CAPITAL STRUCTURE AND PROFITABILITY OF COMMERCIAL STATE-OWNED ENTERPRISES IN NAMIBIA

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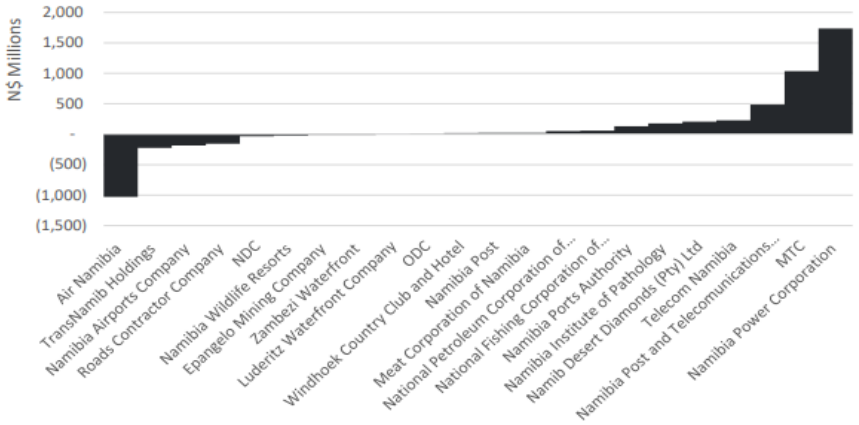
Abstract: This study investigates the impact of capital structure on the performance of commercial state-owned enterprises (SOEs) in Namibia using panel data modelling techniques on data from 2011 to 2020. The research extends performance measures and leverage measures employed by previous studies, utilizing total liabilities to total assets (TLTA) and total equity to total assets (TETA) to examine the effects of debt structures on corporate finance. The study employs return on equity (ROE) and return on assets (ROA) as performance measures. The findings reveal no significant relationship between capital structure and profitability of commercial SOEs in Namibia, thus supporting the irrelevance theory. Additionally, a unidirectional causality is found between capital structure and profitability measures. The study's implications suggest that high debt levels should be reduced to optimize capital structure and that policies should be implemented to enhance SOE performance through innovation and best practices. The findings contribute to the ongoing debate on public sector reforms and provide a basis for further research in this area.
Keywords: Capital Structure, State-Owned Enterprises, ROE, ROA, Performance

Introduction

Research exploring the relationship between capital structure and profitability presents divergent views, without a clear consensus emerging. Studies by scholars such as Shubita and Alsawalhah (2012), Amara and Aziz (2014), and Gupta and Gupta (2014) have delved into this relationship, with mixed findings. Chandra, Junaedi, Wijaya, Suharti, Mimelientesa and Ng (2019) highlight the debate within the academic community, noting that while some research indicates debt influences capital structure, others find no such impact. Furthermore, evidence varies on whether the relationship between profitability and capital structure is negative or positive. Fox (1977) cautioned against the risks associated with excessive debt, such as potential technical bankruptcy, and the high cost of capital from underutilizing debt's tax benefits. Despite these complexities, it is imperative for managers to strike an optimal balance between debt and equity to maximize profitability, underscoring the importance of a nuanced understanding of capital structure dynamics in strategic financial decision-making. The profitability of some of the SOEs in Namibia has been the subject of various government initiatives aimed at improving their performance (Amunkete, 2015). Figure 1 below shows the profitability of 22 Namibian SOEs whose portfolios were taken over by the Ministry of Public Enterprises (now a department under the Ministry of Finance and Public Enterprices). As illustrated, without a government subsidy, most of them are non-profitable resulting in a need for them to get a government bailout, funds which could have been used to finance other economic activities.

Figure: 1: SOE profitability without subsidy



Source: Cirrus Securities: Economic outlook 2020

Mbahijona (2016) examined the impact of capital structure on the financial performance of firms on the Namibian Stock Exchange, finding a significant negative relationship. Marotholi (2018) discusses how governments utilize SOEs to achieve developmental goals like reducing unemployment and poverty, stressing the need for these enterprises to secure financial stability through an optimized capital structure for sustainability. However, Weylandt and ANTI (2016) highlight a national concern in Namibia, where SOEs are often viewed as failing to operate profitably. This research seeks to bridge existing gaps by exploring how capital structure impacts the profitability of commercial State-Owned Enterprises (SOEs) in Namibia, expanding upon the range of performance and leverage metrics previously used. The study employed two measure of leverage, total liabilities to total assets (TLTA) and total equity to total assets (TETA) to investigate the varying effects of these debt structures on corporate finance. Therefore, the aim is to elucidate the relationship between capital structure and profitability within Namibia's commercial SOEs.

