The Influence of Value Added Tax Revenue On Private Domestic Investment in Developing Countries

James Daniel Chindengwike

Abstract: The study's overarching goal is to assess the influence of Value Added Tax (VAT) revenue on private domestic investment in emerging countries. The study used a time series research design, a case study of one country, Tanzania. Annual time series data from 1998 to 2020 were used in the study. The tax income (VAT) data is taken from the Tanzania Revenue Authority website and the Bank of Tanzania. In contrast, the data on private domestic investment as Gross fixed capital formation of the private sector as a percentage of GDP is obtained from the World Bank. Following the first tests for heteroscedasticity, multi-collinearity, unit roots, lag length selection, and co-integrating vectors. The long-run and short-run correlations were then computed.

The findings demonstrated that in the long run, the value-added tax is negatively associated with private domestic investment. The analysis showed a negative association between the degree of investment and the value-added tax parameter estimates. Even though value-added tax generates government revenue, increasing it encourages tax evasion. It leads to high prices of goods, putting the burden on low-income earners, reducing disposable income and distorting saving and private domestic investment. The study recommends that governments reduce VAT rates, simplify their tax regimes, address any tax administrative issues, and plug all tax evasion gaps to increase revenue generation and attract private investments. For example, the government should improve an appropriate tax system and implement progressive tax reforms to attract private investors. As the study's findings demonstrated that value-added tax has a negative long-term impact on investment, a greater value-added tax levied causes higher corporate costs. Governments must also lower VAT rates, simplify their tax regimes, address any tax administrative issues, and close any tax evasion gaps to increase revenue generation and attract private investment. For example, the government should improve an appropriate tax system and implement progressive tax

1 School of Business and Management, Philippine Christian University, Manila, Philippines, Email: chindengwikejames@gmail.com
reforms to attract private investors. As the study's findings demonstrated that value-added tax has a negative long-term impact on investment, a greater value-added tax levied causes higher corporate costs.

1.0 Introduction

Private domestic investment plays a role of a country's economic, social, and political growth (Ahuja, 2010). Countries with strong investor participation achieved greater economic growth and implemented several economic and structural reforms to stimulate and attract prospective investment. Furthermore, larger economies face less corruption, particularly in the private sector, which leads to higher private-sector productivity than in the public sector (Nyoni & Bonga, 2019). However, less developed nations have low investment rates, insufficient incentives for innovation, and unpredictable returns on investment, which is a primary factor of a developing economy's delayed growth (Majeed & Khan, 2008).

After Tanzania recognised ‘Given the importance of investment in stimulating economic growth and creating the potential for long-term revenue generation’, the government provided a tax incentive regime conducive to investment as provided for in various tax laws such as the Income Tax Act of 2004, the Value Added Tax Act of 1997, and the East African Customs Management Act 2004, where the incentives provided for under the East African Customs Management Act 2004 must be negotiated and agreed upon at a tripartite level, (Levin, 2005).

Finding the appropriate optimal balance between a tax system and private domestic investment is one of the challenges that African nations face, creating an environment where international commerce expands by extending investment opportunities and encouraging enterprises to participate. As a result, African governments have attempted to alter their fiscal policies through taxation to stimulate and attract domestic and foreign investment.

The current economic development agenda in developing economies is taxation which provides enormous potential for economic development. In a country like Tanzania whereas 40% of its spending budget of each financial year depends on tax collection from different sources, including value-added tax. Most developing countries, including Tanzania, have embarked on financial reforms with much taxation to generate more tax revenue and promote economic growth. Tanzania initiated serious efforts to reform the economy over the past three decades by adopting the Economic Recovery Plan of 1986, which resulted in a positive indication in the mid-1990s, where the economic performance showed signs of sustainable improvements (Bevan, 2010).

