Namibian household's indebtedness and the impact on overall financial stability

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Abstract

Objectives: Financial soundness of the household sector matters for the overall financial stability of the country. This is true that, financial stability of the household sector does not only affect the financial system but the real economy as well through household consumption and investments. The aim of this paper is to present and analyze the main measures of indebtedness.
Methods/ Statistical Analysis: The effect of different factors such as house- holds income, mortgages, and financial prudence fueling the household debts has been discussed. Granger causality test was used to find the relationship between household debts and GDP. Different ratio tests such as debt to income ratio (DIR), debt to service ratio (DSR), debt to asset ratio and household debt to real GDP were employed in the data analysis.
Findings: Debt to income ratio shows the percentage of income goes toward re- paying someone's debt. It was found out that there is a positive relationship between household debts and GDP; if household debts increase the GDP also increases. It was also found out that household with high income tend to have high debts and vice versa.
Application: This study is helpful because it will show the importance of evaluating household debts and its impact on economic growth. The result of this study will help the policy makers to formulate strategies that are helpful in attaining sustainable financial stability. It will also help people understand the importance of managing household debts so that housing prices would not be inflated for the next generation.
Keywords: Household Debt; Financial Stability; Household Indebtedness; GDP.

1. Introduction

Financial reliability of the household sector matters for the overall financial stability of the country. In recent years, household indebtedness has received a lot of attention in different countries as it is becoming a big concern for different economies as household indebtedness has increased rapidly relative to incomes [1]. According to [2], in many different countries the combinations of financial conditions and fluctuating housing market prices has caused an increase in household debts, mostly caused by housing loans. Indebtedness is the state of owing money to someone or financial institution such as banks, insurance company etc. In this study, the focus is more on debts owed to financial institutions which have significant implication on the economy. The vulnerability of household debt at the aggregate level may be determined by the indebtedness relative to the ability to repay the debt. The larger the amount of debt held by borrowers, the greater the chances of vulnerability or default. To establish how vulnerable households are, requires an in-depth evaluation other than the growth comparison of house- hold income and debt. The extensive debt growth has raised imperative questions about debt sustainability and the possible impact on the financial stability on the other hand with the country's population growing faster. Whether or not the situation remains non-threatening depends on what happens to interest rates, asset values (mainly house prices) and incomes. It is of great importance to study and understand the household's debts motive and its impact on the financial stability of the country. In Namibia, the household debt has been considerably higher for the past 10 years making up more than 50% of the total private sector credit in the country [3].

Relative to income, household credit has increased from 20% in 2002 to about 29% in 2016 implying that by 2016, close to 30% of the income goes to credit and only 70% is available for consumption and saving. However, there is no much work that has been done on this subject in Namibia to understand factors influencing household debts. Most Namibian households have trouble honoring their outstanding loans, debts and/or credit. This threatens the economic and financial stability of the country especially in the current situation where house prices are very high and implies higher mortgages. The main aim of the study [4] is to evaluate Namibia's household indebtedness and its probable impact to the overall financial economic stability of the country. This paper will also improve knowledge about ways of measuring household indebtedness by giving an in-depth discussion of what the term household indebtedness really means and its main influencing factors in referral to the Namibian economy. This study is helpful because it will show the importance of evaluating household debts and its impact on economic growth. The result of this study will help the policy makers to formulate strategies that are helpful in attaining sustainable financial stability. It will also help people understand the importance of managing household debts so that housing prices would not be inflated for the next generation. The data used in this study were sourced from the Namibia Statistic Agency (NSA) and the Bank of Namibia. Although the use of ratio is a fairly common approach to studying interaction between household debts and income this study does not provide a complete picture of these assessments due to lack of all the required data.

2. Literature survey

Institute of Public Policy Research (IPPR, Namibia) conducted a research on housing policies and delivery in Namibia with the main aim to provide an up to date overview about housing initiatives and provide an insight of what the government have achieved in the housing perspective of the country [5-7] and also evaluated the household income, looking at how different income groups influence housing markets. The findings are that, the government has not achieved its goal as most of low-income group still cannot afford a home. It was also found that the Namibian household with high incomes or with more wealth tends to have high debts as they are able to service these loans. However, majority of Namibian households with low income cannot afford these loans as their chances of paying back the loans are significantly low.

According to [8-9] the financial stability report of NAMFISA, financial regulatory authority of Namibia, the ratio of household indebtedness to disposable income at the end of December 2015 increased when compared to the similar period in 2014. The rise in household debt was equivalent to the growth in private sector credit extended, which rose by 13.6% in December 2015. Household income slowly increased relative to the growth in household debt as shown in the table below. They claimed that the main factors that increased household debt were, mortgage loans and other loans and advances as more people want to buy houses. Growth in mortgage loans increased to 12.5% in December 2015 from 12.0% in 2014. Similarly, other loans and advances rose by 20.9% over the same period, compared to 15.9% in December 2014 as shown in the Table 1 [10].

