



An Investigation of the Macroeconomic Determinants of Consumption Spending in South Africa

Rufaro Garidzirai¹, Arthur Mapanga²

Abstract: Household consumption has become a force to be reckoned with in contributing to Sustainable Development Goals. Understanding the determinants that influence household consumption has become a priority especially in emerging countries. Thus, the study examined the macroeconomic factors that influence household consumption in South Africa from 1984–2021 focusing on economic growth, interest rate, unemployment, and inflation. The study is envisaged to contribute to the scant empirical literature on consumption expenditure in the South Africa's context, thus, contributing to the macroeconomics literature body of knowledge. To achieve this aim, the study employed an Autoregressive distributive lag (ARDL) model due to its unique characteristic of forecasting and disentangling the long-run relationship among the variables from short-run relationship. The ARDL results illustrate a comprehensive outlook on the factors that contribute to consumption spending in South Africa. Amidst the most telling, in the long-run is the population growth and remittances that increases consumption spending in South Africa. Noteworthy is that unemployment, high inflation rates and high interest rates continue to create a detrimental consumption environment. Going forward a multipronged approach that includes reforming the African labour markets, creating a good political stability and employing favourable monetary policies that favours employment and lowering of interest rates should be considered

Keywords: macroeconomic; determinants, consumption; households; South Africa; Autoregressive distributive lag.

JEL Classification: B22

¹ Department of Management, Faculty of Management Sciences, Walter Sisulu University, South Africa, Address: Mthatha, South Africa, Corresponding author: garidzirairufaro@gmail.com.

² Senior Lecturer, PhD, Faculty and Department: Business Sciences, Management & Governance Walter Sisulu University, South Africa, Address: Office Number and Building: Campus /Site: Buffalo City Campus/Potsdam, South Africa, E-mail: amapanga@wsu.ac.za.

1 Introduction

A consumer's ability to contribute to multiple Sustainable Development Goals (SDGs) should not be disregarded. In fact, consumers have played a pivotal role in trade, poverty alleviation and economic growth (De Jongh & Mncayi, 2018). The success of household consumption in contributing to SDGs solely depends on macroeconomic and microeconomic policies. From a microeconomics point of view, a consumer's financial stability, education level and household size have a significant role on household consumption (Muzindutsi & Mjeso, 2018). The authors posit that the more income, the bigger the household size; the higher the education level consumers have the more the consumption of goods and services. On a macroeconomics perspective, savings, inflation, wealth, and economic growth play a critical role in consumption spending (Holm et al., 2020). Consequently, an understanding of macroeconomic determinants of household consumption has become a priority to researchers, analysts and policy makers since consumption spending tends to fluctuate over time.

Household consumption contributes about 65 percent towards the global Gross Domestic Product (World Bank, 2020a). South Africa is no exception in this statistic since, on average, household consumption has contributed 75 percent to its GDP from 1960–2019 (Garidzirai & Chikuruwo, 2020; World Bank, 2020b). An interesting observation is that household consumption has taken an upward trend from 1960 and several sectors have contributed to this development as shown in Figure 1. Amongst these factors is level of education, age, wealth, and good economic policies (Bokana & Kabongo, 2018). Notable is that food, transport, housing, health, and clothing are the most consumed goods in South Africa (Mohr, 2020). Between 2008–2011 consumption spending slightly declined due to the global financial crisis, however, it increased from 2012 till date (Trading Economics, 2020). Surprisingly, consumption kept on increasing despite drought, strikes, high unemployment and political instability. Thus, one can conclude that consumption is a steady element of aggregate demand (National Treasury, 2019). Although household consumption spending is considered stable, it is mainly financed by credit. The South African Reserve Bank (2020) has bemoaned that the country's spending is increasing and therefore trading on a hazardous ground since it might not be sustainable to consume with credit. This leads to a rise in interest rate, which also increases the inflation rate (Mohr, 2020). Owusu-Sekyere (2017) posits that the cost of borrowing and high inflation rate reduces the disposable income that compromises the consumption expenditure in future.

