The Influence of Balance of Payment and Fixed Investment on External Debt Level in South Africa

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Abstract: Debt remains a key and critical indicator for African countries, from state indebted institutions to state projects funded through external debt. Given that South Africa was recently downgraded, external debt is a contentious issue grappling policy formulation. Hence, the study investigates how balance of payment and internal investment influence external debt level. Quarterly time series data was used from 2004 to 2017 employing Vector Error Correction Model and Granger Causality techniques in the study. VECM results show that fixed investment has a negative and significant predictor of external debt, while balance of payment was an insignificant predictor in the long run. The Granger causality results revealed that fixed investment has a causal effect on external debt significant at 5%, while balance of payment is rather affected by external debt significant at 5% also. It is therefore recommended that the country needs to mobilise and sufficiently make use of internal investments, this will deter excessive external borrowing to fund infrastructure and critical projects. It is also recommended that, perhaps, South African firms need to invest productively abroad, thereby, improving foreign direct investment (an asset value) income, this will contribute to the current account. As such investment will help deter the impact of the negative outlook imposed by ratings agencies on the country. Balance of payment, with the causal effect on debt level, may also help deter the impact of the ratings agencies pronouncements on South Africa.

Keywords: Balance of payment, External debt, Fixed Investment, Current account

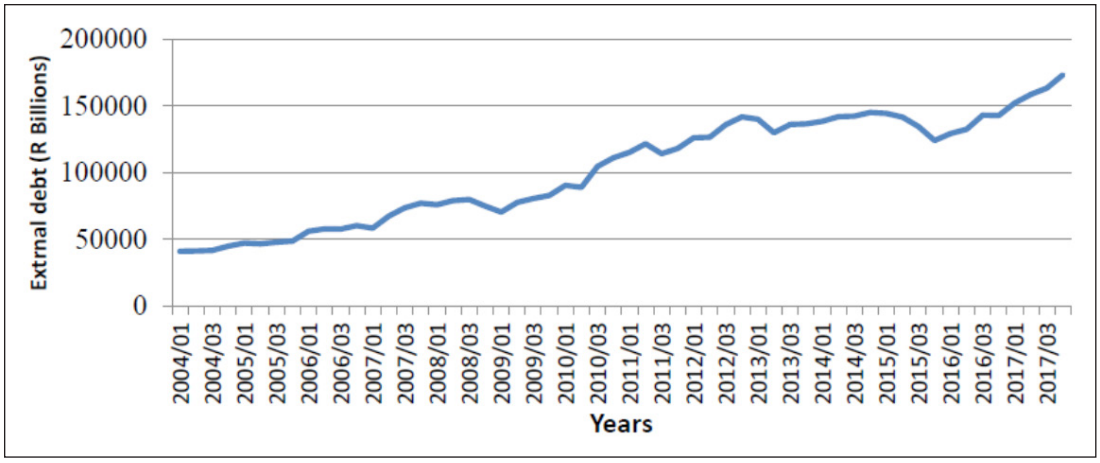
1. Introduction

When countries have insufficient resources, they may opt for internal and, or external borrowing to achieve certain goals as financing public expenditures. However, governments often make use of external debt as a vital source of finance, mostly used to increase the internal funds for supporting development and a nation's other needs (Wachtel, 1998). Commonly, lack of foreign exchange and insufficient domestic saving required for a country's development leads to the need for external debt. The capability of a nation to pay back its debt is substantially affected when a country does not efficiently spend in funds for productive and income generation activities (Siddique, Selvanathan & Selvanathan, 2015). What then, of developing countries such as South Africa which finds itself in a predicament, as it was recently downgraded by the three main agencies, Moody's, Standard and Poor, and Fitch ratings.

The ratings agencies all decided to downgrade the country given several and unique reasons in maintaining a negative outlook, one notch below investment grade. The reasons given were that the country had a structurally very delicate growth outlook and an inhibited capacity to stimulate the economy, additionally, inexorable rise in national debt over the medium term (Treasury media statement, 2020a). Adding to the woes were the impact of COVID-19 pandemic as suggested by Fitch ratings that there's a lack of a clear path to stabilise the impact thereof on the public finance (Treasury media statement, 2020b). Excessive debt has a direct impact on the economic prosperity considerably in consideration of the debt service cost which adds to the higher current account deficit which leads to debt overhang on a country (Krugman, 1988). Table 1 on the next page seeks to reflect on the debt analysis for the country and gage its trajectory as leading to the three downgrades.

