Bank Loans and Bonds. The next section presents our database.

3.2. Data And Sources

The analysis of the determinants of sovereign defaults is based on comprehensive macroeconomic and financial data for 52African countries over the period 1970-2019. The default indicators we use are taken from the Bank of Canada (BoC)- Bank of England (BoE) and the Sovereign Default Database (see Beers and de Leon-Manlagnit, 2019).

Table 1 reports statistics of sovereign defaults to be found in our database. It presents the African countries' sovereign debt, the number of country-years in default, and the amount of debt in default by creditor group. Statistics on defaults are calculated for the African countries (columns with odd numbers) and the other developing countries (columns with even numbers). Our database shows that, among the developing nations, 60.8% of the sovereign debt is issued by African governments and more than 62.9% of sovereign debt crises happened within the African countries.

Table 1 List of Sovereign defaults.

	Official debt				Commercial debt			
	Bilateral debt		Multilateral debt		Bank loans		Bonds	
	Africa	Other developing countries	Africa	Other developing countries	Africa	Other developing countries	Africa	Other developing countries
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sovereign debt	40 650 811	13 553 480	28 009 624	14 000 481	8 770 207	1 624 079	10 464 344	1 114 693
Defaulted debt	695 020	467 238	193 742	13 578	355 779	273 483	71 003	16 367
Average defaulted debt	1 675	3 245	877	116	1 567	1 455	1 092	167
Number of country-years in default	415	144	221	117	227	188	65	98
Defaulted debt (% Debt)	1,71	3,45	0,69	0,10	4,06	16,84	0,68	1,47
Defaulted debt (% GDP)	1,69	2,00	0,47	0,06	0,87	1,17	0,17	0,07

Notes: The table provides statistics on sovereign defaults. The table breaks down the analysis of defaults by creditors (Official vs Commercial). The analysis covers 52 African countries and 47 other developing countries over the period 1970-2018. Values of debt in default are from The BoC-BoE Sovereign Default Database. A sovereign can default on one debt category at once or on several categories simultaneously. Values are expressed in millions of USD.

Table 1 reports statistics of sovereign defaults to be found in our database. In order to estimate the logit models, we collect macroeconomic and financial data on a yearly basis from the World Bank's World Development Indicators and Lane and Milesi-Ferretti (2018)'s Database. We have collected sovereign ratings published by Fitch Ratings and added a market-based variable by using the MSCI World Index Return taken from Bloomberg. Table 2 summarizes the list of variables that we have used in this study, provides definitions, and presents their descriptive statistics. The table also reports the number of observations, means, standard deviations, minimum and maximum of the predictors. It shows that the average GDP growth rate (YoY) for all African countries is 4.0% throughout the sample period while the average inflation rate is close to 12.7%. Moreover, the average sovereign debt liability is below but close to 70.0% of GDP and the amount of remittances received is very disparate and ranges

from 4.0% of GDP to 88.0%.

Table 2 Summary statistics of the variables.

Variable	Definition	Obs	Mean	Std	Min	Max
Macroeconomic balances/imbalances						
GDP per capita	GDP per capita (10,000 USD)	2355	0.133	0.201	0.009	1.128
5 Year Real GDP Growth	5 Year Real GDP Growth	2267	0.040	0.034	-0.056	0.160
Real GDP growth	GDP growth (annual %)	2274	0.040	0.055	-0.136	0.233
Inflation rate	Inflation, consumer prices (annual %)	1921	0.127	0.241	-0.062	1.879
Debt liabilities	Debt liabilities (stock, % of GDP)	2165	0.448	0.418	0.000	2.321
Public consumption expenditure	General government final consumption expenditure (% of GDP)	2030	0.154	0.065	0.019	0.397
Institutional fragility						
Bank credit to private	Domestic credit to private sector by banks (% of GDP)	2204	0.181	0.150	0.015	0.704
Healthcare system	Life expectancy at birth, total (years)	2582	0.542	0.086	0.369	0.746
External factors						
International trade	The sum of exports and imports of goods and services (% of GDP)	2122	0.675	0.324	0.176	1.736
External balance	External balance on goods and services (% of GDP)	2122	-0.097	0.164	-0.737	0.325
International reserves	Total reserves (% of total external debt)	1752	0.564	1.681	0.001	13.782
Exchange rate return	Exchange rate return	2506	0.083	0.227	-0.198	1.484
Remittances received	Personal remittances, received (% of GDP)	1694	0.043	0.108	0.000	0.876
MSCI World Index Return	MSCI World Index Return	2646	0.077	0.169	-0.421	0.391
Other factor						
Technology infrastructure	Mobile cellular subscriptions (per 100 people)	2376	0.195	0.357	0.000	1.475
Default history	Ln of 1 + the number of years since the last default (10y)	2646	0.598	1.155	0.000	4.078
Rating	Long-term foreign currency rating	197	0.841	0.247	0.000	1.400

Notes: The table provide the definitions and descriptive statistics of the variables considered in this study. The data set consists of 52 African economies over the period 1970-2018. The frequency of the data is yearly. All values are winsorized at 1%, and variables are annualized when applicable.

3.3. The African Countries' Sovereign Default Characteristics

We will now analyze the characteristics of the African countries in default and break down/sort the analysis by creditor group.

3.3.1. Debt Burden and Default Frequency

Our database shows that the sovereign debt burden accounts for 45.5% of the GDP for an average African country throughout the period under study, down from about 70% in the 90s and the early 2000s. Comparatively, the average level of debt in the other developing countries was 37.1% over the study period and 50.6% in the 90s and the early 2000s.This significant decrease in sovereign indebtedness is mostly due to the Multilateral Debt Relief Initiative (MDRI) adopted in June 2005.

Sovereign defaults in Africa appear to be periodic every decade (see Figure 1). Indeed, in 1976, sovereign defaults significantly increased after the energy crisis. In 1983, we experienced exponential growth in sovereign defaults following the third world debt crisis in the early 1980s. In 1993, further significant growth was observed in the defaulted debt triggered by the 1990-1991 recession. In 2003, a further significant increase in the amount of sovereign debt in default following several recessions in developed countries occurred, mainly caused by the September 11 attacks as well as the monetary and economic crisis in many emerging countries at the end of the 1990s. Finally, since 2013, we have witnessed a further spectacular increase in the defaulted debt following the sovereign debt crisis in European countries that have trade, monetary and political links with the African ones. What makes this period different is that, unlike African countries, the other developing countries have experienced a continuous decline in the defaulted debt since 2012.

Moreover, when a government stops paying its sovereign debt, it defaults on 3.4% of its debt. Figure 2 displays the share of defaulted debt. It argues that sovereign defaults generally involve a relatively small share of sovereign debt. In fact, 80.5% of the defaults relate to amounts that equal less than 5% of the sovereign debt.

Furthermore, more than 90% of the defaults relate to amounts that equal less than 10% of the sovereign debt. In 49 years, only Liberia defaulted on100% of its public and publicly guaranteed debt in 2010. The average amount of debt in default has grown exponentially from 1970 to 1990, with an average

defaulted debt of 58.9 USD millions in the 70s, 684.6 USD millions in the 80s and 1,581.5 USD millions in the 90s and 1,453.8 USD millions after 2000.

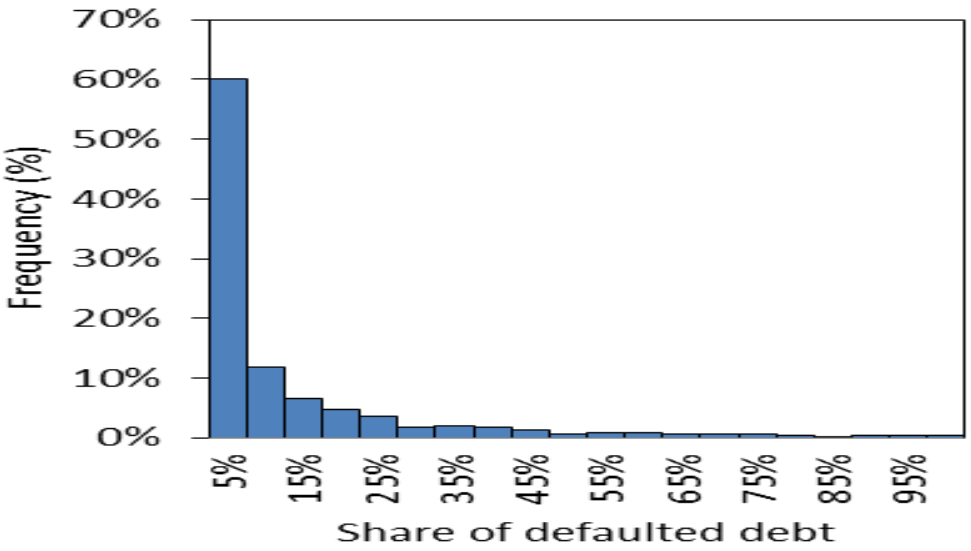


Figure 2: Share of Defaulted Debt.

