TECHNIUM
SOCIAL SCIENCES JOURNAL

Vol. 26, 2021

A new decade for social changes

www.techniumscience.com

ISSN 2668-7798

TECHNIUM SOCIAL SCIENCES JOURNAL

Technium Social Sciences Journal
Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

An assessment of interest rates on high income earners in South Africa

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Abstract. The globalisation phenomenon has enhanced relationship between economies in the world through free market and movement across borders. In such conditions, each government should properly manage and control exchange requirements at domestic and global level through implementation of relevant monetary policies to sustain economic development. Considering the impact of the currency and interest rates on expenditure and/or revenues, this study reports on the results of real interest rates on high income households in South Africa. The study employed the use of quantitative secondary data involving interest rates. Time series data sets on three independent variables over a period of twenty years arising from 1998 to 2018 was used. The data was collected from South African Reserve Bank (SARB) and Statistics South Africa (STATSSA). The statistical bulletins, annual reports and databases were used following permission from the relevant custodians of data from SARB and STATS SA. Data analysis was done using STATA software. The study employed the use of both correlation and linear regression methods of analysis on the changes recorded on how interest rates impact on the behaviour of households for the variables under observation and these are personal transport, household credit and durable goods consumed at the household level. Research findings revealed that a negative relationship exists between real interest rates as adjusted for inflation on the overall consumption of goods in the household level. Furthermore, an increase of the interest rates leads to a decrease in spending while the decrease of interest rates leaves more money in the households for increased spending in all areas of credit consumption and in this case all research variables under study increased with a decreased real interest rate.

Keywords. Interest rate; regression analysis; households; consumer price index; monetary policy

1. Introduction

The subject of interest rates has been discussed and written about exhaustively by many scholars around the world. However, there are still many opportunities for further studies in the field of economics and how it affects consumers and investors alike. In this research study, one critical area of macroeconomics on interest rates and how it affects the high-income households in South Africa has been investigated.

The management of interest rates is crucial for the economic development through spending and saving behaviour of consumers and business as argued by Acha & Acha (2011). In a way it acts as a facilitator for the flow of funds between lenders and borrowers. Interest rates remains an economic aggregate managed by the central bank. The South African Reserve Bank (SARB) uses the monetary and interest rates policy for inflation targeting with the general mandate of preserving currency for attainment of macroeconomic development objectives of

the country. According to (Ayanwale, 2013) interest rates is viewed as both an outcome on financial assets and an incentive to investors. Investors postpone existing expenditure to an upcoming time in pursuit of profits in the form of interest on their investments. Interest rates provides for various important functions in the economy and it influences an extensive proportion of the economic verdicts and results. Interest rates as viewed by Acha and Acha (2011) are declared to be critical in monetary mediation that encompasses transfer of capitals from concentrated surpluses to deficient units. It has an influence in assessing monetary market conditions and is a foremost instrument of monetary policy. There is an agreement amongst the scholars of economics asserting that financial progress has had a substantial and positive impression on the progress of local and international countries (Ayanwale, 2013).

There is a clear correlation between the price of money and many other financial indicators. The most obvious correlation relates to hikes in interest rates resulting in the decline of the inflation rate. This remains one of the critical preoccupations of any central bank to strike a balance between these two variables, especially those pursuing monetary policy related to the inflation targeting as is the case with the SARB (Smal & de Jager, 2001). The SARB holds the sole mandate of pecuniary policy adjustments in the South African economy. In doing so it has been equipped with various instruments at its disposal to ensure a healthy and functional economy. Regarding the eclectic pecuniary policy put in place in 1996, the SARB monitors a consistent spectrum of economic factors in the preparation of monetary policies. In many instances, the SARB has effected adjustments which has implications on the life of citizens and influencing consumer spending patterns from such decisions effected by the bank from time to time.

2. Problem Statement

Specific formulation of the problem statement constitutes the basic departure point that triggers the need of conducting a research (De Vos et al., 2005:116). In so doing, authors must clarify the scope of the research and the concern while keeping in mind the objectives to be achieved.

South Africa has for a long time and is still facing the stubborn problem of unemployment linked to a myriad of issues including interest rates, which has spill over effect to various income groups.

According to Vermuelen (2017) inflation-targeting central banks are consequently chastised for their attempts to contain inflation rates low – attempts which could arguably contribute to higher unemployment. The current study investigates in detail the role of the price of money on high income households. From time to time, the SARB updates adjustments on the interest rates percentages for both the cost of borrowing and the return on investments. The intent of this study therefore is to make a determination on how the high-income earning group is affected by any adjustment of the interest rates, looking at three critical areas of credit such personal transport consumption, household credit consumption and household durable goods consumption.