As reflected in Table 1, external debt in the first quarter of 2004 to the third quarter of 2017 in South Africa reflects an upwards trend throughout. The pattern of external debt increased from R41144 Billion (bn) in 2004 first quarter to R7999973bn in 2008 third quarter, in 2009 second quarter the external debt went down to R77750 bn and increased. An upward trend or rise in External debt is very concerning. Therefore, it became essential to investigate the relationship between the selected macroeconomic variables on external debt.

Figure 1: South Africa's External Debt Outlook



Source: Author's computation (SARB data)

In order to address the rather sluggish ill performing economy, the South African President Mr Ramaphosa has embarked on an investment drive, to also boost the country's exports trajectory in 2018. However, this study seeks to investigate the impact of such strategies on the debt level of the country, that is, Fixed investment (internal or public investment) and Balance of Payment (BOP). There's a popular stance that there is an impending debt crisis in Africa rising.

Some 19 African nations exceeded the 60% debt-to-GDP threshold set by the African Monetary Co-operation Program (AMCP) for developing economies (Onyekwena & Ekeruche, 2019). To this alarming state South Africa is at the verge of reaching the debt-GDP ceiling and shows sign of the symptoms associated with that, reaching 59% debt-GDP ratio. Treasury revealed at the 2018 budget that government's gross borrowing requirement increased by R15.3 bn, that's the difference between revenue and expenditure, and payments for maturing debt. While debt service cost and the actual debt were expected to increase in the medium term. Additionally, it is expected that debt and the associated cost will continue to rise over the medium term with gross loan reaching an estimated R2.81 trillion or 55.6% of GDP I2018/19 and projections of 60.2% of GDP by 2023/24 (Medium Term Budget Policy Statement, 2019).

To this effect South Africa has reached catastrophic level because these lead to strict measures. These are manifested in fiscal deficits through expenditure cuts, and austerity measures may have severe hostile impact on public spending (and thus on livelihoods), and resulted in large current account deficits, astronomical inflation, and depressed currencies. This, while adding to the problem of unemployment in the country. It, therefore, became critical to investigate the relationship between internal investment and balance of payment as perhaps explanatory indicator to alleviate the debt problem.

2. Literature Review

This section aims to submit the theories relevant to the study as perhaps leading and explaining expected results, additionally, to preview literature on the work done thus far. As explained above, this form of investigative study, that is, external debt as the regressed variable, are few in literature. Therefore, diverse papers incorporating the variables understudy are utilised to at least show that indeed these were and are still a very contentious issue.

The linking theory between debt and investment is explained by the debt overhang theory. Krugman (1988) states that debt overhang is a condition in which the anticipated repayment on foreign debt falls short of the contractual value of debt. When a country's anticipated debt level exceeds the repayment ability in the future, the expected cost of debt, the debt service, is likely to be an increasing function of the country's level of output. Thus, economic growth is discouraged as a result of existing foreign creditors crowding out domestic and foreign investors on the notion that some returns from investing in the domestic economy are effectively taxed out. In its original formulation, the debt overhang theory cantered on the adverse effects of external debt on investment in physical capital. This theory is much

broader; a high level of foreign debt can diminish a regime's motivation to carry out structural and fiscal restructurings, since any strengthening of the fiscal position could increase the burden to repay foreign creditors. These disincentives for reform are of special concern in low-income states, where an acceleration of structural transformations is needed to endure higher growth. This suggests that the expected relationship between fixed investment and external debt is a negative one.