A brief overview on the performance of SOES in Namibia

One cannot separate the existence of SOEs from Government intervention as it is essential to SOEs operations. According to estimates by Christiansen & Kim (2014), 22% of the top 100 corporations in the world are under government control. In addition to being a shareholder, the government also acts as a stakeholder. In both capacities, the government demands that SOEs adopt sound corporate governance practices. As the OECD (1998) highlighted, the clear connection between the government and the SOEs include boosting financial discipline, focusing on the core business, and managing the ties between the government and the SOEs. It is common knowledge that very few Namibian SOEs makes profit. Be that may be, one in every 20 jobs are supported by parastatals, according to the government, whose business portfolio is valued at N$90 billion. In addition, recent initiatives, such as the NamCode and the Public Enterprise Act 1 of 2019 are aimed at turning around the SOEs that do not make profit and enhance more those that does. Among those that makes profit is Namibia Power Corporation (Nampower), which had a profit after tax of N$1.2 billion in 2017/18, is among the best-performing parastatals (Minney, 2019). This is primarily due to Nampower's status as a monopoly, whose prices are

controlled by the Electric Control Board, allowing them to continually raise prices and generate profits. The Mobile Telecommunications Corporation (MTC), which generated N$711 million in 2016–17, and Telecom Namibia (N$244 million in 2016–17), are two additional top producers (Minney, 2019).

During the 2022/2023 budget review, Namibia's Minister of Finance Ipumbu Shiimi increased the budget for the phased-out Ministry of Public Enterprises from N$734 million to N$791 million. While motivating this allocation, the Minister of Finance, who was also acting as the Minister of Public Enterprises said the biggest allocation (which is N$ 747 million) of the ministry's budget will go to the 10 parastatals that fall under the ministry (see table 1 below). The remaining N$44 million is to go towards legal, economic, financial advisory, policy coordination and support services.

Table 1: 2022/2023 budget allocation of Namibia's 10 parastatals under the Ministry of Public Enterprises.

Parastatal	Allocation
Namibia Wildlife Resort (NWR)	N$188 million
TransNamib	N$175 million
Namibia Institute of Pathology (NIP)	N$107 million
Agriculture Business Development Agency (AgriBusDev)	N$75 million
Agro-Marketing Trade Agency (AMTA)	N$72 million
Road Contractor Company (RCC)	N$55 million
Namibia Airport Company (NAC)	N$47.5 million
Epangelo Mining	N$12 million
Lüderitz Waterfront	N$9.8 million
Zambezi Waterfront	N$4,5 million

Source: 2022/2023 budget review and Authors construction

On the 11th February 2021 the Namibian Government announced the immediate shut down and liquidation of Namibia's national airline AirNamibia. The airline operated 10 aircrafts on routes to 18 destinations, seven being domestic (Minney, 2019). The decision to close the airline was taken after careful consideration as the national airline was not profitable and has not been profitable since inception. According to a media statement release by the Ministry of Finance (2021), at the time of its shut-down, the airline had significant debt of about N$3 billion and government guaranteed debt of N$2.58 billion. This was a situation that the government was unable to sustain in economic conditions it was facing (which were exacerbated by the Covid-19 pandemic) and it was therefore unreasonable for the airline to trade out of insolvency. The national airline was attempted to be saved on numerous occasions, but none of these efforts were successful. It was discovered during these efforts that a sizeable sum of more than N$4 billion would need to be made available to save the national airline. This, however, was not feasible at the time because using this amount of money would have come at the expense of other national priorities like agriculture, housing, health, and education. Another effort to save the national airline involved collaborating with other airlines that are already operating in and out of Namibia as well as those that plan to, to see if they would be interested in strategic alliances (Ministry of Finance, 2021). When AirNamibia was shut down and liquidated, it was leasing two aircraft for which the government had previously provided guarantees. Regardless of whether AirNamibia continued to operate or was liquidated, the government

was required to pay this estimated sum of N$2 billion to N$2.5 billion (Ministry of Finance, 2021).