The inadequacy of the tax system has caused the motivations for tax reform in Tanzania to generate sufficient income was improved by the implementation of major tax reforms that began in the 1970s, such as; the reduction in import duty collection caused by an expansion in import substitution sectors fostered the introduction of a new sales tax was introduced in 1969 (Sales Tax Act, 1969). The Economic Recovery Programs (ERPs) were implemented in Africa for the first time in the 1980s to improve the economy
and private investment by removing regulatory controls, which rose from 22% in 1984 to about 43% in 1991. From 1970 to 1986, the main tax reform was introduced of a progressive income tax in 1973 (Income Tax Act, 1973), where the investment accounted for 23.2% of GDP on average, while private domestic investment accounted for 6.3% (Osoro, 2001). Also, Tanzania Revenue Authority was formed by Parliament Act No. 11 of 1995, which began operations on July 1, 1996, to ensure efficient and effective tax revenue collection (Temu, 2014). The Investment act of 1997 was enacted to make a conducive commercial environment and to provide investment incentives, for example in 1990, Parliament passed the Investment Promotion Act, which established the IPC focused on lowering personal income tax rates from 10% to 50% to 7.5% to 35% in 1992 designed to encourage domestic investment and attract international investment. The sales tax was replaced with VAT in 1997, which was established under Act 1997 and came into operation on 1st July 1998 as Sales tax failed to generate adequate revenue. Under the Excise Tariff Ordinance, excise duty was introduced in 1989/90, where it is imposed on imports deemed to be luxury and on domestic goods. The excise revenue sharply declined from 1992/93 to 1994/95 due to a reduction of excise tax rates (N. E. Osoro, 2001). The regular VAT rate in Tanzania was 20%, but on June 30, 2009, the government of Tanzania announced a decreased rate of 18%, which began to apply on July 1, 2009, and is still in place today. The government of Tanzania aimed to improve VAT revenue generation so a New VAT Act was introduced in 2014 based on reducing the number of exemptions and addressing structural weaknesses (Njau, 2014).

In 2008 and 2009, the Tanzanian government continued to adopt various legislative and institutional changes to improve revenue collection and create a more welcoming climate for taxpayers and investors. As a result, the Tanzania Revenue Authority (TRA) implemented its third five-year Corporate Plan from 2008/09 to 2012/13, predicting a rise in revenue to GDP ratio to 19.9%. The Corporate Plan is founded on three strategic themes: convenience, compliance, and continuous improvement via the facilitation of taxpayer duties (BOT, 2009).

Even though the management of existing sources was strengthened including improving infrastructure, Tax incentives, setting suitable policies and well-structured legal and regulatory frameworks, insufficient machinery and procedures for executing an effective taxation system, self-employed individuals and organizations who do not have their data in the applicable tax authority's data system engage in tax avoidance and evasion leads to low tax generation (Owino, 2019).

Tanzania has experienced good growth in revenue collection of nearly 20% on average annually since the formation of TRA in 1996. The increase in this revenue reflects the government of Tanzania's ongoing attempts to enhance and reform tax administration, with an emphasis on promoting the taxable sector of the economy, such as mining, construction, manufacturing, and even agricultural and service sectors (Bevan, 2010). For example, in the mid-1990s, the revenue-to-GDP ratio rose from 11.8% in 2004/05 to 12.5% in 2005/06, 14.1% in 2006/07, and 15.9% in 2007/08. (Bevan, 2010).
Tanzania's revenue increased rapidly as a proportion of GDP, rising from 10% to almost 16% between 1999/2000 and 2008/2009. (Robinson, & Papageorgious, 2014). Tax revenue climbed at a 19.5% annual growth rate in 2010/2011. Tax revenue collected in 2020/21 was TZS 17,317.6 billion, 86% less than the planned amount collected in 2019/20, reflecting the negative consequences of the COVID-19 pandemic (BOT, 2020). For most years, the Government of Tanzania has implemented a budget deficit spending from the 1966-2015 caused by low revenue collection performance (Epaphra & Massawe, 2017).

**Figure 1.1: Trend of Total Tax Revenue collection**

![Graph showing trend of total tax revenue collection](null)

**Source:** Tanzania Revenue Authority, 2022

Tanzania's domestic private investment has a mixed trend and remains a major problem due to low levels of domestic savings and limited access to loans from various financial institutions. The domestic investment was critical in cushioning manufacturing activities and supporting economic development in the country, which improved East African Community trade networks (Michael & Aikaeli, 2014). Private investment plays a keen role in resolving issues such as unemployment, level of income, saving potential, economic production capacity, and better living standards (Ali and Shaheed, 2016). Any change in investment would significantly alter both the overall capacity of output and the total amount of demand in an economy (Bint-e-Ijaz and Ellahi, 2012).

Private domestic investment exceeded 10% but declined significantly due to high inflation during the 1990s. The decline of private domestic investment in the 2000s was attributed to the burden of external debts. However, private investment improved in the mid-2000s following debt cancellation by certain creditors, as well as attempts made by the SSA to pursue microeconomic reforms to create a better business climate.