An explanatory theory between BOP and debt is explained through the dependency theory established by Singer and Prebisch (1949). Debt dependency takes precedence over commodity trade dependencies when explaining slow economic growth (Bradshaw & Huang, 1991). Chase-Dunn (1975), Pfister (1984), Sell and Kunitz (1986-87), and Bradshaw (1993) found that external debt, operationalized in several ways, creates toxic consequences such as slow Gross National Product growth, increased income inequalities, and slowed decline in mortality rates. A variety of measures of debt dependency have been utilized but the most cited were "percent debt service to GDP and/or exports". The numerator percentage paid to service their external debts remained constant while the denominator fluctuated somewhat but also remained an aggregate figure derived from a balance of payments accounting system. As such, it is postulated that BOP and national debt should be an inverse to be of good effect in the overall economy. The balance of payment (BOP) accounting method of multilateral institutions typically aggregated capital revenues into gross domestic product figures. Hence, the debt service ratio was the primary measure used in devising strategies to restore net capital flows back to lending agencies (World Bank, 2001).

South African literature on the study at hand is quite lacking, however, a few were analysed as such. A report from the South African Reserve Bank (SARB, 2015) related to Debt/GDP ratio for the country covering the year 1865 to 2010 cited as relevant. A fixed model and time-varying thresholds that permit the level of debt to differ relative to its recent history and the occurrence of financial calamities were estimated. The observed findings exposed a statistically significant threshold of debt/GDP ratio of around 56% throughout the sample period.

Mothibi (2019) studied the impact of external debt and national debt on the South African economic growth applying Auto Regressive Distributive Lag (ARDL) model to examine the connection between the variables over the period between 1980 to 2018. The results found a positive stimulus in the short run on economic growth by foreign debt, government debt and investment. While an inverse long run connexion between economic growth and government debt is observed in the study. The result further indicated a positive long run nexus between economic growth foreign debt and also revealed a positive long run relationship between economic growth and investment. This positive long run association between the country's growth and investment is consistent with the results by Meyer and Sansusi (2019) as well as Bakare (2011) and Moredeck and Ramires (2014). Investment is defined as gross fixed capital formation. Djulius (2018) carried out an investigation to attempt to provide clarity on the role of foreign loans and domestic savings in short and long-term economic growth of Indonesia covering a time period from 1981 to 2015. Error Correction Model (ECM) analysis approach was used. The co-integration test results show that co-integration exists among the observed variables, the results indicates that foreign loans significantly affect economic growth negatively in the short run. The findings were coherent with the results of Farhana (2014) and Zouhaier & Fatma (2014). Furthermore, in the long run the result revealed that foreign loans do not significantly affect economic growth. Also, the study revealed that domestic savings had a stimulus effect on economic growth both in short and long run. In simple words an inference can be made from the result that domestic savings play a bigger role than external debt to boost economic growth. However, domestic savings should be allocated effectively and efficiently. Moreputla & Moffat (2017) studied the effects of external debt on national savings in Botswana from 1980 to 2014 by employing Vector Error Correction Model (VECM). VCEM analysis shows that in the short run fixed investment effects on national savings are statistically significant in both lagged; the lagged values of fixed investment have a negative sign, which implies that fixed investment affects national saving unfavourable. Also, the result shows external debt is not influenced by saving in its own lags. This shows controversy between external debt and national saving. It was revealed that in Botswana exchange rate is negatively related to savings and is statistically insignificant. AL-Kharusi & Mbah (2018) used ARDL approach and ECM instrument to probe the immediate effect of external debt on the

economic growth prospects for Oman using a time series data for the period 1990-2015. The findings were a significant long run stimulus between capital formation (investment) and economic growth which exists at 5% level of significance, and a significant negative long run relationship between external debt and economic growth Nwannebuike, Ike & Onuka (2016) studied the impact of external debt and economic growth in the case of Nigeria for the period 1980 to 2013 analysed using OLS multiple regression technique. The results indicated that external debt has a significant negative impact on public capital.

Mothibi (2019) further employed Granger causality results indicated a unidirectional causality from foreign debt t economic growth. Furthermore, the study revealed that there was a bidirectional causality between investment and economic growth. Saad (2012) investigated the causality between external debt servicing, economic growth and export in Lebanon over the time period from 1970 to 2010. The causality results indicated a bidirectional nexus in external debt and economic growth at 1% level of significance, which is a different from the recent findings by Mothibi (2019).