The National Petrolium corporation of Namibia (NAMCOR) is another SOE that is facing serious financial troubles. According to a press release by NAMCOR, the SOE faced financial losses of up to N$ 700 million for the 2022 financial year which has left the SOE in a delegate situation. According to the press release the SOE also owed its international fuel sources about N$2.5 billion.

NAMCOR's financial struggles and substantial debts to international fuel sources, also demonstrate the difficulties faced by SOEs in maintaining financial health. Such situations often require careful evaluation and strategic decision-making to ensure that the management and operation of these enterprises do not adversely impact the nation's broader economic and social objectives.

These cases reflect broader trends and challenges in the management of SOEs globally, where governments must balance the commercial viability of these entities with their strategic importance and potential socio-economic benefits. The experiences of AirNamibia and NAMCOR may offer valuable lessons for other countries in managing SOEs, especially in times of economic uncertainty and crisis.

Literature Review

Theoretical Literature Review

This section delves into various theoretical perspectives on capital structure and their implications for firm performance, alongside methods for measuring this performance. At the heart of capital structure discourse is the irrelevance theory, which posits that a firm's value is inherently tied to its real assets rather than its financial structuring, as argued by Culp (2006). However, the theory's foundational assumptions—perfect markets and absence of taxes—deemed unrealistic by Wafula and Otuya (2019), underwent revisions by Gordon (1989) to incorporate real-world elements like taxes and bankruptcy costs, thus enhancing its applicability. Further enriching the discussion are the static trade-off theory, which Calabrese (2011) explains as firms striving for optimal leverage by balancing the costs and benefits of debt, and the pecking order theory, which suggests a preference for internal financing over external to avoid information asymmetry and equity issuance costs, as noted by Stanćič, Janković, and Čupić (2017). These theories collectively address the gaps left by the M&M theory, shedding light on the intricacies of managerial and investor decision-making processes.

The discourse extends to equity market timing and agency cost theories. Barker and Wurgler (2002) introduce the concept of equity market timing, where firms issue shares at peak prices and repurchase them when undervalued, exploiting equity cost fluctuations. This notion contrasts with other theories by suggesting managerial efforts to manipulate market perceptions rather than reflecting the company's intrinsic value. Similarly, the agency cost theory, as elaborated by Chechet & Olayiwola (2014), highlights the goal of achieving an optimal capital structure by mitigating conflicts between managers and owners, suggesting that agency costs directly influence capital structuring. Insights into the signalling power of capital structure decisions come from the information signalling theory, which argues that such decisions reveal insider information to external investors, often obscured by asymmetric information. Leland and Pyle (1977) and Ross (1977) provide contrasting viewpoints on how leverage adjustments signal a firm's value to the

market. Additionally, Jensen's (1986) free cash flow theory champions the use of dividends over debt reduction to curb managerial misuse of company earnings, emphasizing legal mandates associated with dividend payments.
Lastly, the life cycle theory, introduced by Anil and Zenner (2005) and based on Disiboshi's (1989) concept, posits that firms undergo evolutionary stages from inception to decline, influencing their financing preferences. In the nascent and growth phases, firms shun substantial debt to preserve agility for seizing new ventures. As firms mature, they become more amenable to borrowing, reflecting a divergence between management and ownership, culminating in a debt reduction in their twilight years. Together, these theories offer a multifaceted view of capital structure's role in shaping firm performance, reflecting a blend of financial discipline, strategic management, and evolutionary adaptability.

Empirical literature on Capital structure and profitability
Numerous empirical studies have been conducted all over the world on the relationship between profitability and capital structure. Although many research studies on capital structure and profitability have been conducted, only few of these studies truly explain how capital structure affects profitability. Corporate finance academics have worked very hard over the past few decades to convert the rationality of capital structure into empiricism (Aragaw, 2015). The research on the connection between capital structure and firm performance has yielded conflicting findings as highlighted in table 2 below. As a result, there has been much discussion on how capital structure and company value are related. In addition to Modigliani and Miller's ground-breaking work from 1958, which minimizes the importance of the capital structure theory and its revision the following year, other theories have also emerged. Some of the subsequent arguments and studies include the Pecking Order Theory by Myers and Majluf (1984), which challenges the static trade-off theory and supports empirical studies that focus on the connections between capital structure and the profitability/performance of firms.