In Tanzania's gross capital formation was 26.1% and 30.6% of GDP in 1990 and 2010, respectively, which is still too low compared to its expected economic contribution. In 2018 gross fixed capital formation as a percentage of GDP for the private sector was 27.16% as the Government launched the National Blueprint for regulatory reforms
Tanzania, which provide detailed business environment challenges and coordinate in creating a conducive investment environment (TIC, 2018). In contrast, during 2019, the gross fixed capital formation as a percentage of GDP for the private sector declined from 26.55% to 26.04 in 2020, as shown below in figure 1.2.

**Figure 1.2: Private Domestic Investment Trend from 1998 To 2020 in Tanzania**

![Private Domestic Investment Trend from 1998 To 2020 in Tanzania](image)

**Source:** World Bank (2022)

Taxation is a key component of a country's investment regulation system and plays an important role in economic development (Ekpung & Wilfred, 2014). Although numerous developing economies like Tanzania have taken vital measures to advance tax revenue generation, various countries' tax revenue generation falls below the international benchmark of 30% of GDP. Since the fiscal year 1969/70, Tanzania has implemented a series of basic tax reforms. However, the central government has consistently failed to raise significant tax money to meet current government service demands. As a result, Tanzania's private domestic investment has been relatively low, with a mixed trend that prompted the implementation of Economic Recovery Programs (ERPs) in the 1980s to reduce regulatory restraints on the economy, intending to increase private investment from 22% in 1984 to over 43% in 1991. Private investment fell from the 1990s to the 2000s, owing to the burden of external debts, but it has been increasing since 2006.

Tanzania is still characterized by complex tax regimes, which deter domestic; apart from the fiscal policy reforms to implement for generating more revenue in Tanzania, the government of Tanzania experience a high fiscal deficit caused by weak revenue performance. Also, Tanzania's position has been precarious since the private sector was largely non-existent before the 1990s. Following liberalization, local private investors
have yet to play a significant role in large-scale investments. As a result, Tanzania's private investment has been modest, with a mixed trend.

Several authors have done much empirical work to demonstrate the major debates over how tax revenue generation affects private domestic investment yielded conflicting results. Some support the hypothesis that a rise in the share of tax revenue collection is positively associated with domestic investment; for example, Akinleye et al. (2019) argued that corporate income tax contributes more to macroeconomic private domestic investment, Adejare & Akande (2018) and Nkem & Sunday (2019)(Nkem & Sunday, 2019) found significant relationship value added tax and private investment (Njuru et al. (2013) found a significant relationship between import duty, excise duty and private domestic investment, a study conducted by Ekpung & Wilfred (2014) performed the analysis which revealed corporate income tax negatively related with investment and Andrejs et al. (2019) revealed that value added tax and corporate income tax are negative correlated with private domestic investment.

A few studies have been undertaken in Tanzania to investigate the impact of VAT on private domestic investment. According to the findings of a relevant study conducted by (Babu et al., 2020) on the impact of taxation and other macroeconomic factors on private investment in Sub-Saharan Africa, VAT is negatively related to private domestic investment. As a result, the study will investigate the impact of value-added tax revenue on private domestic investment in developing countries.

2.0 LITERATURE REVIEW
The Swiss philosopher Jean Jacques Rousseau (1712-1778), the French political economist Jean-Baptiste Say (1767-1832), and the English economist John Stuart Mill (1806-1873) advanced the ability to pay theory in the sixteenth century. The fundamental concept of this theory is that, in order to uphold the principles of equality and justice. The tax burden should be distributed among society’s members based on their ability to pay. This progressive tax system imposes higher taxes on high-income earners and less on low-income earners. Higher earners must pay more taxes under this taxation system than those with lesser incomes. The idea of equity and justice was developed by Adam Smith, who believes that The amount of tax payable should be equal, implying that tax payable is proportional to earned income. Only when the tax system is based on the ability of the taxpayer to pay the amount assessed as tax due is equity and justice presumed(Bhatia, 2018). The high burden of taxes and laws of the government affects investment, where government revenue collection is also affected (Onyinyechi et al., 2016). The ability to pay theory fits this study as it well explains how high tax burden and government laws affect investment where government revenue collection. It also suggested that the government can increase revenue from tax without burdening low-income earners. The theory is relevant to the study because it shows the link between tax revenue and private domestic investment.

