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Investigating the Determinants of Sovereign Bond Yield Spread in Namibia

Sindongo Valentinus Masonde
DBA Student, University of Namibia (NBS)
https://orcid.org/0009-0000-8272-3445

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ABSTRACT

Purpose: The purpose of the study is to investigate the determinant of government bonds yield spread in Namibia, data from 2011Q1 to 2019Q4 was used from Bank of Namibia and Namibia statistic Agency.

Methodology: The study conducted 36 observations, and the descriptive statistics was used to determine the distribution of variables such as GDP growth rate, government debt, current account balance, and inflation rate. The study performed unit root tests, ARDL bound test, estimations of the long run and short run model, and diagnostic tests to test the normality and stability of the model.

Findings: The results reveals that all variables were symmetric around the mean, except for the current account balance and inflation rate which were skewed along the left tail. The Jarque-Bera test for yield spread showed a probability of 0.96, rejecting the null hypothesis. The remaining variables were also normally distributed, moderately close to mesokurtic, the results further indicates that all variables were integrated of order one, except for the current account balance. The cointegration test revealed a long-term relationship between GDP growth rate, government debts as a percentage of GDP, current account as a percentage of GDP, and inflation rate. The ARDL long run model presented a positive and statistically significant yield spread from the previous quarter, indicating a positive impact on the sovereign bond yield spread in the long run. Inflation was found to have a positive and statistically significant influence on the yield spread, this supports Tan and Yan's (2008) findings. The study concluded that GDP growth rate, current account balance, government debt, and inflation rate explain the variation in government bond yield spread.

Unique Contribution to Theory, Policy and Practice: The study recommend that Namibia should prioritize improving GDP growth and trade liberalization policies to attract investment opportunities in the local domestic market.

Keywords: *Spread, Growth, Debt GDP, CA, Sovereign Bond*

INTRODUCTION

Government debt is when a country borrows money from another country or institution locally or from a foreign country to meet its obligations (Choong, Lau,Liew & Puah, 2010). Countries borrow funds with a different motive. To mention a few of the factors that contribute to borrowing: it could be to finance capital projects within the country such as building hospitals, improvement of road infrastructure, telecommunications, debt restructuring, servicing costs, to address a budget deficit and for the political arena. Countries also borrow to stimulate economic performance in the local domestic market. However, several borrowings have brought a lot of side effects on many countries being indebted and not being able to free themselves from such debt.

Namibia has been issuing out a high yield of the same maturity bonds compared to the south Africa benchmark bonds. Elton, Edwin, Gruber, Martin, Agrawal, Deepak and Mann (1999), Christopher, defined the yield spread is the difference between the yields on corporate bonds and comparable government bonds. Further on Avramov, Jostova, and Philipov (2007) revealed that changes in the spread are key inputs in the bond pricing. Besides changes in yield, spreads are building blocks of understanding the risk-return trade-off in government bonds and the management of credit risk. Yield spreads indicate market perception. That is, whether a sovereign bond must be charged, therefore understanding the range is very much crucial as it sheds light on credit risks, default losses, tax and rises of sovereign debt level and cost of servicing the debts. The growth of the debt level indicates that the sovereign debt will be charged more in the future. Furthermore, speculation on the ability to re-pay arises. For example, when the yield spread is higher, the cost of servicing the debt rises and thereby increasing financial risk and long-term debt sustainability. The increase in fiscal risk makes many investors demand a higher premium on any new government debt. According to Mu, Phelps, and Stotsky (2013) since 2011, USD 8.75 billion has been raised by countries such as Namibia and other respective countries in the global market. On the one hand, the participation of these countries in global capital markets has led to the deepening and enhancement of domestic capital markets. Therefore, the results from this study will help the government craft fiscal policy that keeps the premium charged very low and reduce future debt servicing of government debts in the medium to long term.

The rises of yield spreads in bond markets around the continent have resulted in many countries being indebted, and this is due to misappropriation of funds borrowed in such areas as the political funding arena, budget deficits and debt restructuring, causing the yield spread to widen. In this study, the researcher adds to previous literature by investigating the determinants of yield spread on sovereign bond by estimating time-series data. The stochastic is defined as a process that assumes that the underlying observed values will be explained by a constant parameters/ coefficient model. The linear regression models to be used will consider a continuous relationship between the explanatory variables and bond yield spreads. It also implies that the data modelled must satisfy the stationarity assumption. The knowledge of these parameter values will enable the researcher to set up the confidence interval for the prediction of future observation value. Namibia,

like any other developing country, faces a persistent increase in government expenditure as a growing concern according to the Bank of Namibia annual report (2018) among others.

