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Logit Model for Sovereign Credit Ratings in South Africa

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Abstract: The transition of Bretton-Hoods Institutions from being providers of concessionary funding into brokers of private capital implies that credit ratings have become the lynch pin to capital access. The study critically investigates whether the determinants of credit ratings identified in literature are relevant to South Africa. Single country studies that identify the drivers of rating scores in South Africa are scant. Fitch and Standard and Poor ratings are collected for the 22 years ending 2022. Binary framework econometric approach with the use of logit regression methods was adopted. Given the binary nature of the dependent variable, a non-linear formulation that forces the predicted values to be between 0 and 1 is desirable. Across the two international credit ratings, the explanatory power of the estimated models has good performance. Evidence is provided in the study that six macroeconomic variables drives credit ratings in South Africa. The variables are the balance of payment, current account balance, inflation, ratio of foreign debt to GDP, gross domestic product, and the ratio of house-hold debt to disposable income. The exchange is not an essential determinant of sovereign ratings in South Africa. Based on the empirical findings of the study, it is recommended that the government of South Africa should implement policies that stabilizes macroeconomic fundamentals. Structural production bottlenecks need urgent attention to enhance the investment attractiveness of the country and boost GDP. Furthermore, the study recommends that the government institute measure to stabilise debt levels at both national and household level.

Keywords: Infrastructure finance; Sustainable development; Credit scores; Determinants

JEL Classification: F43; G21; O11; O16; O47

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1. Introduction

Infrastructure investment is important for South Africa to achieve the Sustainable Development (SDGs) targets. The biggest challenge that South Africa is facing is that of financing the widening infrastructure funding gap. The South African Government [SAG] (2024) estimates that the country needs R5 trillion by 2030 to achieve the infrastructure goals. According to Mutize and Nkhalamba (2020) the challenge of financing the infrastructure gap is compounded by the observation that the Bretton Woods Institutions are gravitating from the traditional model hitched on member countries receiving concessionary loans for infrastructure development towards becoming brokers of private capital. Thus, to bridge the financing gap, South Africa needs to diversify the sources of infrastructure financing. Mundonde and Makoni (2023) notes that most African countries are budget constrained and cannot solely meet the infrastructure development needs. The selling of sovereign bonds on domestic and international capital markets is one of the lucrative options available to South Africa. In fact, the United Nations Development Program (UNDP) (2023) stated that due to the adoption of market driven borrowing models by international development partners, more African countries are making attempts to enter the international debt market to finance infrastructure projects. UNDP (2023) reports that only 2 African countries issued sovereign securities as of the year 2000. However, by the year 2023, more than twenty countries issued international bonds (South Africa Institute of International Affairs (SAIIA), 2024).

To issue international sovereign bonds, a country should have a credit rating, from the three international credit rating agencies (CRAs): Standard and Poor (S&P), Moody and Fitch (Mutize & Nkhalamba, 2020). Obtaining a credit rating is important for a debt issuer because, in most cases, institutional portfolio investors like pension and mutual funds can only hold securities subject to meeting strict investment grade requirements. Despite the African Development Bank [AfDB] (2011), Pretorius and Botha (2016) observing that some African countries underate the importance of obtaining a rating from CRA, South Africa has been rated since the early 1990s. Having been established in the late nineteenth century, CRAs have played a pivotal role in global finance. In the aftermath of the 2008 global financial crises, the increase in the issuance of domestic and international sovereign securities by developing countries was attributed to the reliance that the countries have on CRAs (UNDP, 2023). CRA plays an important informational role on the global financial markets signaling to investors the opportunities and risks associated with sovereign borrowers (Takawira & Mwamba, 2022). The complexity of international capital markets implies that informational asymmetries are inherent where borrower are perfectly informed about the debt servicing constraints they face relative to lenders. In the review of Africa's credit ratings, Standard and Poor (2018), Africa Peer Review Mechanism [APRM], (2023) affirmed that a country's credit rating is an effective signal to potential equity investors in foreign direct investments

especially in situation where the investor is unfamiliar with the investment climate in a specific country. In this case a credit rating can be viewed as the benchmark for a country's corporate and governance culture (UNDP, 2023). Moreso, the designation of a country's sovereign securities as either investment or non-investment grade usually determines the cost and the volume of capital that countries can raise (Pretorius & Botha, 2016; Takawira & Mwamba, 2022). Hence, CRAs, through the rating system are key enablers of the ability of countries to secure sufficient funding to achieve targets within the SDGs timeline.