With the above discussed stylised facts, it is certain that macroeconomic determinants have a crucial role to play on household consumption in South Africa. Given that South Africa's consumption is mainly financed through credit; the consumption of households might be affected in the future. Thus, the purpose of the

study was to examine the macroeconomic determinants of consumption spending in South Africa, taking into consideration the cost of borrowing, inflation, unemployment, and economic growth. This study was motivated by the fact that these macroeconomic variables change overtime. For instance, interest rate has decreased three times in a space of three months in South Africa and this has led to a decline in the inflation rate (South African Reserve Bank (SARB), 2020). Furthermore, some have lost their savings due to a decline in the interest rate. In addition, economic growth has been changing every quarter making it difficult for policy makers to find the right policy mix. Moving from the theoretical perspective to empirical, this study was also motivated by scant studies on macroeconomic determinants of household consumption spending (Muzindutsi & Mjeso, 2018; de Jongh & Mncayi, 2018). Also, the few studies that were done are infrequent and inconclusive on some selected macroeconomic determinants. Rather, much emphasis is accorded on the effect of consumption function on economic growth and poverty alleviation. Having mentioned this, the current study is aimed at contributing to the scant literature on the macroeconomics body of knowledge.

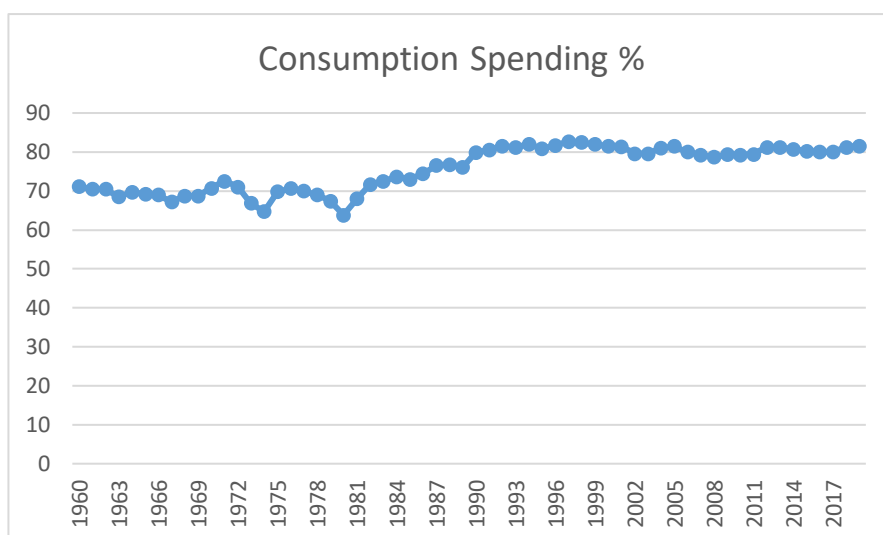


Figure 1.

2. Literature Review

As a starting point, the literature on household consumption is best explained using Ando and Modigliani (1963), Keynes (1936) and Duesenberry (1949) in explaining factors such as income, inflation, unemployment, and interest rate. The investigation of these consumption factors plays a significant role in increasing consumption that

have a positive influence on economic growth. Keynes (1936) established a link between consumption and the level of income. Keynes (1936) further establish a positive relationship between these two variables. Simply put, the more income a consumer has, the more consumption level. Therefore, current income is the main determinant of consumption level, also implying that interest rate has no effect on the consumption level. In summary, Keynes theory of consumption is built on three propositions: consumption is mainly influenced by income; consumption is a positive function of current income and more income earned in a particular period means more consumption of that period (Keynes, 1936). The Keynes idea was further developed by Duesenberry (1949). He argued that consumption is not only influenced by level of income rather it is also influenced by previous consumption trends. Thus, the more previous consumption, the more current consumption level. This also digs deeper to other factors that influences consumption such as inflation, interest rate and unemployment. For instance, if the inflation is significantly high, it increases the current inflation and reduces the future consumption (Nyamekye & Poku, 2017). The application of this theory further stipulates that lower interest rate increases the consumption level in a country while unemployment reduces the consumption level (Pasara & Garidzirai, 2020).