In Table 3 we report the means of the predictors used our database for the non-failed and failed governments. The sample means for the defaulted and non-defaulted governments are significantly different at a significance level of 1% for all variables except for the real GDP growth, foreign direct investment, external balance, and healthcare system. It is of particular interest to observe the behavior of the variables used in this study. It appears from our sample that on average, relative to failed countries, non-failed countries are typified by a higher GDP per capita, long-term GDP growth rate, international reserves, public consumption expenditure, international trade, remittances received, better control of corruption, technology infrastructure, default history, and by a more developed financial sector. However, failed countries are typified by higher inflation rates, debt liabilities, and official debt service.

Table 3 Country characteristics during sovereign default episodes by creditor group.

Variables	No-failed countries	Failed countries							Difference (1) - (2)	t-value for difference between means
	All	All	Official	Commercial	Bilateral	Multilateral	Bank	Bond		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	0,237	0,106	0,105	0,100	0,087	0,084	0,118	0,151	0,131***	13,108
5 Year Real GDP Growth	0,048	0,038	0,038	0,035	0,035	0,015	0,026	0,037	0,010***	5,339
Real GDP growth	0,044	0,039	0,039	0,037	0,042	0,019	0,025	0,045	0,004	1,491
Inflation rate	0,078	0,140	0,141	0,169	0,143	0,411	0,164	0,073	-0,062***	-4,560
Debt liabilities	0,214	0,495	0,524	0,548	0,604	0,695	0,594	0,261	-0,281***	-12,033
Bank credit to private	0,276	0,159	0,156	0,147	0,123	0,096	0,139	0,159	0,117***	15,111
International reserves	1,305	0,429	0,423	0,253	0,164	0,040	0,089	0,298	0,876***	8,026
Exchange rate return	0,034	0,098	0,099	0,120	0,138	0,285	0,149	0,075	-0,063***	-5,891
Public consumption expenditure	0,181	0,147	0,146	0,145	0,134	0,122	0,130	0,141	0,034***	9,505
International trade	0,820	0,640	0,636	0,638	0,614	0,622	0,557	0,740	0,180***	10,346
External balance	-0,085	-0,100	-0,101	-0,093	-0,093	-0,112	-0,054	-0,034	0,014	1,596
Healthcare system	0,547	0,541	0,541	0,532	0,528	0,517	0,547	0,551	0,006	1,577
Technology infrastructure	0,285	0,172	0,174	0,126	0,116	0,125	0,061	0,397	0,113***	6,294
Remittances received	0,097	0,032	0,032	0,026	0,025	0,032	0,024	0,041	0,066***	9,632
MSCI World Index Return	0,058	0,083	0,082	0,087	0,065	0,091	0,105	0,047	-0,025***	-3,226
Default history	2,457	0,000	0,000	0,000	0,000	0,000	0,000	0,000	2,456***	114,849
Rating	10,154	7,546	7,546	7,588	6,182	.	7,000	5,000	2,608***	7,999

Notes: This table presents the economic, institutional and external characteristics of countries in default and decomposes the analysis by creditor group. The data set consists of 52 African economies over the period 1970–2018. The table first displays the characteristics of governments that are not in default (see Column 1), which are compared with those of governments in default (see Column 2). Columns 3 and 4 display the sovereign characteristics when defaults relate to official and commercial debt, respectively. Columns 5 and 6 display the sovereign characteristics when defaults relate to bilateral and multilateral debt, respectively. Columns 7 and 8 display the sovereign characteristics when defaults relate to bank and bond debt, respectively. Column 9 provides details about the difference between Columns 1 and 2, while Column 10 reports robust t-statistics for the difference. The symbols *, ** and *** indicate the coefficient's significance at the 90, 95 and 99% confidence levels, respectively.

3.3.2. Defaults By Creditor Group

As emphasized above, sovereign defaults may significantly differ across regions. Equally important is the analysis of the default events by creditor group. Indeed, when a government defaults on its official debt, there seems to be a distinction according to the creditor group.

Figure 3 shows the sovereign default rates over time by creditor group. It argues that sovereign defaults have been rather frequent in Africa, during

the past 4 decades.

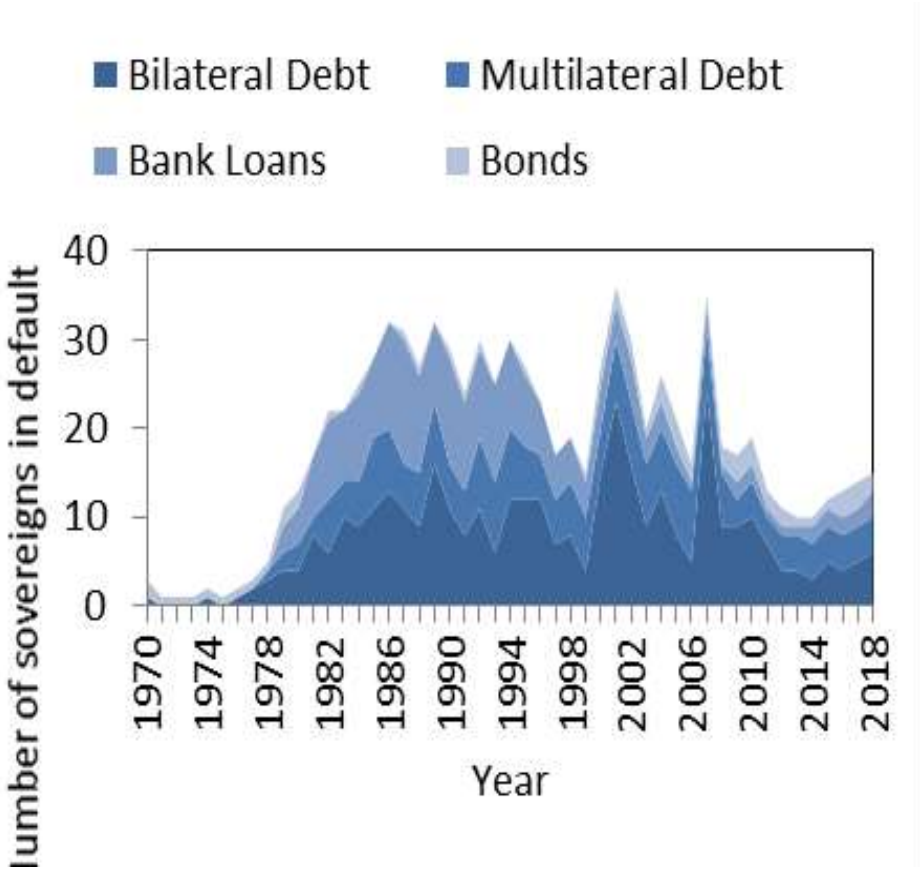


Figure 3: Sovereign Defaults by Creditor Groups.

With regard to the official debt, about two-thirds of the defaults on official debt occur on bilateral debt. More importantly, defaults on bilateral debt seem to relate to the largest share of overall sovereign debt (see figure 3). Indeed, 44.7% of the sovereign defaults have been on official bilateral debt owed to other governments. Nearly 8 African governments defaulted each year on bilateral debt from 1970 to 2019, with peaks at 23 and 24 following the early 2000s recession and the 2007-2009 financial crisis, respectively. The average amount of bilateral debt in default appears to be growing exponentially. In contrast, the average amount of defaulted multilateral debt is growing at a slower pace. On average, 4 countries default each year on multilateral official debt. Thus, multilateral debt seems to enjoy a Preferred Creditor Status (PCS), which is in line with the findings of Fitch Ratings (2018 and 2020) . The creditor seniority is discussed in more details in the next section. Another hypothesis is that the factors that determine defaults on these two types of debt may be different. In section 5.2 we will investigate this last hypothesis.

With regard to commercial debt, about 25% of the defaults relate to bank loans, while only 7% of defaults was about commercial debt owed to bondholders. In contrast with other sovereign debts, defaults on bonds appear to be relatively rare. On average, 5 countries default on bank loans every year while only one country defaults on its bond debt. Defaults on bank loans, together with bilateral debt, relate to larger amounts than defaults on other creditor groups throughout the period under study. Indeed, sovereign defaults on bank loans average 1,567USD million, while the defaulted debts owed to other governments average 1 675 USD millions, which is the most severely affected creditor group.