Table 1. Household debt to disposable income

	2011	2012	2013	2014	2015
Household Disposable Income	35889	41649	49257	530774	57357
Credit to Households	27 391	31242	35939	40703	45810
Credit to Disposable Income (%)	76.3	75	73	76.7	79.9
Adjusted Credit to Households	30540		40072	45384	51079
Adjusted Credit to Income (%)	85.1	83.6	81.4	85.5	89.1

According to [11], the average house prices as a ratio of GDP has been rising at a steep rate for the period 2000 to 2014, excluding the slight dip during the global financial crisis (GFC) of 2007-2009. Nonetheless, the increasing trend continued after the crisis, partly fueled by the encouraging credit conditions to help stimulate the economy. This was evident near the end of 2008, when an accommodating monetary policy was employed. Average house prices have been accumulating, even in the times of short-term monetary policy shrinking. Moreover, house prices have been increasing more than annual inflation.

The average rate of inflation observed over the sample period was 7.1%, while house prices increased by 14.9%. The rate of house price rises has, however, moderated towards the end of the sample period. Some countries like Namibia with the fastest increasing household debts prior to the crisis suffered the severest drop in real private consumption during the recent crisis [12]. Different people defined the concepts of indebtedness differently. In [13] stated that a household is considered indebted when its available and future resources are not enough to meet its financial obligations without lowering the standard of living. Indebtedness is the amount of money that individuals owe financial institutions. As pointed out in the last ten years, many countries experienced the rise in household debts. This caused concern about socioeconomic impacts on different economies in near future. In particular, indebtedness is drawing attention from different nations because of its largely possible effects on the debts sustainability and stability of financial system. Further, the financial vulnerability of household is determined by household default risks. High levels of indebtedness could have some negative impacts on financial stability [14]. Financial stability is defined as the complexity and flexibility of the country's financial system due to shock changes in internal and external factors such as economic, financial and political influences. Financial stability could be affected by household's performances in different ways under stressing macro-economic circumstances [15]. It can also be described as the absence of macroeconomic costs of disturbances in the system of financial exchanges between households, corporate and financial institutions. There are different roots to house- hold's indebtedness and their effect on the overall financial economic stability. In this report, different models will be utilized to provide evidence on the issue.

2.1 Factors affecting household debts

Household's debt can increase due to a number of reasons. Households make decisions and determine the amounts they spent on different types of goods, assets and liabilities consistent with their net worth [16]. These decisions are determined by household's risk preferences. Here is a look at the main factors influencing household indebtedness.

2.2 Household income

In [17] declare household income as the main factor influencing household's indebtedness. In most cases household's income is determined by employment acknowledges that in most cases household sector is more sensitive to changes in household's income. There are different factors that can shake the household income such as unexpected increase in expenses like costly medical care, increase in interest rates and changes in family structure which is mostly caused by divorces, newly born or death of a family member. Household features and debt distribution determines the household's vulnerability that generate increases in unemployment rates. In some cases, the situation of indebtedness develops from poverty, which drives from individuals that are not able to survive with their expenses. This drives these individuals to ask for loans that have tiny chances of being paid back. In [18] particular, the most part of debt is apprehended by higher-income households, who use a smaller amount of their disposable income servicing debts while lower-income households, with low ability to service debt, do not grasp that much and, as such, the spill-over effects from this group to the rest of the economy are perhaps not large. Academic researchers have concentrated on a different of quantitative measures in the mandate to evaluate financial stability. Indebtedness is most commonly estimated in accordance to the dynamics of household's debt to income ratio [19]. Debt to income ratio compares monthly household debts to monthly household disposable income [20]. This ratio shows the percentage of income goes toward repaying someone's debt. Debt to income ratios given by different groups such as the household's age, household's income, and standard life cycle concerns suggest that young and relatively fewer income households would be likely to have the highest debt income ratios (DIR).

$$\text{DIR} = \frac{\text{Debts}}{\text{Disposable Income}} \qquad (2.1)$$

The lower the DIR ratio is the better because it means the less income is spent on servicing debts. On the other hand, a high debt-to-income ratio means more of income is spent on debt, leaving household with less money to spend on other bills or on savings. High debt to income ratio might have a bad impact on finances in numerous expanses e.g. one may struggle to pay bills because so much of the income is going in the direction of debt payments and a high debt-to-income ratio will make it tough to get approval for loans, especially a mortgage or motor vehicle loan. Lenders want to be sure affordability of loan with the ability to repay monthly loan payments. High debt payments are often a sign that a borrower would fail to make monthly payments or default on the loan.