With so much at stake in the context of SDGs and the associated investment planning, the way CRAs assign credit scores is being scrutinized. Critics have questioned CRAs inability to predict the corporate defaults that characterised the global monetary crisis of 2007 (Boumparis, Milas & Panagiotidis, 2019). Boumparis et al. (2019) further attributes the worsening of the Eurozone crisis to the subjectivity of CRAs assessment methodologies. Policy makers in Europe have gone as far as advising the financial markets to conduct independent rating assessments over and above those provided by CRAs (ECB, 2012). This follows the observation that in some cases, CRAs have assigned different ratings to the same corporate entity or sovereign (Takawira & Mwamba, 2022). However, CRAs have argued in favour of the consistency of their methodologies highlighting the five dimensions that underpin credit assessment. Firstly, Standard and Poor (2017), Moody's Investor Services (2018) and Fitch Ratings (2018) states that sovereign ratings are depended on a country's economic strength which is key to absorb financial and non-financial shocks. Second, the institutional dimension that evaluates the ability of a country to craft and implement sustainable economic policies that fosters prosperity. Third, the fiscal strength captures the strength of a country's public finances through the analysis of both the debt burden and debt affordability (Standard and Poor, 2017; Moody's Investor Services. 2018; Fitch Ratings, 2018). Fourth, credit ratings are assigned based on a country's susceptibility to event risk factors that may elevate the default probability of the borrower. Lastly, the monetary assessment dimension that appraise the ability of monetary authorities' commitment to maintaining a balanced economy and the ability to timeously meet financial obligations (Standard and Poor, 2017; Moody's Investor Services, 2018; Fitch Ratings, 2018; Mutize & Nkhambala, 2020).

The likelihood of credit rating downgrade is one of the risk factors overhanging the South African financial market. The South African bond market for instance is reported in (Takawira & Mwamba, 2022) as overly sensitive to credit rating downgrades. The South African Treasury (2020) has cautioned that further sovereign downgrade will result in South Africa exclusion from the FTSE World Government Bond Index (WGBI). Non-resident South Africans holding R800 billion worth of government securities are likely to exit the South African bond market if the country were to suffer a further downgrade (South African Treasury, 2020). This suggest that

the understanding of the role and significance of credit rating dynamics cannot be underestimated during such a time when South Africa seeks to diversify the funding options. Hence it is important to assess the factors that determine credit rating scores in South Africa. More specifically, the objective of the study is to ascertain whether the determinants of sovereign credit scores identified in literature are relevant to South Africa.

Even though the determinants of credit ratings have received meritorious attention from academics (Kabaday & Çelik, 2015; Mohapatra, Nose & Ratha, 2018; Teixeira, Silva, Ferreira & Vieira, 2018), yet, Osobajo and Akintude (2019); Mutize and Nkhambala (2020), Takawira and Mwamba (2022) noted that single country articles that exclusively investigate African emerging and developing markets are extremely limited. The current study seeks to contribute towards this gap through analysing determinants of sovereign credit ratings in South Africa. Drivers of credit ratings in South Africa have been analysed in a panel framework where the country is analysed along other developed, emerging, or developing countries (Pretorius & Botha, 2016; Osobajo & Akintude, 2019). The study is a key piece of literature given that CRAs have continuously downgraded the South African foreign debt in the recent past. Negative changes to South Africa's debt profiling can result in complex problems of under-funding and de-funding of critical infrastructure projects. As we approach the 2030 SDG deadline, credit rating impacts the country's ability to raise finance on the global market. Moreso, it is only through current studies that economic managers can implement empirically driven policies important to stabilise the South African domestic markets.

The rest of the article is structured as follows: Section two reviews the empirical literature. Methodological aspects of the study are addressed under section 3 whilst the findings from the study are presented in section 4. Section 5 concludes the article.

