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Determinants of Sovereign Spreads in Angola

Carmen L. Avila-Yiptong, Victor Duarte Lledó, Marco Miguel

SIP/2026/089

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on April 13, 2026. This paper is also published separately as IMF Country Report No 26/095.

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Determinants of Sovereign Spreads in Angola, Angola

Prepared by Carmen L. Avila-Yiptong, Victor Duarte Lledó, Marco Miguel

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ABSTRACT: This paper aims to analyze the determinants of sovereign spreads for Angola and investigate the potential bias against the country. Identifying determinants and the magnitudes of contributions of each determinant could shed light on the policy and reform efforts to reduce borrowing costs and enhance foreign exchange liquidity management. This literature has also attempted to assess whether SSA countries face a higher risk premium compared to other countries. It found evidence that an SSA premium may exist and it may be driven by often omitted factors associated with fiscal transparency and financial sector development.

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Angola

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Approved By
African Department

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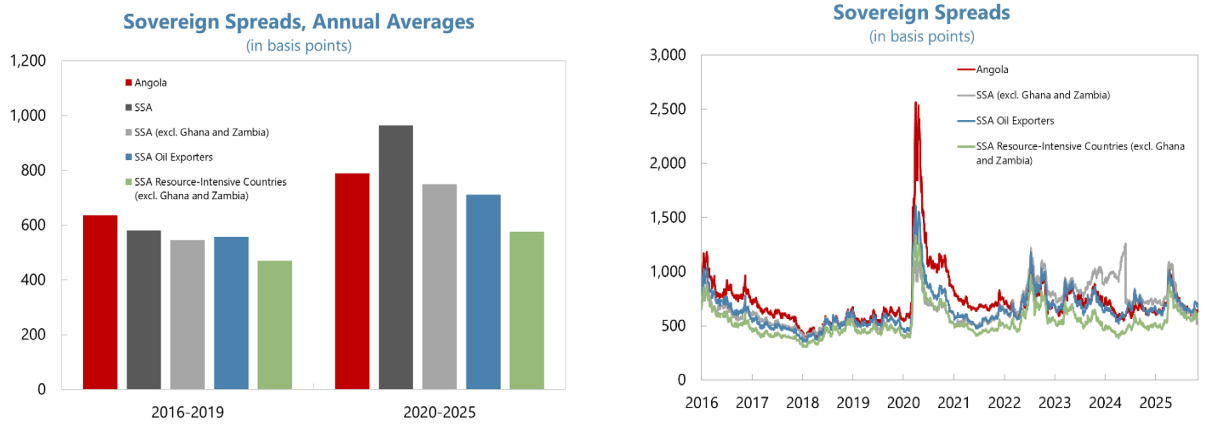
DETERMINANTS OF SOVEREIGN SPREADS IN ANGOLA[1]

A. Introduction

1. Angola has been facing sizeable debt service obligations, largely fueled by the high costs associated with market-based financing. Debt service as a percent of fiscal revenues has hovered since 2020 around 40 to 50 percent and is expected to remain at that range through the end of the decade. Moreover, two-thirds of debt repayments are to external commercial creditors (IMF, 2025). This trend has strained fiscal resources, especially foreign exchange resources, limiting the government's ability to invest in social and economic priorities while making Angola more vulnerable to shocks in global financial conditions.

2. Elevated sovereign spreads have forced the country to borrow at steep interest rates, amplifying the burden of external debt repayments. Angola's bond spreads rank among the highest in the region. Since the issuance of its first international sovereign bond in 2015, Angola's spreads have been significantly higher than those of some of its peers, peaking between 2019 and 2021 with a difference of over 200 basis points compared to countries like Cameroon and Gabon during the same period (Figure 1).

Figure 1. Angola Sovereign Spreads: Comparisons Against Peers, 2016–25

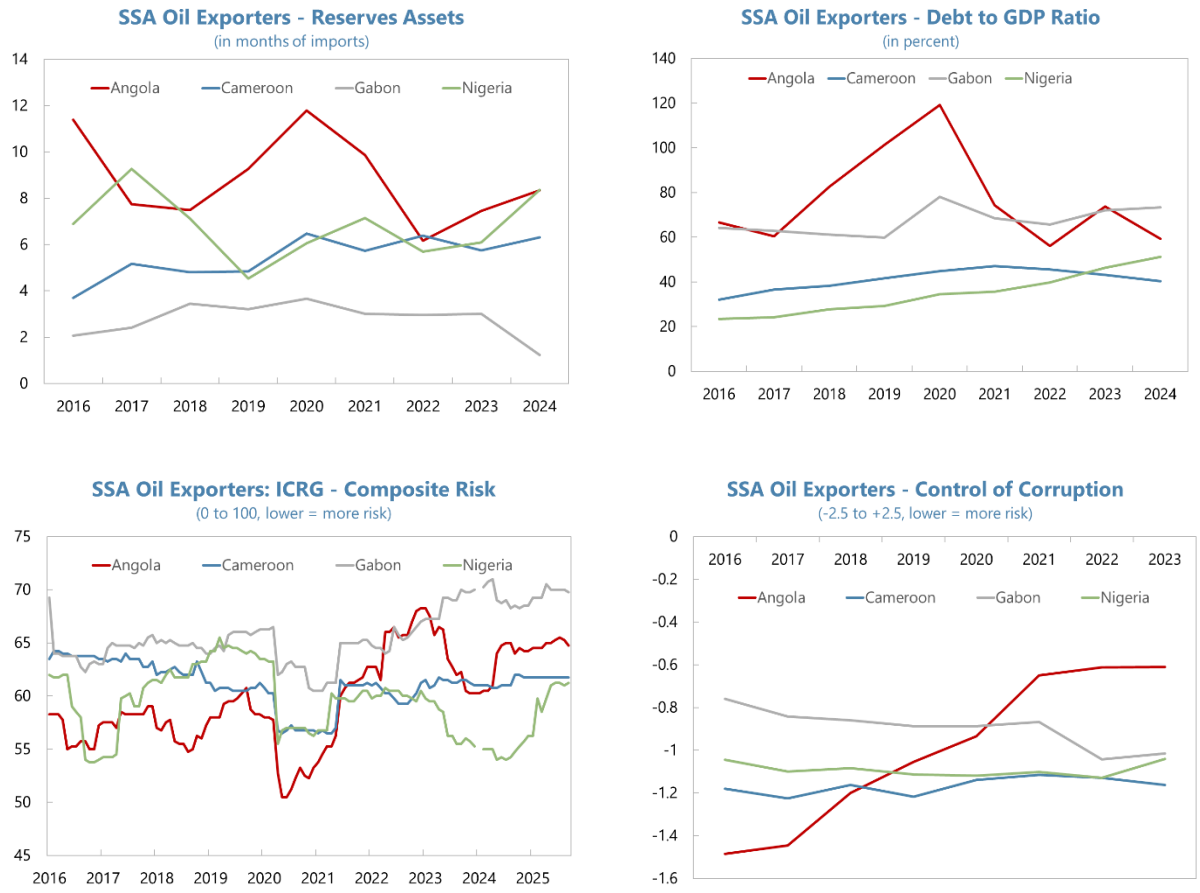


Sources: Data Query – J.P. Morgan Markets and authors' calculations.
Note: Sovereign spreads presented here are strip spreads. The comparator groups reflect the AFR Regional Economic Outlook country groupings. The averages are calculated by excluding Angola, and any other specified countries.

[1] Prepared by Carmen L. Avila-Yiptong, Victor Duarte Lledó, and Marco Miguel.