Debts to income is important because banks and other moneylenders' study how much debt their customers can take on before those customers are likely to start having financial difficulties, and they use this knowledge to set target for lending amounts. In the paper [21], it is stated that the favorable maximum DTR varies from lender to lender, but it's often around in the region of 36% of the gross income. Some household who have more than 30% DTR may want to reduce it by increasing the amount paid monthly toward the debts because extra payments can help lower the overall debt more quickly or household may avoid taking on more debt i.e. reducing the amount charged on credit cards, and try to readjust applying for additional loans. However, it has been acknowledged that debt to income ratio does not provide enough measures to financial vulnerability. Thus household debt service ratio can be also used to evaluate the vulnerability of households. This ratio is clearly defined for indebted households but it does not include those that only have credit card debts or lines of credits. Debt service ratio given by:

$$DSR = \frac{\text{Obligated Debts Payments}}{\text{Disposable Income}} \qquad (2.2)$$

Debt service is the amount of money required over a period of time to repay debts. Debt service ratio (DSR) basically calculates the repayment capability of a borrower. This is a ratio of cash accessible to pay for debt servicing. In other words, it is the ratio of the competence of cash to repay the debt [22] and the Debt Service Ratio (DSR) is becoming the most important ratio among most Income Property lenders [23]. If the DSR is greater than one then it means that zero ability to service debts. If the DRS are equal to one then it means that 100 percent of the income is spent on servicing debts. While this is sustainable in theory, it creates financial vulnerability as it depends on cash flow variation.

2.3. Mortgages

In [20], mortgages are identified as another major factor contributing to household debts. Mortgages are simply known as house loans. Over the last 10 years, the share of households with a mortgage loan has increased considerably. This development partly initiated from the poor quality of the existing housing stock [24]. Buying and refinancing a house is one of the most vital financial choices a household makes. One housing decision that can have large financial effects is the choice to refinance a home mortgage. Households that flop to refinance when interest rates deteriorate can lose out on money in savings. They are normally evaluated/measured using debt service ratio. This ratio shows that how much share of income should be made available to help service housing debt and it reveals the importance of temporary commitments. However [25] it is noted that mortgage debt service income ratio applies only to households with housing loans. Analysis conducted at the Bank of Canada indicates that an increase in the DSR would imply that households are more vulnerable to negative shocks to income or to interest rates, making household balance sheets more precarious and having a negative impact on financial institutions.

2.4. Household assets

When assessing household indebtedness, it is useful to consider the reason why the debts have arisen. In most cases household debt arises from buying goods, assets and services. In particular, when household debts

arise through buying assets it is mainly associated with individual buying and keeping financing their houses.

Thus, it is therefore useful and important to monitor the household assets value. Household's financial assets are made up of four groups namely life insurance and pensions, equity and investment fund shares, currency and deposits, and other financial assets. A rise in debt to asset ratio shows that households are becoming more dependent on debts. The debt to asset ratio is given below:

$$\text{Debts to Asset Ratio} = \frac{\text{Total Debts}}{\text{Total Assets}} \qquad (2.3)$$

The household debt to household asset ratio is a ratio that measures the amount of total assets that are financed and serviced through debts. In other words, it indicates the proportion of household assets that are financed through borrowing compared with the proportion of assets that are funded by the households. This is one of three ratios that are used to measure the debt capacity, in conjunction with the household debt servicing ratio and the household debt to household equity ratio. This is an important ratio because it shows how leveraged the household are by looking at how much of household's resources are owned and not in debt. Household with higher debt to asset ratio say if the ratio is bigger than one means that greater percentage of asset are in debts. Thus, lower ratio is always preferable. If debt to assets ratio is equivalents to one, it means the household has the same amount of debts as it has assets or to say 50 percent of the assets are in debts or financed by creditors. Highly indebted people incur more risk of missing debt payments should their revenues decline, and it is harder to raise new debt to get through a downturn. On the other hand, if the ratio is less than one then it means that household has less percentage of asset represented in debts. People with low ratio are less likely to suffer from insolvency because of asset debts.

2.5. Financial imprudence

Another indebtedness driver is financial imprudence [26]. This has to do with the under- standing of debt literacy and both financial experiences and debt loads, for instance poor financial decisions caused by people taking loans without knowing the actual price tag of paying back the loan. This may result in issue of accuracy of moneylender's terms and conditions which depends on the borrowers knowledge about financial management and the ability to manage ones assets and liabilities plans properly [27]. Sometimes this problem arises from psychological unfairness that affect the household's decision and expectations from borrowing for example some households may underestimate the chances of suffering from unexpected events that shocks and affect the economy at large [28]. In [29], it has been illustrated that the households with modifiable loan interest rates are more likely to undervalue the amount that their loan interest rate could change with.

2.6. Effects of household debts on financial stability

High levels of household indebtedness may pose major risks to the financial stability of the country. At higher levels of indebtedness, households may be more likely to encounter financial distress following negative shocks to income or interest rates, which could pose a direct risk to the banking system's resilience added that the overall household sector indebtedness level affecting banking stability does not just depend on the total debt or income, but also on other assets on the balance sheet of the borrowers and macroeconomic indicators such as interest rates [30]. Rising indebtedness might also shrink the role of the household sector as a driver of economic growth. Highly indebted households might react to a shock by cutting spending sharply in order to maintain their mortgage payments. As a consequence of the higher level of indebtedness is that households may find themselves with insufficient savings when they retire. This because higher debt levels would indicate that a larger part of income would be dedicated to debt servicing meaning more income is spend on debts leaving less money for saving and spending. The household consumption drops as consequently increasing loan burden have made consumption more sensitive to change in economic condition such as fluctuating interest rate and inflation. The subsequent reduced volume to service debt could also unfavorably have emotional impact on household's access to credit and therefore their capability to even their consumption.