1.1 **Problem Statement**

According to the Deloitte Report (2019) over the five years from 2010-2014, Namibia went through the most substantial boom period with the most reliable and most sustained growth level seen since independence. However, the high growth rate, especially the post-global financial crisis, was associated with an increase in government debt. For example, between 2015 and 2017 public debt grew in nominal value from 56.4 billion Namibian dollars (37.6 % of GDP) to 72, 8 billion (40.3% of GDP). This represents an absolute increase of about 16.4 billion over three years. Furthermore, wider yield spreads on the sovereign bonds were observed compared to the preceding years and the South African benchmark bonds. According to the Bank of Namibia Annual Report (2018) during this period, from 2015-2017, macro-economic conditions also deteriorated, and the spread of government bonds widened too, highlighting substantial growing risks in the domestic economy.

This study aims to examine factors that contribute to the determinants of yield spread on government bonds, and how yield spread influences the growth in new public debt. In particular: what seems to drive the yield spread in the Namibian government bonds? The significance of the study is to test the systematic and idiosyncratic variable selected against the yield spread for the Namibian sovereign bonds. Furthermore, to analyse whether the chosen variables can improve the predictability of the yield spread by testing the importance of the selected variables on the Namibian sovereign bonds. Also, to examine what causes the yield spread to widen, or perhaps the primary focus can be a shift to other risk factors. This is, as in Namibia little or no study has been conducted on the determinants of yield spread on sovereign bonds. The findings will also benefit the sovereign through the Ministry of Finance on policy formulation on how to improve the fiscal policy and their debt management strategies that relate to sovereign bonds.

2. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Keynesian Framework

The research paper discusses the role of the central bank in determining the yield spread on sovereign bonds in Namibia. Keynes (2007) argued that the central bank plays a pivotal role in determining the long-term interest rate on government bonds. The central bank formulates policies on short-term and long-term interest rates and manages the country's macroeconomic status. The government's policy on issuing bonds is influenced by monetary policy, which influences yield on bond borrowing. Investors rely on past and current information performance to make informed decisions on investment outcomes. The Keynesian perspective on government bond yield is derived from the point that bond yield is attributed to budget deficits and government debt. The

central bank's decision on inflation and interest rate charges determines the interest rate. The theory concludes with recommendations for future research.

2.1.2. Bond spread

Bonds are debt instruments that require the issuer to repay the borrowed amount plus interest over a specified period, with the principal amount only being repaid at the end of the loan. Fabozzi, Frank and Vink, Dennis (2012) argued that bonds have an inverse relationship between price and yield, meaning that the cost of the bond is the present value of cash flows. This means that when the yield increases, the current amount of cash flow decreases, and vice versa.

The bond yield spread is the difference between the yield of similar maturity bonds, such as Bond A and Bond B. This spread reflects the difference in the risk's appetite associated with the two bonds and is quoted in basis points. A basis point is a unit of measure that describes the percentage change in the value of a bond or benchmark bonds. One basis point is approximately equal to 0.01% or 0.0001 in decimal form. Suppose that investors are risk-averse, the relationship between risk-free and risky bond can be in this equation format as:

$$P(X_t)\left(1+r_f\right)+\left(1-P(X_t)\right)(\mu)=\left(1+r_g\right)+\sigma_t\gamma_t$$

Where, $P(X_t)$ is the probability of no default, $\left(1-P(X_t)\right)$ is the probability of default, r_f yield in a risky bond, r_g yield in a risk-free bond, μ recovery rate in case of default, σ_t risk aversion premium and γ_t liquidity premium

Bond yield is the expected return investors expect from bond investments, whether in government or corporate bonds. It is a crucial factor when investing in relationships, and is used to measure the annual rate of return. Fabozzi, Frank and Vink, Dennis (2012) identifies two terminologies for calculating yield: current yield and yield to maturity.

a) Current yield relates to the annual coupon interest to the market price. The formula for the current yield is:

$$Current\ yield\ =\frac{Annual\ Coupon\ payment}{Bond\ price}$$

b) Yield to Maturity (YTM) is the same as the yield (internal rate of return) in their computation; it is the expected rate of return for a bond assuming that the investor holds the asset until its maturity date.

$$p=\sum_{t=1}^{n}\left(\frac{C}{(1+y)}+\frac{M}{(1+y)}\right)$$

The symbols represent the following explanation:
C= Coupon
n = period to maturity (in a year)
R= redemption value