3. This apparent persistence of Angola's high sovereign spreads relative to peers has fueled a perception of an Angola risk premium. This seems to be particularly the case against other Sub-Saharan African (SSA) oil exporters such as Angola, Cameroon, Gabon, and Nigeria. For instance, over the last ten years, Angola's spread remained above those of several countries in this group over prolonged periods even though it has had the strongest reserve-to-imports. In addition, despite the good progress made in reducing public debt, overall risk (measured by the ICRG composite risk rating) or corruption (measured by the World Bank Governance Indicator of Control of Corruption rating), especially during the Fund-supported program (2018–21), Angola's spreads remained higher than its oil exporting peers through mid-2022 (Figure 2).

Figure 2. Angola Sovereign Spreads: Risk Premium Perceptions Relative to SSA Oil Exporters, 2016–25



Sources: Data Query – J.P. Morgan Markets, International Country Risk Guide (ICRG), World Economic Outlook, Worldwide Governance Indicators.
Note: The peer countries presented here are market-access emerging economies that are listed as oil exporters in the AFR Regional Economic Outlook. The ICRG Composite Risk Rating combines risk measures for political, financial, and economic risk.

4. This paper aims to analyze the determinants of sovereign spreads for Angola and investigate the potential bias against the country. Identifying determinants and the magnitudes of contributions of each determinant could shed light on the policy and reform efforts to reduce borrowing costs and enhance foreign exchange liquidity management. Analyses in this paper are built on a growing empirical literature that has looked at the determinants of sovereign issuance and spreads in emerging market and developing economies (EMDEs) and SSA.[2] This literature has also attempted to assess whether SSA countries face a higher risk premium compared to other countries. It found evidence that an SSA premium may exist and it may be driven by often omitted factors associated with fiscal transparency and financial sector development.

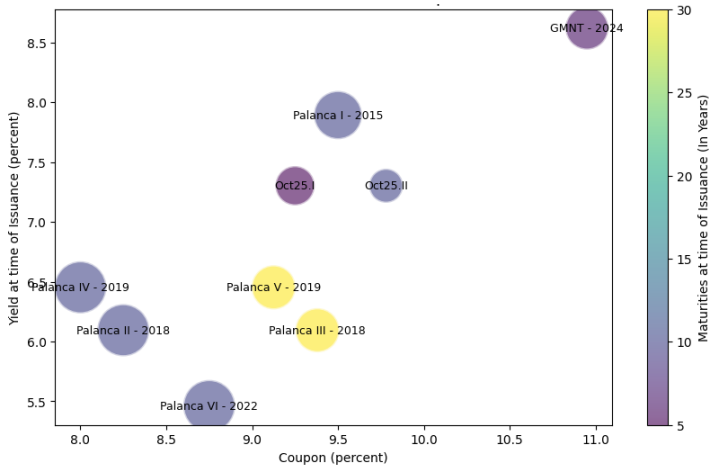
5. The rest of the paper is organized as follows. Section B provides an overview of Angola's sovereign debt issuance and spreads. Section C outlines the empirical methodology employed and presents results. Section D summarizes policy implications.

B. Angola's Sovereign Debt: Some History and Stylized Facts

6. Sovereign spreads for Angola have been monitored since 2012. Monitoring began after the country executed its first indirect issuance via a loan agreement with the Russian bank, VTB. This operation enabled Angola to secure US$1 billion at a yield of 7 percent. The issuance received a Ba3 rating from Moody's.

7. Angola's first sovereign issuance dates to 2015 and the latest in 2025. Angola formally entered the international bond market in 2015 through the issuance of Palanca I, a Eurobond valued at US$1.5 billion, which carried an annual coupon rate of 9.5 percent and was structured with a maturity period of 10 years, while prevailing yields during that period were approximately 7.8 percent (Figure 3). This was followed by further issuances in 2018 and 2019, raising a combined US$6.5 billion (Palanca II-V). The country returned to the markets in 2022 raising US$1.75 billion through a 10-year Eurobond (Palanca VI). In December 2024, Angola issued a Eurobond US$1.98 billion at an annual coupon rate of 10.95 percent, with a maturity of five years. This issuance was a private placement under the Global

Figure 3. Angola Eurobond Issuances, 2015–25



Sources: Data Query – J.P. Morgan Markets and authors', Debt Management Unit of Angola (UGD), and staff calculations.

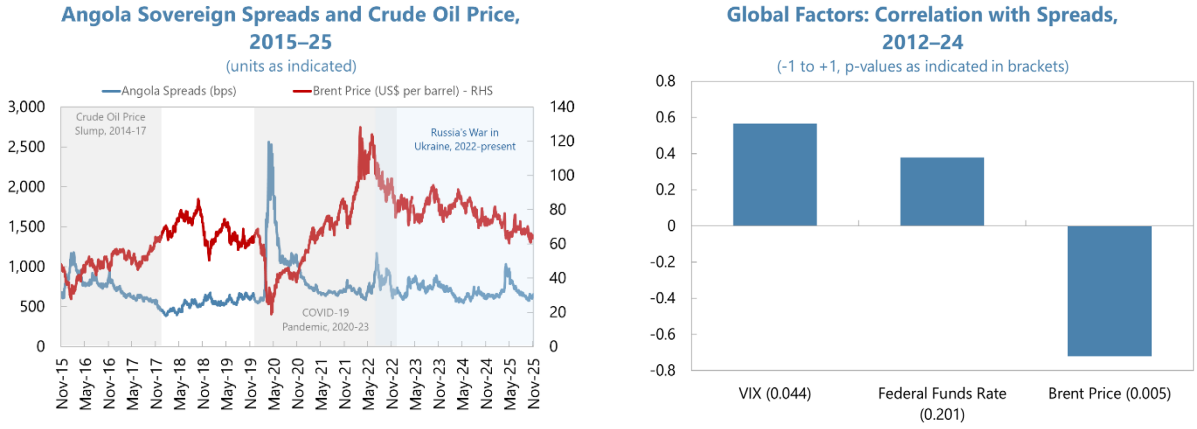
Note: The size of the bubbles represents the amounts per issuance.

[2] See Gbohoui et al. (2023) and Alter et al. (2025) for a recent survey of the empirical literature.

Medium Term Note Program (GMTNP) used as collateral for US$1 billion for a Total Return Swap with an international bank. The most recent transaction occurred in October 2025 with a US$1.75 billion Eurobond issuance, split between five-year notes at 9.25 percent and ten-year notes at 10.125 percent.

8. Angola's sovereign spreads are highly correlated with oil prices. With oil accounting for over 90 percent of the Angola's total exports and about 60 percent of its fiscal revenues, oil prices serve as an important indicator of Angola's ability to meet its debt obligations. Angola's history of sovereign issuance shows a significant negative correlation between Angola's bond spreads and international oil prices (Figure 4). The country's entry into the international bond market coincided with a dramatic shift in the oil market (the Price Slump). The sharp increase in U.S. shale oil production (together with increased production by the Organization of Petroleum Exporting Countries (OPEC) and weaker demand from China) led to an oversupply, drastically reducing prices from above US$100 in mid-2014 to US$44 per barrel by January 2015. This decline coincided with an escalation of global spreads, pushing Angola´s spreads to over 1,000 basis points. During this period, two significant issuances took place (Palanca II-III and Palanca IV-V) to manage a sharp decline in oil revenue. The COVID-19 pandemic brought another sharp decline in oil prices when spreads for Angola varied from 1,266 basis points to a maximum of 2,719 basis points in 2020. Following the initial shock due to the COVID-19 uncertainty, spreads rapidly started moving to pre-pandemic levels as global oil prices recovered. By end-2021, Angola's spreads stabilized around 670 basis points, reflecting a more favorable economic outlook. In 2022, the geopolitical tensions and supply chain disruptions caused by Russia's war in Ukraine led to another surge in oil prices, peaking at over US$120 per barrel. This period also saw the issuance of Palanca VI to manage lingering spending needs from the pandemic and food shortages.

