



DEBT AND FINANCIAL DEVELOPMENT IN AFRICA

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Abstract

In this study, an analysis of the relationship between debt and financial development in Africa is undertaken. Employing panel fixed effect regression analysis of data from 31 Africa countries, selected on the basis of data availability and using the ratio of private sector credit to Gross Domestic Product as proxy of financial development, a significant and positive relationship was found to exist between debt service and financial development in Africa. The country specific OLS results showed that while Cabo Verde, Mali, Mozambique, Niger, Rwanda, Burkina Faso, Burundi, Kenya and Senegal recorded significant positive relationship between debt and financial development in the region, the relationship was negative for Nigeria. The study concludes that whereas the 'safe asset' hypothesis holds for Africa as a whole, the 'lazy bank' hypothesis holds in few countries including Nigeria.

Keywords: Debt service; Financial Development, Africa

Introduction

There is a growing concern of rising debts in Africa. The debt profiles of most Africa countries are beginning to send shivers to policy makers and economic managers in the developing region. Debt service as a percentage

of export of goods, services and primary income for the sub regions in Africa namely, Sub Saharan Africa, Eastern and Southern Africa and Western and Central Africa increased by 247.24%, 194.85% and 373.83% respectively over the last decade (World Development Indicator, 2021).

The rising debt is a product of rising fiscal deficits associated with declining revenues, exacerbated by the declining global macroeconomic shocks occasioned by the 2020 Covid-19 pandemic, declining global productivity, global supply bottlenecks and the Russian-Ukrainian war-induced global economic imperfections. The rise in institutional weaknesses, inefficiencies, corruption and socio-political tensions mounting in the region have not helped matters.

Kumhof & Tanner (2005) posits the notion of a safe government debt. Public debt, according to them enhances liquid collateral which speed up the process of financial intermediation in the financial system. They further claim that returns on government debt encourages the development of the private bonds market where there is excess liquidity such that the case becomes that of government debt 'crowding in' private sector credit.

On the other hand, Hauner (2009) in the 'lazy bank' hypothesis, opined that increasing government domestic borrowings from the domestic banking institutions makes the banks 'lazy' in channeling credits to the more efficient private sector. The banks do this on the premise of the low risk involved in investing in government securities which are seen as 'gilt edge securities' in comparison with the private investors who may be unwilling to add the risk premiums to their negotiations. In developing economies like Africa, credit to government is an increasing function of total bank lending which makes public debt likely to harm financial development given their limited levels of financial depth (Ismihan and Ozkan, 2010). Chung-Lee, Ismail and Ai-Lian (2020) concluded that

continuous government appetite for large domestic borrowings will crowd-out the private sector by first reducing the availability of credit to the sector leading to the preference of banks' lending to low-risk government securities and ultimately resulting in more expensive bank lending to the private sector.

An examination of Africa's financial development over the last decade reveals a declining trajectory. There has been a consistent decline in the ratio of domestic credit to the private sector to Gross Domestic Product (GDP) in the region from 2017 to 2020. From a value of 43.99 in 2017, the index steadily declined to 40.92 in 2018, 39.94 in 2019 and 37.915 in 2020 respectively (World Development Indicators, 2021). Eastern and Southern Africa recorded a decline from 64.25 to 59.74 while Western and Central Africa also experienced a decline from 15.14 to 14.74 respectively. In terms of regional comparison, Africa was below Latin America and the Caribbean (59.78), European Union (93.03), East Asia and the Pacific (171.64) and North America (215.95) in 2020. This shows the relative shallowness of the financial system in Africa.

This study therefore aims at checking empirically, whether the debt service-finance nexus in Africa supports the 'safe asset view' or the 'lazy bank' hypothesis against the backdrop of the rising debt and dwindling financial development experienced in the region in the past decade.