Finally, multilateral creditors benefit from their PCS and record the lowest amount of defaulted debt with nearly 877USD million on average.

3.3.3. Creditor Seniority

An African government typically has many creditors. When debtors are unable or unwilling to pay back their debts, they must choose on which debt to default. In the absence of international bankruptcy law to specify credit seniority, it is generally assumed that official debt is senior to commercial debt (see

Tirole, 2002 and Steinkamp and Westermann, 2014).

Figure 4 clearly shows a seniority structure of sovereign debt: Bonds and multilateral debts are senior, whereas bank loans and bilateral debts are junior. This finding is in line with what Schlegl et al. (2019) observed. In particular, defaulted debt to GDP ratio is lower for bonds and multilateral debt, respectively 0.2% and 0.5% and higher for bank loans and bilateral debt, respectively 0.9% and 1.7%. In addition, this ranking holds true when considering the share of defaulted debt as well as the numbers of country-years in defaults.

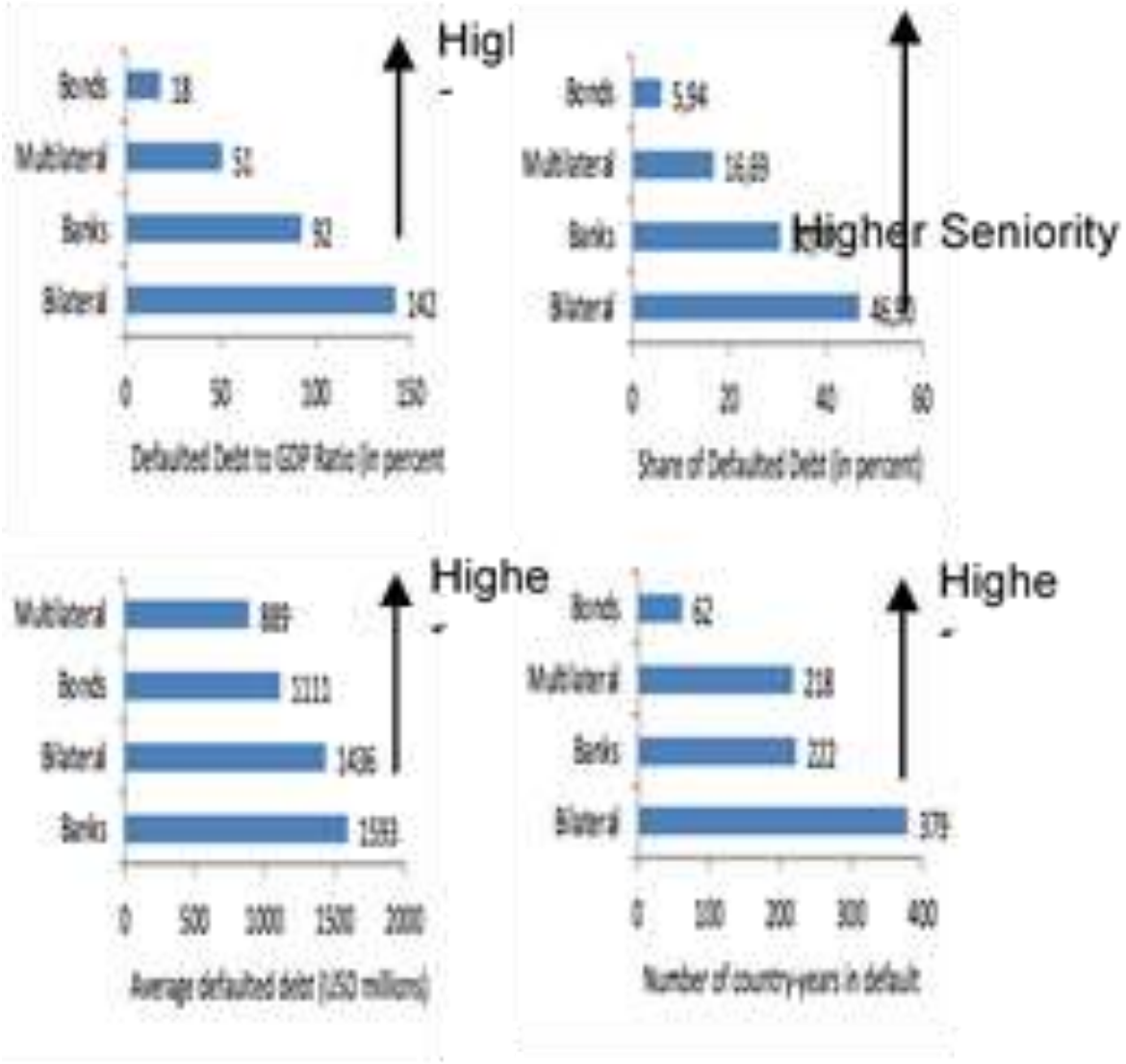


Figure 4: Pecking Order of Sovereign. Debt.

Our database indicates that in 13.3% of cases, governments simultaneously default on both types of official debt. Moreover, when excluding joint defaults from both official and commercial creditors, sovereigns are in default to bilateral creditors in 49.9% of scenarios, while they only default to multilateral creditors in 24.5% of cases. This finding confirms that multilateral creditors seem to be a priority for the repayment or restructuring of official debt, in line with what Schlegl, et al. (2019) and Fitch Ratings (2020) observed. Indeed, multilateral debt should be excluded from debt restructuring options (see, for example, Steinkamp and Westermann, 2014; Roubini and Setser, 2004). It represents, in fact, a public good that makes it possible to solve problems related to the balance of payments of governments. Cordella and Powell (2019) show that IFIs generally enjoy Preferred Creditors Treatment (PCT), which explains the relatively lower default rates on multilateral debt. Indeed, governments confer PCT to multilateral creditors in return for competitive lending rates (see Buiter and Fries, 2002), for insurance motive, knowing that IFIs will grant new loans during hard times (see Yeyati, 2009), and

because of the mutual ownership structure of such institutions (see, for instance, Humphrey, 2015 or Fitch Ratings, 2020).

Bank loans were much more often in default compared to bonds. Indeed, in Africa, sovereign defaults on bank loans represent 20.2% of cases while bond defaults only represent only 5.5% over the period from 1970 to 2019. Thus, bank loans are more likely to face arrears or defaults than bonds. Even though default on a sovereign bond is imposed on creditors, governments generally prefer to avoid defaulting on such kind of debt. Indeed, defaulting on debts owed to bondholders may make the crisis even more acute for the local economy. Thus, the potential cost of default on a bond may be higher than on bank loans. Cruces and Trebesch (2013) prove that this finding also applies to other developing countries where governments prefer to default on bank debt rather than bond debt. In the same vein, Gennaioli et al. (2014) consider that the default on bonds can trigger a liquidity crisis of domestic banks which makes the sovereign default even more serious and could affect, through banks, individual and institutional investors, i.e., the entire economy.

This initial analysis highlights the strong differences in government default behaviors towards the creditor group. Therefore, in the next section, we will consider a comprehensive econometric specification that controls the main economic and financial factors that drive sovereign default, as a first step. Then, in a second step, we will explore the importance of separating debts by creditor group.

4. EMPIRICAL ANALYSIS

We now proceed to the empirical analysis through regression models to gain deeper insights into the fundamental factors influencing sovereign default risk in African countries. In Section 4.1, we begin by identifying and examining the key determinants that lead governments to default on their sovereign obligations. In Section 4.2, we extend the analysis by performing a sensitivity test to assess whether the factors driving sovereign default vary significantly across different categories of debt, specifically by distinguishing among creditor groups. Finally, in Section 4.3, we evaluate the predictive performance of our econometric models to test their reliability and robustness in forecasting sovereign default episodes.

4.1. The Drivers of Sovereign Default

In this section, we investigate the determinants of a sovereign's default risk. In section 4.1.1, we examine the key factors that push a government to enter a sovereign debt crisis. In section 4.1.2, referring to different specifications of the dependent variable, we report whether the key drivers highlighted in the previous section still apply when a government enters and remains in a situation of default. In section 4.1.3, we distinguish the transition from default to a situation of no default in successive years to better assess the determinants of sovereign default.

4.2. Entering A Sovereign Debt Crisis

We investigate empirically through a panel data logit model the probability of default of sovereign debt with two-way clustered adjusted standard errors, following Petersen (2009) and Thompson (2011). Thereby, the 'correct' standard errors are reported, which are adjusted for country and time effects, along with correlation (autocorrelation and cross-correlation) and heterogeneity effects. We use the following regression setting to analyze the determinants of the sovereign default probability:

$$P_{t-1}(Y_{i,t}=1)=1/(1+\exp(-\alpha-\beta x_{i,t-1}))),$$

Where Yi,t is a dummy variable that equals one if the government i enters a default on a sovereign debt in year t, i.e. the government has not defaulted during the previous year; and xi,t-1 is a vector of explanatory variables for the previous year.