3. Research Objectives

- To determine the existing type of relationship between interest rates and high income household consumption on household credit, durable goods and personal transport.

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4. Literature Review

Research studies in macro economy have extensive reports currently available on the topic of interest rates discussed from different perspectives. Emanating from huge interest by scholars in the subject of interest rate, it shows its relevance and significance in the health of any economy. Despite the availability of different types of interest rates in the field of economics, this research study is looking at real interest rates which takes account of inflation and how it affects the household's consumption by high income earners in South Africa. It was discussed in the context of three independent variables namely; household credit consumption, household durable goods consumption and personal transport consumption. Bank rates are the price of interest paid by debtors to creditors as the cost of money for an agreed period of time. Interest rates are expressed in percentage terms and can be per month, per trimester, per semester and/or per annum (pa) in order to make them comparable, for example, 6.525% pa (Faurie AP, 2018:1). According to Smal and de Jager (2001), setting interest rates is a function at the disposal of the central banks.

The SARB is periodically engaged in the reviews of its interest rates and its monetary policy for several economic reasons. Throughout the years one of the major and critical economic function of this institution is to cool off inflation and put it under control, in order to ensure protection of currency from potential devaluation and collapse. In achieving this, the central banks have interest rates as a control tool available for variations in order to maintain the health of their economies, and for the preservation of their currency in particular.

Smal and de Jager (2001) argued that the central banks uses the interest percentage as a financial instrument to manage economic inflation targets following specific policies. According to Fuertes, Heffernan and Kalotychou (2007) regulators define official percentage of adjustments that lead to changes in the short money market instrument and marketing rates in order to manage future expenditures and price increase. Banks and regulators define price of business operations while managing the impact on the market. Therefore, the strength and proximity of the association between bank lending tariffs and the rate fixed by the regulators suggest a high cost price pass-through between the two percentages. At this stage, a higher pass-through status means that banking systems and the monetary policies are efficient (Fuertes, Heffernan, and Kalotychou 2010:9).

The effect of globalisation has created a need for inclusive world integrated economies which opens the currencies to both domestic and international factors to promote investments. That is why the interest fee is another important indicator of Foreign Direct Investment (FDI) for both inflows and outflows as indicated by Singhania and Gupta (2011). It is a fair price value of borrowing and giving a return on savings or investments that attract local and global investors. This mean that the price value should be interesting in order to increase the return on investment that will benefit both the investors and the national economy. With a transaction at a global level, this would translate to capital moving from low rate to a high rate country. To a large extent these types of transactions have both long and short run implications to the average household in the country.

4.1 The role of central banks in the economy

SARB is the institution responsible for the steadiness of the financial system through established regulations and supervision of banks' activities, both internally and externally (SARB, 2014) as quoted by (Bakam and Edoun, 2017). Interest rates is by far a function within the sole control of central banks for strategic economic reasons. On the other hand, interest rates remains a key and a critical macroeconomic indicator in the health of any economy. Various functions have been identified and assigned to the central banks pertaining to interest

Technium Social Sciences Journal
Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

rates administration as a quest to build and maintain a healthy economy and these includes among others and not limited to price stability, the supply and demand of currency, inflation control and economic growth etc.

De Jager (2006) stated that it is not easy to subdivide any specific purpose of central bank as a characteristic of such an institution. A central bank needs to be concerned with other functions quite apart from its responsibility relating directly to its main goals, such as activities relating to financial stability.

SARB (2012) asserts that the establishment of fiscal policies in South Africa is entrusted to the Monetary Policy Committee (MPC) of the SARB. Financial policy details the work of the MPC that involves making decisions about ensuring a healthy and functional economy. Many variables and factors are always under consideration during meetings of the MPC, with the repo-rate being one of those tools and instruments that are adjusted in accordance with the factors relevant to the economic situation. On average the SARB holds six meetings are per annum. However, if a need arises, the MPC should convene "off calendar meetings" that will be pre-announced later through official communication and publication channels (SARB, 2012).

According to SARB (2017), the MPC formulates and implements its monetary policy following a specific targeting-framework to keep inflation within a band of 3–6% target. As a guidance tool, the inflation targeting-framework is a flexible policy that allows to temporarily overlap outside the target range when unexpected circumstances arises. The MPC considers factors like the time lags between monetary policy adjustments and economic changes together with other factors related to the monetary policy decisions. This provides smoothing of the interest rates amount throughout the cycle and thus enhances economic stability and development. Outcomes from MPC meeting are communicated to the public through press conference.