Figure 4. Angola Sovereign Spreads: Global Factors



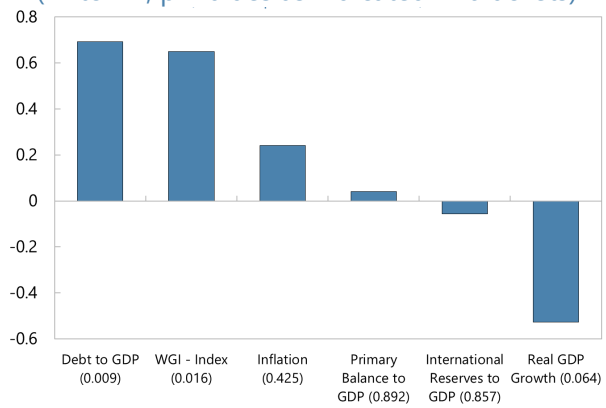
Sources: Haver Analytics, Data Query - J.P. Morgan Markets and authors' calculations.
Note: Sovereign spreads presented in the left-hand side chart are strip spreads. The pairwise correlations in the right-hand side chart use annual data for 2012–24; p-values are shown in parentheses.

9. Angola's sovereign spreads also co-move with global uncertainty. Angola´s bond spreads exhibit a significant positive correlation with measures of global uncertainty, such as the VIX

(Figure 4). This relationship is consistent with investor behavior, as heightened uncertainty typically leads to increased risk aversion and higher demand for yields. In contrast, the Federal Funds Rate (FFR), commonly used as a proxy for global liquidity conditions, shows a positive but not statistically significant correlation with Angola spreads. This finding is consistent with Comelli (2012), who concludes that U.S. interest rates, including both short-term (FFR proxy) and long-term Treasury yields, did not consistently drive emerging market sovereign spreads over the 1998–11 period. While short-term U.S. rates showed episodic significance during periods of abundant global liquidity, their overall impact was limited and often overshadowed by country-specific fundamentals and global risk sentiment.

10. Among domestic factors, debt, governance and growth rates stand out. Angola's economic fundamentals have high correlations with its sovereign spreads (Figure 5). The correlation is particularly strong and positive for public debt and the governance – measured by the Worldwide Governance Indicators (WGI) – and for GDP growth, negatively, with p-values below 5 percent.[3] However, the WGI index has a positive correlation with Angola spreads, which is counterintuitive, since better governance is expected to be associated with lower spreads for a country, as shown in several empirical studies.[4]

Figure 5. Angola's Domestic Factors: Correlation with Spreads, 2012–24
(-1 to +1, p=values as indicated in brackets)



Sources: Authors' calculations.
Note: The pairwise correlations presented in this figure only include the data observations for Angola. See Appendix I, Section C (Table 3) for the correlations of the entire data sample.

[3] We create an index for the Worldwide Governance Indicators by taking the average of the six-subcomponents.

[4] See Avila-Yiptong et al. (2025) for a review. This correlation could be spurious, reflecting the small sample size of the sample (less than 15 observations) and a crisis-reform overlap pushing spreads in different directions. Angola's improvements in governance practices – particularly since the mid-2010s (spread-reducing factors) coincided with a period of declining oil prices, rising public debt, and global volatility (spread-widening factors). The pairwise correlation between spreads and the WGI index is negative, as expected, when using the entire data sample (see Appendix I, Section C).

C. Empirical Analysis

11. A fixed effects (FE) estimator is used to assess the determinants of Angola's sovereign spreads.[5] The FE estimator is selected as it effectively controls for unobservable country-specific effects and is thus robust to endogeneity problems that may arise if these country-specific factors are correlated with other independent variables in the model. The Hausman test was conducted to select a FE estimator over a random effects estimator which is a more efficient but potentially inconsistent estimator if unobservable country-specific variables are correlated with explanatory variables in the model. Other alternative estimators such as a difference-in-difference (DiD) estimator or a two-way FE estimator were not considered as they need to rely on parallel trends assumption. The panel is an unbalanced panel of 83 EMDEs covering the period 2001-24. The empirical model is set up as below to assess how the spread of Eurobond sold in the secondary markets is impacted by a combination of global, domestic, and institutional variables as well as by country fixed effects as follows:

$$Y_{i,t} = \beta Global_t + \gamma X_{i,t} + \delta WGI_{i,t} + \Gamma_i + \varepsilon_{i,t} \quad (1)$$

Here, i is the country index and t is the time index. Y is measured by the J.P. Morgan Emerging Market Bond Index Global (EMBIG) spreads (in log terms). Global "push" factors (Global) reflect global financial conditions and include the US Fed Fund Rate, the VIX index – a proxy for global risk appetite, and Brent crude oil price. Domestic "pull" factors (X) refer to country-specific core "economic fundamentals" affecting investor's decisions, notably real GDP growth, public debt-to-GDP ratio, the stock of foreign reserves, primary balance and inflation (measured by consumer price index). These domestic fundamentals are all lagged to avoid reverse causality. Institutional factors are measured by a simple average of the World Bank Governance Indicators (WGI) categories.[6] Γ_i denotes country fixed effects.[7] Robustness checks are performed using alternative measures for domestic, global, and institutional variables.[8]

12. The existence of an Angola "risk premium" is tested by estimating the difference between country-fixed effects in the above panel regression model. Under this approach, the existence of a risk premium and discount is defined on a relative basis by estimating the difference between a country's fixed effect and the estimated fixed effect of a chosen comparator (a peer or a group with similar characteristics). For instance, in this approach, Angola bias could be computed by testing the difference between Angola's Γ_i with the average Γ_i of SSA countries, SSA oil or resource-rich exporters as well as individual peers in each of these groups (e.g., Kenya, Nigeria, Zambia). A positive and statistically significant difference between Angola's country fixed effect and that of an individual or group peer indicates that unobserved and time-invariant country-specific effects in Angola not captured by global and domestic factors underestimate observed spreads by a larger

[5] This analysis builds upon Alter and others (2025), Avila-Yiptong and others (2025), and Gbohoui and others (2023).

[6] See Appendix I for a detailed description of the data used in the model and descriptive statistics.

[7] Multicollinearity with global factors prevented the use of time fixed effects in the model.

[8] See Appendix I, Section D.

magnitude than that of the peer. This implies the existence of a "risk premium" or "unfavorable bias" that investors place in the price of an Angola bond in the secondary market relative to the bond price of the chosen peer. [9]

13. Empirical analyses indicate that domestic factors associated with governance, debt levels and inflation, are the most important determinants of sovereign spreads (Table 1, Figure 6). For the most part, findings in this paper confirm those in the literature, with some notable exceptions where the significance or magnitude of certain factors differs, warranting further discussions in the context of Angola's sovereign spreads. The sample average (590 basis points) is used as a reference point in the discussions below.

- **Global Financial Conditions.** In line with most empirical studies, results presented in Table 1 indicate that global risk appetite, the VIX index, is an important determinant of sovereign spreads in EMDEs with statistical significance. An increase of one percent in global uncertainty, as measured by the VIX, is associated with a 0.57 percent rise in sovereign spreads. This translates to an approximate increase of 3.3 basis points, based on the sample's average spread. In early April 2025, the VIX index increased by about 100 percent, implying that about 330 basis points increase in the average sovereign spreads of EMDEs could be explained by the hike in the global uncertainty. Conversely, the Federal Funds Rate is negatively associated with spreads, consistent with the correlations reported earlier.