Literature Review

The 'safe asset' hypothesis postulates that safe government debt provides liquid collateral which enhances intermediation in the financial system. The returns on government debt, in the face of excess liquidity fast tracks the development of the domestic bond market which could 'crowd in' private sector credit to the financial system. On the flip side is the 'lazy bank' hypothesis which postulates that public debt-finance nexus could be

affected negatively by the banking system's structural characteristics. For instance, when a country has a larger share of total bank lending channeled to government debt instruments, in a situation of financial shallowness, as is evident in developing economies, financial development will most likely suffer a set-back (Akindipe, 2018, Kumhof & Tanner, 2005, Hauner, 2009 and Ismihan & Ozkan, 2010).

Abbas, Ramzan, & Fatima (2021) examined the relationship between public debt and financial development in seventy-nine (79) countries. They found a positive impact of public debt on financial development with institutional quality. However, without institutional quality, public debt exerted negative influence on financial development.

In a study of the impact of trade openness, public debt and institutional performance on financial development in Asian economies, Akbar, Fakher and Nazar (2021), employing dynamic panel Generalised Method of Moments technique, found financial development to be negatively impacted by public debt. With the inclusion of institutional interaction controls, however, a positive nexus was established.

Employing Autoregressive Distributed Lag (ARDL) model, bound test and Error Correction Model (ECM), Samwel (2021) found a negative effect of domestic debt on financial development in Kenya. Utilizing the second-generation panel unit test and panel cointegration test in 18 emerging economies for the period, 1987 to 2013, Ilgun (2016), found a long run negative effect of government borrowing from domestic banks on financial development. Mun & Ismail (2015), in a similar study in Malaysia, also found a negative relationship between public debt and financial development for the period, 1980 to 2010. The result was not different for Altayligil & Akkay (2013). In a study of the relationship in Turkey from Q1 2002 to Q2 2012, they also found an inverse relationship

between public debt and financial development by using the ECM technique. Ersoy (2012) conducted a research on government debt and financial dilemma in developing countries, using Turkey as a case study. Utilizing the bounds test and granger causality techniques, a negative long run and unidirectional causation flowing from debt to financial depth was ascertained.

Benayed and Gabsi (2020) in an assessment of the non-linear effect of domestic public debt on financial development, in a panel of twenty low income countries in Sub Saharan Africa from 2000 to 2010 found the existence of an inverted U between domestic public debt and bank credit to private sector.

Chung-Lee, Ismail & Ai-Lian (2020) examined if public debt asymmetrically links financial development in Malaysia. Employing a non-linear ARDL technique and data spanning 1980 to 2015 found a short run and long run significant relationship between public debt and financial development. However, at higher development levels, the asymmetry effect becomes debilitating. Ondo (2017) also found a non-linear contracted effect of public debt on financial stability in a study conducted for Economic Community and Monetary Union of Central Africa (EMCCA).

In a panel data of 60 developing countries and utilizing political system-based instruments, Emran & Farazi (2009) found that a dollar more borrowing of government reduces private credit by about \$1.40. This corroborated the lazy bank model especially in less developed economies. Similarly, Shetta & Kamaly (2014) in a test of the lazy banking hypothesis in Egypt using the VAR technique of quarterly data spanning four decades found that government borrowing dampens private credits by shifting banks' portfolio away from more risky private loans which makes

government borrowing shocks contractionary with respect to credits of the banking sector.

Kutivadze (2011) controlled for macro and institutional factors in a study of public debt and financial development. Considering income groupings for a period 1994 to 2007, a positive relationship was found to exist between public debt and financial development conditional on the development of a domestic debt market.

Akpanung (2008) in an analysis of the impact of domestic debt on private sector credit, lending rate and real output in Nigeria did not find a statistically significant impact of government domestic debt on private sector credit in a multivariate VAR model.

The review of literature clearly reveals the necessity and growing empirical interest in analyzing the nature of relationship between public debt and financial development. It is also evident that whereas few and contrasting results exist for sub Saharan Africa, none exists for Africa as a whole. This study intends to add to empirical literature in explaining the nature and strength of the debt-finance nexus in Africa.

The Model

This study relies on the 'safe asset' and the 'lazy bank' hypotheses. Both explain the link between public debt and financial sector development. The difference is that while safe asset postulates a direct impact, lazy bank sees an inverse relationship in the long run.

