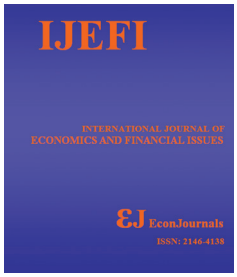

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Country Risk Effects and Government Domestic Debt Nexus in South Africa

Thomas Habanabakize, Zandri Dickason-Koekemoer*

North-West University (NWU), South Africa. *Email: zandri.dickason@nwu.ac.za

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ABSTRACT

Country risk rating is one of the factors that determine the stability of a given country's economy and the government's access to both domestic and foreign loans. This paper aimed at assessing the relationship that exists between country risk rating and the South African government's access to domestic debts or loans. Monthly data from January 2008 to December 2019 was investigated using the ARDL bounds testing approach and the error correction model (ECM). The findings of this paper indicated that all country risk components (economic, financial and political) have a significant long-run effect on government domestic debt. While economic and financial risk scores have a positive effect on government debts, an inverse relationship was found between political risk and government debt. These results imply that in order to be independent of foreign debt which comes with terms and conditions; policymakers and the South African government leaders should strive to sustain the stability of the economy and the country's financial conditions.

Keywords: Government Debt, Economic Risk, Financial Risk, Political Risk, Country Risk, South Africa
JEL Classifications: D81; E42; O55

1. INTRODUCTION

Government borrowing creates government debt which can either be internal debt or external debt. Government debt which in some cases is considered public debt is a concept had more attention in recent decades. Since the 2008/2009 financial global crisis many countries, especially developed countries, increases their sovereign debt with the expectation of increasing country productivity and economic growth. Nonetheless, it has been argued that public or government debt may only have a short-term significant effect on the economy while creating long-term economic challenges such as high government liabilities, low private investment and economic deterioration (Calderón and Fuentes, 2013). Prior to further discussion, it is substantial to indicate that the aggregate government debt refers to the difference between government revenue and government expenditure (Budget Review, 2019). Domestic or internal government debt refers to all resources generated by a given government from local individuals or institutions while external debt denotes all monetary resources used by a government which are not acquired from internal sources (Okeke et al., 2020).

The debt market is one of the largest markets in South Africa and it also plays a significant role in the global liquid evolving bond markets (Liu, 2013). It is in this same market where the government sells its securities and bonds. Besides the revenue acquired from taxpayers, the government has to sell bonds and other securities to finance its infrastructures and other economic and development activities. Half of the South African government aggregate debt is acquired through government-issued bonds. Some of those bonds are currency bonds, inflation-linked, fixed-rate and zero-coupon bonds (Johannesburg Stock Exchange [JSE], 2017). The cost of government debt is established by measuring the yield spread on sovereign bonds (Rowland and Torres, 2004). These Sovereign yield spreads represent major determinants of risk associated with the government's ability to pay or default

the debt. Due to power economic performance, the South African government debt, in 2019, has increased by R15.3 billion and the debt rate was expected to increase in 2020 (Budget Review, 2019) even before the COVID-19 outbreak.

Domestic debt is described by Adofu and Abula (2010) as financial resources acquired internally by the government through selling financial securities in debt markets. Buyers of those securities can either be the Reserve Bank, financial institutions, commercial banks, non-governmental organisations or private individuals. Generally, a government borrows either to improve its economic performance or to solve a given national concern. Thus, the effect of government debt depends on the amount of funds acquired and the purpose of those funds. Given that the government debt is measured as the gross domestic product (GDP) ratio, Reinhart et al. (2015) assert that the debt-GDP ratio should not be more than 90%. The economy will grow if the debt ratio is lower than 90% otherwise it will impede economic growth (Karadam, 2018). In other words, low government debt is beneficial to a country's economy while high country debt results in economic growth encumbrance.

The ability of the government to acquire debt, internally or externally, depend on the country's economic, financial and political stability. When a country is not stable, in any of the aforementioned dimensions, debt financing becomes a critical issue (Abbas and Christensen 2010; Kourtellos, et al., 2013). Courtiers with different economic situations, different political leaders and different income levels have also different debt-paying capacities. Political, financial and economic instabilities are the major component of country risk and therefore, following Abbas and Christensen (2010) and Kourtellos, et al., (2013) country risk has a significant impact on government access to debt. If countries differ in abilities to pay their debt owing to their country risk rating, a relationship between government debt and county risk should rather be asymmetric instead of a linear relationship (Chiu and Lee, 2017).