- **Oil Price.** Oil price is an important explanatory variable for oil exporters' sovereign spreads but not for the entire sample of countries. This may reflect the fact that movements in oil prices are expected to have opposite impacts on oil exporting and importing countries. This is corroborated by findings that oil prices become statistically significant when interacted with dummies for oil-producing countries.10 For an oil-producing country (see equation 4 in Table 1) and a price of US$ 70 per barrel, an increase (decrease) of US$ 1 in the barrel of oil prices implies a reduction (increase) in spreads by 3.6 basis points.

- **Domestic Macroeconomic Fundamentals.** Several macroeconomic variables can explain the movements of sovereign spreads with statistical significance. The debt-to-GDP ratio is positively associated with sovereign spreads, indicating that higher public debt levels raise perceived sovereign risk. An increase of one percentage point in the debt-to-GDP ratio would increase spreads by 4.1 basis point.[11] Similarly, CPI inflation has a positive and significant effect, suggesting that inflationary pressures contribute to higher borrowing costs. It is estimated that an increase in CPI inflation, by one percentage point, would lead to an increase in the spreads by 8.9 basis points. In contrast, international reserves to GDP are negatively associated with spreads, implying that stronger external buffers reduce risk premiums. An increase by

[9] As a robustness check, an alternative test is conducted in Appendix II, Section B following Pesaran and Zhou (2018) two-step approach also pursued in Gbohoui and others (2023).

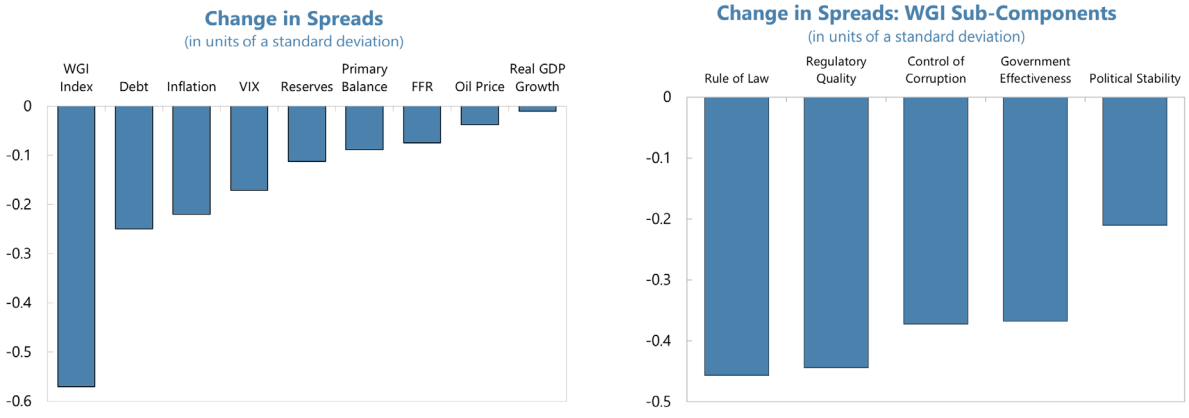
[10] This result is robust to interactions with dummies for SSA oil producers and for Angola (see Appendix I, Section D)

[11] The ratio of external debt to revenues has also shown to be positive and significantly associated with spreads, but with a very small coefficient that was not robust to alternative specifications.

1 percentage point of the international reserves to GDP ratio is associated with a reduction of the spreads by 4.7 basis points. The primary fiscal balance also shows a statically significant negative effect, indicating that fiscal discipline is perceived positively by markets. A reduction by 1 percentage point of the primary fiscal balance implies a reduction in spreads by 9.9 basis points. An index quantifying the depth in domestic financial sector institutions shows an expected negative and statistically significant impact on sovereign spreads. Deeper domestic financial markets can reduce spreads by creating more efficient markets for government debt, making it easier for investors to buy and sell bonds, thereby lowering financing costs for governments. Real GDP growth has a negative but statistically insignificant effect, suggesting limited short-term market responsiveness to growth performance.

- **Governance.** Governance emerges as the most influential determinant of sovereign spreads. The variable displays a substantial and statistically significant negative coefficient, implying that enhancements in institutional quality significantly lower spreads. Since the WGI scale spans from -2.5 to +2.5, even a small improvement in governance—such as a 0.1 increase—can result in a decrease in spreads of approximately 9.95 percent, equal to roughly 58.7 basis points. As illustrated in Figure 6, an improvement of one standard deviation in the WGI leads to reduction in sovereign spreads that is nearly three times greater than the effect of either debt or inflation, the next most influential variables. These results highlight the critical importance for EMDEs, including Angola, to focus on strengthening their WGI scores to lower their financing costs. To further evaluate the significance of the individual WGI subcategories (Table 1), each subcategory—excluding the overall WGI index—is incorporated into the baseline model. Aside from voice and accountability, the results indicate that the governance subcategories are also statistically significant. Among these, rule-of-law and regulatory quality have the strongest associations, followed closely by control of corruption and government effectiveness.

Figure 6. Ranking the Determinants of Sovereign Spreads



Sources: Authors' calculations.
Note: The charts illustrate the change in sovereign spread brought upon by a one standard deviation improvement in the specified variables. This allows for the explanatory variables to be ranked by standardizing the units of these variables. In the right-hand side chart, only components of the WGI, which are statistically significant have been included.