In Table 4 we report the estimates of several models when logit analysis is used to analyze the statistical significance of the various independent variables. Column 1 of Table 4 reports the analysis with macroeconomic determinants. Then, we progressively introduce additional variables into the model. Column 2 includes information related to institutional fragility; Column 3 adds information related to external factors; Columns 4, 5 and 6 incorporate other factors reflecting respectively the investment level, the balance of payments, and social and infrastructure factors. Column 7 integrates the return of the MSCI world index. This last specification provides the baseline regression results. All variables are those of the preceding year, which avoids potential endogeneity and reverse causality issues.

The results show that the sovereign decision to default is largely determined by the level of sovereign debt as well as that of the bank credit to the private sector. Indeed, the government's decision to default on a sovereign debt increases when the level of sovereign debt is high and that of the bank credit to firms is low, in line with the findings of Jeanneret and Souissi (2016). These determinants have the expected signs. In contrast, the decision to default does not seem to be linked to the level of inflation, foreign exchange, social and infrastructure factors. In

the next section, we explore whether the aforementioned key determinants that push a government to default on a sovereign debt remain statistically significant when the government defaults for several successive years.

Table 4 Determinants of the sovereign decision to default.

	Economic factors	With Financial Sector	With FX Factors	With Investment	With Trade	With Social & Infrastructure	Baseline model
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-2.08**	-0.98	-0.33	-0.25	0.18	0.55	0.55
	(-1.99)	(-1.54)	(-0.53)	(-0.44)	(0.22)	(0.32)	(0.32)
5 Year Real GDP Growth	0.84	1.14	4.56	2.02	3.09	0.74	1.21
	(0.28)	(0.35)	(1.30)	(0.52)	(0.77)	(0.18)	(0.29)
Real GDP growth	-0.71	-0.85	-1.28	-0.39	0.22	2.38	2.37
	(-0.40)	(-0.46)	(-0.60)	(-0.15)	(0.08)	(0.83)	(0.83)
Inflation rate	-0.46	-0.39	-0.66	-0.93	-0.98	-1.74	-1.71
	(-1.62)	(-1.25)	(-0.85)	(-0.78)	(-0.81)	(-1.07)	(-1.07)
Debt liabilities	0.95***	0.89***	0.91***	0.87***	1.00***	1.00***	1.00***
	(4.81)	(3.88)	(4.79)	(3.30)	(3.50)	(3.01)	(3.01)
Bank credit to private		-2.35**	-3.03***	-3.40***	-3.42***	-2.10**	-2.13**
		(-2.49)	(-3.26)	(-3.05)	(-3.22)	(-2.02)	(-2.02)
International reserves			-0.25	-0.21	-0.19	-0.06	-0.06
			(-1.19)	(-1.22)	(-1.32)	(-0.58)	(-0.58)
Exchange rate return			0.58	0.68	0.68	0.97	0.96
			(0.66)	(0.68)	(0.68)	(0.99)	(1.00)
Public consumption expenditure				0.74	2.05	-0.86	-0.95
				(0.41)	(1.17)	(-0.42)	(-0.47)
International trade					-0.66	-0.65	-0.62
					(-1.26)	(-0.81)	(-0.76)
External balance					0.12	-1.61	-1.57
					(0.16)	(-1.12)	(-1.06)
Healthcare system						-1.37	-1.42
						(-0.80)	(-0.82)
Technology infrastructure						-0.89	-0.86
						(-1.07)	(-1.01)
Remittances received						-8.37	-8.38
						(-1.42)	(-1.43)
MSCI World Index Return							0.75
							(0.76)
Constant	-2.57***	-2.30***	-2.35***	-2.33***	-2.26***	-1.09	-1.16
	(-12.49)	(-10.63)	(-9.03)	(-7.21)	(-6.99)	(-1.32)	(-1.38)
Observations	1,666	1,624	1,240	1,084	1,084	853	853
LR Chi-square	36.98	32.79	58.05	52.21	66.21	85.62	88.98
Pseudo R-square	0.0399	0.0446	0.0560	0.0571	0.0615	0.0942	0.0960

Notes: This table reports the results of a logit estimation used to highlight the governments' decision to default. The dependent variable is zero for non-default and one if a country enters a sovereign default. Values of country-specific variables are those of the preceding year. The analysis considers annual data for 52 African countries over the period 1970-2018. Standard errors are clustered at the country level (Peterson, 2009) and corrected for heteroscedasticity. Robust z-statistics are reported in parentheses. The symbols *, ** and *** indicate the coefficients' significance at the 90, 95 and 99% confidence levels, respectively.

4.1.2. Remaining In a Sovereign Debt Crisis

A government may default on its sovereign debt for several successive years. In this section, we use the same regression setting as in the previous section with the only difference being the counting of default events. Indeed, the dependent dummy variable equals one if the government i is in default on sovereign debt in year t.

The results from the base specification of the logit model are shown in Table 5. The factors that push a government to default remain statistically significant when the government continues to not pay its debt. Namely, the development of the banking sector, as well as the overall public indebtedness, still are important determinants of an ongoing sovereign

debt crisis. However, the results are slightly different from those obtained for the analysis of the decision to default. When all factors are considered in the analysis (see Column 7), four more variables help explain the probability of a sovereign default at a level of 5%. Namely,a government appears to be more likely to default on sovereign debt in countries with i. relatively high public indebtedness, ii. a less developed financial sector, iii. when the country has alower level of public consumption expenditure, iv. a lower level of external balance, v.when it receives a lower level of remittances, and vi. when the global economic environment is dire. These determinants have the expected signs and seem to be in line with the World Bank (2020) highlights. In particular, a sharp decline of remittances by 23% in 2020, because of the ongoing Coronavirus crisis (better known as the Great Lockdown crisis), may lead to an increase in sovereign defaults for the African governments in 2021.However, Table 5shows that the probability of default does not seem to be associated with real economic growth, and level of inflation. Besides, the baseline model is explaining almost 37% of the variation in the sovereign default probability. Sucha result seems to be an additional factor to conduct a sensitivity analysis. Exploring the factors that help a government emerge from a sovereign debt crisis is the objective of the next section.

Table 5 Determinants of the sovereign default probability.

Variables	Economic factors (1)	With Financial Sector (2)	With FX Factors (3)	With Investment (4)	With Trade (5)	With Social & Infrastructure (6)	Baseline model (7)
GDP per capita	-1.84*	0.40	1.24	1.20	3.23*	3.11	3.15
	(-1.72)	(0.35)	(1.05)	(0.86)	(1.94)	(2.01)	(1.99)
5 Year Real GDP Growth	-5.58	-7.01	-3.73	-4.57	0.81	2.04	1.83
	(-1.21)	(-1.55)	(-0.73)	(-0.88)	(0.13)	(0.31)	(0.28)
Real GDP growth	0.11	-0.64	-0.47	-2.34	-0.53	2.44	2.37
	(0.06)	(-0.33)	(-0.18)	(-0.79)	(-0.18)	(0.92)	(0.88)
Inflation rate	1.22	0.48	0.96	-0.21	-0.05	-1.18	-1.33
	(1.31)	(0.58)	(0.93)	(-0.17)	(-0.04)	(-0.65)	(-0.73)
Debt liabilities	3.01***	3.35***	2.58***	4.09***	4.99***	5.25***	5.32***
	(3.33)	(3.65)	(2.74)	(3.69)	(3.81)	(4.63)	(4.62)
Bank credit to private		-4.67***	-4.93***	-5.10***	-5.85***	-6.23***	-6.36***
		(-4.41)	(-4.68)	(-5.09)	(-5.54)	(-4.24)	(-4.13)
International reserves			-0.12	-0.03	-0.04	-0.02	-0.03
			(-1.07)	(-0.25)	(-0.29)	(-0.18)	(-0.23)
Exchange rate return			0.54	0.25	0.52	-0.17	-0.16
			(0.72)	(0.27)	(0.52)	(-0.21)	(-0.20)
Public consumption expenditure				-10.34***	-7.57**	-9.44**	-9.06**
				(-2.91)	(-2.19)	(-2.35)	(-2.19)
International trade					-1.94**	-2.11*	-2.14*
					(-2.32)	(-1.84)	(-1.84)
External balance					-1.78	-3.90**	-3.91**
					(-1.36)	(-2.27)	(-2.23)
Healthcare system						-1.60	-1.47
						(-0.37)	(-0.33)
Technology infrastructure						-0.09	-0.12
						(-0.16)	(-0.21)
Remittances received						-11.51**	-11.79**
						(-2.23)	(-2.32)
MSCI World Index Return							-1.16**
							(-2.12)
Constant	0.92**	1.68***	1.62***	3.14***	3.26***	5.10**	5.14**
	(2.00)	(3.34)	(2.85)	(4.24)	(3.80)	(2.28)	(2.29)
Observations	1,666	1,624	1,240	1,084	1,084	853	853
LR Chi-square	36.01	32.94	40.28	131.2	91.82	485.2	473
Pseudo R-square	0.135	0.196	0.186	0.262	0.299	0.363	0.367

Notes: This table reports the results of a logit estimation used to highlight the governments being in default. The dependent variable is zero for non-default and one if a country experiences a sovereign default in a given year. Values of country-specific variables are those of the preceding year. The analysis considers annual data for 52 African countries over the period 1970-2018. Standard errors are clustered at the country level (Peterson, 2009) and corrected for heteroscedasticity. Robust z-statistics are reported in parentheses. The symbols *, ** and *** indicate the coefficients' significance at the 90, 95 and 99% confidence levels, respectively.