Table 2: empirical studies on capital structure and performance

Author(s)	Country and period	Findings
Shyam-Sunder and Myers (1999)	US, 1971 to 1989	The pecking order theory holds up well for the sample of mature firms they used.
Ozkan (2001)	UK, 1984 to 1996	The trade-off theory's estimate that there is a negative relationship between leverage and the non-debt tax shield.
Daskalakis and Psillaki (2008)	Greece, 1997 to 2001	The study's findings lend credence to the pecking order idea. They discovered, however, that there is a positive correlation between debt and size, which is consistent with the trade-off theory.
Salim and Yadav (2012)	Malaysia, 1995 to 2011	A firm's performance and capital structure are strongly correlated.
Nirajini and Priya (2013)	Sri Lanka, 2006 to 2010	The findings showed that capital structure and financial performance are positively correlated.
Arulvel and Tharmila (2013)	Sri Lanka, 2007 to 2011	There is a negative correlation between financial performance and capital structure.
Chechet and Olayiwola (2014)	Nigeria, 2000 to 2009	These research's findings offer proof against the Agency Cost Theory.”

Wahba (2014)	Egypt, 2008 to 2010	There is a favourable relationship between performance and capital structure.
Gupta and Gupta (2014)	India, 2009 to 2013	The findings demonstrated a favourable correlation between the selected firms' financial performance and capital structure.

Source: Author's compilation

In addition to the empirical literature in table 2 above. Arulvel and Ajanthan (2013) found a negative correlation between debt ratio and profitability in Sri Lanka, a finding echoed by Nassar (2016) for Turkish industrial companies, where indicators like ROA also showed a negative relationship. Meanwhile, Abu Tawahina, Mohammed, and Salem (2015) discovered that capital structure significantly impacts the financial performance of the financial and banking sector in Palestine, but its influence on industrial firms is negligible. In Namibia, Mbahijona (2016) found that capital structure negatively affects performance among companies listed on the NSX, using data from 2010 to 2013. This contrasts with Mbo (2017)'s study across Sub-Saharan Africa, which showed that strong board governance and resource availability positively influence SOE performance, while government intervention hinders it. Marotholi (2018) offered mixed outcomes from South Africa, indicating the complex relationship between capital structure and financial performance. Internationally, studies like Chandra et al. (2019) in Indonesia and Marimuthu (2020) in South Africa further explore this relationship. Chandra et al. found a negative impact of capital structure on profitability, whereas Marimuthu noted that government financial support adversely affects SOE performance, suggesting reliance on government bailouts weakens financial health. These diverse findings underscore the need for further research to clarify capital structure's effect on profitability, taking into account variables like economy, industry, and business size. Specifically, there's a gap in literature regarding Namibian commercial SOEs, with only Mbahijona's study shedding light on listed companies. This study aims to bridge this gap, focusing on the impact of capital structure on profitability in Namibian commercial SOEs and addressing conceptual, contextual, methodological, and temporal gaps from the past five years.

Methodology

Data and Model Specification

This study aims to assess the impact of capital structure on the profitability of commercial State-Owned Enterprises (SOEs) in Namibia, analysing data from 2011 to 2020. Although there are 21 commercial SOEs, annual reports for only 8 were accessible for the period studied. The data, given its 10-year span, was structured into a panel format for analysis using Eviews12. Panel data analysis was chosen for its effectiveness and flexibility, offering a more comprehensive observation set and handling unobserved variables across firms or individual cultures effectively. Additionally, panel data facilitates the use of instrumental variables to address endogeneity, as noted by Le and Phan (2017), enhancing the study's accuracy in examining the relationship between capital structure and SOE profitability.

$$Y_{it} = \beta_0 + \beta_1 D_{it} + e_{it} \quad \ldots(1)$$

Where: Y = Dependent variable, D = Independent variable, β_0 = Intercept, β_1 = Coefficient of the explanatory variable, e = Error-term, ith = Cross-sectional variable and t = Time-series variable.