In the investment theory, the policy created and enforced can either attract or repel investment. According to investment theory, higher taxes reduce the marginal
propensity to save, resulting in less investment. Individual saving is reduced due to increasing individual income or payroll tax rates. When government grows above its optimal size, it no longer delivers sufficient advantages to outweigh the negative growth effects of rising taxes, which disincentivizes people to work, save, and invest (Kevin 2011). The government uses taxation as a weapon to stimulate and discourage investment in the country. The government lowers the tax rate to boost investment in the country. The flexible accelerator investment theory is a neoclassical theory favoured by the Keynesian school of thought that may be used to assess the impact of macroeconomic factors on private investment (Kilindo, 2015). According to the accelerator principle, boosting a company's production rate necessitates increasing capital stock. Changes in production levels are positively connected with changes in company investment because investment is expected to respond quickly and completely to changes in market circumstances (Njuru et al., 2013). When there is an excess demand, businesses may raise prices to reduce demand or increase investment to balance demand (Chenery, 2019). According to the hypothesis, most investors prefer to increase output and profits, stimulating growth (Tredway, 1971). Our theory is significant to this study because it demonstrates how fiscal policies affect private investment.

Babu et al. (2020) researched taxes and other macroeconomic factors' effects on private investment in SSA nations (EAC and SADC only) using yearly panel data spanning from 2003 to 2017, where dynamic panel models and One-Step Difference GMM were used. According to empirical findings, corporate income tax (CIT) and Value Added Tax (VAT) have a significant and negative impact on private investment. The findings also show that the real interest rate plays an important role in explaining the amount of private investment in EAC and SADC countries. It was discovered that credit to the private sector is statistically significant.

Alizadeh & Motallabi (2016) researched the impact of the value-added tax on the current and future size of government in South Africa using time-series statistics spanning from 2008 to 2014 using the Auto Regressive Distributed Lag (ARDL) model. The research found that VAT has a positive and significant relationship with the size of current and future governments. Omojolaibi et al. (2016) used annual data from 1993 to 2014 to analyze the relationship between fiscal policy and private investment in five chosen West African nations. The results of using the fixed effect model for panel data ordinary least square technique showed that government capital spending and tax revenue had a large crowding in effect, whilst non-tax revenue had a crowding out effect. External debt and recurring expenses also showed crowding-out effects, but both were negligible. Additionally, it was discovered that the accelerator effect of output growth was negligible across all nations during the time frame. The research urged these nations to make coordinated efforts to direct funding into capital projects and reorganize their tax structures to avert the detrimental impacts of public debt.

Asogwa & Okeke (2013) studied how investment is affected by the value-added tax. Multiple regression analysis was used to examine data from the CBN Statistical
Bulletin, published by the Central Bank of Nigeria. The findings indicate that value-added tax significantly impacts Nigeria's investment growth. However, the VAT sign does not match the model's previous predictions.

Yan and Lu (2013) studied the effect of the Value added tax change on investments in non-current assets. Data from companies having Jiang Su listed status were used in regression analysis with economic data. The findings showed that, on the whole, management and development at Jiang's listed firms had benefited from the reform in the value-added tax.

Lyndon and Paymaster (2016) evaluated the effect of corporate income tax and value-added tax on Nigerian economic growth (measured by GDP as a proxy. Secondary time series, from 2005 to 2014, panel data were produced from the Statistical Bulletin of the Central Bank of Nigeria (CBN). Company income tax (CIT) and VAT were independent variables. The study used the OLS technique with SPSS, with GDP as the dependent variable and a proxy for economic progress. The analysis showed that Nigeria's economic development is greatly influenced favourably by both corporation income tax and value-added tax.

Adejare and Akande (2018) examined the effect of value-added tax on private investment in Nigeria. The link between the dependent variable (Private investment) and the other factors was examined using Pearson product-moment correlation and multiple regressions (Value added tax, interest rate, inflation rate and exchange rate.). The results indicate that value-added tax, interest rate, and exchange rate have a strong and positive statistical impact on Private Investment in Nigeria.

Haseeb (2021) investigated how Pakistani private investments were affected by direct taxes. The study's findings showed that interest rates and direct taxes have a negative relationship with Pakistan's private investments and that even a little adjustment in one of these variables, even by just one percentage point, could have a big effect on private investments.