Additionally, a study on causal nexus among foreign debt and economic growth in Nigeria during the period 1970-2014 by Fatai (2016) made similar findings that Granger causality test shows bidirectional causality exist between external debt and economic growth at 5% level of significance. Furthermore, bidirectional causality between external debt service and economic growth exist at the same level of significance. An investigation was conducted by Lau and Lee (2016) on the factors affecting external debt in Thailand and the Philippines spanning the period 1976-2013. The study used panel data from the two countries. Starting with Thailand, the granger causality test was performed, and the result shows an indirect causal linkage and a causal chain that runs from economic growth to inflation to external debt. This means that these variables among others are interconnected to each other and form a circle of causality. In the case of Philippines, Granger causality test results indicate indirect linkages among the variables, external debt and real interest rate respectively cause economic growth. Kanu and Ozurumba (2014) examined capital formation and economic growth in Nigeria from 1981 to 2011. The study indicates that gross fixed capital formation causes economic growth. This shows that the Granger causality test indicated unidirectional causality between gross fixed capital formation and economic growth. Abdullahi, Hassan and Bakar (2015) investigated macroeconomic elements of external debt in Nigeria from 1980 to 2013. The causality test reflected unidirectional causality between external debt and capital formation at 5% significance. Additionally, there was a unidirectional causality between external debt service and capital formation, also at 5% significance.

In a recent study by Meyer and Sansusi (2019) about the investigation on the causal analysis of the relationship between gross fixed capital formation, economic growth and employment in South Africa for the period 1995-2016, the causality results indicated a unidirectionality between economic growth and capital investment at 10% significance, additionally there was causality running from economic growth to capital investment in South Africa.

3. Research Methodology

3.1 Data and Model Specification

The study aims to investigate the influence of balance of payment and fixed investment on external debt level in South Africa. Secondary quarterly data from 2004 to 2017, sourced from the South Africa Reserve Bank was used. The selected macroeconomic variables fixed Investment and Balance of Payment were all sourced from the South African Reserve Bank (SARB), including external debt. To improve the model estimates, two control variables where included, this also serves to avoid any possibility of specification bias due to omission of important variables (Molele & Ncanywa, 2018). Therefore, Gross Domestic Product (GDP) and consumer's Debt Service ratio, all sourced from the Reserve Bank. This can be summarised as:

$$\text{External debt} = f(\text{Balance of Payment and investment, GDP, Debt Service ratio}) \quad (1)$$

The model is presented below, and also logarised the variables to reflect linear coefficients estimates.

$$LEXTD_t = \alpha_t + \beta_1 LINV_t + \beta_2 LBOP_t + \beta_3 LGDP_t + \beta_4 DEBTSR_t + \varepsilon_t \quad (2)$$

Where, α_t represents the constant term, $LEXTD$ is the logarised externa debt which is the total loan debt of national government as measured in total foreign debt in percentage terms, $LINV$ is logarised gross fixed capital formation as measured in

millions rand, $LBOP$ is logarised balance of payment measured as trade balance in million rand, $LGDP$ is gross domestic product at constant prices in millions rand, $DEBTSR$ is debt service ratio, household ratio of debt-service cost to disposable income in Percentage terms, β_1 to β_4 are the coefficients estimates and εt is an error term.

3.2 Estimating Techniques

3.2.1 Stationarity/Unit Root Test

Time-series analysis requires that stationarity tests be done. It is crucial because if the OLS regression is applied with non-stationary variables it would lead to a spurious regression (Gujarati & Porter, 2009). The study uses the Augmented Dickey-Fuller (ADF) test by Dickey & Fuller (1981) analysing the unit root existence. The Phillip-Perron tests is also used to confirm with certainty the level of stationarity.

An alternative unit root test is proposed, a nonparametric method of controlling for serial correlation (Phillips & Perron, 1988). The PP method estimates the non-augmented DF test, and adjusts the share of the coefficient so that serial correlation does not affect the asymptotic spreading of the test statistics (Lütkepohl & Krätzig, 2004). For both techniques, the ADF and PP, the null hypothesis is that the variables understudy contains a unit root, and the alternative is that a stationary process generated the variable.

