The Nexus Between Money Supply and Economic Development in East African Countries: An Empirical Study using ARDL

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Abstract: This study assesses the connection between money supply and economic growth in developing countries. The study used time series data from the National Bureau of Statistics (NBS) and the Bank of Tanzania. The study used the Auto Regressive Distributed Lag Model (ARDL). The study demonstrates that overall, the money supply has a significant favourable effect on economic expansion. Furthermore, the results demonstrate that the money supply boosts economic growth in underdeveloped nations. The study's results indicate that, on the whole, the money supply has a significantly favourable effect on economic expansion. According to the results, emerging nations’ economies expand faster when more money is available. In order to forecast the future value of economic growth, the study also recommended that future studies include exogenous variables in autoregressive integrated moving averages.

1.0 Introduction

Utilizing the proper policy instruments is necessary for the fulfilment of macroeconomic objectives. Monetary policy is usually the primary weapon to promote macroeconomic objectives and boost economic growth. The M3 measure of the money supply includes all of the money in circulation outside of the banking system as well as any domestic and foreign bank deposits made by citizens of the nation (Ayub & Shah, 2015). It is believed that the money supply affects economic planning and strategy. This is so because the law encourages a climate that fosters public welfare and economic development.

Additionally, monetary policy is crucial in controlling the rate and size of an economy's money supply expansion. It is also an effective strategy for controlling macroeconomic issues. Typically, a range of mechanisms is used to implement this strategy, including the central bank's involvement in modifying interest rates (Brockington et al., 2018). By altering the discount rate, the interest rate is changed. A central bank will charge banks

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a discount rate for short-term borrowing. For instance, banks will pay more to borrow money if a central bank increases the discount rate. As a result, banks raise the interest rates they charge their clients. As a result, less money is in circulation, and borrowing becomes more expensive in the economy. The central bank has the authority to alter the quantity of money in circulation by buying or selling government assets, much as it does in a free market. Central banks might buy government bonds, for instance. As a result, banks will be able to borrow more money, resulting in a rise in lending and money supply in the economy. In line with that, the minimum amount of reserves that a commercial bank must hold can be set by the central bank, which also has the authority to amend the reserve requirements. As a result, the central bank can affect the amount of money in the economy by altering the minimum requirement. If the central bank raises the required reserve level, commercial banks would have less money to lend to their customers, resulting in a drop in the amount of money in circulation. Repurchase and reverse repurchase agreements are other terms used (repo). Only the BOT is authorized to print money in Tanzania, which directly impacts how much money is in circulation outside of banks and gives the economy adequate but ideally non-inflationary liquidity.

Australia, for instance, utilized its monetary policy to address the global financial crisis of the 1990s. As a result, the financial crisis's detrimental economic impacts were greatly mitigated (Afolabi & Abu Bakar, 2016). This is because of an observation that came about as a result of the adoption of monetary policy frameworks that better anchor inflation and support macroeconomic stability and growth (Lee & Ng, 2015; Afolabi & Abu Bakar, 2016).

Through the years, Tanzania has managed its economy by changing the quantity of money in circulation. After the 1980s oil price collapse and the resulting balance of payments deficits, various monetary and fiscal stabilization techniques were employed, and interest rates were stabilized (Rwegasira, 2017). According to Mahmoudi et al. (2021)’s assessment of the effects of structural adjustment programs (SAP), decreasing money stock through higher interest rates decreased the Gross National Product, which was in line with the assertions that changes in the money stock and economic activity have an impact on the Tanzanian economy. Monetary policies can only achieve the intended outcomes when an economy is fully integrated, monetised, and interconnected.