Kilindo (2015) provided an empirical analysis of the macroeconomic variables influencing private investment choices in Tanzania. According to the findings, output-based output measures of aggregate demand drive private investment. Additionally, there is evidence that the crowding in the effect of public investment and the flow of credit to the private sector positively impact capital accumulation. In contrast, external debt and inflation have a negative impact.

3.0 RESEARCH METHODOLOGY
The study used annual time series data from 1998 to 2020. The tax revenue data (Value Added Tax) is gathered from the Tanzania Revenue Authority website and Bank of Tanzania. The data on private domestic investment as Gross fixed capital formation of the private sector as a percentage of GDP are obtained from the World Bank. Following the early tests for the heteroscedasticity test, multi-collinearity test, unit roots test, lag
length selection and co-integrating vectors. After that, the long-run and short-run correlations were captured using the Error Correction Model.

The model specification for this study is a multivariate time series model, and all data gathered for the study was critically evaluated and analyzed to ensure accuracy. The model considers how fiscal policy influences private domestic investment, according to (Omojolaibi et al., 2016) and (Yusuf & Mohd, 2020). Therefore, the model needs a few modifications to meet the requirements of the recent study. This model evaluated the impact of tax revenue generation on Tanzanian private domestic investment. The VAT is an independent variable, whereas private domestic investment is a dependent variable.

\[ PDI = f(VAT \& PU) \] ..........................(i)

Transformed to

\[ PDI_t = \beta_0 + \beta_1 VAT_t + \beta_2 PU_t + \mu \] ..........................(ii)

All variables in the model were transformed into ratio form to stabilize their mean and variances.

Where by:

PDI= Private domestic investment as GFCF private sector as % of GDP;
VAT= Value added tax as a ratio of total tax revenue; PU= Public investment (control variable) ; \( \beta_0\)-\( \beta_2\)= the relevant coefficients for the relevant variables and \( \mu\)= the random error term

**4.0 RESULTS AND DISCUSSION**

Table 4.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Stats</th>
<th>PDI</th>
<th>VAT</th>
<th>PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>20.93029</td>
<td>18.02885</td>
<td>4.542646</td>
</tr>
<tr>
<td>Max</td>
<td>27.16179</td>
<td>29.43252</td>
<td>6.496507</td>
</tr>
<tr>
<td>Min</td>
<td>4.112134</td>
<td>12.76789</td>
<td>1.442136</td>
</tr>
<tr>
<td>Sd</td>
<td>6.599545</td>
<td>4.769754</td>
<td>1.458401</td>
</tr>
<tr>
<td>variance</td>
<td>43.554</td>
<td>22.75056</td>
<td>2.126934</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>3.990117</td>
<td>2.803728</td>
<td>2.164027</td>
</tr>
<tr>
<td>Skewness</td>
<td>-1.360296</td>
<td>.9892844</td>
<td>-.581627</td>
</tr>
<tr>
<td>Range</td>
<td>23.04966</td>
<td>16.66464</td>
<td>5.054371</td>
</tr>
<tr>
<td>N</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: STATA OUTPUT, 2022
Note: PDI: Private domestic investment as GFCF of the private sector as % of GDP; CIT: VAT: Value added tax; ED; max: maximum; min: minimum; s.d: standard deviation and N: Number of observation. Table 4.1 provide a statistical summary of the variables used in the analysis. It consists of 23 observations covering the period from 1998 to 2020. Private domestic investment indicates the highest mean of 20.93029 with a maximum of 27.16179 and minimum of 4.112134, while PU indicates the lowest mean of 4.542646, minimum of 1.442136 and maximum of 6.496507. Private domestic investment indicates a larger standard deviation (sd) coefficient for all variables, which recommends a significant change in its value. Also, the variables' standard deviations are not very high further supports the reliability of the data used. The descriptive statistics suggest that private domestic investment and value-added tax, are approximately not normally distributed because their respective skewness is above 0.5 in absolute values.