In real terms, household's debt has almost doubled, while real GDP increased nearly 5.91% during the same period in 2011 as in Figure 1. It has been stated in [31] that in many countries household debt levels relative to GDP have grown fast for the past decade. To see how household indebtedness affects the financial stability of the country one has to compare the household debts to the real GDP of that particular country.

Figure 1. Household debts and GDP
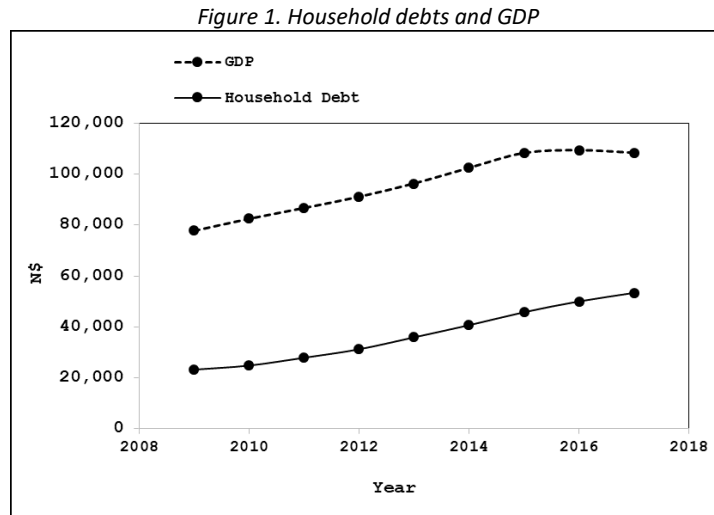
To compare household debts relative to the real GDP we use the debt to GDP ratio (DGR) which is the ratio of a country's household debt to its gross domestic product (GDP). When comparing what a country owes with what it produces, the debt- to-GDP ratio indicates its ability to pay back its debts. Often expressed as a percentage, this ratio can also be interpreted as the number of years needed to pay back debt if GDP is dedicated entirely to debt repayment. The underlying forces of how household debt distresses economic growth is reasonably interesting. Higher debt results in more consumption by households and a bigger segment of economic output impending from consumption. At the same time, this results in the country running a greater current account deficit with the rest of the world as imports escalating, with demand of goods constructing a bigger portion of those imports. When the economy goes into a recession, imports fall dramatically and the country starts to export more than it imports. This appliance permits the country that contended the debt to spring back by exporting goods to the foreign markets.

$$\text{Household debt to real GDP} = \frac{\text{Household Debts}}{\text{Real GDP}} \tag{2.4}$$

Further it is elaborated in [32] that the greater household's indebtedness has important macroeconomic implications. High level of debt causes households to be more sensitive to the movement of interest rate, particularly with income shock. As household debt is commonly related to mortgage loan, increased indebtedness means that there is more exposure to housing prices. Furthermore, if household debt is associated with a housing bubble, the drop-in housing prices after the bubble burst will decrease household's equity value, confidence, and consumption. This is related to the bank's responsibility for promoting financial stability and keeping inflation low and stable. With higher debt, households are more sensitive to shocks to income, interest rates and house prices. The underlying forces of how household debt distresses economic growth is reasonably interesting. Higher debt results in more consumption by households and a bigger segment of economic output impending from consumption. At the same time, this results in the country running a greater current account deficit with the rest of the world as imports escalating, with demand of goods constructing a bigger portion of those imports. When the economy goes into a recession, imports fall dramatically and the country starts to export more than it imports. This appliance permits the country that contended the debt to spring back by exporting goods to the foreign markets. By using British Household Panel Survey (for the year 2000), Banks

Domestic Finance division gave proof on the issue of households indebtedness [33].

They stated that different ratios give different results across different groups. According to the analysis they have made, they found out that the households with most income and assets are likely to have high debts as they are considered first in getting loans compared to low income groups. On the other hand, stated that some European countries have a negative markup where total spending is greater than total revenue. This arises because both current asset and fixed assets are kept as debt back up.

For the household hd, the markup denoted by MKhd is calculated as:

$$MK_{hd} = HTI_{hd} - DR_{hd} - HTE_{hd} \qquad (2.5)$$

where HTI_{hd} is the household total income, DR_{hd} is debt service, and HTE_{hd} is household total expenditures. For Namibia, the important question what is the relationship between household debts, household income and economic growth? What steps can the Namibian government take to minimize the impact of household debts on development programs? This study intends to break new ground by investigating along this direction.