The study utilizes the Ordinary Least Square (OLS) method, a widely adopted approach in panel data analysis as supported by the work of Barclay & Smith (1995), Demirguc-Kent & Maksimovic (1998), and Scherr & Hulburt (2001), to establish correlations within the dataset. Additionally, a Vector Error Correction Model (VECM) Granger causality test was applied to determine the causality direction. The research investigates the relationship between capital structure and profitability in Namibian commercial SOEs by employing regression models (equations 3 to 6). These models analyse how independent variables—total liabilities to total assets (TLTA), total equity to total assets (TETA), tangibility (TANG), tax (TAX), business risk (BR), liquidity (LIQ), and inflation rate (IR)—affect the dependent variables return on assets (ROA) and return on equity (ROE). This methodological approach is in line with the procedures used by Singh & Bagga (2019).

General equation:

Profitability = f (total liability, total equity, tangibility, tax, business risk, liquidity, inflation) (2)

Specific model:

$$\mathrm{ROA}_{it} = \alpha_{it} + \beta_1\mathrm{TLTA}_{it} + \beta_2\mathrm{TANG}_{it} + \beta 3_3\mathrm{TAX}_{it} + \beta_4\mathrm{BR}_{it} + \beta_5\mathrm{LIQ}_{it} + \beta_6\mathrm{IR}_{it} + \varepsilon_{it} \quad \ldots (3)$$

$$\mathrm{ROA}_{it} = \alpha_{it} + \beta_1\mathrm{TETA}_{it} + \beta_2\mathrm{TANG}_{it} + \beta 3_3\mathrm{TAX}_{it} + \beta_4\mathrm{BR}_{it} + \beta_5\mathrm{LIQ}_{it} + \beta_6\mathrm{IR}_{it} + \varepsilon_{it} \quad \ldots (4)$$

$$\mathrm{ROE}_{it} = \alpha_{it} + \beta_1\mathrm{TLTA}_{it} + \beta_2\mathrm{TANG}_{it} + \beta 3_3\mathrm{TAX}_{it} + \beta_4\mathrm{BR}_{it} + \beta_5\mathrm{LIQ}_{it} + \beta_6\mathrm{IR}_{it} + \varepsilon_{it} \quad \ldots (5)$$

$$\mathrm{ROE}_{it} = \alpha_{it} + \beta_1\mathrm{TETA}_{it} + \beta_2\mathrm{TANG}_{it} + \beta 3_3\mathrm{TAX}_{it} + \beta_4\mathrm{BR}_{it} + \beta_5\mathrm{LIQ}_{it} + \beta_6\mathrm{IR}_{it} + \varepsilon_{it} \quad \ldots (6)$$

where αit , "is the unknown intercept for every company, t = 2011,...,2020, represents the year analysed, βs are the coefficients for every independent variable and εit is the error term. The null hypothesis for the dependent variable ROA is that TLTA has no impact on ROA, that is, β1 = 0. (A similar set of hypotheses can be stated for other independent variables for ROA and ROE).

Table 2: Variables and measures

Variable	Notation	Measure
Return on assets	ROA	EBIT/Total assets
Return on equity	ROE	Net income/shareholders' equity
Asset tangibility	TANG	Fixed assets/Total assets
Tax	TAX	Tax/EBIT
Liquidity	LIQ	Current assets/Current Liabilities
Business risk	BR	% change in EBIT/% change in net sales
Total liabilities to total assets	TLTA	Total liabilities/Total assets
Total equity to total assets	TETA	Total equity/Total assets

Consumer price index	IR	Used as the Inflation rate

Source: Authors construction

Data Analysis

Unit root test: The panel data includes a time series component, so testing for unit roots to determine the series' stationarity is prudent to prevent inaccurate results. This study presents the findings of the Im, Pesaran, and Shin (IPS) unit root test, which is based on the well-known Dickey-Fuller method. A stochastic trend in a series prevents it from being stationary and from being predicted far into the future. Regardless of the starting point, a stationary series will always return to a specific value, and it is anticipated that it will eventually reach that value (Sargan, 1958). Pesaran, Shin and Smith (1997) proposed a test for the presence of unit roots in panels that combines data from the time series dimension with data from the cross-section dimension and requires fewer time observations to be valid (Hurlin and Mignon, 2007). This study will also employ the IPS test, which has been demonstrated by economists to have superior test power for examining long-run relationships in panel data.

Correlation Matrix: The relationship between two variables is referred to as correlation. Two things are shown by the correlation: first, the relationship between the two variables is shown, and second, the degree of interdependence between the variables is shown. A number between -1 and 1 represents the relationship, with a coefficient of 1 denoting perfect correlation and a coefficient of 0 denoting no correlation at all between the variables.