### 4.2.2 Value-Added Tax

**Figure 4.2: Trends of Value Added Tax Versus Private Domestic Investment**

The figure above represents the trend of value-added tax versus private domestic investment for Tanzania from 1998 to 2020, where the ratio of value-added tax declined on average from 15.57% in 2005. However, in 2006, value-added tax revenue remained low, primarily due primarily to numerous exemptions, including the elimination of VAT on petroleum products in 2006. The highest amount of value-added tax experienced in 2007 was 29.43%. In the Years 2011 and 2014, value-added tax declined from 15% to 13%; this has mainly been contributed to the structural weaknesses of the VAT Act, 1997 Cap 148, from 2018 rose to 13.525 up to 2019, increased to 14.56% while in 2020 declined gradually to 13.6%. The Gross fixed capital formation (%GDP) from 1998 to 2000 increasing slowly due to debt burden. At, 2008 the government launched a national blue regulatory Reforms that address specific business environment issues and work
together to provide an appropriate investment climate, raised Gross fixed capital formation (% GDP) to 25.53% in 2009 before declining to 21.8% in 2011. The value of gross fixed capital production (% GDP) in 2018 was 27.16; however, it declined from 26.55 in 2019 to 26.04 in 2020, demonstrating the negative consequences of the COVID-19 outbreak.

Table 4.2: Cameron and Trivedi’s Decomposition of IM-Test

<table>
<thead>
<tr>
<th>Source</th>
<th>chi2</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteroscedasticity</td>
<td>20.00</td>
<td>19</td>
<td>0.3946</td>
</tr>
<tr>
<td>Skewness</td>
<td>11.64</td>
<td>15</td>
<td>0.7062</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.36</td>
<td>1</td>
<td>0.5500</td>
</tr>
<tr>
<td>Total</td>
<td>31.99</td>
<td>35</td>
<td>0.6140</td>
</tr>
</tbody>
</table>

Source: STATA OUTPUT, 2022

The results revealed that the model is free of heteroscedasticity. Considering that the calculated p-value was 0.3946 (39.46%), which is higher than the 5% significance implying that the model has a constant variance, we accept the null hypothesis. It can be concluded that as the p-value for skewness (0.7062) and Kurtosis (0.5500) is greater than 5% probability level, it means residuals are normally distributed.

Table 4.3: Jarque-Bera Test for Normality Distribution of Residual

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ch2(2)</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residuals</td>
<td>1.036</td>
<td>0.5957</td>
</tr>
</tbody>
</table>

Source: Researcher Estimation Results, 2022

The normality test results by Jarque-Bera normality test revealed the normally distribution of residuals which is evidenced by a p-value (0.5957), which is higher than a 5% level of significance.
The normality test results by Jarque-Bera normality test revealed the normally distribution of residuals which is evidenced by p-value (0.5957) which if higher than 5% level of significance.

Table 4.5: Variance Inflation Factor (VIF) test results

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU</td>
<td>3.60</td>
<td>0.278009</td>
</tr>
<tr>
<td>VAT</td>
<td>1.46</td>
<td>0.687132</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>2.23</td>
<td></td>
</tr>
</tbody>
</table>

Source: STATA OUTPUT, 2022

Results as observed in Table 4.7 indicate that Variance Inflation Factor (VIF) is 2.23 and falls below 10, showing that the variables are not subjected to multi-collinearity. So, the model is unconstrained and equipped to conduct the regression analysis.

Table 4.6: Correlation Matrix of All Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>PDI</th>
<th>VAT</th>
<th>PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDI</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT</td>
<td>-0.1533</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>P-Value</td>
<td>0.4851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.8610*</td>
<td>-0.2062</td>
<td>1.000</td>
</tr>
<tr>
<td>P-Value</td>
<td>0.0000</td>
<td>0.3452</td>
<td></td>
</tr>
</tbody>
</table>

Source: STATA OUTPUT, 2022

NOTE: PDI: Private domestic investment as GFCF of private sector as % of GDP; VAT: Value added tax and PU: Public investment.
Table 4.7: Lag Length Selection

Selection-order criteria

**Sample: 1998 - 2020**

<table>
<thead>
<tr>
<th>Lag</th>
<th>LL</th>
<th>LR</th>
<th>DF</th>
<th>P</th>
<th>FPE</th>
<th>AIC</th>
<th>HQIC</th>
<th>SBIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-247.27</td>
<td>992.523</td>
<td>26.7647</td>
<td>26.8236</td>
<td>27.1127</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-137.99</td>
<td>218.55</td>
<td>49</td>
<td>0.00</td>
<td>2.57486</td>
<td>20.4201</td>
<td>20.8912</td>
<td>23.2037</td>
</tr>
<tr>
<td>2</td>
<td>961.006</td>
<td>2198</td>
<td>49</td>
<td>0.000</td>
<td>8.8e-5*</td>
<td>-90.1059</td>
<td>-89.223</td>
<td>-84.8866</td>
</tr>
<tr>
<td>3</td>
<td>4041.27</td>
<td>6160.5</td>
<td>49</td>
<td>0.000</td>
<td>-411.397</td>
<td>-410.28</td>
<td>-404.786</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4077.77</td>
<td>72.997*</td>
<td>49</td>
<td>0.015</td>
<td>-415.24*</td>
<td>-414.1*</td>
<td>-408.63*</td>
<td></td>
</tr>
</tbody>
</table>

Number of observations = 23

**Source:** STATA, 2022

The results showed that, the AIC lowest value was selected for the model because the lower the value of AIC the better the model. The optimal lag length selected is lag 4 cause the smallest value of all four criterions lies at lag 4.