P = Purchasing value

2.2.2 Conceptual Framework

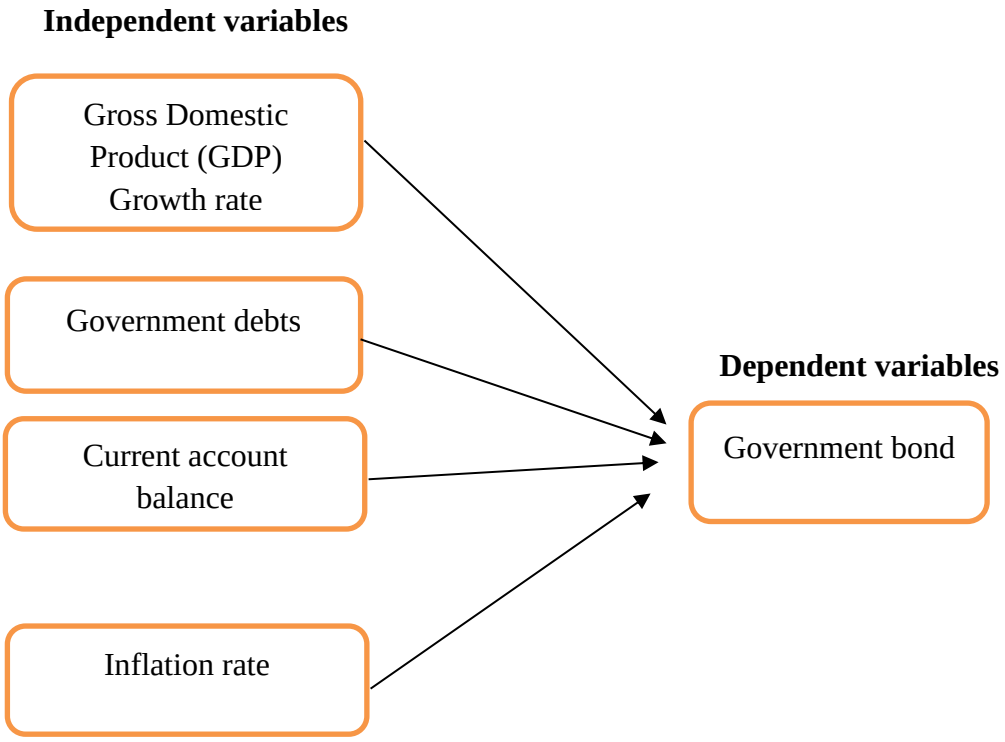

Figure 1: Conceptual Framework

Source: Researcher's Construct (2019

2.2.3 Research Gaps

The study by Costantini, Fragetta, and Melina (2014) suggests that the varying factors affecting sovereign bond yield spread across different countries, depends on the countries by countries ongoing debate on its stability and significance. This research contribute to the debate on the determinants of sovereign bond yield spread at the Namibian level, as there is limited research on this topic.

3. MATERIAL AND METHODS

3.1 Study Design:

The study examined the relationship between GDP growth rate, government debt, current account, and inflation rate in Namibia using descriptive statistics and a simple linear regression model. Data was collected from the Bank of Namibia and the Namibia Statistics Agency. econometric analysis was performed using EViews software, and a diagnostic test confirmed the model's accuracy. Statistical tools like the Augmented Dickey-Fuller test were used to examine stationarity of time series data.

4. FINDINGS

Table 4.1 Descriptive statistics (2011-2019)

	Yield Spread	GDP growth rate	Government debt	Current account balance	Inflation rate
Mean	0.89	2.85	34.37	-8.16	5.23
Median	0.90	2.41	33.25	-6.60	5.23
Maximum	1.17	13.70	56.80	0.93	7.70
Minimum	0.51	-4.30	16.70	-21.66	2.70
Std. Dev.	0.16	4.64	11.29	6.00	1.36
Skewness	-0.06	0.42	0.27	-0.51	-0.12
Kurtosis	2.79	2.35	1.71	2.41	1.97
-Bera	0.09	1.71	2.94	2.06	1.67
Probability	0.96	0.43	0.23	0.36	0.43
Sum	32.16	102.77	1237.40	-293.61	188.14
Sum Sq. Dev.	0.92	753.80	4463.27	1261.51	65.09
Observations	36	36	36	36	36

Table 4.1 The examines the distribution of five variables: yield spread, GDP growth rate, government debt, current account balance, and inflation rate, over a nine-year period from 2011 to 2019. The data is analyzed using descriptive statistics, determining the mean, median, and standard deviation before econometric analysis. The average quarterly government yield spread has a maximum of 1.17% and a minimum of 0.51%, with a mean and standard deviation of 0.89% and 0.16% respectively. The GDP growth rate shows a steady increase, with a minimum value of -4.30% and a maximum value of 13.70%. Government debt has the highest mean of 34.37%, with a maximum value of 56.80% and a minimum of 16.70%. The current account balance has the highest mean of 0.93% and the lowest of -21.66%. The inflation rate has the highest maximum of 7.70% and the lowest of 2.70%. The results indicate that the remaining variables are normally distributed fairly to moderate and close to mesokurtic. The Jarque-Bera test for yield spread shows a probability greater than the critical value, indicating the null hypothesis can be rejected.