The life-cycle hypothesis (LCH) is a model that elucidate the consumption behaviour of households (Ando & Modigliani, 1963). The theory further emphasises that a consumer's intertemporal satisfaction function depends on consumption in every period of life and the microeconomic structures that maximises consumer satisfaction (Hall, 1978). Fuhrer (1992) contends that to maximise satisfaction, consumers tend to subject themselves to a single lifetime budget constraint. Hence, it becomes difficult for an income to be equal to the consumption in a certain period because of the lack of a static or period-by period budget constraint. The author further emphasised that access to capital markets allows consumers to choose their pattern of consumption over time, because it allows consumers to borrow at any time, considering the interest rate. In other words, consumers borrow to finance consumption. At that time, consumption increases though savings are eroded and indebtedness increases (Ando & Modigliani, 1963)

The relationship between macroeconomics and consumption cannot be excluded from other previous studies consumption. Although there is no study that focused directly on macroeconomic determinants of household consumption, some related studies were consulted (Hausman & Wieland, 2014; Nyamekye & Poku, 2017; de Jongh & Mncayi, 2018; Muzindutsi & Mjeso, 2018). Abdelgany (2020) used Structural Vector Autoregressive Model to investigate the influence of interest rate on consumption spending. The results reveal that any shock in the interest rate decreases the consumption spending by households. Fikizolo (2020) studied the impact of interest rate on consumption spending in South Africa. The study utilised Vector Autoregressive Model and found out that a 1 percent decrease in interest rate

causes a 0.56 percent increase in consumption in South Africa. Nyamekye and Poku (2017) examined the effects of inflation and real interest rate on consumer spending in Turkey during the period 1964–2013. The Johansen cointegration method and Vector Error Correction (VECM) was used and found that interest rate and inflation negatively influence consumer spending. Similar results were found by Hausman and Wieland (2014) who postulate that high interest rate decreases borrowing which negatively decreases household consumption spending. The authors also maintained that inflation decreases a consumer's purchasing power, thereby, reducing household consumption. Contrary results were found by Mian et al. (2013) who argued that consumers tend to increase their current consumption if they expect higher inflation rates in the future. The study was conducted in India using Smooth Transition Autoregressive (STAR) models. A recent study by Lieb and Schuffels (2022) investigated the relationship between inflation and consumption spending in Netherlands. The authors used an econometric examination and found out that an expected future price increases the consumption spending in the short-run and reduce consumption in the long-run.

Ganong and Noel (2019) examined the influence of unemployment on consumption spending. The study shows that unemployment has an inverse influence on consumption spending. The rationale is that unemployment reduces the chances of one having income in the long run, thus, reducing household consumption levels. Instead, consumption tends to increase in the short run as consumers tend to spend much for precautionary motives. De Jongh and Mncayi (2018) give a dissenting argument by stating that consumption spending decreases in the short run. The authors argue that unemployed individuals decide to save for precautionary purposes with the expectation of spending in the future. Campos and Reggio (2014) validated Ganong and Noel (2019) results by pointing out that a 1 percent increase in unemployment decreased consumption spending by 0.7 percent in Spain. The authors claim that the decrease in consumption spending is because of the decrease in the expectation of consumers.

A study done in Ghana investigated the impact of remittances on consumption spending considering the agricultural output (Eric, 2022). The study used two least square estimator and found that remittances are significant in explaining consumption spending especially when agriculture output is at its lowest. Contrary, Wang et al. (2021) found that remittances do not have any effect on consumption in Kyrgyzstan. Zhang et al (2022) further examined the effects of remittances on household spending in Ukraine taking into consideration the impact of COVID-19. Scholars used ARIMA model and found out that remittances did not contribute that much to consumption spending in Ukraine.

Mason (2022) examined six ways of that will change the global economy. The scholar used some trends analysis and found that population growth has a positive

impact on consumption spending in the global economy. Mason (2022) findings were also supported by the study done by Hasibuan (2018) who found out that population growth cause consumption spending in Indonesia. The author found this result after employing a multiple linear regression model. A panel data methodology was used by Peterson (2017) to investigate the The Role of Population in Economic Growth in low and middle income. The author found that population growth positively influences consumption spending first before it influences economic growth. Thus, a positive relationship exists between population growth and consumption spending. Sujarit (2016) further posit that population growth of young and middle age increases consumption spending of the economy compared to old age.

Noteworthy is that the literature findings are not consistent. Other studies propose that interest rate and inflation lead to an increase in consumption level, while some studies propose that Consumer Price Index and interest rate lead to an insignificant effect on consumer spending. Most empirical studies focused on the interest rate against consumption of government or household, and the studies were undertaken in developed countries. Therefore, this study is unique as the objective is to determine the impact of real interest rate and inflation on the final consumption expenditure by households in a developing country, South Africa. In observance to the above discussion, the methodologies used by other studies are Smooth Transition Autoregressive (STAR) models, Vector autoregressive method and Vector Error Correction Model. Therefore, the present research differs from most of the above-mentioned studies as it investigated the impact of real interest rate and inflation on individual consumption by employing the more apposite econometrics method, being the Auto-Regressive Distributed Lag approach to check the robustness of the results. The section that follows thus explores the methodology employed in the study.