3.2.2 Johansen Co-Integration

(Brooks, 2002) tests residual for stationarity and as such co-integration exists whereby the linear combination of the time series is integrated of order zero, meaning a long run equilibrium relation that connects the individual variables is affirmed. Therefore, for such purpose the study uses the Johansen (1991) likelihood ratio tests for evaluating the number of cointegration vectors within the system of time series. In addition, if there is evidence of variables cointegration, then we can venture the idea that there may exist co-movements in their performance and perhaps they will trend to a long-run equilibrium state (Ghali & El-Sakka, 2004). Henceforth, if these variables are cointegrated, the cointegration vector will reflect the magnitude of the impact of each variable on the long-term level of external debt (Moolman & Du Toit, 2005). Additionally, presentation of cointegration is preceded by a determination of the lag length criteria, that is, how many lags to be included in the model.

3.2.3 Vector Error Correction Model (VECM)

VECM representation is an advanced estimation technique, this because it permits differentiation between the long-run and short-run relationship amongst the variables employed in the study (Brooks, 2002). VECM is a multivariate generalization of ECM model. It be a VAR model which is intended for practice in non-stationary time series known to be cointegrated. Good characteristics of a VAR are its simplicity and that the econometrician does not have of which variables are exogenous or endogenous (Brooks, 2008). And the estimation is simple in the sense that the equation can be estimated separately with the ordinary least square method. However, the model has a criticism that is not based on any economic theory (Mongale & Mogoe, 2014). The VECM approach is used if cointegration amongst the variables is established. Additionally, this technique is employed when all variables have unit root at the same level, at first difference (Ouattara, 2004).

3.2.4 Granger Causality Test

Granger causality was employed to investigate if there exists a cause and effect in the variables understudy (Engle & Granger, 1987). Aworinde (2013), however, argues the causal test do not provide solutions on whether the movement on one variable can pronounce the variation in the other variable. But still, it explains that the movement in one indicator is followed by another indicator instead. The model can present one of the four possible results, firstly, a unidirectional causality from variable dependent variable (Y_t) to independent variable (X_t), secondly, a unidirectional causality from X_t to Y_t, thirdly, bidirectional causality between the variables, and lastly there may exists no causality between the variables.

3.2.5 Diagnostic and Stability Tests

In order to guarantee that the outcomes from the econometric model yields true estimates, the Jarque-Bera, Breauch-Pegan, ARCH tests and the White tests are utilised to test for heteroskedasticity. This will ensure that the model is well specified. Additionally, normality test through the Jarque-Bera test. A normal distribution has skewness of zero, that is, a perfect mean symmetry and a kurtosis should be three. Kurtosis tells how much data is in the tails and gives an idea about how "peaked" the distribution is. Finally, to verify the stability of the model the Cumulative Sum of recursive residuals is employed (CUSUM) test is employed (Lutkepohl, 1993).

Table 1: Augumented Dickey Fuller and Phillips Perron Unit Root Test Results

Series	Model	At level		First difference	
		ADF Statistic	PP Statistics	ADF Statistic	PP Statistics
LEXTD	Intercept	-1.435566	-1.430267	-6.894265***	-6.893574***
	Trend and Intercept	-1.594360	-1.631048	-6.987325***	-6.985979***
	None	3.710904	3.624850	-5.632707***	-5.790744***
LINV	Intercept	-2.090851	-2.604855	-3.825810***	-3.828370***
	Trend and Intercept	-2.353493	-1.705465	-4.094255***	-3.966448***
	None	2.339285	3.677885	-2.842206***	-2.633486***
LBOP	Intercept	-2.840810	-2.912606	-10.07873***	-10.24148***
	Trend and Intercept	-2.960607	-3.033157	-9.988611***	-10.22432***
	None	-2.818012	-2.870346	-10.15716***	-10.30605***
LGDP	Intercept	-2.510325	-3.520782	-3.940464***	-3.834955***
	Trend and Intercept	-2.570860	-2.430945	-4.397163***	-4.397163***
	None	2.662398	4.325136	-2.732894***	-2.517534***
LDEBTSR	Intercept	-2.436083	-2.056440	-3.136523***	-3.201161***
	Trend and intercept	-2.340362	-1.880613	-3.207749***	-3.281467***
	None	-0.176450	0.074529	-3.156401***	-3.216437***
Note: *, **, ***, shows level of significance at 10%, 5% and 1* respectively					