Various researchers conducted studies in different economic areas to determine the effect of country risk on government debt. Ramzan and Ahmad (2014) conducted a study in Pakistan to assess the relationship between economic risk and government debt. The findings suggested that economic distortion reduces the country's access to debt and creates inefficient debt capital flow within the country. Concerning political risk, poor institutions, inadequate laws and other political unrest may cause moneylenders to become reluctant to lend their money to the government as they have no surety that their money will be paid back. Besides, political instability is another bottleneck for economic development which hinders corporates and individuals' ability to have money that they may lend to the government (Roe and Siegel, 2011). In addition to economic and political instabilities, financial instability or financial risk is another component of country risk that may influence domestic government debt. A mutual causality exists between financial risk and government debt. If financial institutions are well doing and individuals are financially secured, it will be easier for the government to borrow locally and increase its debt. However, on the other hand, poor debt management on the government side will make it insolvency and default on the borrowed money resulting in an unstable financial system and a reduction in moneylenders' willingness to lend (Chiu and Lee, 2017).

In the South African context, country risk components namely economic, and financial risks, plays a significant role in financial markets (Bloomberg, 2017). According to Papendorp and Packirisamy (2015), political risk factors such as political instability, high rate of crime and corruption, protest action and other allegations against the country in 2016, and unnecessary cabinet reshuffle in both 2015 and 2017 caused South Africa to be listed among junk status. Other factors such as the stagnant economy (economic risk) and weak local currency against the UD dollar (financial risk) increased the government borrowing and rose the likelihood of the country's downgrade. Although some studies were conducted to determine the effect of country risk on equity market, debt and bond markets (Kaminsky and Schmukler, 2001; Codogno et al., 2003; Nhlapho and Muzindutsi, 2020), none of these studies focused on the implications of country risk on government domestic debt in South Africa. This highlight the importance of the current study to fill up that gap.

2. DATA AND METHODS

The study focuses on a quantitative to analyze the long and short-run effects of country risk components (economic risk, financial risk and political risk) on government domestic debt in South Africa. The analysed data is a monthly time series of 300 observations for a period ranging between January 2008 and December 2019. Government domestic debt is measured in million and was acquired from the South African Reserve Bank (SARB) website (SARB, 2022). The data of country risk is measured by a combination of the South African economic, financial and political risk ratings. This data was retrieved from the International Country Risk Guide (ICRG). The latter is an investment risk company that offers country risk components (economic, financial and political) for 140 countries (PRS Group, 2022). While economic risk. Economic risk emphasises the probable strengths or weaknesses of a country by rating economic growth features such as GDP growth, budget balance and inflation; financial risk focuses on the country's aptitude to pay its foreign debt and the country's liquidity level. Further, political risk rating considers government instabilities and other political uncertainties that could impact investment levels (Meyer and Habanabakize, 2018). When rating a country's risk, each economic risk and financial risk has a score of 50, while the political risk has a score of 100 (PRS Group, 2018). These scores are considered indicators that serve in making the comparison between high and low-risk countries. Thus, a high score suggests that country has low risk while a high-risk country has a low score rating.

The study employed the Autoregressive Distributed Lag (ARDL) model to determine the relationship that exists among variables in both the short and long run. This model was introduced by Pesaran and Shin (1998) and revised by Pesaran et al. (2001). Contrary to rational models such as Engle and Granger (1987) and Johansen (1988) that analyse variables with the same integration order; the ARDL model allows a regression between variables

of diverse integration order such as I(0), I(1) or a combination of both. Additionally, this model provides short and long-run results simultaneously. Nonetheless, the ARDL model does not apply to variables that are stationary at the second difference I(2) (Pesaran et al., 2001). To ascertain the stationarity level of the study variables and the appropriateness of model selection, the Augmented Dickey-Fuller (ADF) test was used for the unit root test. The analysis variables cointegration and their short-run relationship, the subsequent ARDL model was estimated:

$$\Delta LGDT_t = \propto_0 + \sum_{i=1}^{k} \beta_i \Delta LGDT_{t-i} + \sum_{i=0}^{k} \delta_i \Delta LER_{t-i} + \sum_{i=0}^{k} \eta_i \Delta LFR_{t-i} + \sum_{i=1}^{k} \psi_i LPR_{t-i} + \lambda_1 LINV_t + \lambda_2 LER_t + \lambda_3 LFR_t + \lambda_4 LPR_t + e_t \quad (1)$$

Where $\Delta LGDT$ denotes changes in the natural log of government domestic debt, ΔLER denotes changes in the natural log of economic risk ΔLFR denotes changes in the natural log of financial risk and ΔLPR denotes changes in natural log of political risk. Short-run coefficients are represented by β_i, δ_i, η_i and ψ_i while λ_1 to λ_4 represent the long-run coefficients. Additionally, $\propto_0$ and e_t represent the intercept and error term, whereas t symbolises the time period of the data. The test for cointegration or long-run relationship among variables is built on the subsequent hypotheses:

H_0: $\lambda_1=\lambda_2=\lambda_3=\lambda_4=0$ for no cointegration

H_0: $\lambda_1\neq\lambda_2\neq\lambda_3\neq\lambda_4\neq0$ for cointegration

Using the bound test for cointegration, the H_0 was tested against H_1 and the computed F-statistics were compared to I(0) and I(1) critical values from Pesaran et al. (2001) table. The null hypothesis for no cointegration is rejected if the value of the computed F-statistic is greater than the upper bound critical values. There is no long-run relationship between variables if the if the value of computed F-statistic is smaller than the lower bounds critical values. In case the null hypothesis is rejected, suggesting the existence of cointegration, the subsequent error correction model is estimated:

$$\Delta LGDT_t = \propto_0 + \sum_{i=1}^{k} \beta_i \Delta LGDT_{t-i} + \sum_{i=0}^{k} \delta_i \Delta LER_{t-i} + \sum_{i=0}^{k} \eta_i \Delta LFR_{t-i} + \sum_{i=1}^{k} \psi_i LPR_{t-i} + \vartheta ECT_{t-1} + e_t \quad (2)$$

Where the speed of adjustment towards long-run equilibrium is measured by the ECT. It is important to note that the reliable ARDL model was chosen following the optimal lag length selected using the Akaike Information Criteria (AIC). Additionally, before the discussion of the findings, and the accuracy of obtained results, the model was assessed for heteroscedasticity, parameter stability and serial correlation.

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistics

The summary statistics in Table 1 suggest that variables under the study namely government domestic debt, economic, financial and political risk have average or mean of 11.98680, 3.496539, 3.645441 and 4.177162 respectively. The results in the table indicate also, from a high standard deviation, that the domestic government debt has been volatile over the period under investigation. The political fluctuations, over the sample period, were lower compared to changes experienced within the economic and financial risk index. Based on both skewness and kurtosis, as suggested by Hair et al. (2010) and Bryne (2010), economic risk is the only variable that is normally distributed.

3.2. Correlation Analysis

The correlation coefficient (r) is one of the statistical tools employed to measure the relationship that exists between a pair of variables. Its value varies between −1 and +1. Thus, its mathematical representation can be written as follows: $-1\leq r\leq 1$. The magnitude of the relationship between two variables of interest depends on how the value of the coefficient (r) is closer to zero. If the value of r is closer to zero, a small relationship exists between the variables of interest (Ahlgren et al., 2003). Considering the results in Table 2, a weak correlation exists between government debt and country risk components. While a weak and positive correlation exists between government debt and economic risk, a weak and negative correlation exists between financial risk, political risk and government debt.

3.3. Stationarity Test

The presence or absence of a unit root within the study variables was established using the Augmented Dickey-Fuller test (ADF) test where the null hypothesis suggests that the series under consideration has a unit root and the alternative suggests that the series has no unit root. The outcome of the test is presented in Table 3. These results indicate a mixture of stationarity among variables. That is, economic risk and financial risk are stationary at levels I (1) while government debt and political risk are stationary at the first difference. Consequently, the ARDL model is the appropriate approach to estimating the relationship among variables.