Despite all efforts, Tanzania's economy is growing unevenly and deviating from the annual goal. According to BOT, the government, for instance, set a goal of 7.2 per cent Real GDP growth (2018). In contrast to the administration's 7.2 per cent growth forecast, the GDP only grew by 7.0 per cent in 2018. (O. Afolabi & Abu Bakar, 2016). The administration has taken many actions to lessen the issue mentioned above. The Open Market Operation (OMO), Required Reserve Ratio (RRR), Bank Rate, Liquidity Ratio, Selective Credit Control, and Moral Persuasion are only a few examples of the techniques available to achieve its desired aims. These are only a few of the available tools. Tanzania's monetary policy has undergone several adjustments throughout its history (both tight and loose), with the overarching goal of lessening the effects of
inflationary pressures. Tanzania's economy has also seen boom and bust cycles, with unsustainable growth patterns visible throughout the entire process. The country is afflicted by the institutional and commercial flaws that put a country's population in a perpetual state of utter poverty. Consistent currency depreciations in recent years have raised the relative profitability of investing in marketable assets. This is one of the terrible correlations between times of undervaluation and faster rates of economic expansion. Therefore, a major component in Tanzania's economic growth is the availability of money. As a result, this research aims to investigate the relationship between Tanzania's money supply and economic development.

2.0 LITERATURE REVIEWS

Chaitip et al. (2015) investigated the GDP, the money supply, and demand deposits. Between 1995 and 2013, this study encompassed several ASEAN states and used a longitudinal research technique. Additionally, the statistical analysis that followed The study discovered a strong correlation between the money supply and economic growth, as well as stationary growth rates for GDP, demand deposits (DD), and narrow money (M1). These findings supported the panel unit root and estimation models using panel ARDL of the Pooled Mean Group Estimator.

Marshall (2016) examined many variables, including the money supply and real GDP. Secondary data were used for the analysis, which spanned the years 1970 through 2014. The research team also used the Granger Causality test, ADF stationary tests, Johansen co-integration test, and vector error correction model. The study concludes that there is a strong correlation between the expansion of the economy and the growth of the money supply.

According to the ruling, the money supply, repo rate, and exchange rate contributed to the South African republics' economic expansion. Laktutiene (2008) agrees with Atiq et al. (2020) that monetary policy can change the long-term inflation trend but has a limited and intermittent impact on real economic activity. Therefore, the central bank contributes very little to the economy. The ISLM paradigm may be used to talk about the broadcast process. For instance, if the LM curve shifts to the right, the central bank is employing open market operations to implement an expansionary monetary policy, implying that interest rates are declining and economic growth is accelerating. However, if these penalties are viewed as the direct short-run consequences of monetary policy, the price level will rise, and the LM curve will return to a positive slope. In their analyses of the symmetric effects of positive and negative disruptions of the money supply using monthly data from 1951 to 1987, Kaitila, 2003 and Ayub & Shah, 2015 conclude that uncertainty about the future course of the money supply has a negative influence on production. Even though the money supply is expanding rapidly, Boukbech et al. (2018) discovered that, except for a small number of industrialized nations, there is no association between the money supply and production in many of the 110 countries they studied during 30 years.
Kaitila (2003) looked at the connection between the money supply and output in the Lao People's Democratic Republic and discovered that it is not Granger-caused. The Vector Error Correction Model Approach was utilized by Ayub & Shah (2015) to look at the relationship between Nigeria's money market and economic growth. They discovered a very shaky link between the money market and the real sector and that the money supply significantly negatively impacts economic growth.

British economist John Maynard Keynes created the idea in the 1940s (1883–1966). (2013) Coddington Keynes is credited with forming both the International Monetary Fund (IMF) and the World Bank. He is well known for his contributions to economics during times of war (Coddington, 2013). Keeping its size in check is crucial since a collapse in the money supply caused by an unsustainable economic boom might lead to a devastating recession. The government should raise income tax rates to take advantage of the expansion in economic activity. While the economy is strong, it is good to experiment with new government policies, such as reforming the tax code or the healthcare system. To further monetize wage growth, governments may enact taxes that did not previously exist.

3.0 RESEARCH METHODOLOGY

This study employed a quantitative research approach because the study used testing theories, shaping facts, numerical data, signifying relations between variables and forecasting future values, and drafting close from quantitative data. The study will use only secondary data and also used time series data drawn from the National Bureau of Statistics (NBS) and the Bank of Tanzania. The study was analyzed using the Auto Regressive Distributed Lag Model (ARDL).