Simon-Oke and Jolaosho (2013:1) stated that financial institutions like banks should ensure their primary role of financial intermediary by making capital to be accessible to all economic agents. Furthermore, (Ewubare & Merenini 2019) states that banks should make sure that during the intermediation process funds are assigning from sectors with a surplus to the sectors with cash deficient as argued by Uremadu, (2002) and Nnanna, Englama and Odoko, (2004). The flexibility on the reassignment of funds is determined by the level of progress of the financial sector together with the savings behaviour in the economy. Accessibility to investible funds is a big step towards advancing investments in the economy that will ultimately culminate in a well-structured economic regime for growth and improvement.

5. Discussion of Results

Emanating from the previous section, the computed results of the study has been presented and will be receiving further in-depth discussion. This includes all the features of data as obtained from the descriptive statistics, the linear regression, histograms, scatter plots compiled, test of normality and correlation analysis including the visual observation tests. This chapter therefore provides an exhaustive discussion of the results and findings of the study.

Regarding potential relationship between variables, the multiple linear regression is to be used in the settings of this study.

The multiple linear regression equation will be computed as indicated by the formula below:

$$Y = \square_0 + \square_1 X_1 + \square_2 X_2 + \ldots + \square_n X_n,$$

Where

$\square_0$ is the intercept,

Technium Social Sciences Journal
Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

$\square_1$, $\square_2$, . . . $\square_n$ are coefficients representing the contribution of the independent variables X_1, X_2, …….X_n.

Wegner (2007: 432) stated that the same mathematical principles of the method of least squares is used to derive the coefficients of the multiple regression equation. Compared to the simple linear regression, multiple linear regression includes the relations between one dependent and two or more independent variables.

5.1 Correlation Analysis

Correlation is a two variables technique of analysis utilised to measure the direction of the relationship and the relationship itself through determination of the nature of the relationship between two or more variables (Wegner , 2007:432). While linear regression analysis is about establishing the type of relationship between variables, correlation is about finding the strength of the relationship between two or more variables. The correlation coefficient is expressed as a percentage that can be negative or positive.

In this study, a Pearson *r* correlation is utilised to evaluate the degree of the relations between related time series data of variables. The r value is calculated as follow:-

$$r_{xy} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n\sum x_i^2 - (\sum x_i)^2}\sqrt{n\sum y_i^2 - (\sum y_i)^2}}$$

Where:

r_{xy} = Pearson r correlation coefficient between x and y
n = number of observations
x_i = value of x (for i^{th} observation)
y_i = value of y (for i^{th} observation)

5.2 Major findings of the study

(a) 5.2.1 Descriptive statistics

The descriptive statistics as computed indicates that one dependent variable and three independent variables were put under study with each variable having 20 observations. Very clear distinct observations can be made from the features data series. All variables were analysed within the confidence level of 95%. The measure of the central tendency, dispersion and normality is elaborated in the following sections.

Measures of central tendencies

The mean of the data series is smallest on the independent variable of real interest rates and is largest on the household consumption. The household credit consumption accounts for the largest mean value followed by household's durable goods and lastly the personal transport consumption. The household durable goods consumption remains with huge mean value due to large values of raw data series used and followed by household credit, personal transport

consumption and lastly the real interest rate. The same goes for median values obtained from the raw data sets with household credit occupying the highest value and followed by household durable goods, personal transport consumption and lastly the real interest rate.

Measures of dispersion

The data for household credit accounts for a huge range of data dispersion at a maximum of 162998 and 255756 minimum, followed by household durable goods at a maximum of 192049 and minimum of 67738. Personal transport consumption registered a maximum range of 120233 and minimum of 45399 and then lastly the real interest rates with a range of 12.93 to a minimum of 2.209 minimum. The standard deviation calculates a dispersion of the sets of data against the population sample mean. Standard deviation emphasises on the extent to which data values containing numerical data are spread around the mean. The homoscedasticity allows to measure the degree to which the data values for the dependent and independent variables have equal variances (Saunders et al., 2016:548). This implies that if the sample has specific unequal variances then is referred to as heteroscedasticity.

From the computed table of descriptive statistics, the standard deviation readings which is computed as the square root of variance, real interest rates fetched a reading of 2.967 while personal transport consumption obtained a reading of 23171 followed by household durable goods at 44984 and lastly the household credit scored 491000. The range on the data sets for real interest rates is close to each other with minimum of 2.209 and maximum of 12.993. For widest range is seen on the data set for household credit with minimum value of 255756 and maximum of 1629983 and 120233 as minimum value and maximum of 45399 for personal transport consumption and lastly the range for households' durable goods is 67738 and 192049 respectively.

In this case the range is tight for real interest rates and extremely wide for household credit followed by household durable goods and by transport consumption.