3. Methods

The study has used the quantitative approach. The review literature on the relationship between household debts and household income can be well assessed using a quantitative method thereby applying different models and ratio mentioned in section 2 to analyze data sets. The debt service to income ratio is computed as the debt-servicing burden out of income, estimated based on the available data. Debt service ratios are also computed for unsecured loan holders. Debts to income ratios are computed as the ratio of outstanding debt out of the estimated individual incomes. Economic analytical E-views software was used for estimating the models and to process data and giving the relationship between household debts and the financial stability. The real GDP was used as a proxy used for measuring impact of the overall financial stability of the country.

3.1 Data sources and Variables

The study used time series data from the period 2008/09 to 2017/18 which represent 10 observations. Secondary data were collected and well assessed and obtained from Namibian statistics agency (NSA), Bank of Namibia and from World Bank. The variables used in this study include household debts, household income, household assets, household expenditure, mortgages loan and real GDP. To use the Cox regression model, each variable has been categorized in different parameter such as age group, different educational level, gender, region and different income group expect real GDP. The data used are annual data.

3.2 The cox regression model

This model aims at approximating the probability of staying employed at a given time t [34]. The reason for approximating job loss probability is that employment is the main source of household income and it has a greater influence in decision making. This model is described as follow:

Let T be a positive random variable representing the time to the failure event and S denote the survival function this case the failure event is the job loss and the survival function gives the time a household will stay employed. The survival function is given as the reverse of the cumulative distribution function $F(t)$:

$$S(t) = 1 - F(t) = \Pr(T > t) \qquad (3.6)$$

where the density function at time t is given by:

$$f(t) = \frac{\partial}{\partial t}(1 - F(t)) = -S'(t) \qquad (3.7)$$

the Cumulative Hazard Function is defined as:

$$H(t) = -\ln[S(t)] \tag{3.8}$$

and,

$$h(t) = \frac{\partial}{\partial t}\left(-\ln[S(t)]\right) = H'(t) \tag{3.9}$$

such that

$$f(t) = h(t)e^{-H(t)} \tag{3.10}$$

The function $h(t)$ is called the hazard function which analyzes the likelihood that someone will lose job at a certain point in time based on the survival at an earlier time t. If we have several explanatory (X) variables of interest beside household income say looking at different groups like age, gender, education then the hazard or risk of losing a job at time t can be express as:

$$h(t) = h(0)\exp(x_1\beta_{age} + x_2\beta_{edu} + x_3\beta_{gender} + x_4\beta_{income}) \tag{3.11}$$

Applying natural logarithms on both sides:

$$\ln h(t) = \ln h(0) + x_1\beta_{age} + x_2\beta_{edu} + x_3\beta_{gender} + x_4\beta_{income} \tag{3.12}$$

where $h(0)$ is the baseline when all the explanatory variables are zero, i.e. $e^0 = 1$. The regression coefficients β_{age} to β_{income} give the proportional change that can be expected in the hazard, related to changes in the explanatory variables. This coefficient is estimated using MATLAB and EVIEW software.

For accuracy, several methods which include parametric, semi parametric and non- parametric are combined to approximate the probabilities of household job losses. Non parametric function for the time a household will stay employed is given by Kaplan-Meier formula as:

$$S(t) = \prod_{j/t_j \le t} \frac{\alpha_j - \beta_j}{\alpha_j} \tag{3.13}$$

where α_j is the number of individuals at risk at time t_j and β_j is the number of job losses at time t_j. According to [33], a semi parametric model needs no parametric system of the survival function, and assumes that covariates change multiplicatively the standard hazard function. For the $j - th$ subject, the hazard function is:

$$h(t / X_{j,t}) = h_0(t)\exp(X_{j,t}\beta_x) \tag{3.14}$$

where β_x are estimated from the data.

The baseline function $h_0(t)$ it is not estimated, because the model is proposed in terms of ratios (individual j compared to individual n):

$$\frac{h(t / X_{j,t})}{h(t / X_{n,t})} = \frac{h_0(t)\exp(X_{j,t}\beta_x)}{h_0(t)\exp(X_{n,t}\beta_x)} \tag{3.15}$$

which simplifies to,

$$\frac{h(t / X_{j,t})}{h(t / X_{n,t})} = \frac{\exp(X_{j,t}\beta_x)}{\exp(X_{n,t}\beta_x)} \tag{3.16}$$

Parametric methods require striking a functional form to the baseline hazard function. The common parametric models are Weibull, Exponential, Lognormal, Gamma and Log logistic distributions. These models are computationally costly, and have the weakness of bias in situation where inappropriate distributional assumption is used.

3.3 Granger casualty test

Granger casualty test is used to check the causal relationship among variables for this study. According to Granger, a variable X_t is said to be Granger cause another variable Y_t if the past and present values of X_t helps to predict Y_t. Thus, this study used the granger causality test to test the causal relationship between household debts and GDP, with the reason to determine the direction of causality between household debts and GDP in Namibia. GDP was used as a proxy of measuring the financial stability of the country. The following regression is estimated to find the causal relationship between these variables. In this case, X_t represents household debts while X_t represents real GDP.