Table 4.8: Unit Root Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test</th>
<th>Critical value</th>
<th>Test</th>
<th>Critical value</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistics</td>
<td></td>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDI</td>
<td>-4.627</td>
<td>-3.000</td>
<td>-5.322***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>VAT</td>
<td>-1.238</td>
<td>-3.000</td>
<td>-3.017***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>PU</td>
<td>-1.887</td>
<td>-3.000</td>
<td>-3.371***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

**PP test**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test</th>
<th>Critical value</th>
<th>Test</th>
<th>Critical value</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistics</td>
<td></td>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDI</td>
<td>-4.241</td>
<td>-3.000</td>
<td>-4.350***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>VAT</td>
<td>-1.831</td>
<td>-3.000</td>
<td>-5.723***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>PU</td>
<td>-1.435</td>
<td>-3.000</td>
<td>-6.415***</td>
<td>-3.000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

**Source:** Researcher Estimation Results, 2022
Table 4.9 shows the unit root results for all variables by using ADF test and Phillip-Perron test. ADF test revealed that at level I(0), all variables were not stationary except PDI; after first differencing I(1) all variables are stationary. While the Phillip Perron unit root test results revealed that at level I(0), all variables were not stationary except PDI and ED. After taking the first differences I(1), all variables are stationary. As, the time series data were integrated at I(0) and I(1). Error correction model(ECM) model was the appropriate method for estimating the short-run and long-run effect of regressors variable on regressand variable, which did not yield spurious regression results. *** indicates rejection of the “null hypothesis of non-stationary” at 1% levels of significance.
Table 4.9: The ARDL Bound Co-Integration Test Results

<table>
<thead>
<tr>
<th>F statistics</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.05</td>
<td>0.025</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.496</td>
<td>2.12</td>
<td>3.23</td>
<td>2.45</td>
<td>3.61</td>
<td>2.75</td>
<td>3.99</td>
<td>3.15</td>
<td>4.43</td>
</tr>
</tbody>
</table>

Source: STATA Output, 2022

Bound test results show that the F-statistic (9.496)) is greater than both the upper bound and lower bound at 1%, 2.5%, 5% and 10%; hence we reject the null hypothesis that indicates there is co-integration. This implies that there is a long-run relationship among the variables. Furthermore, F-statistic (9.496) is greater than the upper bound critical value of 3.23 at 10% significant level this gives proof for the existence of the long-run relationship between the study variables, F (9.496) is greater than the upper bound critical value of 4.33 at 1% significant level this gives proof for the existence of long-run relationship among the variable; also, F (9.496) is greater than upper bound critical value of 3.61 at 5% significant level this gives proof for the existence of the long run relationship between the study variables, lastly, also, F (9.496) is greater than the upper bound critical value of 3.99 at 2.5% significant level this provide proof for the existence of long-run relationship hence, the long run model was estimated by using Error Correction Model (ECM).

R-squared = 0.8742,
Adj R-squared = 0.7358

Table 4.10: Error Correction Model (ECM) Estimation Results

| D.PDI | Coef   | Std. err | T    | P>|t| | (95% conf. interval) |
|-------|--------|----------|------|-----|---------------------|
| ADJ   |        |          |      |     |                     |
| PDI L1| -.726643 | .1344686 | -5.40 | 0.000 | -1.030833 - .422455 |
| SR VAT| -.354137 | .1065404 | -3.32 | 0.009** | -.5951476 - .113125 |
| PU    | .5064219 | .6270926 | 0.81 | 0.440 | -.9121602 1.925004 |
| PU D1 | .4143927 | .5500625 | 0.75 | 0.470 | -.8299351 1.658721 |
| LD    | 1.33939 | .4394307 | 3.05 | 0.014* | .345335 2.333458 |
| Cons  | 18.99721 | 5.61318 | 3.38 | 0.008 | 6.299319 31.69511 |

Source: Researcher Estimation Results, 2022
The regression model fits because the adjusted R Square shows 73% of the value of the dependent variable is explained by the independent variables included in this study. However, the rest 27% is explained by other external variables of this study which have been designated as error terms. Information criteria selected the 4-lags but error correction model (ECM) estimates have no lags because ARDL approach used the lags chosen by Matrix list e(lags).