Measurement of normality

Normality of a distribution sample can be determined by the central distribution of a normal curve which has a mean value of 0. For the computation of measurement of normality, the Kurtosis and skewness measurements becomes essential tools. Emanating from the variable data set analysed the value of skewness for distribution of data sets, household credit is -0.04 and 1.322 for real interest rate, -0.086 for personal transport and -0.114 for household durable goods variable. A symmetric distribution is attained when the score of distribution is 0 and using the generally acceptable rule of thumb in the test of distributions:

The Pearson coefficient of skewness is given by the model:

$$SK_p = \frac{3(\text{mean}-\text{median})}{S}$$

$SK_p = 0$ the distribution is normal and $SK_p > 0$ the distribution is positively skewed and where $SK_p < 0$ the distribution is negatively skewed.

The distribution of all independent variables is negatively skewed since all values obtained are less than 0 and only real interest rates distribution is positively skewed with a coefficient above 0.

In both instances the dispersion shows a deviation from the normal distribution with the mean of 0 and a standard deviation equalling to 1. This is the case in all variables since the distribution thereof has deviated from the conditions of normal distribution.

Technium Social Sciences Journal
Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

The Kurtosis measurement of the variables have been registered as 1.477 for household credit consumption and 3.727 for real interest rates and 1.764 for personal transport consumption and -1.514 for household durable goods. Kurtosis measurement is looking at the pitch of the slope of distribution of data sample.

Compared to the skewness, the other indicator of the distribution's shape is the Kurtosis that evaluate the degree of flatness of the distribution around the normal distribution as stated by Saunders et al (2016:519). Dancey and Reidy (2011) added that a distribution that is in-between the extreme of peakedness and flatness is considered to be mesokurtic and also has a value below zero.

Since the coefficient of Kurtosis seeks to determine whether the distribution has a K value of 3 for normal peak or not. In the event where K=3 the peak is considered normal, while it leptokurtic for distribution with K>3 and laptykurtic where K < 3. The distribution for household credit, personal transport and household durable goods has K <3 and these makes the distribution to be laptykurtic with a flat slope. Only interest rates has registered a K value >3 and makes the peak of the distribution to be leptokurtic. Leptokurtic has a positive value while laptykurtic has a negative value away from the mean of the sample of distribution.

Table 1: Summary of measures of distribution

Measures									
Variable	**Skewness**			**Kurtosis**			**Shapiro Wilk**		
	Normal	Positive	Negative	Normal	High peak	Flat peak			
	SkP 0	SkP> 0	SkP<0	K3	K>3	K<3	W=0.05	W<0.05	W>0.05
Household Credit Consumption			-0.04			1.477		0.03	
Personal Transport consumption			-0.086			1.764			0.236
Household durable goods	-0.114					1.514		0.028	
Real interest rates		1.322				3.727		0.0019	

Source: Author (2020)

5.2.2 Test of normality of distribution

The null hypothesis states that the data are normally distributed in terms of the Shapiro Wilk test of normality. The p-value is the value of the Prob < W given in the output. If the alpha amount chosen is 0.05 and the p-value is less than 0.05, then the null hypothesis is rejected, and the data is normally distributed. If the p-value reaches 0.05, then the null hypothesis is not rejected. (Discovery, 2020).

The value computed for the real interest rates variable is 0.0019 which is less than the 0.05 given at the level of significance of 5%. In this case the null hypothesis is rejected since the distribution for the real interest is not normal.

In the case of household credit consumption, the P value obtained is 0.0312 which is less than 0.05 P value at the 5% level of significance. Emanating from these findings it can be concluded that the distribution is not normal, and the null hypothesis is rejected. On the personal transport consumption, the value of P was computed to be 0.237 which is greater than the null hypothesis value as computed at 5% level of significance for the P value of 0.05. This indicates that the distribution for personal transport consumption is normally distributed and the null hypothesis is accepted.

Lastly on the normality test for the household durable goods consumption the computed P-value is 0.028 which is was done at 5% level of significance and is less than the null hypothesis value of 0.05. The distribution for this variable sample is not normally distributed and the null hypothesis is rejected.

5.2.3 Multi linear regression computations

The linear regression computation was done for all three variables under study. The regression was done at the 5% level of significance and household credit consumption, household durable goods, and personal transport as predictor variables. The sample size was made of 20 observations of the three independent variables namely household credit consumption, household durable goods and personal transport consumption. The inclusive computation of the regression yielded, and adjusted R squared of 0.5508 with MSE value of 2.15.

The real interest rates of the fitted line is computed by Real interest rates = 10.6 + (-7.35) (household credit consumption) + 0.000124 (Household durable goods) + (-0.00018) (Personal transport). In this model the most influential predictor is household durable goods due to its positive coefficient. The other two variables household credit consumption is the least influential and followed personal transport consumption preceding household credit consumption.

On the same note the variable household durable goods is the most useful and is estimated by the regression coefficient which is equal to 0.0001243 which is not 0. The regression coefficient of the household durable goods variable is given by –0.00000879, 0.0003365 and does not contain 0 at the 95% of the confidence interval. Its P-value is 0.283 that is superior to 0.05.