Unit root test

The analysis of the time series properties of the data is to identify variables are not integrated of order two (I (2)), resulting in a spurious result. This is done before testing the cointegration relationship between sovereign bond yield spread and its determinants. The bound test for ARDL assumes all variables should be integrated of order zero or one, as the presence of order two integration violates the model's assumption. Ouattara (2004) asserted that the F-statistic provided by Pesaran *et al.*, (2001) are not valid for the integration of order two I (2).

Table 4.2 Augmented Dickey-Fuller Test results

Variables	Augmented Dickey-Fuller (ADF)				
	Individual intercept		Individual intercept and Trend		
	Level	1st difference	Level	1st difference	Order of integration
Spread	-2.011	-1.945	-5.638***	-5.869***	I(1)
	(2.614)	(3.205)	(3.639)	(4.253)	
Growthr	-1.278	-2.643	-5.817***	-5.639***	I(1)
	(2.619)	(3.222)	(3.662)	(4.285)	
Debtgdp	-0.023	-2.041	-5.185***	-5.180***	I(1)
	(2.613)	(3.207)	(3.639)	(4.253)	
CA	-3.670***	-3.770***	-	-	I(0)
	(3.633)	(3.544)			
			-	-	
Inf	-2.089	-2.480	-4.831***	-4.839***	I(1)
	(2.614)	(3.207)	(3.639)	(4.253)	

*Note: The *** denotes the rejection of the null hypothesis at 1% level of significance,*

Table.3 above demonstrates the outcome results for the Augmented Dickey-Fuller test.

The ADF table null hypothesis revealed non-stationary variables, that government bond yield spread, GDP growth rate, government debt, and inflation rate are non-stationary. The current account balance variable was rejected at 1% significance level, indicating it was stationary and integrated of order zero. All other variables were integrated of order one, I (1), and the null hypothesis was rejected in the first differences.

Long run results

Table 5. below represents the long run estimated results. After the bound cointegration test is conducted, the next step is to determine the long run relationship between the sovereign bond yield spread and its potential determinants.

Table 5. Estimate Long run model, ARDL (1, 3, 0, 3, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Spread (-1)	0.521	0.123	4.232	0.000
Growthr(-3)	0.006	0.003	1.811	0.085
Debtgdp	0.003	0.002	1.228	0.233
CA(-3)	-0.004	0.002	-1.680	0.108
Inf	0.034	0.013	2.632	0.016
C	0.069	0.193	0.357	0.725

The study found that changes in the inflation rate, the sovereign bond yield spread, and the GDP growth rate have a positive and significant impact on the bond yield spread. The inflation rate, with a 95% confidence level, increases the sovereign bond yield spread by 0.034 units in the long run. The previous quarter's sovereign bond yield spread also has a positive effect, with a 99% confidence level, increasing the current quarter's spread by 0.521 units. The GDP growth rate, with a 90% confidence level, affects the bond yield spread with three lags, with a coefficient value of 0.006 indicating that an increase in the current quarter will increase the sovereign bond yield spread by 0.006 units in the next three quarters. The findings are supported by Fedderke's (2020) analysis of the South Africa – United States sovereign bond spread relative to macroeconomic fundamentals.

Table 6 Short run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(*Growthr*)	-0.005	0.002	-1.973	0.059
D(debtgdp(-1))	-0.004	0.005	-0.707	0.485
D(CA)	0.003	0.002	1.270	0.215
D(Inf)	0.073	0.016	4.596	0.000
ECM(-1)	-0.980	0.280	-3.500	0.002

Table 6. The study reveals a significant and negative error correction term coefficient, confirming cointegration between variables. The speed of adjustment of deviations in the short run back to equilibrium level is 98%. GDP growth rate and inflation rate have a negative and positive effect on sovereign bond yield spreads in the short run. However, government debts and current account balance have no effect on short-run yield spreads. A positive relationship between inflation and public debt leads to sovereign bond spread, forcing investors to hedge investments and increase borrowing to offset outstanding balances.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study examined the determent of government bond yield spread in Namibia from 2011Q1 to 2019Q4. It used data from 36 observations and descriptive statistics to determine the distribution of variables such as GDP growth rate, government debt, current account balance, and inflation rate. The results showed that all variables were fairly symmetric around the mean, except for the current account balance and inflation rate, which were skewed along the left tail. The study performed unit root tests, ARDL bound test, estimations of the long run and short run model, and diagnostic tests to test the normality and stability of the model. The cointegration test revealed a long-term relationship between GDP growth rate, government debts, current account balance, and inflation rate. The study concluded that GDP growth rate, current account balance, government debt, and inflation rate explain the variation in government bond yield spread.