4.1.3. Emerging From a Sovereign Debt Crisis

We have so far analyzed the characteristics of countries that either start or continue defaulting on their sovereign debt. Equally important is to distinguish the transition from default to a situation of no default in successive years. To this end, we constructed a new dummy dependent variable,Yi,t,

that equals one if the government i is not in default during year t but has defaulted during the previous year and 0 otherwise. By doing so, we distinguish governments that emerge from default from governments that continue being in a situation of no default or default.

Table 6 reports the results of a binary logit model that investigates a government's decision to emerge from default on sovereign debt. Overall, the results are consistent with those obtained for the analysis of the key drivers that push governments to be – or continue being in default. In particular, the government's decision to emerge from default is determined by the level of debt liabilities, the level of the public expenditure, the level of external balance, and the development of its infrastructure. The results indicate that reducing the sovereign debt burden will help the government emerge from a debt crisis. More importantly, the results show that a government appears to be more likely to emerge from a sovereign default when the level of its external balance on goods and services, the level of its public expenditure and the external balance increase, and when the country enjoys good and reliable technology infrastructure.

Table 6 Determinants of the government's decision to emerge from a sovereign default.

	Economic factors	With Financial Sector	With FX Factors	With Investment	With Trade	With Social & Infrastructure	Baseline model
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	1.23***	0.94	0.86*	0.91	-0.01	-1.83	-1.82
	(2.95)	(1.62)	(1.68)	(1.63)	(-0.02)	(-1.81)	(-1.80)
5 Year Real GDP Growth	3.52	4.22	3.85	2.15	0.31	3.53	3.64
	(0.85)	(1.00)	(0.83)	(0.42)	(0.06)	(0.56)	(0.58)
Real GDP growth	-2.66	-3.16	-4.47	-3.11	-3.90	-4.20	-4.22
	(-1.06)	(-1.27)	(-1.63)	(-1.00)	(-1.26)	(-0.90)	(-0.90)
Inflation rate	-1.38	-1.27	-2.72*	-2.38*	-2.41**	-0.38	-0.33
	(-1.50)	(-1.40)	(-1.71)	(-1.90)	(-1.99)	(-0.27)	(-0.24)
Debt liabilities	-1.87***	-1.81***	-1.65***	-2.04***	2.34***	-2.36***	-2.38***
	(-3.82)	(-3.52)	(-2.97)	(-3.33)	(-3.54)	(-2.71)	(-2.73)
Bank credit to private		0.82	0.45	0.37	0.69	-0.17	-0.16
		(1.03)	(0.56)	(0.42)	(0.78)	(-0.15)	(-0.14)
International reserves			-0.02	-0.05	-0.06	-0.11	-0.11
			(-0.46)	(-0.91)	(-1.01)	(-2.00)	(-1.99)
Exchange rate return			-0.37	-0.15	-0.18	-1.61	-1.60
			(-0.35)	(-0.15)	(-0.19)	(-1.21)	(-1.22)
Public consumption expenditure				3.03	2.71	6.73*	6.56*
				(1.43)	(1.12)	(1.84)	(1.83)
International trade					0.70**	0.19	0.20
					(2.29)	(0.29)	(0.32)
External balance					1.53*	3.18*	3.18*
					(1.87)	(1.94)	(1.94)
Healthcare system						3.66	3.63
						(1.11)	(1.10)
Technology infrastructure						1.21**	1.22**
						(2.51)	(2.54)
Remittances received						3.77	3.85
						(1.22)	(1.24)
MSCI World Index Return							0.67
							(0.57)
Constant	-2.62***	-2.81***	-2.47***	-2.85***	2.89***	-5.41**	-5.45**
	(-9.15)	(-8.51)	(-7.30)	(-5.95)	(-5.71)	(-2.50)	(-2.49)
Observations	1,666	1,624	1,240	1,084	1,084	853	853
LR Chi-square	44.86	37.06	41.74	51.73	69.79	48.68	50.06
Pseudo R-square	0.0532	0.0541	0.0559	0.0589	0.0667	0.0926	0.0939

Notes: This table reports the results of a logit estimation used to highlight the governments' decision to exit default on sovereign debt. The dependent variable is one if a country has not defaulted during the current year but has defaulted during the last year and 0 otherwise (i.e., the country continues being in a situation of no-default or continues being in default in successive years). Values of country-specific variables are those of the preceding year. The analysis considers annual data for 52 African countries over the period 1970-2018. Standard errors are clustered at the country level (Peterson, 2009) and corrected for heteroscedasticity. Robust z-statistics are reported in parentheses. The symbols *, ** and *** indicate the coefficients' significance at the 90, 95 and 99% confidence levels, respectively.

A large fraction of sovereign defaults has so far remained unexplained. As suggested by Jeanneret and Souissi (2016), possible explanations are i. the importance of the unwillingness-to-pay dimension in conjunction with the economic factors considered in our model; ii. the drivers of default on sovereign debt by creditor group may differ from those considered in the baseline model. We will now conduct a sensitivity analysis to verify this finding together with some robustness checks to analyze the sovereign default predictions in the next section.

4.2. Sensitivity Analysis

We have so far considered that a government's default probability is independent on the nature of the creditor. In fact, there is not a single default option, but one for each type of debt on which a government may default. A sovereign government can choose which creditors to favor when redeeming debt (see Schlegl, 2019). Therefore, we formulate the hypothesis that the default decision should differ depending on the creditors. We will first explore defaults on official bilateral and multilateral debt. Then, we will study the specific factors that make a government more prone to default on bank loans rather than on bonds.

4.2.1. Default On Bilateral Vs. Multilateral Debt

This section aims to analyze the characteristics that make a government more prone to be in default on bilateral debt rather than multilateral debt. We thus employ a multinomial logit model to predict default probability on bilateral and multilateral debt. The dependent variable is zero for non-default (base case), one when a sovereign is in default on bilateral debt only, and two when a sovereign is in default on multilateral debt only. Simultaneous defaults on bilateral and multilateral debts are excluded. We cluster standard errors at the country level (Peterson, 2009) and correct them from heteroscedasticity.

Table 7 reports the results for the baseline regression model (see Table 4). The values of the variables are those of the preceding year. The results show that some variables help explain the probability of sovereign default on both bilateral and multilateral debt. In particular, a government is more likely to default on both bilateral and multilateral debt when the financial sector is less developed. Some other variables seem to be specific to each type of debt. Especially, higher inflation, lower sovereign indebtedness, higher international trade, and external balance, as well as a well-established technology infrastructure help decrease the probability of a crisis on bilateral debt. However, these variables do not determine a sovereign default on multilateral debt. On the other hand, relatively low amounts of international reserves increase the probability of multilateral debt crisis only.

Table 7 Determinants of the sovereign default probability on Official Debt.