The value of the adjusted Squared is 0.5508 which is 55, 08%. This indicates that the fitted line of regression explains that 58, 08% of the variable interest rates in terms of household durable goods consumption, household credit consumption and personal transport consumption has been obtained. This illustrates that the relevance of the predictor variables to interest rates is moderately significant.

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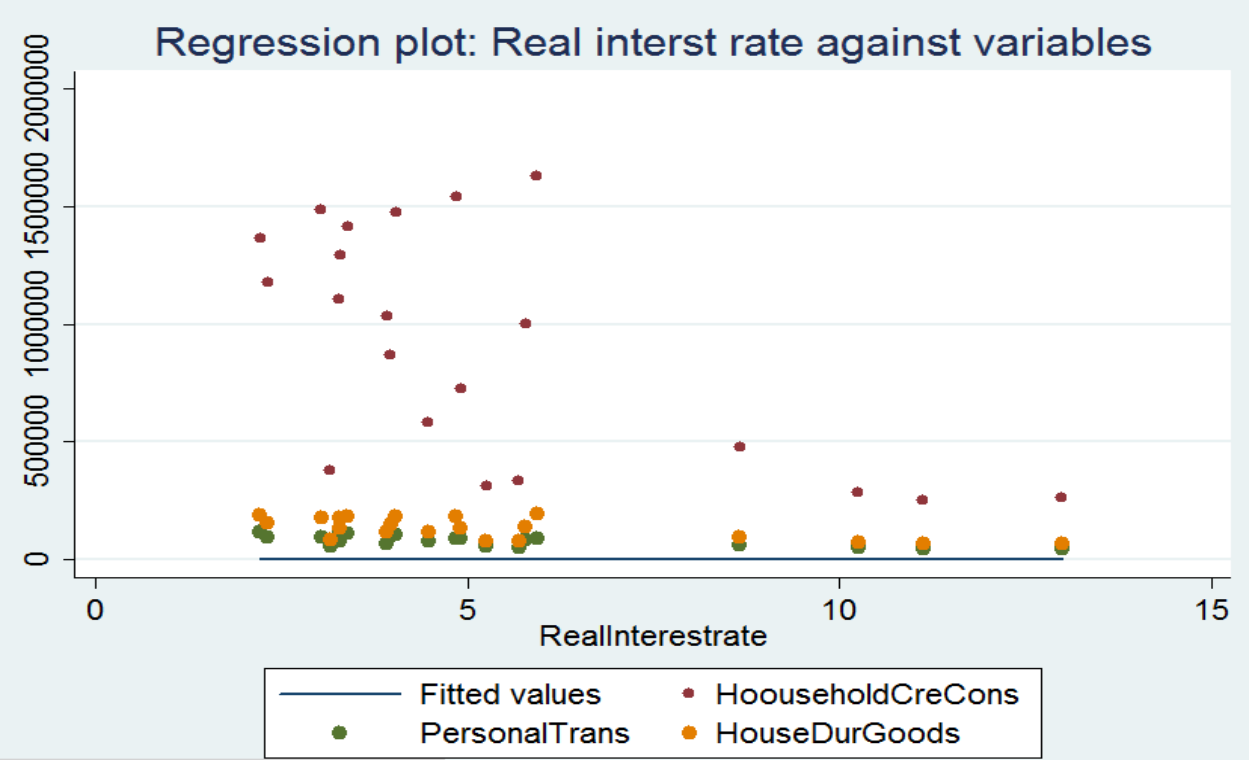
Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

Figure1: Scatter plot for all variables



Source (Author, 2020)

5.2.4 Scatter plots for various data series

In all the variables obtained on the plot of interest rates and household credit consumption accounts for the most of outliers on the plot. The fitted line of regression could not connect any points on the variables on the plotter. There is a huge variation between the independent and dependent variables utilised in this study and there is a close proximity between household durable goods and personal transport consumption. The line of best fit is trending at zero constant and all treading above the line of regression. This indicates a significant variation on the data sets and the strength and association of the relationship between research variables utilised.

Real interest rates scatter plot

The visual analysis of the scatter plot is trending with a negative slope below the mean. The real interest rates R squared value of the slope has been computed to be 0.4432. The regression equation is expressed as Y= 0.3152x + 638.2. The real interest variable has been declining and there is a negative correlation between the two variables as opposed to the variable displayed

Lowering interest rates on its own has its general effect on the economy and lower interest rates makes credit affordable and available to the consumers. This effect is evident from the household credit consumption as more money is left in the pocket of consumers. The R squared line computed indicates the 44% of line of best fit with the coefficient of 0.3152 and for increase or decrease in the real interest rates. According to Drobyshevsky Trunin, Bogachkova and Sinelnikova-Muryleva (2017) the economy shrinks marginally as credit interest rates increase. Furthermore, economic agents rely predominantly on adaptive forecasting for inflation in their decision-making on how much fixed investment to undertake.