Adopting the framework by Kumhof and Tanner (2005), Ismihan and Ozcan (2010) and Akindipe (2018), and the empirical studies briefly discussed in the preceding section, the baseline model for the study is presented in its functional form as;

$$DCREDIT_{it} = f(\ln DEBT_{it}, \ln TRADEBAL_{it}, FDI_{it}, \ln TRADESERV_{it})$$

1

DCREDIT is Domestic Credit to private sector as percentage of GDP, FDI

is Foreign direct investment, net inflows (% of GDP), lnTRADEBAL is the trade balance (billions of US Dollars) in log form, lnTRADESER is trade in service (billions of US Dollars) expressed in log form, DEBT is debt service on external debt, total (TDS, current US\$) expressed in log.

Original data are annual for the period, 1992 - 2019 from World Development Indicator's database.

Specifically,

$$\text{DCREDIT} = b_0 + b_1 \ln \text{DEBT} + b_2 \ln \text{TRADEBAL} + b_3 \text{FDI} + b_4 \ln \text{TRADESERV} + e_2$$

Where, b_0 is the constant, b_1 , b_2 , b_3 and b_4 are the coefficients of debt service, trade balance, foreign direct investment and trade in services respectively and e is the stochastic error term. The variables expressed in log form allows for their respective coefficients to be interpreted as elasticities.

The a priori sign of the explanatory variables could either take positive or negative values.

Estimation Procedure

Given the inherent shortcoming of the Pooled Ordinary Least Squares technique of analysis such as, the assumption of homogeneity across cross sections in panel data analysis and the assumption that the explanatory variables are non-stochastic and strictly exogenous, the alternative techniques become either the fixed effect model which assumes that each cross sectional unit has its own intercept and the random effect model which assume variation of intercept and slope across cross sectional units. In determining the more efficient method to adopt, the Hausman test is conducted (Table 7). The Hausman test assesses the null hypothesis that the random effect is the more efficient procedure to adopt. Given that the

probability of the cross section random was below the 5% level, the null hypothesis is rejected. Hence the fixed effect model was adopted for the study. The data employed spanned 1992 to 2019 and was sourced from the World Bank database. 31 Africa countries were involved in the study (see appendix for the list of countries). The choice of the period and countries was essentially due to data availability

The Data

TABLE 2: DESCRIPTIVE STATISTICS OF THE VARIABLES (GENERAL)

	BROADMO	DCREDIT	TRADEBA	TRADESE		
	NEY	T	L	R	DEBT	FDI
Mean	29.12939	19.74960	-6.905920	15.61678	4.77E+08	2.479205
Median	22.37825	12.27515	-7.804567	13.68679	96319585	1.533964
Maximum	104.6259	160.1248	36.68441	60.06963	1.56E+10	39.44175
Minimum	5.143200	0.402581	-61.30599	1.748920	259869.5	-8.703070
Std. Dev.	20.02812	26.17917	13.61169	9.497615	1.17E+09	3.700869
Skewness	1.798048	3.539816	0.362818	1.947631	5.930979	3.760235
Kurtosis	5.598537	16.11889	4.793290	7.869594	56.07773	30.20195
Jarque-Bera	528.1953	5963.075	100.4221	1043.442	79371.70	21372.84
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	644	644	644	644	644	644

Source: Author's computation (2022).

The average broad money to GDP ratio for the selected Africa countries, between 1992 and 2019 from Table 1, is 29.13. Its value ranged between 5.14 and 104.63. With coefficients of skewness and kurtosis of 1.80 and 5.60 respectively, the distribution of broad money to GDP ratio is positively skewed and leptokurtic. Also, the average ratio of domestic credit to GDP is 19.75 with minimum and maximum values of 0.40 and 160.12 respectively. The distribution is also positively skewed and leptokurtic as are evident in the respective coefficients of skewness and kurtosis. From the foregoing, the two measures of financial development employed by

this study reveal the relative shallowness of the financial sector in Africa. The mean of the control variables in the study (trade balance, trade in service and foreign direct investment) are -6.91 billion dollars, 15.62 billion dollars and 2.48 respectively. Debt service is 477 million dollars in the period under review.