Table 1. Angola: Determinants of Sovereign Spreads

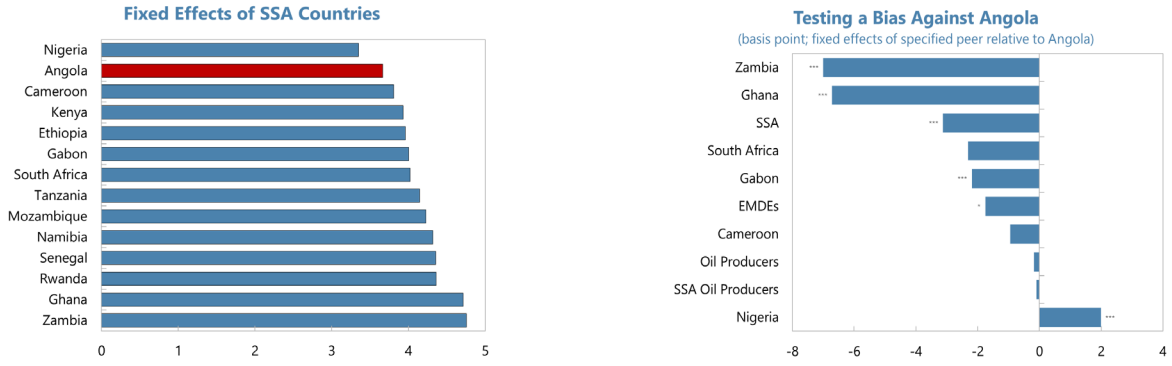
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Global Factors										
Federal Funds Rate (in log terms)	-0.052***	-0.045***	-0.091***	-0.058***	-0.057***	-0.051***	-0.051***	-0.053***	-0.062***	-0.053***
	(0.017)	(0.017)	(0.015)	(0.019)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
VIX (in log terms)	0.572***	0.588***	0.460***	0.601***	0.583***	0.580***	0.581***	0.564***	0.584***	0.575***
	(0.051)	(0.050)	(0.059)	(0.055)	(0.052)	(0.051)	(0.048)	(0.052)	(0.050)	(0.052)
Brent Price (in log terms)	-0.085	-0.076	-0.205***	0.084	-0.059	-0.092	-0.062	-0.082	-0.056	-0.077
	(0.071)	(0.068)	(0.072)	(0.091)	(0.073)	(0.072)	(0.070)	(0.071)	(0.073)	(0.071)
Macroeconomic Factors										
Real GDP Growth (lagged)	-0.002	-0.003	-0.005	-0.008	-0.002	-0.003	-0.002	-0.003	-0.002	-0.002
	(0.007)	(0.007)	(0.009)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
International Reserves to GDP (lagged)	-0.008*	-0.010**	-0.002	-0.017***	-0.008	-0.010*	-0.009	-0.008*	-0.007	-0.007
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Debt to GDP (lagged)	0.007***	0.006**	0.009***	0.008***	0.008***	0.008***	0.008***	0.008***	0.007***	0.007***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
CPI inflation (lagged)	0.015***	0.011***	0.018***	0.017***	0.017***	0.017***	0.014***	0.016***	0.015***	0.017***
	(0.003)	(0.003)	(0.006)	(0.002)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)
Primary Balance to GDP (lagged)	-0.017**	-0.016**	0.004	-0.013	-0.015**	-0.014*	-0.016**	-0.016**	-0.012	-0.018**
	(0.007)	(0.008)	(0.009)	(0.009)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)
External Debt Service to Revenue (lagged)		0.000**								
		(0.000)								
Governance										
WGI - Index (Mean of WGI categories - lagged)	-0.995***	-0.997***	-1.050***	-0.671***						
	(0.208)	(0.200)	(0.223)	(0.1019)						
WGI - Voice and Accountability (lagged)					0.199					
					(0.298)					
WGI - Control of Corruption (lagged)						-0.589***				
						(0.135)				
WGI - Government Effectiveness (lagged)							-0.618***			
							(0.173)			
WGI - Rule of Law (lagged)								-0.727***		
								(0.164)		
WGI - Regulatory Quality (lagged)									-0.690***	
									(0.144)	
WGI - Political Stability (lagged)										-0.264***
										(0.095)
Financial Development										
F. Institutions Depth (lagged difference)			-2.095***							
			(0.581)							
Oil										
Oil Producers (BP Classification)				4.690***						
				(0.452)						
Oil Producers X Brent				-.351***						
				(0.119)						
Observations	1,085	1,070	689	1,085	1,085	1,085	1,085	1,085	1,085	1,085
Number of Countries	75	73	58	75	75	75	75	75	75	75
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared (Within)	0.414	0.430	0.467	0.4259	0.373	0.399	0.407	0.404	0.411	0.388

Sources: Authors' calculations.

Note: The asterisks indicate the level of statistical significance of each regressor (*** p<0.01, ** p<0.05, * p<0.1).

14. An "Angola bias" seems to exist against Nigeria but not relative to other countries in SSA. By contrast, the results seem to indicate that Angola-specific factors provide the country a "discount" or favorable bias in the spreads relative to the average or EMDE country as well as to most relevant peer countries except for Nigeria (Figure 7, left-hand side chart).

Figure 7. Assessing the Existence of an Angola Risk Premium



Sources: Authors' calculations.
Note: The left-hand side figures present estimated fixed effects for a sample of SSA countries. The right-hand side figure presents the basis-point impact of the calculated Angola bias. This is calculated by taking the difference between the fixed effects for a given peer country or peer comparator group relative to Angola's fixed effects and computed using Angola's 2024 average spread. The asterisks indicate the level of statistical significance of each t-test that was run to determine if the difference in fixed effects is statistically significantly different from zero (*** p<0.01, ** p<0.05, * p<0.1).

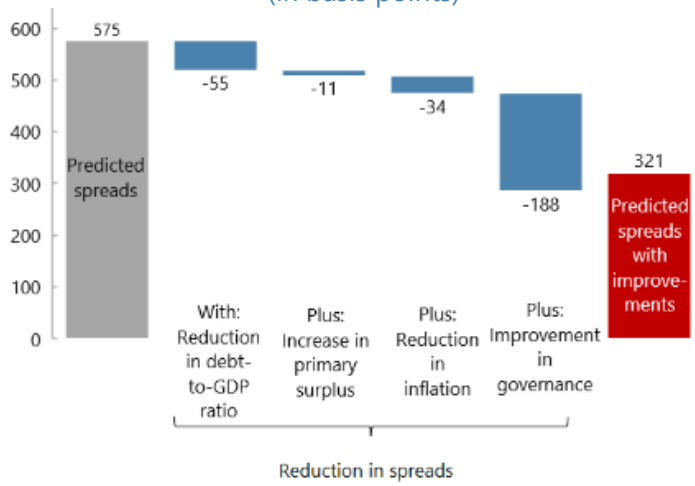
15. An illustrative package comprised of fiscal, monetary, and governance policy actions could deliver meaningful reductions in Angola's sovereign cost of borrowing (Figure 8).[12] These reforms include (i) an alignment of the debt ratio with the 60 percent target of the Fiscal Sustainability Law, (ii) an increase in the primary balance to align with the FSL's operational target for the non-oil primary deficit, (iii) a reduction in inflation to single digits, and (iv) an improvement in governance such that Angola's WGI performance is equal to the EMDE average.[13] This illustrative example showcases that, through a multifaceted policy approach, Angola can reduce its spreads by half relative to the level of spreads observed in 2024.[14]The analysis highlights that various combinations of policy reforms can support the authorities' efforts to reduce borrowing costs and strengthen debt management.

[12] This exercise, which simulates Angola reaching sovereign spreads at a level aligning with investment grade status, replicates work done by Avila-Yiptong and others (2024).

[13]More concretely, the illustrative exercise assumes (i) a reduction of the debt-to-GDP ratio from its 2023 level (73.7 percent) to 60 percent; (ii) an increase of the primary balance from its 2023 level (3.5 percent of GDP) to the debt stabilizing level of 4.85 percent estimated in Zedginidze (forthcoming), and (iii) a decrease of inflation from 13.6 percent (2023 average) to 9 percent.

[14] Angola's average spreads in 2024 were 641 bps.

Figure 8. Illustrative Example: Reducing Angola's Sovereign Cost of Borrowing
(in basis points)



Sources: Authors' calculations.

D. Policy Implications

16. A sustainable debt position, stable prices, and strong governance are all critical to reducing sovereign spreads in Angola and EMDEs. Among the various domestic "pull" factors analyzed in this paper, governance (as measured by the WGI), public debt, and inflation appear to be the most important determinants of spreads in EMDEs. More specifically:

- Aligning the fiscal stance with the Fiscal Sustainability Law (FSL) could reduce Angola's sovereign cost of borrowing. A reduction of debt to attain the 60 percent target level of the FSL could reduce spreads by some 55 basis points, saving 0.33 percentage point of GDP in interest costs, in addition to 1.1 percentage point of GDP decline in the interest bill due to a lower debt level.[15] Keeping debt at that level thereafter by ensuring the primary balance is aligned with the FSL's operational target for the non-oil primary deficit could reduce spreads by an additional 11 basis points, saving 0.07 percentage point of GDP in interest costs. The combined savings of adhering to the FSL could amount to 1.5 percentage point of GDP. This could be achieved by a combination of domestic revenue mobilization, expenditure cuts, notably on fuel subsidies, and supported by strengthened public financial and investment management practices, as indicated in Benicio (forthcoming).