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Household credit

The linear household credit consumption R squared value of the slope was computed to be 0.977. Between the periods of 1998 to 2005 the household consumption has been on the steady incline. The regression equation is expressed as Y= 78288X - 2E + 08. The demand for household credit has been on the rise and is increasing annually on the exponential scale. The linear household credit line shows the best line of fit for all data points collected from the data series. All data points within the R squared falls between 0 and 100% and the higher the percentage indicates a more linear line series where most of data points are aligned. The line of best fit is 97% which makes the variable significant in predicting the interest rates values.

Real interest rates paid by households

The regression equation was computed as Y= 9200x + 2E + 07 obtained an R squared value of 0.8749. The location of data points between and around the mean has 45% above and 55% below the mean respectively. This variable is also significant as it stands at the R-Squared value of 0.8749 which represents the 87.49% line of best fit. Again, 2008 comes as a significant point of reference that marks the global market recession and not surprisingly as the corrective measures. From the market a response is to augment the interest rates in order to control the potential over inflation that can be caused by the oversupply of funds in the market. As quoted by Jordaan C (2013), the International Monetary Fund (IMF) mentions that households are most vulnerable to rising interest rates, particularly with respect to mortgages. The share of vulnerable households and debt- at-risk increases fairly sharply under rising interest rates scenarios, with a strong impact on lower-income households (IMF 2012). This assertion was also supported by Kida (2009), who mentioned that although most households in New Zealand remain mortgage-free, and the most debt is held by high income households; the debt-service ratio indicator suggests that lower-income indebted households are more vulnerable to interest rates increases.

The overall trend of the plot indicates a steady incline in the real interest rate. The general increase in the real interest rates is to make credit unaffordable and it's used as a tool by the central banks to safe guard and preserve the value of money supplied to the market. Christensen (2012:2) claimed that lesser interest rates have traditionally contributed to increase levels of consumption; however, there is a point where lower interest rates are harmful to society. However, on the contrary increased interest rates serves as an appetizer for the investor to put their money on the system with the sole intent of consuming at later stage with huge dividends from invested funds. The households have a huge burden of interest rates which is payable on the debts they take.

Farrell et al (2018) conducted a study in the USA where patterns of consumer spending in response to mortgage resetting were investigated. The research assessed the impact of the monetary policy revenue channel on homeowner consumption with a specific form of variable-rate mortgage. The empirical results revealed that the income channel is automatic in a declining interest rates setting, the consumer response is significant, for both anticipatory and contemporary increases in consumption at the microeconomic level. Expressing findings in the broader sense of monetary policy transmission channels operating via mortgages to impact personal consumption, a research showed that the refinancing channel suffers from limitations that restrict its effect on homeowners. It is difficult to trigger with traditional interest rates policies and has frictions that minimize its bandwidth and unequal distribution.

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Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
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Personal transport consumption

From the visual observation of the scatter plot the graph is trending with a slope above the 0 mean. The recorded R squared value of the slope was computed to be 0.6845. The plot is generally on the rise except for two periods between 2007 and 2009 and 2010 and 2015 respectively where there was significant drop on the transport consumption. The variable is significant with a line of best fit at 68-45% as derived from the r squared value computed.

The year 2013 marked the highest demand for personal transport consumption by the households. However, the period 2008 is critical as it marked the global recession which in this case the demand was fairly high. The regression equation is expressed as Y= 3098.6X -6 + 06. The demand for household transport consumption is on the rise despite the economic slowdown of the previous decade. The points of the line of best fit are located at 42% of the above the mean and 55% below the mean respectively. In a study done by (DI Maggio et al 2017) borrowers slightly increased their car consumption starting one quarter before the interest rates reset. This suggests that some households may have anticipated the mortgage payment reduction and altered their car purchasing before the reset date.

The lack of proper safe and reliable public transport puts pressure on the need for personal transport consumption in the country. Running the extrapolation of the variable at ceteris paribus it shows that a demand for the service is on the rise. This creates a room for authorities to enter the market and provide reliable public transport that can meet the needs of a modern consumer. With the ailing public transport system and its associated poor infrastructure and the prolonged failure of the state to provide an alternative, the demand for the increased consumption will continue to rise in the coming years.