Model Specification; Auto Regressive Distributed Lag Model (ARDL) is used to assess the nexus between money supply and economic development in East Africa Countries, the truth of choosing is the reality that the dependent variable of the study is “continuous data in nature” (GDP %) and the researcher intends to test long term association between variables.so, the ARDL is suitable for this research. The equation is expressed in following form;

\[ GDP_t = f(MS_t) \]

Whereby:
GDP\_t = Gross Domestic Products;
MS = Money Supply
\( \varepsilon_t \) = Error Term
\[ GDP_t = \alpha + \beta_1 MS_1 + \beta_2 MS_2 + \beta_3 MS_3 + \varepsilon_t \]

Whereby:
GDP$_t$ = Gross Domestic Products;  
MS$_1t$ = Money 1  
MS$_2$ = Money 2  
$\alpha$ = Constant term  
MS$_3$ = Money 3  
$\varepsilon_t$ = Error Term

4.0 RESULTS AND DISCUSSION

Table 4.1 depicts the mean, standard deviation, maximum, minimum and skewness findings for both level data and natural logarithms transformed data. The findings in table 4.1 show that for the transformed data, there were not many differences in the values of the natural logarithms of GDP and natural logarithms of the money supply over the years. These differences are observed by taking maximum values minus the minimum values of their respective variables. The skewness for all transformed random variables of natural logarithms GDP, natural logarithms of money supply and negative depicts that the left tail is mainly extreme. Nevertheless, the extreme left tail indicated the presence of non-normality. Apart from that, for non-transformed random variables, the skewness depicts the positive values, which imply their positive skewed

Table 4.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>Skew.</th>
<th>Kurt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>51</td>
<td>2560000</td>
<td>4150000</td>
<td>9173</td>
<td>1.490e+08</td>
<td>1.718</td>
<td>4.731</td>
</tr>
<tr>
<td>M3</td>
<td>51</td>
<td>544000</td>
<td>876000</td>
<td>2219.6</td>
<td>29900000</td>
<td>1.582</td>
<td>4.123</td>
</tr>
<tr>
<td>Ln(GDP)</td>
<td>51</td>
<td>14.375</td>
<td>3.25</td>
<td>9.124</td>
<td>18.816</td>
<td>-.223</td>
<td>1.585</td>
</tr>
<tr>
<td>Ln(M3)</td>
<td>51</td>
<td>12.934</td>
<td>3.083</td>
<td>7.705</td>
<td>17.214</td>
<td>-.184</td>
<td>1.666</td>
</tr>
</tbody>
</table>

Source: STATA, 2022
Figure 4.1: the time series plot with first difference

Source: STATA, 2022

Figure 4.1: Show the time series plot for the first difference of the macroeconomic variables: gross domestic product and Money supply in Tanzania.

Figure 4.2 shows the time series plot for the first difference of the macroeconomic variables: GDP, and Money supply in Tanzania from 1970 to 2020, for a total of 51 observations. The results of Figure 4.1 show that the data were now macroeconomic variables are stationary after applying the first difference transformation, which means that while there is fluctuation in these transformed macroeconomic variables, the data fluctuate around the constant values that are meaningful and that the variation is constant over time. This shows that by visual inspection, there is a tendency for stationary, though the formal statistical test of augmented in addition to that, the findings show that after applying data transformation, the time series depicts the irregular pattern, which is the residual. Since the GDP and money supply in Tanzania from 1970 to 2020 show the tendency to increase as time fluctuation data around the mean, this signals the presence of stationary random variables (i.e., constant mean and variance as time goes. Therefore, this graph shows that the random variables are stationary, then no other transformation is needed so that the GDP and money supply are stationary.