3. Model Specification and Description of Variables

A quantitative approach was used in examining macroeconomic factors that influence household consumption spending in South Africa. The examination was based on annual time series data from 1980–2021. The data includes household consumption spending, unemployment, economic growth, interest rate and inflation. Worth noting is that household consumption as a percentage of GDP was used as a dependent variable while unemployment, economic growth, interest rate and inflation were employed as independent variables. This relationship is illustrated in equation 1:

$$\begin{aligned} & \ln hcons_t \\ & = \beta_0 + \beta_1 popg_{-1t} + \beta_2 une_t + \beta_3 rem_t + \beta_4 cpi_t + \beta_5 int_t \\ & + \varepsilon_t \end{aligned} \quad (1)$$

where $\ln hcons$ represents household consumption spending as a percentage of GDP, $\ln hcons_{-1}$ is household consumption as a percentage of GDP for previous year, $\ln une$ is unemployment rate, $\ln cpi$ is inflation rate and $\ln int$ is interest rate in South Africa. β are the coefficients of all independent variables under study, t stands for time and ε represents an error term. Provided in Table 1 is the summary of variables used in the study.

Table 1. Summary of variables used in the study.

Variable	Source	Description	Priori Expectation
Household consumption expenditure (cons)	Global economy	It is the value of all goods and services produced in a country expressed as a percentage of GDP	Dependent variable
Household consumption expenditure for previous year ($\ln hcons_{-1}$)	Global economy	It is the value of all goods and services produced in a country expressed as a percentage of GDP	Positive/negative association with household consumption
population growth (popg)	Global economy	is the change in population expressed over time	Positive association with household consumption
Remmittances (rem)	Global economy	Remittances constitute the personal transfer and compensation of employees expressed as a percentage of GDP	Positive association with household consumption
Unemployment (une)	Global economy	of people in the labour force without work but they are looking for work (unemployment rate)	Negative association with household consumption

inflation (CPI)	Global economy	Increase in the prices of basic goods and services measured by CPI	Negative association with household consumption
Interest rate (Int)	Global economy	Cost of borrowing	Positive or negative association with household consumption

3.1. Estimation Techniques

This segment provides the procedures undertaken to investigate macroeconomic determinants of household consumption. Two complementary procedures were employed; unit root test and ARDL bound cointegration. These two procedures were used to determine the appropriate estimation technique. For the unit root test, the Augmented Dickey Fuller (ADF) was used to assess if the variables are stationary as well as to assess the order of integration. These tests assess whether variables are stationary at level, first difference or second difference. Something to note is that when variables are stationary at level then they are integrated at I(0) while variables that are stationary at first difference are integrated I(1). The rule of thumb is that when variables p-value is more than 10 percent, the variable will not be stationary and vice versa (Zhanje & Garidzirai, 2018). When variables are integrated at level zero and one, an Autoregressive distributive lag is deemed fit, while a Vector Auto regression (VAR) and Vector Error Correction Model may be employed (VECM) if variables are integrated at level one (Pasara & Garidzirai, 2020). For the purposes of this study, an ARDL was deemed appropriate, and one must carry out a cointegration analysis to check if a long-run relationship exists among the variables under study. This cointegration is based on F-statistic and prescribes that for cointegration to exist, the computed F-statistic should be greater than the upper critical values (Pesaran & Shin, 1999). If there is cointegration, an ARDL technique will be employed to explain both the short-run and long-run relationship. An ARDL model is illustrated in equation 2:

$$\Delta hcons_t = \beta_0 + \sum_{i=1}^q \beta_1 \Delta hcons_{t-1} + \sum_{i=1}^q \beta_2 \Delta CPI_{t-1} + \sum_{i=1}^q \beta_3 \Delta_{t-1} + \sum_{i=1}^q \beta_4 \Delta une_{t-1} + \sum_{i=1}^q \beta_5 \Delta int_{t-1} + ECT + \varepsilon_t, \tag{2}$$

where Δ is the difference operator showing the presence of short-run relationship, q is the lag length in the long-run, $hcons$ represents a change in the consumption of households, Δcpi represents a change in the inflation rate, $\Delta popg$ represents a change

in population growth, Δ une shows a change in the unemployment rate and Δ int represents a change in the interest rate. Moreover, β represents the coefficients to be estimated, ECT is the error correction term