- The BNA's sustained efforts to transition to an inflation-target regime by strengthening the interest-rate transmission mechanism, enhancing communications, and reforms to deepen

[15] Consistent with the illustrative exercise in the previous session, the stock reduction is assumed to be 13.3 percentage points of GDP (see footnote 13). Spread reductions in this back-of-the-envelope exercise are applied to an implied effective interest rate of 9.7 percent (total debt service to debt in 2023). Interest cost savings are thus estimated as the difference in interest payments from reducing the implied effective interest rate by the spread reductions stemming from different policy actions described in each of the bullets at the reduced debt-to-GDP ratio of 60 percent.

domestic monetary and debt markets could also contribute to reducing sovereign spreads. Reducing inflation to single digits over the medium term, BNA's medium-term objective, could reduce spreads by 34 basis points, saving 0.21 percentage point of GDP in interest costs.

- Reinvigorating reforms to strengthen governance and tackle corruption, an area where Angola continues to lag most of its EMDE and SSA peers, could have the most significant contribution in reducing borrowing costs. Spreads could be reduced by 188basis points, equivalent to 1.13 percentage point of GDP in savings in interest costs, if Angola's governance performance reached the EMDE average.[16]

[16] See Duarte Lledó and Miguel (2025).

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Appendix I Dataset, Descriptive Statistics, Additional Results

A. Data Description and Sources

Table AI.1. Angola: Baseline Model: Data Description and Sources

Variable	Model Specification	Expected Sign	Data Source
	Dependent Variable		
Spreads[1]	Natural logarithm		J.P. Morgan Emerging Market Bond Index Global via DataQuery
	Independent Variables		
Global Factors			
VIX	Natural logarithm	+	Cboe Volatility Index via Haver Analytics
Federal Funds Rate	Natural logarithm	+/-	Federal Reserve Board via Haver Analytics
Crude oil price (Brent)	Natural logarithm	-	Financial Times via Haver Analytics
Domestic Factors			
Real GDP	Lagged	-	IMF WEO
Inflation (period average)	Lagged	+	IMF WEO
International reserves to GDP	Lagged	-	IMF WEO
Debt to GDP	Lagged	+	IMF WEO
Primary balance to GDP	Lagged	-	IMF WEO
Other			
Governance[2]	Lagged	-	World Bank Worldwide Governance Indicators
Financial Institutions Depth	Lagged difference	-	IMF Financial Development Index

[1] Strip spreads are used for sovereign spreads in this analysis.

[2] The estimate of the WGI is used in this analysis. These governance variables are indicated in units of a standard normal distribution ranging from -2.5 to +2.5.

Table AI.2. Angola: Additional Explanatory Variables: Data Description and Sources

Variable	Model Specification	Expected Sign	Data Source
	Independent Variables		
Global Factors			
Economic Policy Uncertainty Index (U.S.)		+	Economic Policy Uncertainty
U.S. 10-year Treasury Note Yield	Natural logarithm	+/-	Federal Reserve Board via Haver Analytics
U.S. Real Effective Exchange Rate (2010 = 100)	Lagged	+	IMF
Domestic Factors			
Daily Oil Production[3]	Natural logarithm	-	Energy Institute Statical Review of World Energy
Other			
Human Development Index	Lagged	-	UNDP
Open Budget Index		-	Open Budget Survey
Financial Development Index (Overall)		-	IMF Financial Development Index
Export Diversification Index	Lagged		UNCTAD
Export Concentration Index	Lagged		UNCTAD

[3] This variable uses the authors' calculations. It is the daily production (in thousands of barrels per day).

B. List of Sample Countries

Table AI.3. Angola: List of Sample Countries

No.	Country	No.	Country
1	Algeria	43	Lithuania
2	Angola	44	Malaysia
3	Argentina	45	Maldives
4	Armenia	46	Mexico
5	Azerbaijan	47	Mongolia
6	Bahrain	48	Morocco
7	Barbados	49	Mozambique
8	Belarus	50	Namibia
9	Belize	51	Nigeria
10	Bolivia	52	Oman
11	Brazil	53	Pakistan
12	Bulgaria	54	Panama
13	Cameroon	55	Papua New Guinea
14	Chile	56	Paraguay
15	China	57	Peru
16	Colombia	58	Philippines
17	Costa Rica	59	Poland
18	Côte d'Ivoire	60	Qatar
19	Croatia	61	Romania
20	Dominican Republic	62	Russia
21	Ecuador	63	Rwanda
22	Egypt	64	Saudi Arabia
23	El Salvador	65	Senegal
24	Ethiopia	66	Serbia
25	Gabon	67	Slovak Republic
26	Georgia	68	South Africa
27	Ghana	69	Sri Lanka
28	Greece	70	Suriname
29	Guatemala	71	Tajikistan
30	Honduras	72	Tanzania
31	Hungary	73	Thailand
32	India	74	Trinidad and Tobago
33	Indonesia	75	Tunisia
34	Iraq	76	Türkiye
35	Jamaica	77	Ukraine
36	Jordan	78	United Arab Emirates
37	Kazakhstan	79	Uruguay
38	Kenya	80	Uzbekistan
39	Korea	81	Vietnam
40	Kuwait	82	Zambia
41	Latvia		
42	Lebanon		

C. Descriptive Statistics and Pairwise Correlations

Table AI.4. Angola: Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Spreads (in log terms)	1,259	5.7980	0.8969	2.9628	10.6426
Federal Funds Rate (in log terms)	1,968	-0.2441	1.4491	-2.0794	1.6465
VIX (in log terms)	1,968	2.9364	0.2993	2.4066	3.4860
Brent Price (in log terms)	1,968	4.1342	0.4468	3.1959	4.7152
Real GDP Growth (lagged)	1,967	4.0615	4.7631	-36.6568	53.3856
International Reserves to GDP (lagged)	1,894	18.6782	13.6925	0.2433	110.2919
Debt to GDP (lagged)	1,948	50.1091	33.6793	1.5410	357.6870
CPI inflation (lagged)	1,945	7.4109	14.6351	-8.2378	325.0286
Primary Balance to GDP (lagged)	1,954	-0.1393	5.3729	-34.9072	52.5334
WGI - Index (Mean of WGI categories - lagged)	1,748	-0.1979	0.5735	-1.9012	1.3279

Table AI.5. Angola: Pairwise Correlation - Angola[4]

	Spreads (in log terms)	Federal Funds Rate (in log terms)	VIX (in log terms)	Brent Price (in log terms)	Real GDP Growth (lagged)	International Reserves to GDP (lagged)	Debt to GDP (lagged)	CPI inflation (lagged)	Primary Balance to GDP (lagged)	WGI - Index (lagged)
Spreads (in log terms)	1									
Federal Funds Rate (in log terms)	0.3791	1								
VIX (in log terms)	0.5645**	-0.1426	1							
Brent Price (in log terms)	-0.7218***	-0.2886	-0.1578	1						
Real GDP Growth (lagged)	-0.5269*	0.2057	0.0986	0.0209	1					
International Reserves to GDP (lagged)	-0.0554	-0.6725***	0.2524	0.2671	-0.4811**	1				
Debt to GDP (lagged)	0.6921***	0.1942	0.2325	-0.5539***	-0.6281***	0.2868	1			
CPI inflation (lagged)	0.2423	0.3363	0.2618	-0.7238***	0.0002	-0.6563***	0.543***	1		
Primary Balance to GDP (lagged)	0.0417	0.3891*	0.1383	0.1609	0.1606	0.0495	0.1439	0.1172	1	
WGI - Index (lagged)	0.6497**	-0.1638	-0.043	0.5252**	-0.5671***	0.5184**	0.1383	-0.6671***	0.032	1

Note: The asterisks indicate the level of statistical significance of each regressor (*** p<0.01, ** p<0.05, * p<0.1).