Table 4.2: Breusch-Godfrey LM test for autocorrelation

<table>
<thead>
<tr>
<th>lags(p)</th>
<th>chi2</th>
<th>df</th>
<th>Prob &gt; chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.566</td>
<td>1</td>
<td>0.5612</td>
</tr>
</tbody>
</table>

Source: STATA, 2022

Table 4.2 shows that the p-value is greater than the level of significance of 5% employed in this test. As a result, we fail to reject the null hypothesis at the 5% level of significance. As a result, the conclusion was reached that the regression residuals do not exhibit serial autocorrelation. As a result, the Breusch-Godfrey Serial Autocorrelation results demonstrate that the data series did not break the assumption of autocorrelation.
4.1 Test of the normality assumption

Table 4.3 shows that at a 5 per cent significance level, the calculated Jarque-Berra P-value is 0.3443, greater than 0.05. Hence, as a rule of thumb, the null hypothesis could not be rejected if the p-value calculated is greater than the 5 per cent level of significance. As a result, the regression residuals were determined to have a normal distribution. Consequently, the Jarque-Berra normality test results show that the data series does not violate the assumption of normality distribution. According to Hill et al.(2018), if the residuals have a normal distribution pattern, the estimates’ coefficients are also normally distributed.

Table 4.3: Jarque-Berra statistic

<table>
<thead>
<tr>
<th>Model</th>
<th>Chi2</th>
<th>Prob&gt;Chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residuals</td>
<td>2.133</td>
<td>0.3443</td>
</tr>
</tbody>
</table>

Source: STATA, 2022

4.2 Test of Heteroscedasticity assumption

The results in table 4.4 indicate that at a 5 per cent significance level, the computed Breusch Pagan test for Heteroscedasticity P-value is 0.1129, which is greater than 0.05. Hence, as a rule of thumb, the null hypothesis could not be rejected at a 5 per cent significance level. This leads to the conclusion that the residual is homoscedasticity, meaning there is constant variance.

Table 4.4: Test for Heteroscedasticity

<table>
<thead>
<tr>
<th>Source</th>
<th>chi2</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteroscedasticity</td>
<td>20.58</td>
<td>14</td>
<td>0.1129</td>
</tr>
<tr>
<td>Skewness</td>
<td>7.41</td>
<td>4</td>
<td>0.1156</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.92</td>
<td>1</td>
<td>0.3386</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>28.91</td>
<td>19</td>
<td>0.0674</td>
</tr>
</tbody>
</table>

Source: STATA, 2022

Note that the star (**), therefore, accounts for the P values less than 5% significance level. The Dickey-Fuller (ADF) test is based on the null hypothesis that there is a root unit in the series and the alternative hypothesis that no root unit in the series. If the ADF statistics are superior to absolute asymptotic critical values, the null hypothesis that the unit root of the series is rejected is to be found stationary, and the series is to be concluded with no unit root (Judge et al., 1985). Table 4.5 of the ADF unit root test results shows that Interest rate, GDP and consumer price index were stationary after the first difference since ADF statistics were greater than the absolute asymptotic critical values. The output of the ADF unit root test in Table 4 however reveals the presence of
no unit root for the GDP at a level form of 5% but at 1 percent showing the unit root is present: Given the inclusion of the root unit ADF data in certain variables, the data have been further analysed using the superior Phillips’s perron (PP) criterion. Phillips’s perron (PP) is a preferable criterion, according to Gujarati (2011) because it makes it possible to differentiate between stationary series, unit root series and non-unit root series where tests are not instructive as to whether the series is stationary or integrated. The results were obtained, summarized and given in Table 4.6.

Table 4.5: Show test for stationarity both augmented dickey fuller test and Phillips’s perron.