An ARDL model was chosen because it makes use of a single equation to estimate both the long-run and short-run relationship (Pesaran & Shin, 1998). It also gives accurate and precise estimates, and it is the only methodology that accommodates variables that are integrated at different levels (Garidzirai & Matiza, 2020).

In conclusion, the diagnostic tests were carried out to assess the reliability and robustness of results. Thus, researchers tested for serial correlation, normality tests, heteroscedasticity, and stability of the model. The results of these diagnostic tests are explained in section 4.

4. Presentation of Results

The presentation of results includes, unit root tests, ARDL bounds test, ARDL results and diagnostic test results. The following section discusses the descriptive statistics.

4.2 Stationarity Tests

The literature prescribed the use of the Augmented Dickey Fuller test when testing for unit root and the results are shown in Table 2. The study's results show that household consumption (hcons), household consumption for previous year (hcons_1) and interest rate (int) are stationary at level $I(0)$ as the p-values are below 10 percent. As a result, these variables are integrated at order zero $I(0)$. On the other hand, inflation (CPI), and unemployment (une) are not stationary at levels, thus, there is a need to first difference. The results in table 3 shows that the variables became stationary when first differenced. One can conclude that the variables under study are a combination of $I(0)$ and $I(1)$. Since the variables are a combination of $I(0)$ and $I(1)$, an ARDL model was deemed fit and the cointegration tests were employed to assess a long-run association on the variables.

Table 2. Unit root tests

Variables	t-statistic and critical values		Probabilities		Order of integration
	Levels	1 st Difference	Levels	1 st Difference	
hcons	-2.23912 (-1.4726)	-2.5217 (-2.8922)	0.0002***	0.0000***	I(0)
CPI	-2.9125 (-2.4732)	-7.098765 (-2.8123)	0.3818	0.0000***	I(1)
popg	-3.2140 (-2.1210)	-4.3126 (-2.1086)	0.5953	0.0000***	I(1)
une	-3.1721 (-1.3014)	-4.8158 (-1.2018)	0.1290	0.0031***	I(1)
int	-1.2987 (-3.7810)	-2.1298 (-2.4612)	0.0000***	0.0000***	I(0)
rem	-1.3018 (-4.3921)	-2.3920 (-2.7521)	0.0152***	0.0000***	I(0)

Note: *** represents 1 percent significant

4.3. ARDL bounds Test

The cointegration tests were done in the form of the ARDL bounds tests with the purpose of assessing the long-run relationship amongst the variables under study. The results of the ARDL bounds test are illustrated in Table 3. The computed F-statistic (7.10) is greater than the (I0 = 4.62) and (I1 = 5.20) at a 1 percent level of significance. For that reason, we reject the null hypothesis of no cointegration and confirm a long-run association among the variables under investigation.

Table 3 ARDL bounds test

Test statistics	Value	K
F-statistic	7.102927	8
Critical value Bounds		
Significance	I0 Bound	I1 Bound
5%	3.23	3.70
2.5%	3.60	4.47
1%	4.62	5.20

Since a long-run association is on the variables, equation 4 illustrates the factors that influence household consumption in South Africa.

$$hcons = 1.1093 + 1.9024popg + 0.6401rem - 0.5982CPI - 0.1401int - 1.1515une, \quad (4)$$