Source: Author's computation using Eviews 9 (SARB Data)

Table 2: VAR Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC
0	-37.77755	NA	3.57e-06	1.645290	1.832910
1	312.4468	619.6276*	1.32e-11*	-10.86334*	-9.737619*
2	328.3823	25.12912	1.93e-11	-10.51470	-8.450888
3	351.3688	31.82749	2.24e-11	-10.43726	-7.435349

Source: Authors Computation using Eviews 9

4. Results and Discussion

In the order that follows the methodology above, the results are chronologically set accordingly. The stationarity tests are reflected at Table 1 for both the ADF and PP tests, and it is quite evident that the three main variables, external debt, investment and balance of payment, are stationary at first difference, significant at 1%. The two control variables are also stationary at first difference. Therefore, all the variables at $I(1)$, a condition to estimate VECM upon cointegration.

Prior to testing for cointegration, lag length selection criteria are reflected in Table 2. The lag length describes the method for selecting lags k for each individual test specifications. These criterions specify the maximum lag(s) to be used. Based on Table 2 the lag length is stated to be at most one (1).

Since all the variables are found to be stationary, the Johannes co-integration can be performed. The number of co-integrating equations is examined through the use of Johansen (1991) test for co-integration as shown in Table 3 on the next page.

The trace test statistic depicts the presence of one co-integrating equation in panel A, therefore the null hypothesis of no co-integration of the series is rejected. This is shown by Trace statistic value of 83.17984, which is greater than the 69.81889 critical value. Its probability value of 0.0030 which is significant at 5%, therefore supporting the existence of co-integration. Additionally, panel B, Max-Eigen test results, also depict the presence of one co-integrating equation at 5% level. The evidence is further provided by the Max-Eigen value statistic of 38.24058, which is greater than the critical value of 33.87687. Therefore, there's enough evidence of

Table 3: Johansen Co-Integration

Panel A: Trace Test				
Hypothesized No. of CE(s)	**Maximum Eigenvalue**	**Trace statistic**	**Critical Value**	**Prob**
None *	0.507450	83.17984*	69.81889	0.0030*
At most 1	0.300731	44.93925	47.85613	0.0916
At most 2	0.200710	25.62242	29.79707	0.1404
Panel B: Maximum Eigen Test				
None*	0.507450	38.24058*	33.87687	0.0141*
At most 1	0.300731	19.31683	27.58434	0.3904
At most 2	0.200710	12.09768	21.13162	0.5380

Source: Authors Computation using Eviews 9

Table 4: VECM Long Run Estimates

LEXTD	LINV	LBOP	LGDP	DEBT-SR
1.000000	2.763833	0.003186	-34.61985	-0.048034
	(6.24325)	(1.78974)	(3.75876)	(3.75876)
Note: values in parenthesis () are t-statistics				

Source: Author's computation using Eviews 9

the existence of a long run co-movement amongst the variables of the model.

The result from Table 4 shows the long run relationship among the dependent and the independent variables. The outcomes are presented in the equation where the signs of the coefficient had to change as they were transferred to the right side of the equal sign.

$$EXD_t = 0.025037 - 2.763833LINV_t - 0.003186BOP_t + 34.61985LGDP_t + 0.048034DEBTSR_t + \varepsilon_t \quad (3)$$
$$(6.24325)\quad (1.78974)\quad (3.75876)\quad (3.75876)$$

Equation 3 represents the responsiveness of external debt to changes in fixed investment and balance of payment, and the two control variables. To relate significance, a special type yet applicable technique is through the t-stats (Brooks, 2008). A t-stat of greater than 2 or less than -2 reflects significance. The results therefore suggest that there exists an inverse relationship between fixed investment and external debt levels and significant as seen by the t-stat of 6.24325 in parenthesis. This means that a 1% change in Investment will decrease external debt by 2.76%. Hence, this shows that fixed investment an internal investment is a crucial economic indicator to relieve an economy that may be overly indebted. These findings are in line with expected a priori as advocated by the Krugman theory.