	Bilateral debt	Multilateral debt
Variables	(1)	(2)
GDP per capita	2.97	-5.04
	(2.58)	(-0.85)
5 Year Real GDP Growth	-2.87	-14.43
	(-0.54)	(-1.22)
Real GDP growth	2.44	-7.08*
	(0.64)	(-1.66)
Inflation rate	-2.73***	1.63
	(-3.45)	(1.10)
Debt liabilities	1.73***	-0.18
	(3.36)	(-0.24)
Bank credit to private	-4.82***	-25.68***
	(-3.82)	(-3.34)
International reserves	-0.27	-27.53**
	(-1.45)	(-2.47)
Exchange rate return	0.87	-1.05
	(1.39)	(-0.92)
Public consumption expenditure	-1.76	20.54***
	(-0.64)	(2.78)
International trade	-1.44**	-3.10
	(-2.15)	(-1.33)
External balance	-2.94**	-3.83
	(-2.29)	(-0.80)
Healthcare system	0.68	7.15
	(0.27)	(1.34)
Technology infrastructure	-1.69***	0.43
	(-2.70)	(0.20)
Remittances received	-8.68*	19.27
	(-1.89)	(2.26)
MSCI World Index Return	0.28	2.43
	(0.41)	(1.81)
Constant	-0.95	-2.96
	(-0.70)	(-1.17)
Observations	825	825
LR Chi-square	4785.97	
Pseudo R2	0.2909	

Notes: This table reports the results of a multinomial logit model used to highlight the determinants of sovereign default on bilateral and multilateral debt. The dependent variable is zero for non-default, one for a government in default on bilateral debt, and two for country in default on multilateral default. Simultaneous defaults on bilateral and multilateral debt are excluded. Values of country-specific variables are those of the preceding year. The analysis considers annual data of 52 African countries over the period 1970-2018. Standard errors are clustered at the country level (Peterson, 2009) and corrected for heteroscedasticity. Robust z-statistics are reported in parentheses. The symbols *, ** and *** indicate the coefficients' significance at the 90, 95 and 99% confidence levels, respectively.

We will now discuss several dimensions that deserve more detailed investigation. First, the consumer price index drives down the probability of default, but solely for bilateral debt. This finding is probably linked to the fact that several countries belong to the same monetary zone in Africa. Hence, debt monetization increases inflation and reduces the debt burden denominated in the same currency.

Second, default risk on multilateral debt rises when a government has a relatively low level of international reserves. This latter finding highlights the importance of liquidity issues and the necessity to have a safety jacket to get an exchange comfortable position. However, a bilateral debt could be denominated in local currency, thus, monetizing the debt may lead to higher inflation, but to a low default probability.

Third, a greater general final consumption expenditure of a government is associated with a higher default risk but on multilateral debt only. Such public consumption expenditure consists of expenditure incurred by the government in its production of non-market final goods and services and market goods and services provided as social transfers in kind. Such expenses may not have a substantial effect on the financial standing of the government in foreign currency. Therefore, further increasing public consumption expenditure may lead to an increase in the default probability on multilateral debt, generally denominated in foreign currency.

Overall, these results highlight the importance of sorting sovereign debts according to the creditor group. Indeed, governments typically default under

different economic and financial conditions for each type of debt.

4.2.2. Default On Bank Loans Vs. Bonds

We have so far analyzed the determinants of the probability of sovereign default on official debt. Equally important is the analysis of the drivers that explain why a sovereign chooses to default on its commercial debt. In this section, we review in some detail the factors driving the sovereign default probability on commercial debt. Such debt is essentially made up of bank loans and bonds. While bank loans considered in the BoC-BoE Sovereign Default Database are made of foreign currency debt, bonds comprise both local currency and foreign currency debt. We used a multinomial regression model to carry out the analysis. The dependent variable is zero for non-default (base case scenario), one when a sovereign is in default on bank debt only, and two when a sovereign is in default on bond debt only. Simultaneous defaults on bank and bond debt are excluded. As in the preceding analysis, we cluster standard errors at the country level (Peterson, 2009) and correct them from heteroscedasticity.

Table 8 reports the results of the regression analysis. The values of the variables are those of the preceding year. The results show that the drivers of sovereign default on commercial debt differ significantly according to the creditors. While sovereign default on bank loans is mainly determined by the level of international trade, defaults on bonds seem to derive from other factors.

Table 8 Determinants of the sovereign default probability on Commercial Debt.

Variables	Bank loans (1)	Bonds (2)
GDP per capita	0.53	-0.63**
	(1.44)	(-2.12)
5 Year Real GDP Growth	-7.79	8.63
	(-1.20)	(0.80)
Real GDP growth	-4.46	3.71
	(-1.02)	(0.67)
Inflation rate	-0.02	3.56
	(-0.02)	(1.07)
Debt liabilities	0.88	-1.30
	(0.76)	(-0.68)
Bank credit to private	-2.96	-4.91
	(-0.98)	(-0.63)
International reserves	-2.63	-1.96*
	(-0.34)	(-1.90)
Exchange rate return	-0.92	-7.36
	(-1.45)	(-1.07)
Public consumption expenditure	-4.90	-18.35*
	(-0.75)	(-1.66)
International trade	-4.63*	1.13
	(-1.90)	(0.31)
External balance	3.38	2.37
	(0.91)	(0.29)
Healthcare system	13.00	-11.61**
	(1.45)	(-2.06)
Technology infrastructure	-1.91	2.83
	(-0.78)	(0.96)
Remittances received	-18.21	-24.89
	(-1.04)	(-0.68)
MSCI World Index Return	0.47	0.60
	(0.73)	(0.34)
Constant	-4.61	4.47**
	(-1.01)	(2.19)
Observations	738	
LR Chi-square	87927.55	
Pseudo R2	0.3419	

Notes: This table reports the results of a multinomial logit model used to explain the determinants of sovereign default on foreign currency (FC) bank loans and bond debt. The dependent variable is zero for non-default, one for a government in default on FC bank loan, and two for country in default on bonds. Simultaneous defaults on bank loans and bonds are excluded. Values of country-specific variables are those of the preceding year. The analysis considers annual data of 52 African countries over the period 1970-2018. Standard errors are clustered at the country level (Peterson, 2009) and corrected for heteroscedasticity. Robust z-statistics are reported in parentheses. The symbols *, ** and *** indicate the coefficients' significance at the 90, 95 and 99% confidence levels, respectively.

The level of international trade seems to be a

particularly interesting factor for defaults on foreign currency bank loans. When a government faces a contraction in its international trade, its revenues in foreign currency may decrease sharply. Defaulting in foreign currency bank loans seems to be an unavoidable constraint, since bonds may be denominated either in local currency or in foreign currency. As expected, the effect is significant for bank loans but not for bonds.

In contrast, the results indicate that the probability of defaulting on bonds increases for countries with a lower level of GDP per capita, public consumption expenditure, international reserves, and poor human capital environment. Indeed, markets (either national or international) are often sensitive to these variables and the bond spread is always high for countries having bad related performances.

We will now discuss several items that deserve a more detailed analysis. First, defaults on foreign currency bank loans and bonds are unrelated to the level of inflation, as debt monetization is related to local currency debt, in line with Jeanneret and Souissi (2016).

Second, default risk declines when the government increases its public consumption expenditure and develops the healthcare system. When expenditures for collective consumption (defense, justice, technology infrastructure, etc.) and "individual" consumption (healthcare system, housing, education, etc.) increases, the country's economy is likely to benefit from it, which would improve the local economy and public finances. This reduces the risk of default on local currency-denominated bonds. As expected, the effect is significant for bond debt.

Overall, the results have illustrated that governments typically default on each group of sovereign debt under different economic conditions. In the next section, we will analyze in more details the models' performance statistics.

4.3. Models' performance statistics

In this section, we conduct the assessment of the predictive power of our models. Following common practice, we will focus on what is usually referred to as discriminative power, i.e., the ability of our models to provide an accurate estimation of the sovereign default events according to the factors developed in the baseline model (see Table 4). Table 9 reports the models' performance statistics.

Table 9 Model performance statistics.

	Logit			Multinomial logit					
	Default vs Non-default			Official Debt vs Commercial Debt		Bilateral Debt vs Multilateral Debt		Bank Loan vs Bond Debt	
	Baseline	With default history	With rating	Baseline	With default history	Baseline	With default history	Baseline	With default history
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total observations	759	759	109	275	275	731	731	738	738
Pseudo R-square	0.455	0.640	0.797	0.368	0.523	0.305	0.312	0.342	0.368
Non-defaults									
Observations	120	120	30	120	120	617	617	634	634
Fraction correctly predicted	0.533	0.742	0.900	0.800	0.800	0.982	0.984	0.972	0.978
Defaults									
Observations	639	639	79	155	155	114	114	104	104
Fraction correctly predicted	0.955	0.983	0.987	0.671	0.852	0.158	0.184	0.404	0.413

Notes: This table reports the prediction accuracy of the logit and the multinomial logit regression models. The logit regression model explores the probability that a government is in default in a given year, while the multinomial logit separates defaults by creditor group, and the specification use the baseline model reported in Table 4. We compare the results of the baseline model with those of a specification that either additionally includes a country's default history or the country's credit rating. Ratings are those of the preceding year. The analysis considers annual data for 52 African economies over the period 1970–2018.