5.2.5 Correlation analysis matrix

Correlation analysis was conducted for the variables under the study and the subsequent matrix has been compiled as indicated below:

Table 2: Correlation analysis matrix

	RealIn~e	Hoouse~s	Person~s	HouseD~s	RealIn~e
RealIntere~e	1.0000				
Hoousehold~s	-0.6259	1.0000			
PersonalTr~s	-0.7135	0.8504	1.0000		
HouseDurGo~s	-0.6617	0.9692	0.9411	1.0000	
RealIntere~e	1.0000	-0.6259	-0.7135	-0.6617	1.0000

Source: Author (2020)

Real interest is negatively correlated with household credit consumption. The coefficient of correlation is -0.625 and it represents the 62% of line of good fit between the variables. The rise in real interest rates leads to a decrease in household consumption.

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Vol. 26, 1-16, December, 2021
ISSN: 2668-7798
www.techniumscience.com

Emanating from the results of correlation there is a significant and negative association between the two variables.

Similarly, to personal transport consumption, the relationship is depicted as negative correlation due to the coefficient value of -0, 7135 which also represents the 71% line of good fit between the variables under comparison. As interest rates increases the personal transport consumption is reduced. The inverse is true in the event where real interest rates is reduced results in the increase in personal transport consumption. Interest is the cost of credit and when it is reduced it makes credit more affordable and hence consumption of such product or service may increase. Emanating from the results of correlation, there is a strong and negative association between the two variables.

In terms of relationship between household credit consumption and personal transport, the coefficient value computed is 0.8504 which represents 85% of line of good fit. There is a positive correlation between household consumption and personal transport and the association is strong between two the two variables. Emanating from the results of correlation there is a significant and positive correlation and strong association between the two variables.

Household durable goods consumption has a negative correlation with real interest rates at a computed coefficient value of 0.6671 representing a 66% of line of good fit between the variables.

With regards to household credit consumption a positive correlation exists at a value of 0.9692 with a 96% line of good fit between the variables. On the relationship between household durable goods and personal transport a positive correlation exists at a coefficient 0.9411 with a 94% line of good fit. Interest rates is in a negative correlation with all variables under comparison in the study which implies that any changes resulting in the growth of the interest rates will always result in the decrease in household credit consumption, household durable goods consumption and personal transport. Emanating from the results of correlation there is a significant positive correlation and strong association between the two variables.

5.3 Implications of the study

The major implications of the study are obtained around the variation of interest rates by the central bank which has lowered interest values in order to keep management of the inflation according to prescriptions of the monetary policy targets. From the scope of the period under observation the interest rates has been declining resulting in the increased consumption. This has its own negative implications to the consumer because it encourages consumption of durable goods and personal transport which are acceptable, but as for the consumption of credit its action results in the creation of vulnerable consumer.

Similarly, the rise in real interest rates has seen the increase in the payment of interest which is a cost of credit consumed by households. The more credit was made affordable the more interest was payable by households from credit commitments done. In the long run, the low interest rates results in the oversupply of money in circulation which results in inflation that is eroding the purchasing power of money. This has severe consequences in the long run for the whole economy.

The lowering of interest works against the government policy for creating a financially empowered society through its economic empowerment.

However, this creates opportunities in the education and awareness on financial literacy because the consumer seems to be utilizing the relief for further engaging in credit commitment which further perpetuates unequal and financially vulnerable society.

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5.4 Limitations of the study

The study was limited to the result of interest rates on the three variables, such as household credit, household durable goods and personal transport consumption. The data utilised was derived from SARB and accounted for the period from 1998 to 2018 and was down for the South African household. The study came short of not analysing the saving pattern as influenced by the real interest rates which is a highly related variable to the context of the study.

5.5 Conclusion

In this section of the report the results of the study have been discussed starting with the descriptive statistics, where it becomes evident that the data used on the study had a negative skewness for all variables except for the y intercept variable of interest rate. The data was also platykurtic because of the negative kurtosis values as computed from the software. On measures of location the household credit showed a wide range followed by household durable goods. The standard deviation readings which indicates the location of data away from the mean is also too wide among all the variables under study, except for the real interest rates which had small values of data sets.

The scatter plots showed a linear incline across all the data series sets under observation. The household credit consumption followed by household durable goods followed by personal transport have indicated increased consumption of those items by the South African consumer.

6. Recommendation and Conclusions

Real interest rates remains an instrument available to central banks around the world as part of the macroeconomic indicator. Interest rates is one of the main aggregates that regulates the economy's supply and demand for capital. At any point in time in the economy, the central bank governors have a duty to preserve a balance between the demand and the supply for capital stability. Many studies have been and will been still undertaken in future on the subject of interest rate. Similarly a lot of work has been done by the scholars in the field of interest rates around the world and this study has been conducted with a specific focus on real interest as adjusted for inflation and its effect on the South African consumer looking at the specific variables such as household durable goods, household credit and personal transport consumption.