TABLE 2: CORRELATION RESULT OF THE VARIABLES

	BROADMO NEY	DCREDI T	TRADEBA L	TRADESE R	DEBT	FDI
BROADMONEY	1.000000					
DCREDIT	0.677112	1.000000				
TRADEBAL	-0.182241	0.008400	1.000000			
TRADESER	0.406084	0.076805	-0.089760	1.000000		
DEBT	0.451208	0.586341	0.186010	-0.105659	1.000000	
FDI	0.121676	0.003084	-0.043410	0.280321	-0.037360	1.000000

Source: Author's computation:

Original data are annual for the period, 1992 – 2019 from World Development Indicator's database

Table 2 shows the correlation among the variables. It is clearly noticed that a strong correlation exists between domestic credit to the private sector and broad money as percentages of GDP in Africa. This justifies the use of broad money variable as a robustness check for the primary model. All the explanatory variables except trade balance are positively correlated with the ratio of broad money to GDP. Debt service exerts the strongest positive correlation with the ratio of broad money to GDP and the ratio of domestic credit to private sector to GDP in Africa with coefficients of 0.45 and 0.59 respectively.

TABLE 3. PANEL UNIT ROOT TEST RESULTS (AT LEVELS)

Variables	Intercept and Trend							
	Homogenous Unit Root Process		Heterogenous Unit Root Process					
	Levin, Lin & Chu		Im, Pesaran & Shin		ADF -Fisher		PP -Fisher	
	Statistic	Pro**	Statistic	Pro**	Statistic	Pro**	Statistic	Pro**
BROADMONEY	1.39	0.92	1.56	0.94	32.94	0.98	44.96	0.52
DCREDIT	-0.91	0.18	-0.27	0.39	56.48	0.14	47.47	0.41
TRADEBAL	-1.85	0.03	-2.22	0.01	69.52	0.01	89.33	0.00
TRADESER	-3.55	0.00	-3.55	0.00	77.42	0.00	102.82	0.00
DEBT	2.38	0.99	0.44	0.67	67.02	0.02	101.40	0.00
FDI	3.07	0.00	4.43	0.00	94.58	0.00	139.91	0.00

Source: Author's computation (2022).

Panel Unit Root Test at levels is depicted by Table 3. From the common (homogenous) characteristics of the Africa countries, employing the Levin, Lin and Chin process, *BROADMONEY*, *DCREDIT* and *DEBT* were not stationary at levels.

TABLE 4. PANEL UNIT ROOT TEST RESULTS (AT FIRST DIFFERENCE)

Variables	Intercept and Trend							
	Homogenous Unit Root Process		Heterogenous Unit Root Process					
	Levin, Lin & Chu		Im, Pesaran & Shin		ADF-Fisher		PP-Fisher	
	Statistic	Pro.**	Statistic	Pro.**	Statistic	Pro.**	Statistic	Pro.**
BROADMONEY	-6.31	0.00	-10.16	0.00	191.11	0.00	368.58	0.00
DCREDIT	-13.87	0.00	-12.13	0.00	216.24	0.00	326.76	0.00
TRADEBAL	-12.18	0.00	-14.83	0.00	286.68	0.00	486.97	0.00
TRADESER	-11.21	0.00	-14.83	0.00	288.28	0.00	516.24	0.00
DEBTSERV	-9.97	0.00	-15.09	0.00	299.98	0.00	554.80	0.00
FDI	-10.86	0.00	-15.23	0.00	294.20	0.00	525.48	0.00

Source: Author's computation (2022).

The result of stationarity test in table 5 reveals that all the variables became stationary at first difference at the 1% level of significance for both homogenous and heterogenous processes.

TABLE 6. JOHANSEN FISHER PANEL COINTEGRATION TEST

Hypothesized No of CE(s)	Unrestricted Cointegration Rank Test			
	Trace Test		Max -Eigen Test	
	Fisher Stat*	Prob	Fisher Stat*	Prob
None	195.4	0.0000	129.9	0.0000
At Most 1	97.91	0.0000	72.10	0.0083
At Most 2	51.31	0.2733	41.52	0.6603
At Most 3	37.49	0.8100	31.22	0.9530
At Most 4	54.58	0.1807	54.58	0.1807

Source: Author's computation (2022).