The null hypothesis that is tested is:

$$H_0 : \alpha_2 = 0, j = 1, 2, 3, \ldots, p,$$

which indicate that X_t do not Granger cause Y_t;

$$H_1 : \alpha_2 f = 0, j = 1, 2, 3, \ldots, p,$$

which means that Y_t do not Granger cause X_t.

If both hypotheses cannot be rejected, its means that there is no causal relationship between variables. That shows that two variables are independent. The rejection of one hypothesis indicates the unidirectional relationship between variables and the rejection of both hypotheses indicate the existence of bidirectional relationship between them [35]. The Granger-causality test within the VAR framework is estimated as;

$$Y_t = \alpha_1 \sum_{i=1}^{n} Y_{1-1} + \alpha_2 \sum_{i=1}^{m} X_{t-1+\varepsilon t2}$$

(3.17)

$$X_t = \alpha_2 \sum_{i=1}^{n} \sigma_1 X_{t-1} + \alpha_1 \sum_{i=1}^{m} \delta_1 Y_{t-1+\varepsilon t2}$$

(3.18)

where s_{t1} and s_{t2} are error terms and σ_1 and δ_1 are constants.

4. Results and Discussions

This section looks at the presentation and analysis of data under consideration. It gives an overview of the findings of the study, how the study was carried out. The study results are presented using different data presentation tools and techniques such as tables as well as graphs. The results provide an insight to understand the relationship between financial stability, household debts and income in Namibia based on the methodology used.

Figure 2. Household debts allocations
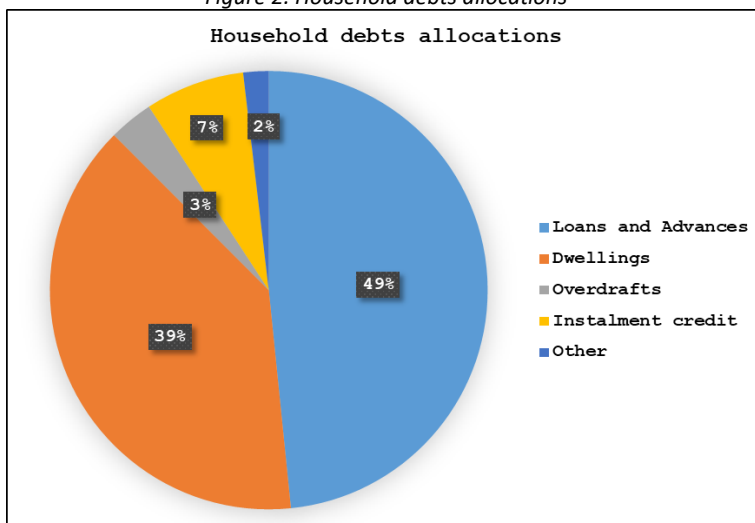
4.1 Debts categories

In Namibia, the second larger portion of the household credit has since been mortgage loans and dwellings, indicating that most of the credit acquired by households is mainly for shelter which is a necessity for living (Figure 2). Most of household debts arise from loans and advances which make up 49%   of the total household debts followed by dwellings which include housing loans and overdrafts with 39% and 7% respectively. Also, some debts arise from the buying of assets such as expensive cars and furniture which are recorded under loans and advances. In addition, small interest rates, greater house prices and financial innovations have also contributed to the accumulation in household debts. In Namibia, 23.0% of households (125,425) owed unsettled debts in different forms (Table 2). There were more reported households with debts in urban areas with 29.9% than in rural areas with 14.9%. Regions with more households with debts include Kavango West with 41.8% followed by Hardap, Otjozondjupa and !Karas with 41.5%, 34.0% and 33.3% respectively Figure 3.

Table 2. Debts distribution by region

Region	Households with Debt	Contribution (%)	Total No. of Households
Namibia	125,425	23%	544,655
Urban	88,136	30%	294,827
Rural	37,289	15%	249, 827
!Karas	7,855	33%	23,567
Erongo	15,486	27%	58,454
Hardap	8,682	42%	20,901
Kavango East	6,785	27%	25,301
Kavango West	6,066	42%	14, 518
Khomas	35,975	32%	112,305
Kunene	6,743	31%	21,468
Ohangwena	4,227	9%	48,487
Omaheke	3,690	19%	19,639
Omusati	1,356	3%	53,090
Oshana	5,465	12%	45,331
Oshikoto	5,176	13%	41,411
Otjozondjupa	13,015	34%	38,238
Zambezi	4,905	22%	21,945

4.2 Debt to Income ratio

It is evident that household debt has been increasing faster than disposable income in the last decade. In 2011 household debt increased by 12.3% whilst household incomes increased with only 11%. Also in both years, 2014 and 2015, debts increased by 13.3% and 12.5% while disposable income increased with 10.5% and 10.3% respectively as shown in Figure 4.