In estimating the ARDL model, an Akaike Information Criterion. Equation 4 shows that population growth has a direct and positive effect on consumption spending. A one percent increase in population growth leads to an increase in consumption spending by 1.9024 units. This result was expected since an increase in the number

of people increases the chances of spending in an economy . This result is in line with studies done by Mason (2022), Peterson (2017) and Hasibuan (2018) that posit that population growth increases consumption of goods and services in the economy. The results also reveal that remittances positively influence household consumption spending. Thus, a 1 percent increase in remittances increases household consumption spending by 0.6401 units. The result was expected since remittances in the form of income increases the marginal propensity to consume. This finding resonates with the studies done by (Eric, 2022; Wang et al., 2022; Zhang et al. 2022). The results further show an inverse relationship between inflation and household consumption. Consequently, a 1 percent increase in inflation decreases household consumption spending by 0.5982 units. The result was expected since inflation erodes purchasing power and households end up buying few goods and services. The findings are in line with the findings of Hausman and Wieland (2014) and Nyamekye and Poku (2017) who found a negative relationship between inflation and household consumption. Likewise, interest rate negatively influenced household consumption. It was found that a 1 percent increase in interest rate decreases household consumption by 0.1401 units. The result was expected since an increase in the cost of borrowing reduces the income of households which in turn negatively influences household consumption. This result is in line with the recent study done by De Jongh and Mncayi (2018) who found that high cost of borrowing decreases household consumption. In conclusion, unemployment negatively influenced household consumption. The results report that a 1 percent increase in unemployment reduces household consumption spending by 0.1515 units. The result was expected since unemployment decreases the chances of one having income (Ganong & Noel, 2019; Campos & Reggio, 2014).

4.4. Short-run Analysis

Having established the long-run relationship among the variables, this section provides a short-run relationship of the variables under investigation. Table 5 shows an Error Correction Term (ECT) of -0.41736 that is significant at a 1 percent level of significance. This negative ECT confirms that the model converges in the long run, thus, all the disequilibrium is corrected in the upcoming years, holding all other things constant. To be precise, the model moves back to equilibrium after 2 years 3 months ($1/049720$). The short-run results further show that unemployment, and interest rates are not significant in explaining household consumption. Contrary, remittances and population growth and inflation influence household consumption.

Table 4. Short-run analysis

Variable	Coefficient	Std.error	t-statistic	p-value
ECT	-0.41736	0.1297	-2.4901	0.0000***
rem	0.1086	0.0281	3.1309	0.0298**
popg	0.3018	0.1001	1.76104	0.0014***
CPI	-0.2981	0.0953	-3.49081	0.0731*
int	-1.0937	0.9873	-4.96204	0.1084
une	-0.8183	0.7653	-3.98163	0.2781

(Source: Authors compilation)

Note: *, ** and *** represents level of significance at 10%, 5% and 1% respectively

4.5. Diagnostic Tests

The diagnostic tests results are illustrated in Table 5. The p-value of 0.3019 for normality test implies that the residuals are normally distributed. Furthermore, the probability values of autocorrelation, serial correlation and heteroscedasticity are above 10 percent accepting the null hypothesis of no autocorrelation, serial correlation, and heteroscedasticity respectively. Therefore, the study confirms the absence of no autocorrelation, no correlation, and no heteroscedasticity. The Ramsey test has the probability that is less than 10 percent showing that the model is free from specification errors.

Table 5 Diagnostic test

Test	Test Statistic	p- value	Conclusion
Normality Test (JB test)	1.8936	0.4620	residuals are normally distributed
Autocorrelation (Order 6)	8.3012	0.3010	no autocorrelation
Serial Correlation (LM test)	7.3019	0.2840	No serial correlation
Heteroscedasticity test (white test)	3.7201	0.4571	No heteroscedasticity
Ramsey test	2.7633	0.4520	Model is free from specification errors

4. Conclusion

The objective of this study was to examine the macroeconomic factors that influence household consumption in South Africa. The purpose of this study was to give additional knowledge on how these factors influence household consumption from 1980 to 2021 using the ARDL model. The ARDL model results reveal that economic growth and previous household consumption increases household consumption both in the short-run and long-run. Conversely, unemployment, interest rate and inflation were found to decrease household consumption in South Africa. The findings of the study reveal that unemployment is a phenomenon that does not only affect consumption rather it has long-run implications on economic growth. In addition, the interest shocks tend to shrink consumption although interest rate have a close association with investment. The findings of the study further reveal that population growth in South Africa increases the chances of an increase in consumption spending. Therefore, a multi-pronged approach that includes reforming the African labour markets, creating a good political stability and employing favourable monetary policies that favours employment and lowering of interest rates should be considered.

Even though, the study has achieved its purpose, some limitations were pin pointed. For instance, the study should have considered other microeconomic variables such as wealth and household size. Secondly, the study could have added more countries to make it a panel analysis. Importantly is that these limitations will be addressed in the upcoming studies.

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