There is a long run relationship among the variables in the study as evident in table 6. Employing the Johansen co-integration test, there exist at most one co-integrating equation for both the Trace test and the Max-Eigen test at the one percent level of significance. This confirms a long run

relationship between debt and financial development in Africa.

Table 6: Debt and Financial Development in Africa

Explanatory Variables	Fixed Effect Model	
	Domestic Credit to GDP ratio (Model 1)	Broad Money to GDP ratio (Model 2)
<i>Constant</i>	10.761*** (0.000)	20.42*** (0.000)
<i>Debt</i>	0.126*** (0.000)	0.69** (0.044)
<i>Trade Balance</i>	-0.037 (0.209)	-0.03 (0.38)
<i>Foreign Direct Investment</i>	0.306*** (0.000)	0.267*** (0.002)
<i>Trade in Services</i>	0.343*** (0.000)	0.481*** (0.000)
Adjusted RSquared	0.911	0.841
F-Statistics	261.89 (0.000)	27.74 (0.000)

Note:*** represents significance at the 1% level and** represents significance at the 5% level. Figures in parenthesis are the probabilities. Domestic Credit to private sector as ratio of GDP is used here as the dependent variable for model 1; while broad money to GDP ratio is used as the dependent variable for Model 2 (used as a robustness check)

Table 6 shows the result of the relationship between debt and financial development in Africa. Two models were developed by the study. The first is the ratio of domestic credit to the private sector to GDP as proxy for financial development while the second model is used as a robustness check of the first model and represents broad money to GDP ratio.

Prior to subjecting both models to panel regression analysis, the Hausman test was conducted to ascertain the most efficient of either the Fixed effect or Random effect methodologies. The result of the test in table 7 finds no

statistical basis for the acceptance of the null hypothesis that the Random effect is more appropriate. Therefore, the fixed effect panel regression model was developed and utilized by the study.

The fixed effect model clearly reveals a significant and positive relationship between debt and financial development in Africa. Specifically, a unit increase in debt service in the region significantly enhances the ratio of domestic credit to GDP by 0.126 unit at the 1 percent level of significance. This supports the safe asset postulate (Kumhof & Tanner, 2005).

Table 7: Hausman Test

Test Summary	Chi -sq. Statistics	Chi -sq.df	Prob.
Cross -section random	17.851	4	0.0013

Source: Authors' computation (2022).

From the robustness check (replacing domestic credit to GDP ratio with money supply to GDP ratio), it is also evident that a significant and positive relation exist between debt and financial development in Africa. Both results are similar in most respect. Foreign direct investment, trade in service also significantly and directly influenced financial development in both models. Trade balance however had a negative effect on financial development.

Table 8 shows the OLS models for some selected countries in Africa. The result reveals that most of the countries recorded significantly positive relationship between debt service and financial development in Africa. This corroborates the fixed effect result. Cabo Verde, Mali, Mozambique, Niger and Rwanda recorded a direct relationship at the 1 percent level of

significance while Burkina Faso, Burundi, Kenya and Senegal showed direct causation of debt-financial development nexus at the 5 percent level. On the other hand, a significant negative relationship was found for Nigeria at the 5 percent level.