We will start the analysis by predicting sovereign default and non-default events without taking into consideration the group of creditors. In order to achieve this, we consider 3 specifications. First, we use the baseline model (column 1); then, we add the government's default history to the analysis (column 2); finally, we replace the sovereign default history withthe sovereign credit rating (column 3).We observe high predictive accuracy of the default events, with 95.5% of fraction being correctly predicted when using the baseline and 53% of non-defaults. The predictive power of the model is

significantly increase of up to 98.3% and 98.7% when introducing respectively the default history and the rating to the analysis. The default history seems to produce nearly the same information as the rating in terms of the predictive power of the model.

We will now categorize sovereign defaults according to the group of creditors. The default history is included in the analysis since it provides nearly the same prediction accuracy as the credit rating and we have relatively more observations of this variable compared to those of the rating. Under the specifications of the base case, the model predicts 67.1% of the defaults on the official and commercial debt. When the default history is included, the accuracy of the forecast improves considerably with85.2% of the defaults being correctly predicted. When separating defaults on bilateral debt from those on multilateral debt, the fraction of defaults being correctly predicted decreases to 18.4%. Our model is not accurate enough to predict these defaults. On the other hand, the model provides much better predictions, with up to 41.3%, for default events on bank loans and bond debt. Our best model has greater explanatory power than the model estimated by Jeanneret and Souissi (2016) and the power which similar to that developed by Amstad et al. (2020).

5. CONCLUSION

This paper makes a main contribution to the literature on governments' financial distress. First, we carefully implemented a baseline econometric model to predict sovereign defaults at a one-year horizon. We then analyzed sovereign default determinants by creditor group. We believe that distinguishing sovereign debt according to the type of creditor has meaningful empirical advantages over the bankruptcy risk model which does not make this distinction. To study this hypothesis, we based our analysis on a panel of 52 African countries scrutinized over the period 1970-2019, which is a broad period during which African countries suffered several major national, regional, and international economic and financial crises.

Our results prove that the factors that push a government to default remain statistically significant when the government keeps on defaulting on its debt. In particular, the overall sovereign indebtedness, as well as the development degree of the financial sector seem to be the most determinant factors of sovereign debt crisis for African governments. Furthermore, it appears that lower levels of public expenditure, weak external balance, lower remittances received as well as poor global economic conditions weaken the level of public finances and push the government to continue to default on its debt. More importantly, the results show that a government appears to be more likely to emerge from a sovereign default when the level of its overall sovereign debt decreases, the level of its public expenditure increases, external balance on goods and services goes up, as well as technology infrastructure becomes reliable.

Moreover, the results show that governments default on sovereign debt under different economic conditions depending on the creditor group. Indeed, in the case of an official debt, we show that the development of the financial sector is an important common factor of sovereign default on both bilateral and multilateral debts. However, when considering commercial debt, international trade turns out to be the main determinant of sovereign defaults on foreign currency bank loans while GDP per capita, international reserves, public expenditure, and the development of healthcare systems are the main determinants of sovereign default on bonds. Finally, we find that multilateral official creditors and bondholders are senior lenders, while official bilateral debt and bank loans are junior, in line with Schlegl et al. (2019).

Based on these results, it seems clear that African countries have to take serious action to minimize debt default risks. Particularly, they have to pay attention to financial development since the presence of an efficient banking system ensuring careful financing to firms (notably small and medium sized ones) could reinforce domestic resource mobilization and create a favorable business climate. Besides, having dynamic financial markets could improve the ability of governments to obtain adequate financing and then reduce the debt burden. It is for all these reasons, African policymakers should engage in serious banking and financial reforms that would guarantee the development of the African financial systems (digitization, regulation, openness, etc.).

In the same vein, African countries have to make substantive progress in developing savings instruments that reinforce remittance transfers. African Diaspora populations are growing, as are their savings and the scale of resources available for reinvestment, while the efforts made to attract these resources still remain low. Issuing for example a Diaspora bond could help mobilize important resources and reduce the foreign debt burden and sovereign debt default probability.

Opening their economies through the signature of preferential trade agreements with developed countries as well as the reinforcement of free trade

inside the continent seem also to be important for African countries. Preferential trade agreements could boost their exports and attract FDI which reinforces exchange reserves and limit their indebtedness. Besides, the ratification of the treaty on the African Continental Free Trade Area (AfCFTA) could allow access to large African markets, acquire imported inputs and technology at free trade prices and benefit from large financial markets. Having these opportunities could reduce the burden of the foreign debts for each country and reduce sovereign default risks.

Our results also prove that African countries facing higher risks of sovereign defaults on officialdebts, whether bilateral or multilateral, have to reinforce their saving capacities by improving monetary frameworks, supporting the development of long-term saving instruments and aligning exchange rates on their long-term sustainable level. On the other hand, developing innovative tools to finance development by supporting the development of African domestic capital markets could help improve the financial conditions and decrease sovereign default.

However, the African countries facing higher sovereign risks on commercial debts, whether coming from banking or bond markets, have to adjust their economic policies and regulations to guarantee macroeconomic stability. Policymakers also have to design appropriate sovereign risk management policies oriented towards achieving institutional reforms that will ensure official debt sustainability. Together with an improved debt management capacity, such policies would allow frontier markets to access additional funds, improve sovereign rating and increase resilience against sovereign default. Further research should analyze the determinants of sovereign default on other commercial debts, owed to trade creditors and suppliers and thereby improve our understanding of the specific causes of sovereign default.

REFERENCES

Abdilahi, A. Katsushi, S.I. (2015) Crises, Economic Integration and Growth Collapses in African Countries. Journal of African Economies, Vol. 24, n°4, 471–501.

Abotsi, A.K. (2023), "Influence of governance indicators on public debt accumulation in Africa", Journal of Economic and Administrative Sciences, Vol. ahead-of-print No. ahead-of-print. African Development Bank (2018) African Economic Outlook.

Alfaro, L. and Kanczuk, F. (2005). Sovereign debt as a contingent claim: a quantitative approach. Journal of International Economics, 65(2):297–314.

Ams, J. Baqir, R. Gelpern, A. Trebesch, C. (2018) Sovereign Default. Chapter 7. In Sovereign Debt: A Guide for Economists and Practitioners. IMF, mimeo.

Amstad, M. Packer, F. Shek, J. (2020) Does sovereign risk in local and foreign currency differ? Journal of International Money and Finance, Vol 101, 102099.

Appiah-Kubi, S.N.K. Malec, K. Phiri, J. Krivko, M. Maitah, K. Maitah, M. Smutka, L. (2022) 'Key Drivers of Public Debt Levels: Empirical Evidence from Africa. Sustainability, 14, 1220.

Archer, C.C., Biglaiser, G., and De Rouen Jr, K. (2007). Sovereign bond ratings and democracy: The effects of regime type in the developing world. International Organization, 61(2):341–365.

Bayale, N (2020) Empirical Investigation into the Determinants of Public Debts in Africa: New Insights Using a Panel Bayesian Model Averaging Approach. Journal of Economic Structures.

Beers, D. De Leon-Manlagnit, P. (2019) The BoC-BoE Sovereign Default Database: What's new in 2019? Staff Working Paper/39, Bank of Canada.

Bernoth, K. Erdogan, B. (2012) Sovereign bond yield spreads: a time-varying coefficient approach. Journal of International Money and Finance 31, 639–656.

Borensztein, E. and Panizza, U. (2009). The costs of sovereign default. IMF Staff Papers, 56(4):683–741.

Buiter, W. Fries, S. (2002) What Should the Multilateral Development Banks Do? European Bank for Reconstruction and Development, Office of the Chief Economist, Working Papers, 16.

Bulow, J. and Rogoff, K. (1988). Sovereign Debt: Is To Forgive To Forget? American Economic Review, 79(1):43–50.

Bulow, J. and Rogoff, K. (1989). A constant recontracting model of sovereign debt. Journal of Political Economy, 97(1):155–178.

Caldes Montes, G. De Oliveira D.S.P., De Mendonça H.F. (2016) Sovereign Credit Ratings in Developing Economies: New Empirical Assessment. International Journal of Finance and Economics, volume 21, issue 4, 382-397.

Campbell, J.Y. Hilscher, J. Szilagyi, J. (2008) In search of distress risk. Journal of Finance, 63, 2899–2939.

Catao, L.A Milesi-Ferretti, GM. (2014) External liabilities and crises. Journal of International Economics, 94 (1), 18-32.

Chambers, J. Daria A. (2003) 2002 Defaults and Rating Transition Data Update for Rated Sovereigns. in Ratings Performance 2002, Default, Transition, Recovery, and Spreads (New York, Standard & Poor's), pp. 75–86.