[4] This table includes the pairwise correlations for Angola only.

Table AI.6. Angola: Pairwise Correlation – All Countries

	Spreads (in log terms)	Federal Funds Rate (in log terms)	VIX (in log terms)	Brent Price (in log terms)	Real GDP Growth (lagged)	International Reserves to GDP (lagged)	Debt to GDP (lagged)	CPI inflation (lagged)	Primary Balance to GDP (lagged)	WGI - Index (lagged)
Spreads (in log terms)	1									
Federal Funds Rate (in log terms)	-0.0496*	1								
VIX (in log terms)	0.2022***	-0.1426***	1							
Brent Price (in log terms)	-0.0194	-0.2886***	-0.1578***	1						
Real GDP Growth (lagged)	-0.143***	0.2136***	-0.0002	0.0391*	1					
International Reserves to GDP (lagged)	-0.1579***	-0.1181***	0.0085	0.1423***	-0.095***	1				
Debt to GDP (lagged)	0.3867***	0.1277***	-0.026	-0.0974***	-0.1719***	0.0045	1			
CPI inflation (lagged)	0.416***	0.1075***	0.0608***	-0.0626***	-0.0126	-0.0129	0.2371***	1		
Primary Balance to GDP (lagged)	-0.0934***	0.1532***	0.0594***	-0.0617***	0.1405***	-0.0169	-0.1694***	0.0331	1	
WGI - Index (lagged)	-0.4908***	-0.0099	-0.0014	0.004	-0.111***	-0.0367	-0.0024	-0.2155***	0.045*	1

Note: The asterisks indicate the level of statistical significance of each regressor (*** p<0.01, ** p<0.05, * p<0.1).

D. Additional Results

To assess the robustness of the baseline model, additional variables are introduced to evaluate the model's response to these changes. Specifically, the Human Development Index, the US Real Effective Exchange Rate (REER), the Economic Policy Uncertainty Index, Export Diversification and Concentration Indexes, the U.S. 10-Year Treasury Note Yield, and oil production-related measures are incorporated. The results indicate that the Federal Funds Rate (FFR), the VIX, and the WGI Index remain robust across specifications, consistently exhibiting statistically significant coefficients and expected signs, with only minor variations in coefficient magnitude. CPI inflation also demonstrates robustness throughout most model specifications, except for model 4, where the inclusion of oil production alters its significance.

Among the newly added variables, only the US REER and the Economic Policy Uncertainty achieve statistical significance and display the anticipated positive relationship. This outcome suggests that a stronger US dollar, as reflected by an increase in REER, tends to widen emerging market sovereign spreads, driven by higher debt servicing costs, capital outflows, and elevated risk perceptions. The results also indicate that Economic Policy Uncertainty is a close substitute for VIX in capturing the spread-widening impact of rising global uncertainty. Overall, the inclusion of these additional variables does not undermine the validity of the baseline model's findings.

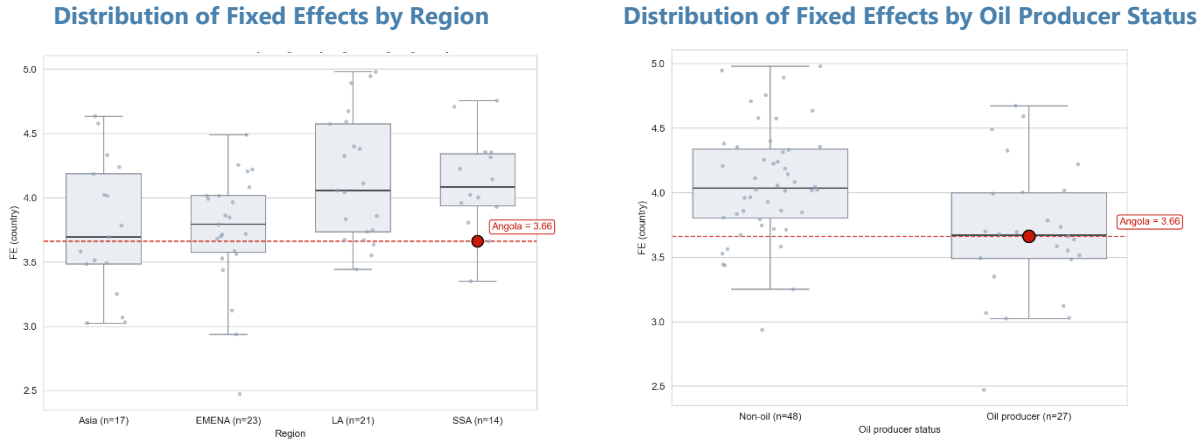
Table AI.7. Angola: Additional Explanatory Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Federal Funds Rate (in log terms)	-0.103***		-0.052***	0.107**	-0.093***	-0.053***	-0.052**	-0.055***	-0.052***	-0.052***
	(0.013)		(0.017)	(0.043)	(0.014)	(0.019)	(0.021)	(0.017)	(0.018)	(0.018)
VIX (in log terms)	0.464***	0.604***	0.616***	-0.083	0.554***		0.488***	0.577***	0.566***	0.569***
	(0.053)	(0.051)	(0.058)	(0.261)	(0.059)		(0.058)	(0.051)	(0.051)	(0.051)
Brent Price (in log terms)	-0.221***	-0.049	-0.038	0.295	-0.173**	-0.095	0.367	-0.068	-0.087	-0.082
	(0.072)	(0.074)	(0.083)	(0.452)	(0.072)	(0.075)	(0.574)	(0.073)	(0.071)	(0.072)
Real GDP Growth (lagged)	-0.005	-0.006	-0.001	-0.028***	-0.019**	0.000	0.008	-0.003	-0.002	-0.002
	(0.008)	(0.006)	(0.006)	(0.010)	(0.009)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
International Reserves to GDP (lagged)	-0.005	-0.007	-0.009*	0.002	-0.002	-0.009*	-0.006	-0.008*	-0.008*	-0.008*
	(0.006)	(0.005)	(0.005)	(0.012)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Debt to GDP (lagged)	0.006*	0.006**	0.007***	0.010*	0.013***	0.007***	0.005	0.008***	0.007***	0.007***
	(0.003)	(0.002)	(0.003)	(0.005)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.003)
CPI inflation (lagged)	0.015***	0.015***	0.015***	0.017***	0.008*	0.016***	0.006**	0.015***	0.015***	0.015***
	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Primary Balance to GDP (lagged)	-0.004	-0.020***	-0.015**	-0.008	-0.003	-0.014*	-0.012*	-0.013*	-0.016**	-0.016**
	(0.008)	(0.007)	(0.007)	(0.010)	(0.009)	(0.008)	(0.006)	(0.007)	(0.007)	(0.008)
WGI - Index (Mean of WGI categories - lagged)	-0.908***	-1.017***	-1.024***	-0.484	-0.819***	-1.023***	-0.774***	-0.844***	-1.005***	-1.000***
	(0.217)	(0.216)	(0.203)	(0.438)	(0.211)	(0.208)	(0.241)	(0.216)	(0.212)	(0.209)
Human Development Index - Score (lagged)	-1.199									
	(1.451)									
10-Year Treasury Note Yield (in log terms)		-0.045								
		(0.057)								
Real Effective Exchange Rate US (lagged)			0.012**							
			(0.005)							
Open Budget Index				-0.011						
				(0.008)						
Financial Development Index (Overall)					-0.833					
					(0.776)					
Economic Policy Uncertainty Index						0.003***				
						(0.001)				
Export Concentration Index (lagged)									0.073	
									(0.473)	
Export Diversification Index (lagged)										0.317
										(0.549)
Daily Oil Production (in log terms)							-0.060			
							(0.247)			
Daily Oil Production X Brent							-0.108			
							(0.082)			
SSA Oil Producers								5.014***		
								(0.448)		
SSA Oil Producers X Brent								-0.305***		
								(0.073)		
Observations	885	1,085	1,085	210	651	1,085	400	1,085	1,077	1,081
R-squared	0.371	0.402	0.421	0.567	0.494	0.367	0.391	0.414	0.415	0.415
Number of Countries	75	75	75	56	56	75	27	75	74	74
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix II Assessing the Existence of an Angola Risk Premium

A. Differences in Risk Premium across Broad Groups

Figure AII.1. Fixed Effects by Region and Oil Producer Status



Sources: Authors' calculations.