5.2 Recommendations

The study reveals a long-term relationship between sovereign bond yield and various determinants, suggesting that all variables can impact bond spreads. Namibia should prioritize improving GDP growth rate through trade liberalization policies and encouraging flexibility of trade between countries. The Ministry of Finance should implement strict policies that adjust to changes in economic activity, engage with expert stakeholders to formulate or restructuring seasonal economic policies, and utilize public funds in high-multiplier sectors like agriculture, education, and health. The sovereign budget should be reviewed quarterly to oversee which expenditures need more funds and review performance in these sectors. Further research is recommended to enhance statistical outcomes and compare determinants of sovereign bond yield spread in Namibia.

DECLARATION

I, Valentinus Masonde Sindongo, hereby declares that this study is my own work and is a true reflection of my research and that this work or any part thereof has not been submitted for a degree to any other institution.

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6.0 REFERENCES

Avramov, D., Jostova, G. & Philipov, A., 2007. 'Understanding changes in corporate credit spreads. Financial *Analysts Journal. 63*(2):90-105

Akram, T., & Das, A. (2015). A Keynesian Explanation of Indian Government Bond Yields. *Journal of Post Keynesian Economic*, 38(4), 565-87

Adejimi, A., Oyedira, O.S., & Ogunsanmi, E.B. (2010). Employing qualitatively enriched semi integration. *The Built and Human Environment Review*, 3(1), 49-6

Bank of Namibia Annual Report (2018). Retrieved July 18, 2019, from https://www.bon.com.na/Economic-information/Annual-Reports.aspx

Bank of Namibia Annual Report (2018). Retrieved July 18, 2019, from https://www.bon.com.na/Bank/Financial-Markets/Public-debt-management.aspx

Choong, C.K., Lau, E., Liew, V.K.-S., & Puah, C.-H. (2010). Does Debts Foster Economic Growth? The Experience of Malaysia. African Journal of Business Management, 4, 1564-1575.

Costantini, Mauro & Fragetta, Matteo & Melina, Giovanni, 2014. "Determinants of sovereign bond yield spreads in the EMU: An optimal currency area perspective ,"European Economic Review, Elsevier, vol. 70(C), pages 337-349.

Dooley, D. (2007). Social Research Methods, New Delhi, Prentice-Hall Deloitte report (2019).Retrieved July 18, 2019, from https://www2.deloitte.com/na/en/pages/finance/articles/na_namibian_debt_markets_2019.html

Elton, Edwin J. and Gruber, Martin J. and Agrawal, Deepak and Mann, Christopher, Explaining the Rate Spread on Corporate Bonds (September 1999). NYU Working Paper No. FIN-99-082, Available at SSRN: https://ssrn.com/abstract=1299452

Fedderke, J.W., (2020). The South Africa – United States Sovereign bond spread and its association with macroeconomic fundamentals. *ERSA Working Paper WP/8/830/*, August 2020

Fabozzi, Frank J. and Vink, Dennis, Determinants of Primary Market Spreads on U.K. Residential Mortgage-Backed Securities and the Implications for Investor Reliance on Credit Ratings (June 6, 2011). The Journal of Fixed Income, Vol. 21, 2012, pp. 7-14, Available at SRN: https://ssrn.com/abstract=2156986

Keynes, J.M. (2007). *The General Theory of Employment, Interest, and Money*. New York: Palgrave Macmillan. Addison Wesley.

Mu, Y., Phelps, P., & Stotsky, G. (2013). *Bond Markets in Africa*. Working paper No. 13/12, International Monetary Fund.

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001) Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16, 289-326. http://dx.doi.org/10.1002/jae.616

Tang, D.Y., & Yan, H. (2008). Market conditions, default risk and credit spreads. *Discussion paper series 2: Banking and Financial Studies 2008*. Frankfurt: Deutsche Bundesbank, Research Centre.

Ouattara, B. (2004). Modelling the Long Run Determinants of Private Investment in Senegal. *Working Paper No: 04/05*, University of Nottingham, United Kingdom.