Balance of payment is also inversely related to external debt but insignificant as the t-stat is below two. As such, balance of payment may not be seen as a predictor of external debt. These results affirm the findings of Hermann and Jochem (2005). On oversight, the two control variables, gross domestic product is positively related to external debt, and significant. While debt service ratio is positively related to external debt and significant also.

Table 5 on the following page reflects the short-run and error correction estimates. In the short-run, Investment has a negative but insignificant relationship on external debt, while balance of payment is positively and significantly related to external debt. According to Adamopoulos (2010), the size of the error correction term specifies the speed at which the model adjusts back to equilibrium given the presence of disequilibrium towards a long run equilibrium state. The estimated coefficient of (ECT) of -0.031887 in the model and certifies the theoretically correct sign (negative sign). The estimated coefficient of -0.031887 reflect that approximately 3% of the disequilibrium of the previous quarters comes back to long run equilibrium in the following year.

Table 6 on the following page presents the results of the Causality test and relates the second objective of the study.

Table 5: ECM Estimation (Short-Run Estimates)

Variables	Coefficients	Standard Error	t-statistic
EXTD	-0.086120	(0.16190)	(0.16190)
LINV(-1)	-0.596247	(0.33665)	[-1.77114]
BOP(-1)	0.000465	(0.00100)	[0.46640]
LGDP(-1)	6.422201	(3.31829)	[1.93540]
DEBT-SR(-1)	-0.003543	(0.02912)	[-0.12166]
ECT	-0.031887	(0.07964)	[-0.40039]
Constant	175.4917		
Notes: (-1) Denotes the first lag of the variables, EC: denotes Error Correction			

Source: Author's computation using Eviews 9

Table 6: Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Probability
LINV does not Granger Cause LEXTD LEXTD does not Granger Cause LINV	54	1.34614 4.38396	0.2697 0.0177**
BOP does not Granger Cause LEXTD LEXTD does not Granger Cause BOP	54	3.32844 0.47552	0.0441** 0.6244
BOP does not Granger Cause LINV LINV does not Granger Cause BOP	54	2.31110 0.56744	0.1099 0.5707
Note: *, **, *** represents significance at 1%, 5% and 10% respectively			

Source: Author's computation using Eviews 9

Table 7: Summary of Diagnostic Test Results

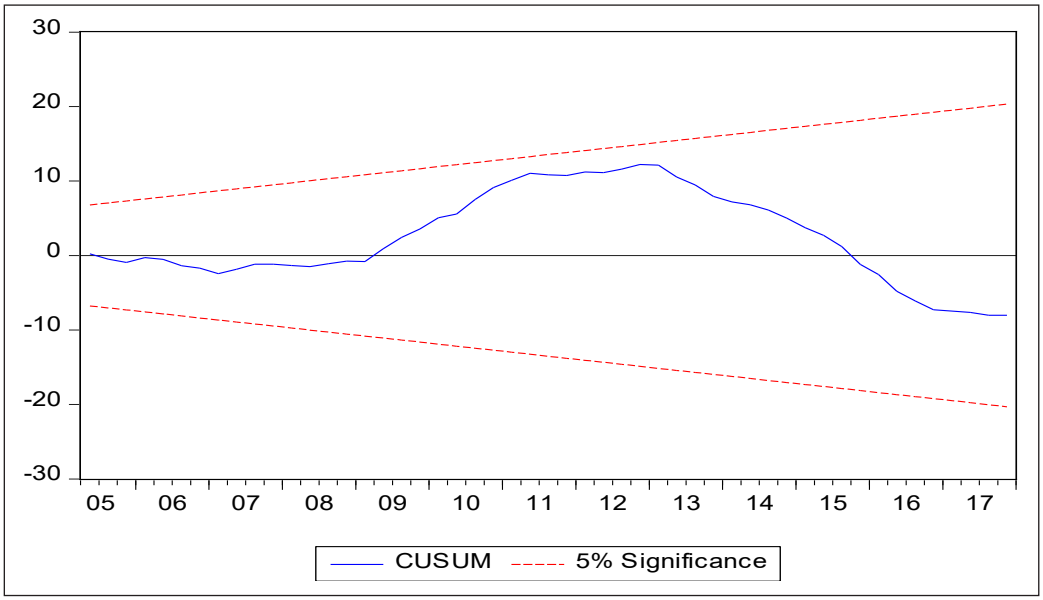
Testing Procedure	Null hypothesis (*Ho*)	t - Stat (p-value)	Conclusion
Jarque-Bera normality test	Residuals are normally distributed	1.302265 (0.521455)	Do not reject *Ho* given that PV(0.52) > L.O.S (0.05), residuals are normally distributed.
Breusch – Pagan Godfrey Heteroscedasticity Test	No Heteroscedasticity	0.780442 (0.5431)	Do not reject *Ho* given that PV(0.54) > L.O.S (0.05), no heteroscedasticity in the model.
White (NCT) Hetero-scedasticity Test	No Heteroscedasticity	0.948636 (0.5100)	Do not reject *Ho* given that PV(0.51) > L.O.S (0.05), no heteroscedasticity in the model.
Harvey heteroscedasticity Test(s)	No Heteroscedasticity	1.717228 (0.1606)	Do not reject *Ho* given that PV(0.16) > L.O.S (0.05), no heteroscedasticity in the model.
Glejser Heteroscedasticity Test	No Heteroscedasticity	1.317532 (0.2760)	Do not reject *Ho* given that PV(0.27) > L.O.S (0.05), heteroscedasticity in the model.