B. Alternative Approach

To ensure the robustness of the baseline findings, the alternative two-step empirical approach proposed by Pesaran and Zhou (2018) is applied as follows. First, consistent with the baseline model, a fixed effects regression is estimated excluding time-invariant variables to obtain the fixed effects estimator along with the residuals. Next, the time-averaged residuals are calculated and regressed on the time-invariant variables of interest. The outcomes of these estimations are summarized in Table A.II.1 and 2 with the results from the second step displayed at the bottom of the table.

As outlined in Table A.II.1, equation 5, this two-step procedure supports the main conclusion regarding Angola's risk premium. Specifically, the negative fixed effect for Angola suggests the presence of a discount, indicating a positive bias in Angola's favor relative to other Sub-Saharan African (SSA) countries. However, this apparent advantage for Angola disappears once controls for oil-producing countries are introduced: the Angola variable loses statistical significance, suggesting that Angola's discount is largely explained by its status as an oil producer (Table A.II.1, equation 7). This result is robust to the introduction of additional variables to the baseline model such as the U.S. Real Effective Exchange Rate (Table A.II.2, equation 5 and 7) and Export Diversification and Concentration Indexes (Table A.II.2 and Table A.II.3, equations 5 and 7).

In line with the empirical literature (Gbohoui et al., 2023), the SSA unfavorable bias or premium ceases to exist when additional variables are added to our baseline model (Table A.II.2 and Table A.II.3, equation 2).

Table AII.1. Angola: Robustness Checks: Alternative Empirical Method with Baseline Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
First Step									
Federal Funds Rate (in log terms)	-0.052***								
	(0.017)								
VIX (in log terms)	0.572***								
	(0.049)								
Brent Price (in log terms)	-0.085								
	(0.068)								
Real GDP Growth (lagged)	-0.002								
	(0.006)								
International Reserves to GDP (lagged)	-0.008*								
	(0.005)								
Debt to GDP (lagged)	0.007***								
	(0.002)								
CPI inflation (lagged)	0.015***								
	(0.003)								
Primary Balance to GDP (lagged)	-0.017**								
	(0.007)								
WGI - Index (Mean of WGI categories - lagged)	-0.995***								
	(0.200)								
Second Step									
SSA		0.224*							
		(0.120)							
SSA Oil Producers			-0.271*						
			(0.167)						
Oil Producers (BP Classification)				-0.380***			-0.353***		
				(0.116)			(0.124)		
Angola					-0.274***	-0.229***	-0.015		
					(0.058)	(0.067)	(0.104)		
SSA exc. Angola						0.259**	0.174		
						(0.121)	(0.111)		
Nigeria								-0.540***	-0.589***
								(0.067)	(0.058)
SSA exc. Nigeria								0.283**	
								(0.111)	
Constant	3.927***								
	(0.395)								
Observations	1,085								
R-squared	0.414								
Number of countries	75								

Table AII.2. Angola: Robustness Checks: Alternative Empirical Method with Alternative Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
First Step														
Federal Funds Rate (in log terms)	-0.052***							-0.091***						
	(0.017)							(0.014)						
VIX (in log terms)	0.616***							0.460***						
	(0.056)							(0.057)						
Brent Price (in log terms)	-0.038							-0.205***						
	(0.080)							(0.069)						
Real GDP Growth (lagged)	-0.001							-0.005						
	(0.006)							(0.009)						
International Reserves to GDP (lagged)	-0.009*							-0.002						
	(0.005)							(0.005)						
Debt to GDP (lagged)	0.007***							0.009***						
	(0.002)							(0.002)						
CPI inflation (lagged)	0.015***							0.018***						
	(0.003)							(0.006)						
Primary Balance to GDP (lagged)	-0.015**							0.004						
	(0.007)							(0.009)						
WGI - Index (Mean of WGI categories - lagged)	-1.024***							-1.050***						
	(0.196)							(0.213)						
US Real Effective Exchange Rate (lagged)	0.012***													
	(0.004)													
F. Institutions Depth (lagged difference)								-2.095***						
								(0.556)						
Second Step														
SSA		0.199							0.136					
		(0.122)							(0.161)					
SSA Oil Producers			-0.304*							-0.444**				
			(0.169)							(0.177)				
Angola				-0.304***	-0.263***		-0.047				-0.571***	-0.536***		-0.347***
				(0.059)	(0.067)		(0.105)				(0.073)	(0.084)		(0.125)
SSA exc. Angola					0.234*		0.149					0.203		0.138
					(0.124)		(0.113)					(0.158)		(0.144)
Oil Producers (BP Classification)						-0.381***	-0.356***						-0.350**	-0.316**
						(0.117)	(0.124)						(0.143)	(0.153)
Constant	3.605***							4.580***						
	(0.470)							(0.463)						
Observations	1,085							689						
R-squared	0.421							0.467						
Number of Countries	75							58						

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Table AII.3. Angola: Robustness Checks: Alternative Empirical Method with Alternative Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
First Step														
Federal Funds Rate (in log terms)	-0.052***							-0.052***						
	(0.017)							(0.017)						
VIX (in log terms)	0.569***							0.566***						
	(0.049)							(0.049)						
Brent Price (in log terms)	-0.082							-0.087						
	(0.069)							(0.069)						
Real GDP Growth (lagged)	-0.002							-0.002						
	(0.006)							(0.006)						
International Reserves to GDP (lagged)	-0.008*							-0.008*						
	(0.005)							(0.005)						
Debt to GDP (lagged)	0.007***							0.007***						
	(0.002)							(0.002)						
CPI inflation (lagged)	0.015***							0.015***						
	(0.003)							(0.003)						
Primary Balance to GDP (lagged)	-0.016**							-0.016**						
	(0.007)							(0.007)						
WGI - Index (Mean of WGI categories - lagged)	-1.000***							-1.005***						
	(0.202)							(0.204)						
Export Diversification Index (lagged)	0.317													
	(0.529)													
Export Concentration Index (lagged)								0.073						
								(0.456)						
Second Step														
SSA		0.178							0.206					
		(0.126)							(0.128)					
SSA Oil Producers			-0.335**							-0.311*				
Angola					-0.341***	-0.305***	-0.092					-0.321***	-0.281***	-0.060
					(0.058)	(0.066)	(0.105)					(0.059)	(0.067)	(0.105)
SSA exc. Angola						0.218*	0.138						0.247*	0.165
						(0.128)	(0.114)						(0.130)	(0.116)
Oil Producers (BP Classification)				-0.374***			-0.352***				-0.388***			-0.363***
				(0.116)			(0.123)				(0.118)			(0.125)
Constant	3.719***						0.106	3.930***						
	(0.502)						(0.073)	(0.410)						
Observations	1,081						74	1,077						
R-squared	0.415						0.147	0.415						
Number of Countries	74							74						