Figure 3. Households debt by region
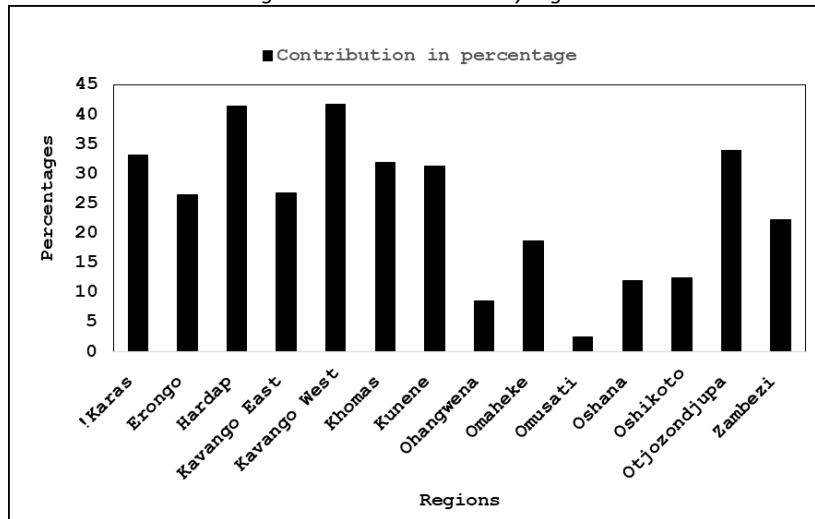
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Figure 4. Growth in income and debts
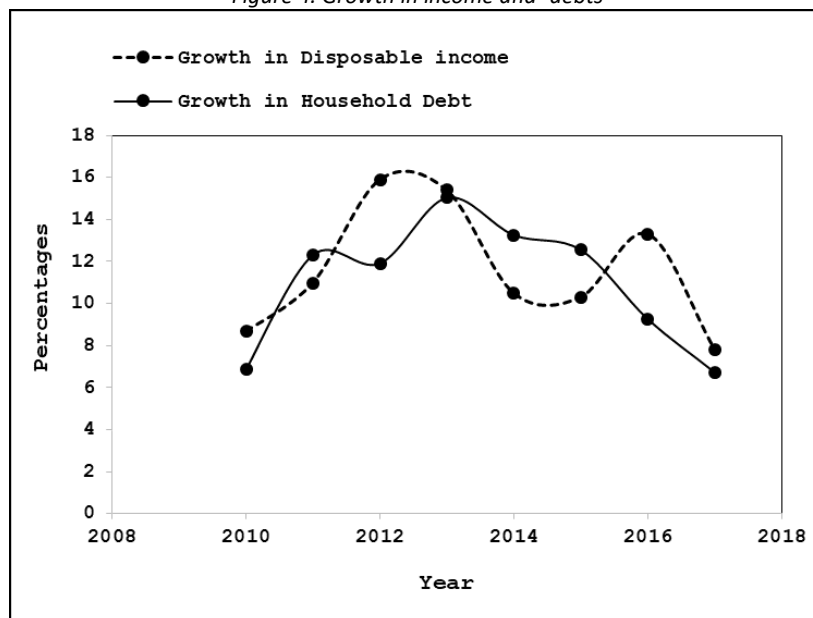
Debt to income ratio compares household's debts to household's disposable incomes. Total debt growth has also grown more or faster than household's disposable income. This growth can be also reflected through the debt to income ratio.

The debt to income ratio reached 78% in 2015 from 75% at the end of year 2012 as shown in the Figure 5. This means that in 2015 almost 78% of income in 2015 is used to pay for debts, leaving only 23% of income for daily consumption. This increase indicates that most Namibian household became more depends in debts.

4.4 Debt to service ratio

The debt service burden is defined by the amount of the borrower's incomes allocated to paying their debts, both principal and interest. The aggregate debt service burden has also expanded significantly, though less than total outstanding debt growth, because higher debt has been financed with lower rates and longer terms. The debt service to disposable income ratio (DSR) reached 52.9% in 2011 from 52.24% in 2009 as shown in the Figure 6. However in 2016 the DSR decreased to 50.63% from 51.61% in 2012. Mortgages have been consistently increasing over the years. Total mortgages have in- creased from N$400 thousand at the beginning of 2008 to nearly N$1.5 million in at the end of 2018 (see Figure 7). This means that housing debts has increased to more than 27.33% in 2017 from 17.7% at the beginning of the 2008. Major escalation occurred in the second quarter of 2013 when mortgages increased from N$47 thousand to N$64 thousand which is almost equivalent to 35.79%. It is evident that housing prices is a major factor contributing to household debts as shown in the pie Figure 2.

4.5 Household debts to assets ratio

This ratio indicates the proportion of household assets that are financed through borrowing compared with the proportion of assets that are funded by the households. The household debts to household assets ratio has been consistently increasing for the nine years amounting to almost 63% in 2017 compared to when it was almost 40% back in 2009 (Figure 8). This means that more household debts are becoming more reliant on debts when buying or purchasing their assets. For example, say a person want to buy an expensive car which he or she cannot afford so they take on loan so that they buy it on credit. This increases debts as they have to pay back the loan plus the interest rate.