2. Literature Review

As more African countries transition to capital market-based models of financing sustainable development initiatives, researchers and policy makers are paying more attention to the determinants of sovereign credit ratings. Researchers have made attempts to model the factors that influence a country's rating (Afonso, Gomes & Rother, 2011; Mohapatra, Nose & Ratha, 2018; Teixeira, Silva, Ferreira & Vieira, 2018; Aras & Öztürk, 2018). Even though literature confirms that studies identify the determinants of sovereign credit ratings in developed and developing countries, Pretorius and Botha (2014), Pretorius and Botha (2016), Mutize and Nkhalamba (2019) argues that research on developing countries excludes the African continent. This is despite the characteristic uniqueness of the African economies relative to developed countries and developing countries from other parts of the world

(Giordano, Losch, Minsat & Solignac-Lecomte, 2015; Ekechi, Chukwurah, Oyeniyi & Okeke, 2024). Developed countries have the lion's share of scholarly work and researchers have adopted different viewpoint to unpack the drivers of sovereign credit ratings.

In a seminal paper, Cantor and Packer (1996) presented the viewpoint that macroeconomic variables are the principal drivers of sovereign credit ratings. The Authors used sovereign credit ratings published by Standard and Poor as well as Moody's to investigate the influence of gross domestic product (GDP), inflation, level of economic development, per-capita income, fiscal balance, external balance, and the country's default history on credit ratings. The sample of forty-nine countries used in the study was drawn from both the developed and developing countries. Six variables: default history, GDP growth, per capita income, inflation, economic development, and external debt were concluded to influence the sovereign credit ratings. Using correlation analysis and Ordinary least squares, the study did not find any symmetric relationship between sovereign credit ratings and the two variables of fiscal balance and external balance. The endogeneity of fiscal policy and international flows was given as an explanation to this observation. However, plausible the findings of the study were, these cannot be superimposed to African economies given that Africa was weakly represented in the sample. Of the forty-nine countries in the study, only one was from the African continent.

Boumparis, Milas and Panagiotidis (2015) used annual data from 2002 to 2013 to examine the determinants of credit rating in 18 Eurozone countries. The study used the linear transformation of the dependent variable: rating score from Standard and Poor, Mood's and Fitch. Pooled Ordinary Least Squares was applied on the nine variables namely GDP per capita, growth rate of GDP, government debt, inflation rate, unemployment rate, current account, external balance, log reserves, regulatory quality. Boumparis findings primarily corroborated those in Cantor and Parker (1996), Oskonbaeva, (2020). Macroeconomic variables of GDP per capita, GDP growth rate, exchange reserves exhibited a positive and considerable influence of credit scores in the Eurozone. On the other hand, high level of unemployment and inflation negatively and significantly influenced credit scores. Contrary to Cantor and Packer (1996), during the Eurozone debt crisis, the cumulative current account balance is a significant determinant of credit ratings. In a further study, Boumparis et al. (2019) used multivariate panel vector autoregressive model and a generalized impulse response function on data collected for the period 1998 to 2016. As in Boumparis et al. (2015), a positive shock on GDP, investment stock, government debt, fiscal balance positively influences credit ratings. Fiscal considerations in terms of fiscal balance triggers longer impact on decisions made by CRAs (6 to 10 years). Moreso, the study confirmed a bi-directional relationship between credit ratings and non-performing loans.

Relative to other developing countries, African countries incur higher coupon payments on sovereign securities (Olabisi & Stein, 2015). This strand of literature, though still in its infancy, has provided interesting insight on the subject matter. Holding that sovereign credit score for African countries should not solely depend on the ratings international CRAs' Pretorius and Botha (2016) investigated the determinants of credit scores on a panel of 27 Africa countries using ratings by Standard and Poor, Moody's, Fitch and the NKC African Economics. NKC African Economics is a South African based rating firm. The Authors argued that NKC African Economics has a competitive advantage over the international rating agents due to its domiciliate in Africa and the firsthand experience the rating Agent has on Africa's business and economic environment. Ordered probit model was applied on data collected between 2007 and 2012. The study concluded that the main determinants of credit rating in Africa are, the external balance, the level of investment, inflation, foreign reserves, per-capita income, and the level of internet connectivity. Even though the external balance is reported in Cantor et al. (2016) as insignificant, Pretorius and Botha (2016) reported the variable as significant.