3.4. Bound Testing for Cointegration

To establish the cointegration between variables, the F-statistics were computed and compared to the critical values of both lower

Table 1: Summary statistics

	LGDT	LER	LFR	LPR
Mean	11.98680	3.496539	3.645441	4.177162
Median	12.11924	3.496508	3.650658	4.182050
Maximum	12.65555	3.540959	3.737670	4.255613
Minimum	10.83267	3.367296	3.511545	4.119037
SD	0.477773	0.033377	0.044508	0.029271
Skewness	−0.845062	−1.689195	−0.383917	−0.059396
Kurtosis	2.920266	7.587139	2.927392	2.487513

Table 2: Correlation coefficients

	LGDT	LER	LFR	LPR
LDT	1			
LER	0.183517**	1		
LFR	−0.0899***	−0.053429	1	
LPR	−0.6018*	0.133459	0.244245	1

*, **, ***indicates significant at the 10%, 5% and 1% level of significance respectively

Table 3: Unit root results

Series	Levels		First difference		Integration status
	Intercept	Intercept and trend	Intercept	Intercept and trend	
LGDT	0.1378	0.7746	0.0000**	----------	I (1)
LER	0.0325*	----------	----------	----------	I (0)
LFR	0.0044**	----------	----------	----------	I (0)
LPR	0.2613	0.4159	0.0000**	----------	I (1)

*, **denotes the rejection of the null hypothesis at 5% and 1% significant level respectively

and upper bounds. Used critical values that were obtained from the table of Pesaran et al., (2001). As discussed previously, if the computed F-statistic value is higher than the upper bound critical value the null hypothesis is rejected otherwise it is not rejected meaning the absence of cointegration. The F-bounds test results in Table 4 suggest the rejection of the null hypothesis at all significant levels (10%, 5% and 1%) as the value of the computed F-statistics of 8.2583 is higher than the upper bounds critical values of 3.2; 3.67 and 4.66 at 10%, 5% and 1% respectively. Consequently, a long-run relationship exists between government debt and country risk components.

3.5. Regression Findings for the ARDL (4, 0, 1, 3)

The model estimated parameters for both long-run and short-run relationships are reported in Table 5. However, before the result interpretation, it is important to note that a high score in country risk components is awarded to the positive rating component (Muzindutsi and Manaliyo, 2016). Thus high score for political risk indicates political stability while a high score for both economic and financial risk implies improvement in both countries' economies and financial stability or certainty. The long-run estimates suggest a rating of economic risk and financial risk that increase the possibility of government debt. However, a negative long-run relationship exists between political risk and government debt. The long-run findings indicate that if the South African economic risk rating were to increase 1%, the government would increase its debt by approximately 6.14%; while a 1% increase in financial rating would allow the government to increase its debt by 14.84%. Nonetheless, a low rating of political stability would reduce the government's access to borrowing. In other words, a 1% decline in political risk rating would reduce the government's ability to acquire debts by about 4.62%. These findings make more sense as the considered government debt is sourced domestically not from external foreign creditors. If the country's economy is doing well and the finances of domestic companies and businesses are successful, then the latter can lend to the government and the government would acquire a date quickly at a reasonable interest rate. However, the political situation is not good as few companies are willing to lend their money to the government and the risk of losing their money is high.

Considering the short-run estimation, the coefficient of economic risk and lagged political risk are significant and bear positive and negative signs respectively. This implies that similar to the long-run results, economic risk has a positive impact on government domestic debt while political risk has a negative impact on government debt in the short run. It is also important to highlight that the model error correction term is negative and significant at 1% level. Therefore, any shocks or deviation from the long-run equilibrium will be adjusted each month at a low speed of 1.8%. In other words, changes in country risk components will have a significant effect on government domestic debt after 54.93 months (1/0. 018206); that is approximately 4 years.