Regression analysis - Pooled OLS, Random effects, Fixed effects. According to Saddam (2015), panel data can also be estimated using three distinct estimation models, according to pooled cross section estimation, fixed effect estimation, and random effect estimation. The selection between random and fixed effects models hinges on sample characteristics and statistical assumptions. The random effects model is favoured for randomly selected cross sections and when aiming for fewer estimated parameters, making it suitable for samples with a larger number of cross sections and shorter time observations, as per Brooks (2008) and Gujarati and Porter (2004). However, it assumes no correlation between the composite error term and independent variables, a condition stricter than for fixed effects models. The fixed effects model is preferred when sample units closely represent the population and when error terms might correlate with independent variables. The choice between the two models can be clarified by the Haussmann test, where a p-value below 0.05 suggests the fixed effects model, and above 0.05, the random effects model.

Granger causality test The Dumitrescu-Hurlin panel causality methods, which were developed by Dumitrescu and Hurlin (2012), are used in this study to examine the panel causality between variables.

Empirical findings

Panel unit root tests

Panel unit root test was applied for all variables used in the analysis to avoid spurious regression results. The study applied the Im, Pesaran, and Shin (IPS) unit root test.

Table 3: Panel unit root test (IPS)

Variable	IPS Test	P Value	Order of Integration
ROA	-1.79	0.03	I(0)
ROE	-2.69	0.00	I(0)
TLTA	-2.37	0.00	I(1)
TETA	-2.33	0.00	I(1)
TANG	-2.00	0.02	I(1)
TAX	-5.20	0.00	I(0)
BR	-7.18	0.00	I(0)
IR	-4.66	0.00	I(1)
LIQ	-2.77	0.00	I(1)

Source: Authors computation

The results of the Im, Pesaran, and Shin (IPS)are displayed in Table 3. The IPS tests the alternative hypothesis that the series is stationary while rejecting the null hypothesis that all of the included series have unit roots or are non-stationary. Table 3 shows that TLTA, TETA, TANG, IR and LIQ are stationary after first difference, while ROA, ROE, TAX and BR are integrated in order I(0).

Correlation matrix

The correlation analysis shows the relationships between the study variables, and it is useful in identifying multicollinearity between the explanatory factors. The results of the study's chosen explanatory and control variables' correlation analysis are shown in Table 4.

Table 4: Correlation matrix

	ROA	ROE	TLTA	TETA	TANG	TAX	BR	LIQ	IR
ROA	1.000								
ROE	0.238	1.000							
TLTA	-0.381	0.066	1.000						
TETA	0.380	-0.066	-0.999	1.000					
TANG	0.085	-0.072	-0.305	0.304	1.000				
TAX	0.163	0.028	-0.250	0.250	0.011	1.000			
BR	0.035	-0.132	-0.208	0.208	0.067	0.296	1.000		
LIQ	-0.161	-0.050	-0.496	0.496	-0.328	0.123	0.082	1.000	
IR	0.113	-0.163	-0.030	0.028	-0.049	-0.011	-0.126	-0.021	1.000

Source: Authors construction

The findings show that there is no multicollinearity among the variables because all the reported correlation coefficients are below the threshold value of 0.60, except for the correlation between the ratios of total liability to total assets (TLTA) and total equity to total assets (TETA), which is approximately 0.9998. This, however, does not create multicollinearity as both independent variables TLTA and TETA will regress separately in different regression models and will not be considered in a single regression model. As per the results, it is evident that the multicollinearity issue does not exist along with other variables.

Regression analysis

Numerous scholars have stressed the importance of a firm's capital structure in determining the performance of the companies (see, for instance, Huberman, 1984; Opler & Titman, 1994; Gonzalez, 2013). The result of fixed effect, random effect and OLS estimation techniques are given in Table 5 and 6 below.