COUNTRY	EXPLANATORY VARIABLES				DIAGNOSTICS		
	FDI	TRADE BALANCE	TRADE IN SERVICE	DEBT	R- Squared	F-Stat	D.W. Stat
Burkina Faso	0.635 (0.389)	0.613** (0.019)	-0.855** (0.039)	0.001** (0.018)	0.779	20.230 (0.000)	0.895
Burundi	0.742 (0.172)	-0.107 (0.135)	-0.167 (0.264)	0.012** (0.022)	0.332	2.858 (0.047)	0.896
Cabo Verde	0.187 (0.716)	0.392 (0.119)	0.079 (0.705)	0.076*** (0.002)	0.864	36.578 (0.000)	0.649
Central Africa Republic	0.058 (0.834)	-0.386*** (0.000)	0.440 (0.443)	0.253 (0.318)	0.658	11.042 (0.000)	1.189
Congo Rep	0.023 (0.801)	-0.163** (0.031)	-0.190 (0.108)	0.014* (0.071)	0.450	4.711 (0.006)	0.570
Cote d' Ivoire	- 2.995* (0.007)	-0.743** (0.029)	0.656 (0.211)	5.210 (0.173)	0.410	4.001 (0.013)	0.836
Gabon	0.047 (0.685)	-0.238*** (0.000)	-0.268** (0.020)	11.900 (0.888)	0.471	5.127 (0.004)	1.230
Ghana	0.835* (0.000)	-0.217** (0.040)	0.362* (0.000)	9.880 (0.950)	0.854	33.689 (0.000)	1.307
Guinea	0.062 (0.538)	-0.077** (0.036)	0.027 (0.829)	-0.016 (0.172)	0.477	5.236 (0.004)	0.952
Kenya	0.381 (0.552)	-0.449** (0.011)	-0.111 (0.260)	6.330** (0.015)	0.650	10.677 (0.000)	1.369
Madagascar	0.498* (0.008)	0.107 (0.176)	-0.463* (0.001)	-6.130 (0.585)	0.403	3.876 (0.015)	1.157
Mali	0.290 (0.553)	0.037 (0.884)	-0.227 (0.675)	0.001*** (0.003)	0.394	3.739 (0.017)	0.615
Mozambique	0.532* (0.000)	0.001 (0.986)	-0.487** (0.019)	0.036*** (0.000)	0.898	50.402 (0.000)	1.340
Niger	0.633* (0.003)	0.190* (0.079)	0.447 (0.264)	0.043*** (0.004)	0.733	15.811 (0.000)	1.012
Nigeria	0.683 (0.495)	-0.099 (0.447)	-0.211 (0.676)	84.700** (0.045)	0.249	1.906 (0.144)	0.409
Rwanda	1.445* (0.002)	-0.111** (0.017)	-0.363 (0.230)	0.002*** (0.000)	0.865	36.701 (0.000)	1.382
Senegal	-0.506	-0.681**	-0.049	0.039**	0.389	3.660	0.556

For the control variables, whereas trade balance showed negative relationship with financial development in most of the countries studied, trade in service and FDI affect financial development positively in most of Source: Authors' computation (2022).

the countries. Nigeria, with relatively high debt stock recorded a negative relationship between debt and financial development.

The implication of the finding that debt positively enhances financial development in Africa is that the debt ratio is still sustainable in the region. Also, the gains from debt (especially external) which includes foreign inflows into the region's financial system outweighs the repatriation in terms of the debt services payments. Therefore, debt accumulation that improves the wide infrastructural gaps, channeled towards the productive sectors in Africa in a wasteless manner will result in improving the depth and breadth of the financial system in the region. For proper and sustainable debt-financial development relations in the region therefore, there should be the pursuance of transparency of the public sector, tax administration reforms, macroeconomic stabilization, massive infrastructural development and a competitive business environment.

Conclusion

This study examined the impact of debt on financial development in Africa. It employed the panel cointegration and fixed effect panel regression model of 31 selected countries and found a significant and direct relationship between debt and financial depth in the region as a whole. This supports the safe asset hypothesis for Africa. The OLS results also found positive relationship in most of the selected countries. Whereas, Burkina Faso, Burundi, Cabo Verde, Kenya, Mali, Mozambique, Niger, Rwanda and Senegal experienced a significantly positive debt-financial development nexus, Nigeria was found to have an inverse relationship between debt and financial development.

Deliberate efforts by the fiscal managers of Africa economies to ensure that debts are within the sustainability benchmark, channeled to the productive sectors of the economy and deliberate efforts at strengthening

the institutions of governance to curb corruption will no doubt continue to enhance the gains of public debt on financial development in the region.

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Degli Studi Di Milano

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