Osobajo and Akintunde (2019) investigated the determinants of sovereign credit rating in emerging markets. The sample comprised of 20 countries and data was collected for fourteen years ending 2015. Unlike, Pretorius and Botha (2014), Pretorious and Botha (2016) who collected rating score from the three International CRA, Osobajo and Akintunde (2019) used ratings from Standard and Poor and Moody's. Pooled Ordinary least square was used in the study. The findings revealed the importance of five macroeconomic variables in determining credit scores in emerging markets. Inflation, government debt, reserves, external debt, and gross domestic product per-capita influences credit ratings in emerging markets. No relationship was established between credit scores and the two variables of GDP growth and current account balance. The study however suffered from data limitation; the reason cited for the exclusion of ratings from Fitch.

Takawira and Mwamba (2022) examined sovereign credit ratings in South Africa using logistic regression. Unlike Cantor et al. (1996), Osobajo and Akintunde, (2019), that analysed South Africa along with a panel of countries, Takawira and Mwamba (2022) adopted a single country approach. Using logistic econometric framework, the study provided evidence that the ratio of household debt to disposable income, exerts the greatest influence on credit scores in South Africa. Exchange rate and the level of inflation is important only as far as predict sovereign credit ratings is concerned. The current study seeks to extent this limited strand of literature by applying logit regression to a more recent data set.

3. Methodology: Data, Variables, and Sample

The study used secondary data to analyze the determinants of credit scores in South Africa. Previous studies on the Euro-zone used secondary data (Boumparis et al., 2015; Boumparis et al., 2019). Rating scores are collected from the two international credit ratings of Fitch and Standard and Poor. The study uses macroeconomic indicators as explanatory variables. Chen, Chen, Chang and Yang (2016) argues that, relative to other variables, there is a strong relationship between credit score and economic variables. Chen et al. (2016)'s views are corroborated in Moody's Investor Services (2018) where weak economic fundamentals are reported to explain much of the previous defaults in Africa.

In a sample of 29 sovereign defaults, between 1997 and 2012, 10% of the defaults are largely explained by economic stagnation, 41% of the defaults were driven by high debt burden. The finding in Moody's Investor Services (2018), APRM (2023) underscores the importance of the economic variables in explaining the dynamics of credit scores and together with a comprehensive review of literature informs the choice of variables. Like Takawira and Mwamba (2022), data is collected from World Bank data bank, Thomson Reuters, Quantec Easy data, Trading Economics database, Statistics South Africa (Stats SA), and the South African Reserve Bank (SARB). Quarterly data is collected for the 22 years ending 2022. The time frame generates 95 data points which the researchers consider adequate for meaningful econometric inference. Table 1 summarises the data and the respective sources from which it was collected.

Table 1. Explanatory variables

Variable	Indicator	Data source	Reference
SCR	Sovereign credit rating	Trading economics, Thomson Reuters	Aras et al. (2018); Mutize and Nkhalamba (2020); Takawira Mwamba (2022)
BOP	Balance of payments	World Bank WDI data base, South African Reserve Bank	Boumparis et al. (2015); Boumparis et al. (2019); Takawira and Mwamba (2022)
CAB	Current account balance	World Bank WDI data base	Cantor and Parker (1996); Pretorius and Botha (2016); Aras et al. (2018)
CPI	Consumer price index Headline	World Bank WDI data base	Pretorius and Botha (2014); Kabaday and Celick (2015); Pretorius and Botha (2016)
HD	Ratio of household-debt to	World Bank WDI data base	Takawira and Mwamba (2020); Takawira and Mwamba (2022)

	disposable income		
EX	Real effective exchange rate	World Bank WDI data base	Kabaday and Çelik (2015); Takawira and Mwamba (2022)
GDP	Gross domestic product	World Bank WDI data base	Pretorius and Botha (2014); Kabaday and Celick (2015); Pretorius and Botha (2016)
FDGDP	Ratio of foreign debt to GDP	World Bank WDI data base	Cantor and Parker (1996); Pretorius and Botha (2014); Oskonbaeva (2020)