Results from table 4.10 show that the parameter of the error correction term (\( \text{ADJ} = -0.726 \)) that is negative. The coefficient value is 72.6%, meaning that the system corrects the previous period's disequilibrium at a speed of 72.6. The p-value < 5% shows that there is a long-run causality among the variables. It means the speed of adjustment, 0.726643, which implies that about 72.6643% point of the last period’s disequilibrium is corrected for in the following period.

4.10 Granger Causality Test

The Granger causality test is a statistical hypothesis test used to verify the usefulness of a variable to forecast another, a variable is said to granger cause another if it helps forecast another variable. Table 4.11, shows Granger causality test results for the impact of value added tax on private domestic investment in Tanzania for the period 1998-2020.

<table>
<thead>
<tr>
<th>Null hypothesis</th>
<th>chi2</th>
<th>Prob &gt; chi2</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDI does not Granger Cause VAT</td>
<td>17.793</td>
<td>0.000***</td>
<td>Rejected</td>
</tr>
<tr>
<td>VAT does not Granger Cause PDI</td>
<td>58.423</td>
<td>0.000***</td>
<td>Rejected</td>
</tr>
<tr>
<td>PDI does not Granger Cause PU</td>
<td>23.608</td>
<td>0.000***</td>
<td>Rejected</td>
</tr>
<tr>
<td>PU does not Granger Cause PDI</td>
<td>30.994</td>
<td>0.000***</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**Source:** Researcher Estimation Results, 2022

Note: PDI: Private domestic investment; VAT: Value added tax; MT: PU: The Public investment (***, ** and * show presence of causality at 1%, 5% & 10% level of significant).
rejected. After all, Prob > chi2 (0.000) is less than a 5% significant level. Also, the probability value of (0.000) is less than the critical value of 5%. Therefore, the value-added tax does granger cause private domestic investment. Furthermore, the Granger causality Wald test results confirmed bidirectional causality between private domestic investment and value-added tax.

4.11 Model Stability Test

The Cumulative Sum (CUSUM) test was used to check the model stability. It was used to test if the model is dynamically stable and that variables were never affected by external shocks in the prior period. According to the CUSUM testing approach's rules, the estimated model will be stable if its line falls within the fixed CUSUM lines. According to (Xiao & Phillips, 2002), a model is stable if the plot shows that the CUSUM of recursive residuals lie within the range of critical values. All CUSUM of recursive residuals are inside the 5% zone.

Table 4.12: The Cumulative Sum (CUSUM) Test Results

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Test statistics</th>
<th>1% Critical value</th>
<th>5% Critical value</th>
<th>10% Critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recursive</td>
<td>0.4253</td>
<td>1.1430</td>
<td>0.9479</td>
<td>0.850</td>
</tr>
</tbody>
</table>

Figure 4.6: Cumulative Sum Test

The Cumulative sum test results revealed by Figure 4.6 shows the straight line represents critical bounds at 5% level of significance. The model was stable due to fact that the graphs of the recursive residuals fell within the critical zone (the model stays...
within the boundaries of 5% level of significance). The model is valid hence can be used for forecasting and planning in future movement of tax revenue generation and private domestic investment.

5.0 CONCLUSION AND RECOMMENDATIONS

The findings revealed that value-added tax is negatively related to private domestic investment in the long run. The investigation discovered a negative relationship between the level of investment and the parameter estimates of value-added tax. Even though value-added tax generates government revenue but when it increases, it encourages tax evasion and leads to high prices of goods where the burden falls to low-income earners; hence it reduces disposable income it distorts savings and private domestic investment.

The governments also need to reduce the VAT rates, simplify their tax regimes, address any tax administrative issues and plug all gaps for tax evasion to increase revenue generation and attract private investments. For instance, the government should enhance the appropriate tax system and progressive tax reforms that attract private investors. This study result revealed that value-added tax negatively impacted investment in the long run, implying that a higher Value-added tax creates higher business costs.

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