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF Test</th>
<th></th>
<th></th>
<th>Phillips's perron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First difference</td>
<td>order of Integration</td>
<td>Test statistics</td>
</tr>
<tr>
<td></td>
<td>Test statistics</td>
<td>Critical value</td>
<td>Test statistics</td>
<td>Critical value</td>
</tr>
<tr>
<td>GDP</td>
<td>-1.593</td>
<td>-3.580</td>
<td>-4.175 **</td>
<td>3.587</td>
</tr>
<tr>
<td>M3</td>
<td>-2.675</td>
<td>-3.580</td>
<td>-4.236 **</td>
<td>3.587</td>
</tr>
</tbody>
</table>

Table 4.6: Lag length selection

<table>
<thead>
<tr>
<th>lag</th>
<th>FPE</th>
<th>AIC</th>
<th>HQIC</th>
<th>SBIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>38.4132</td>
<td>17.8378</td>
<td>17.9118</td>
<td>18.0346</td>
</tr>
<tr>
<td>1</td>
<td>0.00027</td>
<td>5.96707</td>
<td>6.41147*</td>
<td>7.14802*</td>
</tr>
<tr>
<td>2</td>
<td>0.000197*</td>
<td>5.613</td>
<td>6.42773</td>
<td>7.77806</td>
</tr>
<tr>
<td>3</td>
<td>0.000263</td>
<td>5.80423</td>
<td>6.98929</td>
<td>8.95341</td>
</tr>
<tr>
<td>4</td>
<td>0.000224</td>
<td>5.44646*</td>
<td>7.00186</td>
<td>9.57977</td>
</tr>
</tbody>
</table>

Source: STATA, 2022

Table 4.6 show together the GDP, exchange rate, interest rate, money supply and inflation rate have one maximum number of lag since at lag one, the value for Hannan
Quinn Information Criterion (HQIC) and Schwarz Bayesian Information Criterion (SBIC) while the final predictive error (FPE) and Akaike Information Criterion (AIC) depicts the different maximum number of lags. Since Schwarz Bayesian Information Criterion (SBIC) is very powerful in determining the number of lags so in determining the long-term relationship the maximum number of lag employed is lag one.

4.3 Johansen Co-Integration Test

Johansen co-integration helps to evaluate whether the long-term relationship between the variables exists. After a stationary check and the optimal lag length of variables are achieved the Johansen co-integration test is applied. This is done to determine which model should be applied between VEC or VAR models that can be employed after differentiation to obtain stability before re-entry in the case of stationary variables. If variables have a long-term bond or relationship, the VEC model, known as the Vector Correction Model (VECM), is suitable. However, it is advisable to apply the Autoregressive Distributed Lag (ARDL) proposed by Schaffer et al.(2013), in the presence of both Non-Stationary I (1) and Stationary I(0) variables. The ARDL model has various benefits, like its applicability to small samples, according to Ghatak and Siddiki (2001) and may also be utilized regardless of the integration order so that the pre-test problem with the traditional co-integration method, which requires a comparable integration order, is avoided. This study employed the Johansen co-integration test based on homogenous integration orders to determine whether the time series data are co-integrated or not co-integration. Besides the Johansen co-integration, such tests of co-integration such as co-integration boundary tests and the Gregory-Hansen test have always been adopted when the order integration is not uniform to all variables.

Table 4.7: Show Johnsen Co-integration test

<table>
<thead>
<tr>
<th>Null Hypotheses</th>
<th>Trace Statistics</th>
<th>Critical Value</th>
<th>Max-Eigen Statistics</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>r = 0</td>
<td>87.7819**</td>
<td>68.52</td>
<td>30.6247</td>
<td>33.46</td>
</tr>
<tr>
<td>r ≤ 1</td>
<td>57.1572**</td>
<td>47.21</td>
<td>22.8502</td>
<td>27.07</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>34.307**</td>
<td>29.68</td>
<td>17.3333</td>
<td>20.97</td>
</tr>
<tr>
<td>r ≤ 3</td>
<td>16.9737**</td>
<td>15.41</td>
<td>12.3528</td>
<td>14.07</td>
</tr>
<tr>
<td>r ≤ 4</td>
<td>4.6209**</td>
<td>3.76</td>
<td>4.6209**</td>
<td>3.76</td>
</tr>
</tbody>
</table>
Note: \( r \): represents co-integrating vectors or relationships; when \( \lambda_{trace} \) and \( \lambda_{max} \) tests are in conflict decision is made based on \( \lambda_{trace} \) statistics; ** indicates rejection of the null hypotheses at 5% levels of significance.