Source: Author's Compilation

3.1. Model Specification

The objective of the study is to establish the determinants of sovereign credit ratings in South Africa. To achieve the objective of the study, logit regression framework is used given that the dependent variable is binary. Stable ratings take the value of one whilst unstable rating assumes the value of zero. Stock and Watson (2020) recommend the logit framework to model binary non-linear relationships given that the model ensures that the predicted probabilities fall between zero and one. The linear probability model does not have this property since predicted probabilities can either be above one or below zero. Furthermore, logit coefficients are estimated using the maximum likelihood technique which produces efficient and consistent estimators (Woodridge, Wadud & Lye, 2016). Guided by economic theory and literature, the model is specified as:

$$Prob(SCR_t = 1|X) = \mathrm{G}(\alpha_0 + \alpha_1 BOP_{t-1} + \alpha_2 CAB_{t-1} + \alpha_3 CPI_{t-1} + \alpha_4 FDGDP_{t-1} + \alpha_5 GDP_{t-1} + \alpha_6 HD_{t-1} + \alpha_7 EX_t) + \varepsilon_t \quad (1)$$

Where **G** is the cumulative standard logistic function (Stock and Watson, 2020), SCR_t is the sovereign credit rating that assumes either 0 or 1, BOP_{t-1} is the one period lag of the balance of payment, CAB_{t-1} is the current account balance lagged once, CPI_{t-1} is the consumer price index lagged once, $FDGDP_{t-1}$ is the one period lag of the foreign debt to *GDP* in South Africa, GDP_{t-1} is the gross domestic product lagged once, HD_{t-1} is the ratio of house hold debt to income, EX_t is the exchange rate, and ε_t is the error term. In line with Ba and Noumba (2017), lagged variables of *BOP*, *CAB*, *CPI*, *FDI*, *GDP*, *HD* are used to rule out endogeneity and to manage adjustment lags. To control for multicollinearity, only variables with a variance inflation factor [VIF] that is less than 10 are included in the model (Mundonde and Makoni, 2023). The average VIF is (3.37), which implies that multicollinearity is adequately managed. Table 2 summarises the VIF test results.

Table 2. Multicollinearity Analysis

Variable	VIF	1/VIF
BOP	8,8	0,113659
CAB	5,53	0,180747
CPI	2,72	0,367734
HD	1,93	0,517462
EX	1,75	0,572572
GDP	1,49	0,669167
FDGDP	1,39	0,720314
Mean VIF	3,37	

Robust standard errors are used in the estimation to control for heteroskedasticity (Brooks, 2008; Stock & Watson, 2020). The findings of the study are presented in the subsequent section.

4. Logit Regression Results and Discussion of Findings

Determinants of sovereign credit ratings are examined using rating scores reported by two internationally recognised agencies of Standard & Poor and Fitch. Ratings from Moody could not be incorporated due to data accessibility constraints. The logit regression results for the estimated models are summarised under table 3 and table 4. The estimated coefficients are reported along with the respective marginal effects. Appendix 1 tabulates the postestimation checks.

Table 3. Logit regression results - S&P model

VARIABLE	STANDARD & POOR	MARGINAL EFFERCTS
BOP	0.0002287**	0.0000442***
	(0.0001004)	(0.0000104)
CAB	-0.0002966**	-0.0000573***
	(0.0001294)	(0.0000139)
CPI	-1.451764**	-0.2803388***
	(0.5637908)	(0.0697985)
FDGDP	-3.049476**	-0.5888606***
	(1.260167)	(0.1517147)
GDP	6.610066**	0.0629067***
	(2.814383)	(0.0423477)
HD	2.126462**	0.4106246 ***
	(0.8728167)	(0.0996252)
EX	-0.104889	-0.0202543

	(0.1270975)	(0.0174766)
Constant	-98.86185	
	(38.96656)	
Obs	95	
Wald chi2(7)	24.41	
Prob > chi2	0.0010	
Pseudo R2	0.9502	
Log pseudolikelihood	-3.2644888	