Table 5: Regression model with Return on Asset as a dependent variable

Variables	Model 1	Model 2
Constant	0.1918 (2.2684)	0.1019 (1.3529)
TLTA	-0.0910 (-1.0283)	-
TETA	-	0.0883 (0.9936)
TANG	-0.0963 (-1.2975)	-0.0971 (-1.3094)
TAX	0.0007 (0.2192)	0.0007 (0.2203)
BR	-4.83E-06 (-0.1106)	-4.81E-06 (-0.1100)
LIQ	-0.0202 (-4.82)***	-0.0202 (-4.80)***
IR	0.0065 (1.4428)	0.0066 (1.4495)
F-Value	4.5644	4.5493
Adjusted R2	0.2314	0.2307
Hausman Test	0.1136 (10.2745)	0.1093 (10.3850)

Source: author's construction. Notes: t-values are in parentheses (t-statistics) while ***, **, and * designate the level of significance at 1%, 5% and 10% respectively

Table 5 exhibits the estimated outcomes of the regression analysis using ROA as the measurement of profitability. TLTA is used as the explanatory variable for model 1 and TETA as the explanatory variable for model 2. TANG, TAX, BR, LIQ and IR are used as control variables in both models. Table 5's Hausman test findings demonstrate that the random effect model is more suitable for illuminating the link between the data in the first and second models. That is, the p-value of the Hausman test was 0.1093 and 0.1136 for model 1 and 2 respectively (both more than 0.05) meaning do not reject the null hypothesis that the random effect model is appropriate than the fixed effect mode. As a result, the random effect model's outcome is discussed.

The results of model 1 in Table 5 indicates that when using TLTA as a proxy for leverage, firm performance which as measured by ROA is negatively related to capital structure and statistically insignificant. The negative results are consistent with Rajan and Zingales (1995), Zeitun and Tian (2007) and Abor (2007) who indicate firm performance is negatively related to capital structure. In contrast, the results of model 2 in Table 5 indicates that when using TETA as a proxy for leverage, firm performance which is measured by ROA is positively related to capital structure and statistically insignificant. The positive results are consistent with Hadlock and James (2002), Frank and Goyal (2003) and Berger and Bonaccors di Patti (2006) who revealed a positive relation between firm performance

and capital structure. Moreover, Model 1 and 2 reveals that LIQ has a negative impact on ROA at a 1% level of significance. All other variables do not influence ROA.

Table 6: Regression model with Return on Equity as a dependent variable

Variables	Model 3	Model 4
Constant	1.8870 (1.3014)	1.5908 (1.807)
TLTA	-0.2940 (-0.2907)	-
TETA	-	0.2854 (0.2824)
TANG	-0.8454 (-0.7807)	-0.8396 (-0.7763)
TAX	0.0487 (0.6005)	0.0488 (0.6026)
BR	-0.0014 (-1.3025)	-0.0014 (-0.3016)
LIQ	-0.0562 (-0.6682)	-0.0557 (-0.6630)
IR	-0.1849 (1.5379)	-0.1846 (1.5366)
F-Value	0.7974	0.7965
Adjusted R2	-0.017412	-0.0174
Hausman Test	0.9086 (2.1172)	0.9078 (2.1250)

Source: author's construction. Notes: t-values are in parentheses (t-statistics) while ***, **, and * designate the level of significance at 1%, 5% and 10% respectively

Table 6 displays the estimated results of the regression analysis using ROE as the profitability metric. Model 3's explanatory variable is TLTA, while Model 4's explanatory variable is TETA. Both models employ TANG, TAX, BR, LIQ, and IR as control variables. Again, the Hausman test results in Table 6 show that the random effect model is better suited for analysis. That is, the p-value of the Hausman test for models 3 and 4 was 0.9086 and 0.9087, respectively (both greater than 0.05), indicating that the null hypothesis that the random effect model is superior to the fixed effect mode cannot be rejected. Hence, the interpretation focuses on the outcomes of the random effect model.

According to the results of model 3 in Table 6, when TLTA is used as a proxy for leverage, firm performance as measured by ROE is negatively related to capital structure and statistically insignificant. The negative findings support Rajan and Zingales' (1995), Zeitun and Tian's (2007), and Abor's (2007) findings that firm performance is negatively related to capital structure. Furthermore, the results of model 4 in Table 6, on the other hand, show that when TETA is used as a proxy for leverage, firm performance as measured by ROE is positively related to capital structure and statistically insignificant. Hadlock and James (2002), Frank and Goyal (2003), and Berger and Bonaccors di Patti (2006) all found a positive relationship between firm performance and capital structure.