Chami, R. Fullenkamp, C. Jahjah, S. (2005) Are Immigrant Remittance Flows a Source of Capital for Development? IMF Staff Papers, 52 (1).

Chervalier, B. (2011) Debt Issues in Fragile and Conflict-Affected States. 2011 Annual Multilateral Development Banks Meeting on Debt Issues.

Cole, H., Neuhann, D., and Ordonez, G. (2016). Debt crises: For whom the bell tolls. National Bureau of Economic Research, NBER Working Paper 22330.

Cordella,T. Powell, A. P. (2019) Preferred and Non-Preferred Creditors. Policy Research working paper; no. WPS 8941 Washington, D.C.: World Bank Group.

Cruces, J. J. Trebesch, C. (2013) Sovereign Defaults: The Price of Haircuts. American Economic Journal: Macroeconomics, 5(3), 85-117.

De Grauwe, P. Ji, Y. (2013) Self-fulfilling crises in the Eurozone: An empirical test. Journal of International Money and Finance, 34(C), 15-36.

Dell'Erba, S. Hausmann, R. Panizza, U. (2013) Debt levels, debt composition, and sovereign spreads in emerging and advanced economies. Oxford Review of Economic Policy, 29, 518–547.

Eaton, J. and Gersovitz, M. (1981). Debt with potential repudiation: Theoretical and empirical analysis. Review of Economic Studies, 48(2):289–309.

Eberhardt, M. (2018) (At least) Four Theories for Sovereign Default. CEPR discussion papers, 13084.

Elliott, M., Golub, B., and Jackson, M. O. (2014). Financial networks and contagion. American Economic Review, 104(10):3115–3153.

Fitch Ratings (2018) Preferred Creditor Status Multilateral Development Banks. Comparative Advantage' Special Report, October 11, 2018.

Fitch Ratings (2020) Sovereign Default History. Evidence of Supranationals' Preferred Creditor Status. Special Report, March 16, 2020.

Fosu, P., Eshun, J. and Ankrah Twumasi, M. (2025), "The linkage between economic growth, debt servicing, pollution and health expenditures: panel evidence from 42 African countries", African Journal of Economic and Management Studies, Vol. ahead-of-print No. ahead-of-print.

Fuentes, M. and Saravia, D. (2010). Sovereign defaulters: Do international capital markets punish them? Journal of Development Economics, 91(2):336–347.

Furceri, D. Zdzienicka, A. (2012) How costly are debt crises? Journal of International Money and Finance, 31, 726-42.

Gennaioli, N. Martin, A. Rossi, S. (2014) Sovereign Default, Domestic Banks, and Financial Institutions. Journal of Finance, 69(2), 819-866.

Gu Weishi (2021), Sovereign default, trade, and terms of trade. Macroeconomic Dynamics. 25(6),1346-1380.

Gumus, I. (2011) Exchange Rate Policy and Sovereign Spreads in Emerging Market Economies. Review of International Economics 19(4), 649-663.

Hamann,F. Mendoza E. G. Restrepo-Echavarria, P. (2018) Resource Curse or Blessing? Sovereign Risk in Resource-Rich Emerging Economies. Working Papers 2018-32, Federal Reserve Bank of St. Louis, revised 31 Oct 2019.

Hatchondo, J. C. and Martinez, L. (2010). The politics of sovereign defaults. Federal Reserve Bank of Richmond Economic Quarterly, 96(3):291–317.

Hernandez, L. Gamarra. B. (2011) Debt Sustainability and Debt Distress in the Wake of the Ongoing Financial Crisis: The Case of IDA-Only African Countries. In Sovereign Debt and the Financial Crisis: Will this time be different? Chapter 6, The World Bank, 129-172.

Humphrey, C. (2015) Are Credit Rating Agencies Limiting the Operational Capacity of Multilateral Development Banks? Policy paper for the Group of 24, October 30, 2015. Washington: G24.

IDA, (2019) Addressing Debt Vulnerabilities in IDA Countries: options for IDA19. International Development Association, World Bank.

International Monetary Fund (2020) The international architecture for resolving sovereign debt involving private-sector creditors – Recent developments, challenges, and reform options' September 23, 2020,

Washington.
Jeanneret, A. Souissi, S. (2016) Sovereign default by currency denomination. Journal of International Money and Finance, 60, 197-222.
Kohlscheen, E. (2010) Domestic vs external sovereign debt servicing: an empirical analysis. International Journal of Finance and Economics, volume 15, issue 1, 93-103.
Lane P.R. Milesi-Ferretti, G. M. (2018) The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis. IMF Economic Review, Palgrave Macmillan; International Monetary Fund, 66, 189-222.
Manasse, P. Roubini, N. (2009) Rules of Thumb for sovereign debt crises. Journal of International Economics, 78 (2) 192-205.
Megersa, K. (2019) Determinants of Sovereign Debt default: Some Evidence from FCAS and MENA Countries. K4D Helpdesk Report, Brighton, UK: Institute of Development Studies.
Mitchener, K. J. and Weidenmier, M. D. (2010). Supersanctions and sovereign debt repayment. Journal of International Money and Finance, 29(1):19–36.
Mpapalika, J. Malikane, C. (2019) The determinants of sovereign risk premium in African countries. Journal of risk and financial management, 12-29.
Ncube, M. Brixiová, Z. (2015) Public Debt Sustainability in Africa: Building Resilience and Challenges Ahead. Working Paper Series N° 227 African Development Bank.
North, D. C. and Weingast, B. R. (1989). Constitutions and commitment: the evolution of institutions governing public choice in seventeenth-century england. Journal of Economic History, 49(4):803–832.
Oberdabernig, D. (2018) Determinants of IMF lending: how different is sub-Saharan Africa? Economics Bulletin 38 (1), 136-145.
Ouyang, A. Y. Rajan, R-S. (2014) What determines external debt tipping points? Journal of Macroeconomics, Volume 39, Part A, March 2014, 215-225.
Owusu-Nantwi, V. and Owusu-Nantwi, G. (2023), "Public debt, corruption and shadow economy in Africa: an empirical analysis", Journal of Economic and Administrative Sciences, Vol. 39 No. 1, pp. 184-202.
Panizza, U., F. Sturzenegger and J. Zettelmeyer (2009), "The Economics and Law of Sovereign Debt and Default", Journal of Economic Literature, Vol. 47, No. 3, pp. 651-98.
Petersen, M-A. (2009) Estimating standard errors in finance panel data sets: comparing approaches. The review of financial studies, 22, 435-480.
Princeton, NJ: Princeton University Press.
Reinhart, C. M. and K. S. Rogoff (2009), This Time Is Different, Eight Centuries of Financial Folly, Princeton University Press.
Reinhart, C. Reinhart, V. Trebesch, C. (2016) Global cycles: Capital flows, commodities, and sovereign defaults, 1815-2015. American Economic Review, 106(5), 574- 80.
Reinhart, C. Rogoff, K. (2011) From financial crash to debt crisis. American Economic Review, 101 (5), 1676-1706.
Rose, A. K. (2005). One reason countries pay their debts: renegotiation and international trade. Journal of Development Economics, 77(1):189–206.
Schlegl M. Trebesch C. Wright Mark, L-J. (2019) The Seniority Structure of Sovereign Debt. NBER Working Papers 25793, National Bureau of Economic Research, Inc.
Scholl, A. (2017). The dynamics of sovereign default risk and political turnover. Journal of International Economics, 108:37–53.
Schultz, K. A. and Weingast, B. R. (2003). The democratic advantage: institutional foundations of financial power in international competition. International Organization, 57(1):3–42.
Steinkamp, S. Westermann, F. (2014) The Role of Creditor Seniority in Europe's Sovereign Debt Crisis. Economic Policy, 29(79), 495-552.
Sturzenegger, F. Zettelmeyer, J. (2006) Debt defaults and lessons from a decade of crises. MIT press.
Swamy, V (2015) Government Debt and Its Macroeconomic Determinants: An empirical Investigation. Available at SSRN: https://ssrn.com/abstract=2601875.
Thompson, S-B. (2011) Simple formulas for standard errors that cluster by both firm and time. Journal of Financial Economics, 99, 1-10.
Tirole, J. (2002) Financial Crises, Liquidity, and the International Monetary System.
Tomz, M. (2007). Reputation and International Cooperation: Sovereign Debt across Three Centuries. Princeton

University Press.
World Bank. (2020) World Bank Predicts Sharpest Decline of Remittances in Recent History. Press Release No: 2020/175/SPJ, April 22.
Yeyati, L-E. (2009) Optimal Debt? On the Insurance Value of International Debt Flows to Developing Countries. Open Economies Review, 20, 489–507.