Where ***; **; * denotes significance level at 1%, 5% and 10% respectively

Table 4. Logit regression results - Fitch model

VARIABLE	FITCH	MARGINAL EFFECTS
BOP	0.0000703***	0.0000173***
	(0.000018)	(5.44e-06)
CAB	-0.0001297**	-0.000032**
	(0.0000513)	(0.0000143)
CPI	-0.6296458***	-0.1553254**
	(0.1429294)	(0.0414192)
FDGDP	-1.73692**	-0.4284756**
	(0.7366946)	(0.1791187)
GDP	2.341593***	0.5776405***
	(0.6935123)	(0.1549537)
HD	0.8573556***	0.2114985***
	(0.1747594)	(0.0537472)
EX	0.0624113	0.0153961
	(0.1400354)	(0.0330143)
Constant	-50.00237**	
	(17.78376)	
Obs	95	
Wald chi2(7)	39.92	
Prob > chi2	0.0000	
Pseudo R2	0.8899	
Log pseudolikelihood	-7.2246375	

Where ***; **; * denotes significance level at 1%, 5% and 10% respectively

Both the S&P and Fitch models reports similar findings. Evidence is provided that the balance of payment (BOP) is a significant determinant of credit scores in South Africa. BOP is significant at 1%. The finding contradicts the earlier conclusion in Takawira and Mwamba (2022) who reported BOP as insignificant determinant of rating scores in South Africa. The difference in findings can be explained by the fact that the current study uses a more recent data set and the fact that the set of explanatory variables is different between the studies. Economic managers thus have to pay particular attention to BOP dynamics in South Africa in order to enhance the

country's credit rating profile. Cantor and Parker (1996) asserted that there is no relationship between credit scores and the current account balance (CA). The current study, however, establishes a significant relationship between credit scores and current account balance (CA) at 1% level of significance. Furthermore, CA negatively relates to credit scores. The finding is consistent with Afonso, Gomes, and Rother (2011) who postulated and reported a significant negative relationship between CA and sovereign credit rating. Contrastingly, Aras, Osman, Nuri and Öztürk, Mustafa (2018), Osobajo and Akintunde (2019) reported an insignificant positive relationship between CA and rating scores. Unlike the current study, the studies investigated credit scores using a panel of countries.

Stable rate of inflation is associated with positive credit ratings (Cantor & Parker, 1996; Aras et al., 2018; Osobajo et al., 2019). The current study established a negative and significant level at 5%. In fact, according to the S&P model, a unit improvement in the level of inflation is associated with a 28% more likelihood of a stable credit score. Inflation level in South Africa averages 5.3%. Which is a stable trend relative to Zimbabwe with annual inflation that is unstable and often very high (Mundonde & Makoni, 2023). Pretorius and Botha (2016) similarly reported the level of inflation as a significant determinant of ratings emerging African economies. Boumparis et al. (2015) arrived at similar conclusion for the euro-zone. Parallel to Cantor and Parker (1996), Burhan, Ahmet (2015), Osobajo and Akintunde (2019), Pretorius and Botha (2016) and unlike Takawira and Mwamba (2022) the study provide evidence that foreign debt to GDP ratio is significantly related with credit rating. A unit improvement in foreign debt to GDP ratio is associated with a 42% more likelihood of a stable rating. Afonso et al. (2011) states that in both the long and short run a country's level of debt is associated with adverse rating trend. The fining is corroborated in Osobajo and Akintude (2019). South Africa's debt burden is forecasted to be 80% of GDP by 2025. This suggest that the country is expected to incur higher interest repayment burden which is more likely to impact South Africa's rating scores. Even though with asymmetric impact on credit ratings for developed and developing countries, Mutize and Nkhalamba (2019) provided empirical evidence that gross domestic product (GDP) is a key driver of credit ratings. The current study corroborates the findings. GDP positively and significantly (1% significance level for Fitch and 5% significance level for S&P) drives credit ratings in South Africa. Moreso, Boumparis et al. (2015), Osobajo and Akintunde (2019), and Oskonbaeva (2020) and concur with the view that GDP is a strong determinant of credit ratings. Countries with higher GDP and stable institutions are in a better position to withstand exogenous shocks hence the association with stable credit scores. The Fitch model provide evidence that a unit increase in GDP is associated with a 6% more likelihood of a stable rating. Evidence is provided in the study that household debt expressed as a proportion of disposable income (HD) significantly influences sovereign ratings in South Africa. The finding