Source: Authors Computation using Eviews 9

The null hypothesis that external debt does not Granger because gross domestic is rejected at 5% level of significance. Balance of payment is seen as causing an effect on external debt, significant at 1%. Investment does not hold Gross Domestic Product at 1% level of Significance, we reject the null hypothesis. Gross Domestic Product does not hold Investment therefore we reject the null hypotheses at 1% then we reject the null hypothesis. On the overall, it seen that gross domestic product, investment and debt service ratio do not have a causal effect on external debt.

Table 7 gives a summary of results of the diagnostic tests for both normality and heteroskedasticity. The Jarque-Bera normality test gives positive feedback as the condition accepts the null hypothesis is satisfied. Likewise, all the heteroskedasticity tests satisfied the conditions to retain the null hypothesis that there is no heteroskedasticity in the model. Following on, the

Figure 2: Cusum Test



Source: Authors

stability test is presented by the CUSUM test, and is presented by Figure 2.

The results of the CUSUM test indicate that the parameter of the model is stable because the cumulative sum, the blue line, moves inside the two critical lines of 5%. The test therefore supports that the model equation is stable during the sample period.

5. Conclusion and Recommendations

The study ventured and investigated the influence of balance of payment and fixed investment on external debt level in South Africa given the current downgrades of the country. A time series econometrics analysis uses secondary quarterly data from 2004 to 2017 for the study. Two techniques where used to address the two objectives short and long-run relationship, and the causality effects, that is, VECM and Granger causality techniques. While, stationarity and cointegration proved positive for the model with one cointegration equation.

The main findings where that fixed investment is beneficial for the country's external debt level as evidenced through an inverse and significant relationship between them in the long run. These are critical and relevant findings in that it was seen that debt level has a causal effect on investment. It is therefore recommended, as imperative that there be a mobilisation and efficient use of internal or fixed investment to reduce debt reliance for the country. Additionally, balance of payment had the expected inverse relationship on external debt but insignificant. However, causality findings did reveal that balance of payment has a unidirectional effect on external debt. These are critical outcome in that the numerous sub-accounts of balance of payments need to be at strength level. It is also recommended that, perhaps, South African firms need to invest productively abroad, thereby, improving foreign direct investment (an asset value) income, this will contribute to the current account. Additionally, the local produce for export market needs to be improved, goods and services with a complex nature or knowledge embeddedness to improve its competitiveness internationally, needs to be encouraged. This will further improve the trade balance and the balance of payment subsequently. For future studies, to explore ways to improve the balance of payment or current account, the relationship between product sophistication and current account needs to be explored.

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