As a body with legal authority to assess the interest rate, the SARB has adopted inflation targeting framework as a method to efficiently supervise monetary policies. This stance calls for the variation of interest rates as and when required to keep inflation within the required band in order to preserve the value of the currency. Central banks raises interest rates to slow down an economy that is expanding too rapidly and lowers them when the economy is heading for a recession. According to Borio and Hofmann (2017) monetary policy adjustments may also adjust the distribution of income by influencing dividends as equities are owned predominantly by households of high income. Higher interest rates will raise dividends over time because, ceteris paribus, corporations' earnings rise due to higher debt servicing costs and increased economic activity

This on its own suggests that there are two sided effects caused by interest rates and it all depends on whether an individual is on the consumption or saving side. For instance, a lower interest rates works well for the consumer because it incentivises them and makes credit affordable, but an investor is not enticed because the money they put in the lending institution does not accrue meaningful return on investments. Generally lowering the interest rates is meant to increase consumption in the economy. Any decision made on interest rates always has two different sided outcomes for both the consumer and the investor at any given point in

time. In Pakistan, the influence of the interest rates on investment revealed that that the interest rates has a negative relationship with the investment while the income has a positive impact on the investment (Muhammad , Lakhan, Zafar, And Noman , 2013).

The novelty of the approach is to document that the sustained period of low interest rates boosts households' consumption through its impact on mortgage rates in the main, but this consumption effect may be weakened by households' incentives to deleveraging. The findings highlight the important role of the household balance sheet channel in the transmission of interest rates shocks onto the real economy (DI Maggio et al, 2017).

According to (DI Maggio et al, 2017) this implies that households consume about 0.8 of the monthly disposable income generated by the rate reduction to 0.29 Taken together the results corroborated the view that policies crafted at reducing mortgage rates may have a meaningful impact on macroeconomic conditions by improving household balance sheets.

In this paper real interest rates has a negative correlation with all variables under study and results showed that a decrease in interest resulted in the increase in consumption for household durable goods, personal transport and household credit. Household credit consumption accounted for the highest consumption levels followed by household durable goods, personal transport consumption which all showed a linear and steady incline showing a continued demand for consumption. Again, it appeared to be the most influential predictor in the regression model with highest coefficient of regression obtained between all the values. This is in line with most studies conducted where a lower cost of credit makes more consumers to afford to take up credit and results in increased consumption.

The findings in a study conducted by Christensen (2012:3) on the effect of optimal rate of the Federal Reserve Bank in the United States on consumption and savings, it was found that the lower interest rates helps increase the consumption levels which is comparable to the finding of the current study. Again, the findings are in agreement to the study undertaken by Kampoor and Ravi (2009) on the effects of interest rates on household consumption in India. They found out that the increase of 50 basis points on the interest rates and deposits rate led to an immediate decline of 12% in consumption expenditures of a household. However, the analysis of the disaggregated monthly consumption data revealed that the decline was primarily in non-food then on non-essential items.

Interest rates is varied mainly in order to obtain a balance in the supply and demand in the money market. Central banks conducted adjustments on regular basis in order to control the flow of currency in the market and to keep inflation under control within the prescribed band of 3-6% according to the prescriptions of the SARB inflation targeting framework. The monetary policy of the reserve bank also influences and provides a basis for the adjustment of the interest rate. Global events that cause major dents and threating market and economic recessions has the potential to necessitate the reasons for the adjustment of interest rate.

The key findings revealed by the study is that a negative correlation exists between real interest rates as adjusted for inflation on the overall consumption of goods in the household as per the empirical evidence in all the variables utilised in the study. The study revealed that an increase in interest rates causes a decrease in spending while the decrease of interest rates leaves more money in the households for increased spending in all areas of credit consumption.

6.2 Recommendations from the study

South Africa has been reported as one of the poorly saving nation in the world. Emanating from the study it is evident that due to high consumption levels of credit by the households and all other variables listed for the study. This scenario is made possible by the continued lowered interest rates as required by the inflation directing the monetary policies of

the SARB. Equally, the economic slump that is creeping on the economy is due to the failure of incentivized environment for the attraction of foreign direct investment (FDI) which will have a widespread benefit to stimulate the economy as more FDI will be drawn in the country. Similarly, the increased interest rates will encourage consumers to postpone their marginal propensity to consume to a later date, thus fostering a culture of savings as opposed to the current culture of consumption in the country.

As the current fiat model is highly vulnerable to a variety of factors and incidents that continue to erode fiat supplies from circulation, the SARB should look into digital currencies and assets to maintain the currency value. In the event that fiat amounts are withdrawn due to incidents such as robberies, corruption etc., it means that more fiat will be needed to replace the missing notes, causing hyperinflation that will have a major long-term effect on the interest rates in the country.

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