**Source:** STATA, 2022

Table 4.8 shows \( \lambda_{trace} \) tests rejected the null hypothesis of co-integration \((r = 0)\) against the alternative since the trace statics were greater than the absolute asymptotic critical values, this lead concluding that there was the long-run relationship between GDP, exchange rate, interest rate, money supply and inflation rate. In contrast to Max-Eigen Statistics were less than the absolute asymptotic critical values. This lead concluding that there was no long-run relationship between GDP, exchange rate, interest rate and inflation rate. In this situation with conflicting results from the two statistics, Trace statistics is to be selected as the one with the best decision (Gujarati, 2004). Therefore, this leads to relying on the finding of trace statistics and then leads to acceptance of the presence of a long-run relationship between GDP, exchange rate, interest rate and inflation rate.

### 4.4 Autoregressive distributed lag model for examining the nexus between money supply and economic development in East African countries

In this section, the result of regression analysis is presented then after that, the diagnostic test is followed to test the validity of the findings.

**Table 4.5: Show the nexus between money supply and economic development in East Africa countries**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln Money supply</td>
<td></td>
<td>0.645***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.107)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0149)</td>
<td></td>
</tr>
<tr>
<td>L. ln GDP</td>
<td>-0.240***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0818)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>0.891***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.277)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>47</td>
<td>47</td>
<td>47</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.801</td>
<td>0.801</td>
<td>0.801</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*** \( p<0.01 \), ** \( p<0.05 \), * \( p<0.1 \)

**Source:** STATA, 2022
Table 4.9 show the result of the autoregressive distributed lag model (ARDL) employed to determine the relationship between money supply and economic growth in Tanzania. The finding reveals that in the long run, there was a positive significant relationship between money supply and economic growth since the p-value was less than the 5% level of significance employed. This implies that other factors remain constant, for one percentage increase in money supply, on average, the economic growth increase by 0.645 per cent. However, findings show no relation between money supply and economic growth in the short run since the short-run money supply was not found as one among the variables that have significant or no significant influence on economic growth (i.e. GDP). Chaitip et al (2015) found that money supply significantly influences economic growth; this result is parallel to the findings obtained in this study since this study also had the same result obtained in the relationship between money supply and economic growth. Similar studies found this (Ayub & Shah, 2015; Lakštutiene, 2008; Marshal, 2016).

5. CONCLUSION AND RECOMMENDATIONS

In this section, the autoregressive distributed lag model (ARDL) was employed to determine the relationship between money supply and economic growth also the money supply was transformed by applying the natural logarithms. Additionally, as the p-value was determined to be smaller than the 5% significance level applied, the results show a significant positive relationship between money supply and economic growth over the long run. This implies that other factors remain unchanged. Accordingly, for every percentage point increase in the money supply, economic growth rises by an average of 0.645 points. However, findings indicate that there is no relationship between the money supply and economic growth in the short run because it was not identified as one of the factors that have a substantial or insignificant impact on economic growth in the short run (i.e. GDP).

Because there is a significant relationship between money supply and GDP in Tanzania, which is positively associated, it recommends that the government make sure that it applies a monetary policy for the better achievement of economic growth. This study employed the ARDL model; future studies can use autoregressive integrated moving averages with exogenous variables by incorporating the interest rate and exchange rate as the exogenous variables to forecast the future value of economic growth.

REFERENCES


Asian Journal of Business and Management, 03(06), 2321–2802.


Chindengwike, J. (2022). Does External Debts Promote Sustainable Economic Development in Developing Countries?. Available at SSRN 4031616.


Chindengwike, J. (2022). The Effect of Recurring Expenditure Financed by External Grants on 248


Schaffer, M. E., Baum, C., Finlay, K., Kleibergen, F., Magnusson, L., & Stillman, S. (2013). *Stata software for econometric estimation and testing; avar, weakiv, actest, ivreg2h, ranktest, ivreg2*.