is like Takawira and Mwamaba (2022) where HD identified as a critical driver of sovereign ratings in South Africa. Enwereji and Uwizeyimana (2020), Bohoslavsky (2021) observed that the level of household debt is unsustainably rising in South Africa. Lastly, the study established that there is not significant relationship between sovereign credit ratings and exchange rate. Contrastingly, Kabaday and Çelik (2015), established a strong and significant relationship between sovereign ratings and exchange rate in Turkey.

5. Conclusion

The need to bridge the infrastructure funding gap is compelling the government of South Africa to consider alternative sources of finance. Coupled with the transition of the Bretton-woods institution to being brokers of private finance, sovereign ratings have become the lynch pin to accessing finance. This is because sovereign credit rating determines the flow of capital into and out of South Africa. Having been downgraded in the recent past, policy makers and academics are questioning the objectivity of rating models used by the international credit rating agencies. Even though the models and the weights assign to variables are not disclosed to the public, econometric modelling can provide insight into drivers of rating scores. Given that studies that solely focus on South Africa are limited, using a more recent data set, this study examined whether drivers of credit scores identified in literature are relevant to South Africa. Quarterly data was collected over a 22-year period ending 2022. Ratings scores from Standard & Poor and Fitch were used in the study. About methodology, the study adopts a binary framework. Particularly, logit regression model is used to identify the principal determinants of sovereign credit ratings in South Africa. In both the S&P and Fitch models, the same results are obtained. The significant variables in Fitch model are significant in the S&P model and the coefficients have the same signs. Exchange rate has a negative sign in the S&P model and a positive sign in the fitch model. The variable is however insignificant in both models. Evidence is provided in the study that the ratio of household debt to income, balance of payment, gross domestic product positively and significantly relates with sovereign ratings. On the other hand, the ratio of foreign debt to GDP, inflation and the current account balance negatively and significantly relates to sovereign credit ratings. The findings imply that, to enhance the credit profile, the South African government should implement growth-oriented policies to boots the country's national output. Structural challenges on energy must be addressed to enhance the productive capacity of industrial assets. Furthermore, this should enhance the investment profile of the country and consequentially the competitiveness of South African exports on the global market. This is essential given that international loans are serviced in foreign currency.

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Appendix

Table 5. Goodness of Fit test

	Standard & Poor	Fitch
Number of observations	95	95
Number of groups	9	10
Hosmer-Lemeshow chi2(5)	0,14	0,51
Prob > chi2	0,9999	0,9998

Table 6. Classification: Fitch Model

Classified + if predicted Pr(D)	>= .5		
True D defined as FT != 0			
Sensitivity	Pr(+ D)	94.12%	
Specificity	Pr(-~D)	95.45%	
Positive predictive value	Pr(D +)	96.00%	
Negative predictive value	Pr(~D -)	93.33%	
False + rate for true ~D	Pr(+~D)	4.55%	
False - rate for true D	Pr(- D)	5.88%	
False + rate for classified +	Pr(~D +)	4.00%	
False - rate for classified -	Pr(D -)	6.67%	
Correctly classified			94.74%

Table 7. Classification Standard and Poor's Model

Classified + if predicted Pr(D)	>= .5		
True D defined as SP != 0			
Sensitivity	Pr(+ D)	98.04%	
Specificity	Pr(-~D)	97.73%	
Positive predictive value	Pr(D +)	98.04%	
Negative predictive value	Pr(~D -)	97.73%	
False + rate for true ~D	Pr(+~D)	2.27%	
False - rate for true D	Pr(- D)	1.96%	
False + rate for classified +	Pr(~D +)	1.96%	
False - rate for classified -	Pr(D -)	2.27%	
Correctly classified			97.89%