Table 4: F-bounds test

Null hypothesis: No level of relationship				
Test statistic	Value	Sig.	I (0)	I (1)
F-statistic	8.258340	10%	2.37	3.2
k	3	5%	2.79	3.67
		1%	3.65	4.66

Table 5: ARDL regression outcome

Variable	Coefficient	SE	t-Statistic	Prob.
Long-run results				
LER	6.138472	3.732635	1.644541	0.1028
LFR	14.84378	6.249885	2.375048	0.0192**
LPR	−4.622738	4.783394	−0.966414	0.3358
Short run dynamics				
D (LER)	0.100157	0.058914	1.700047	0.0917*
D (LFR)	0.085162	0.071979	1.183153	0.2391
D (LPR)	0.075351	0.193115	0.390186	0.6971
D (LPR(-1))	0.492973	0.269962	1.826084	0.0703*
D (LPR(-2))	−0.518255	0.197946	−2.618158	0.0100**
CointEq(-1)	−0.018206	0.005331	−3.415123	0.0009***

*, **, and ***indicate significance at 10%, 5% and 1% respectively

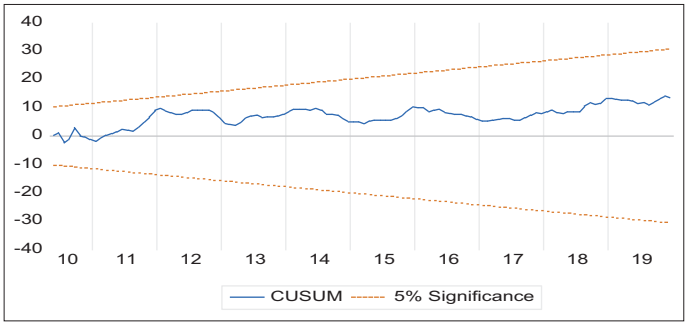
Table 6: Diagnostic tests

Test	Hypothesis (H_0)	Probability	So what?
White	No heteroscedasticity	0.2975	Reject H_0
LM	No serial correlation	0.4895	Reject H_0
JB	There is normality	0.31472	Reject H_0
Ramsey	Error variances are all equal	0.6303	Regression is correctly specified

3.6. Diagnostic Tests Discussion

Table 6 displays the diagnostic results from the study model. The results indicate the failure to reject null hypotheses for all conducted tests (normality test, homoscedasticity, serial correlation and parameters stability). Failure to reject the null hypothesis for normality implies that the model residuals are normally distributed, and the failure to reject the homoscedasticity and serial correlation suggest that the used model is homoscedastic and free of serial correlation. Additionally, the probability value of 0.6303 from the Ramsey test indicates that the error variances are all equal meaning that the asymmetric combinations of the fitted values assist to elucidate the dependent variable. Lastly, the CUSUM in Figure 1, test result confirms the stability of the model coefficients. In other words, within the 95% level of confidence, the estimated model parameters are stable.

Figure 1: CUSUM test results



4. CONCLUSION

This study aimed at determining the effect of country risk on the South African government's domestic debt. To this end, monthly data from January 2008 to December 2019 was assessed and using the autoregressive distributed lag (ARDL) bounds testing method, a regression model was estimated. The results from the assessment suggested that a long-run relationship exists between the country risk components (economic risk, financial risk, and political risk) and government domestic debt. Both economic and financial risk high scores infer a long-run increase in government debt while a high score in political risk is associated with a decline in the South African domestic debt. Besides having positive effects, both economic and financial risk scores were found to have a large effect compared to political risk.

These results possess policy inferences. Development and improvement of both economic and financial stability assist the government in acquiring needed funds from domestic businesses and companies instead of borrowing from foreign creditors who would charge a high rate of interest. And since the money borrowed by the government is spent within the country, aside from the interest rate on loaned funds, households and domestic businesses will also benefit from government debt and the late may be used to improve infrastructures and sustain institutions which are useful for economic and financial stabilities. Thus, an interaction exists between the usefulness of government debt and country risk.

Irrespective of the significance of this study, some limitations can be considered for further research. Due to data availability, the study sample was limited to the period between 2008 and 2019. Further, studies should extend the scope and also consider including the effect of Covid-19 on the South African debt, in their analysis.

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