Granger causality test

Granger causality, also known as precedence, occurs when one time series variable consistently and predictably changes before another variable (Granger, 1969). Granger causality is significant because it allows us to determine which variable comes first or "leads" the other. Table 7 and 8 shows the Granger causality test results for the estimated models for this study.

Table 7: Granger causality test when ROA is the dependent variable

Null Hypothesis:	F-Statistics	Prob.	Result
TLTA does not Granger Cause ROA	2.55768	0.0870	Reject
ROA does not Granger Cause TLTA	0.26800	0.7659	Fail to Reject
TETA does not Granger Cause ROA	2.80817	0.0693	Reject
ROA does not Granger Cause TETA	0.28180	0.7555	Fail to Reject
TANG does not Granger Cause ROA	1.70287	0.1920	Fail to Reject
ROA does not Granger Cause TANG	1.72759	0.1876	Fail to Reject
TAX does not Granger Cause ROA	0.24072	0.7869	Fail to Reject
ROA does not Granger Cause TAX	0.40718	0.6676	Fail to Reject
BR does not Granger Cause ROA	0.08886	0.9151	Fail to Reject
ROA does not Granger Cause BR	0.17582	0.8393	Fail to Reject
LIQ does not Granger Cause ROA	4.61855	0.0142	Reject
ROA does not Granger Cause LIQ	1.12604	0.3319	Fail to Reject
IR does not Granger Cause ROA	0.15992	0.8526	Fail to Reject
ROA does not Granger Cause IR	0.25438	0.7763	Fail to Reject

Source: Authors construction

The Granger causality test results at lag 2 in Table 7 above can be summarised as follow. The variables TETA does Granger cause ROA, similarly, TELTA also does Granger cause ROA. Therefore, there is a unidirectional relationship running from TELTA and TETA to ROA. In addition, there is also a unidirectional causal relationship running from LIQ to ROA. There is no causal relation between ROA and the other variables.

Table 8: Granger causality test when ROE is the dependent variable

Null Hypothesis:	F-Statistics	Prob.	Result
TLTA does not Granger Cause ROE	1.46137	0.2411	Fail to Reject
ROE does not Granger Cause TLTA	0.03362	0.9670	Fail to Reject
TETA does not Granger Cause ROE	1.45479	0.2426	Fail to Reject
ROE does not Granger Cause TETA	0.03449	0.9661	Fail to Reject
TANG does not Granger Cause ROE	3.18446	0.0494	Reject
ROE does not Granger Cause TANG	0.58004	0.5634	Fail to Reject
TAX does not Granger Cause ROE	0.04829	0.9529	Fail to Reject
ROE does not Granger Cause TAX	0.00497	0.9950	Fail to Reject
BR does not Granger Cause ROE	0.07453	0.9283	Fail to Reject
ROE does not Granger Cause BR	1.75059	0.1844	Fail to Reject
LIQ does not Granger Cause ROE	0.05818	0.9435	Fail to Reject
ROE does not Granger Cause LIQ	0.06961	0.9328	Fail to Reject
IR does not Granger Cause ROE	0.32870	0.7213	Fail to Reject
ROE does not Granger Cause IR	0.86020	0.4289	Fail to Reject

Source: Authors construction

Table 8 shows that only TANG Granger cause ROE and this is a unidirectional causal relationship. All the other variables do not Granger cause ROE.

Conclusion

This study delves into the contentious topic of capital structure's impact on the profitability of commercial State-Owned Enterprises (SOEs) in Namibia from 2011 to 2020, using panel regression and descriptive statistical analysis. It explores the relationship between capital structure and profitability, employing leverage measures like total liabilities to total assets (TLTA) and total equity to total assets (TETA), alongside performance indicators such as return on equity (ROE) and return on assets (ROA). Contrary to expectations, the findings indicate no significant relationship between capital structure and profitability, thus supporting the Irrelevance Theory. Granger causality tests also uncover specific unidirectional relationships between TETA and ROA, and other variables, suggesting certain causal effects on profitability.

The study advises against high debt levels, recommending a balance between the costs and benefits of debt to enhance efficiency as suggested by the agency theory. It emphasizes the need for improved monitoring, reporting, and the introduction of innovation within SOEs. These insights urge a reassessment of public sector reforms by government and policymakers. This research lays a foundation for further exploration into capital structure and SOE performance in Namibia, suggesting the need for new hypotheses and considerations of institutional influences and the broader economic context.

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