Figure 5. Debts to Income ratio
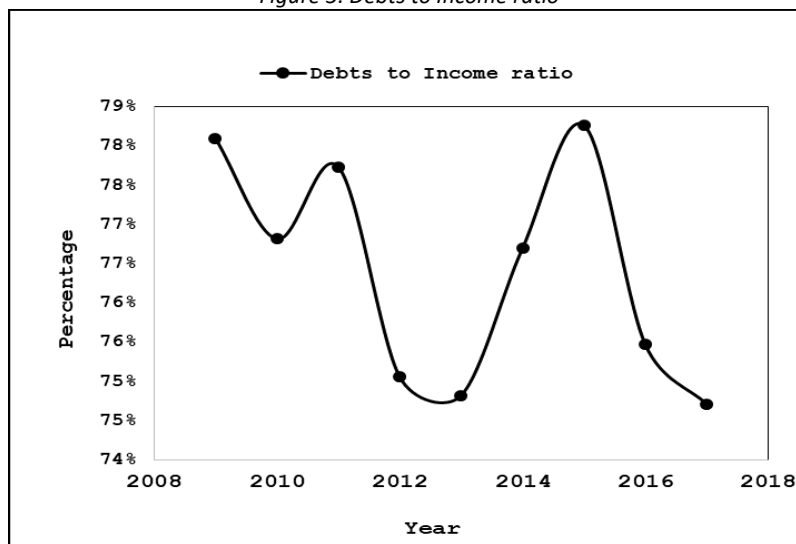
4.6. Household Debts and GDP

In real terms, household's debt has almost doubled, while real GDP increased nearly 5.91% during the same period in 2011 as in Figure 2. Debt's real annual growth rate averaged to 11% between 2009 & 2017, with the highest increase recorded between 2012 & 2013 at 15%. Total household debt increased to 49.31% of GDP in 2017, from 6.9% of GDP in 29.86% in 2009 (Figure 9). What is clear from the graph is that the unconditional correlation of household debt with consumption growth is positive. This is consistent with cross-country evidence that an expansion of household credit is often associated with stronger private consumption and GDP growth (Figure 1).
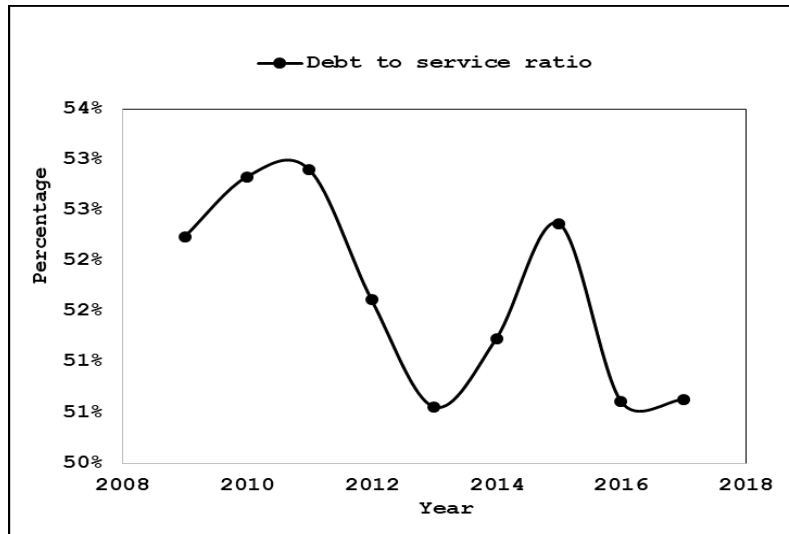
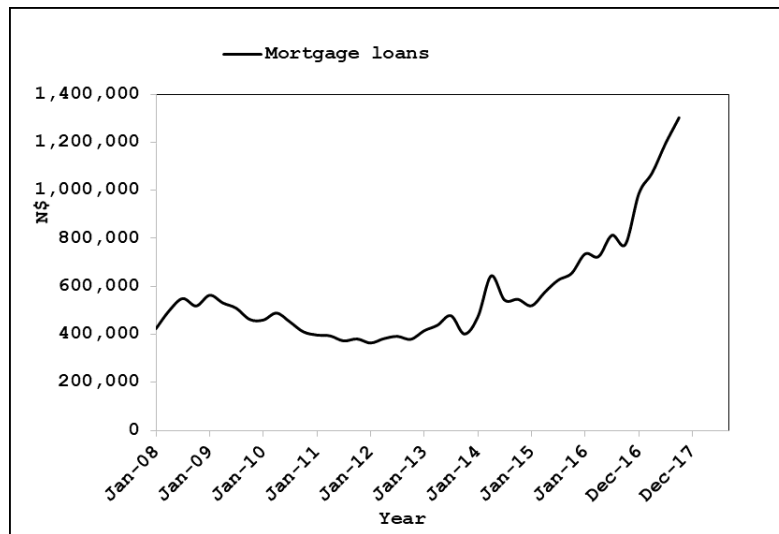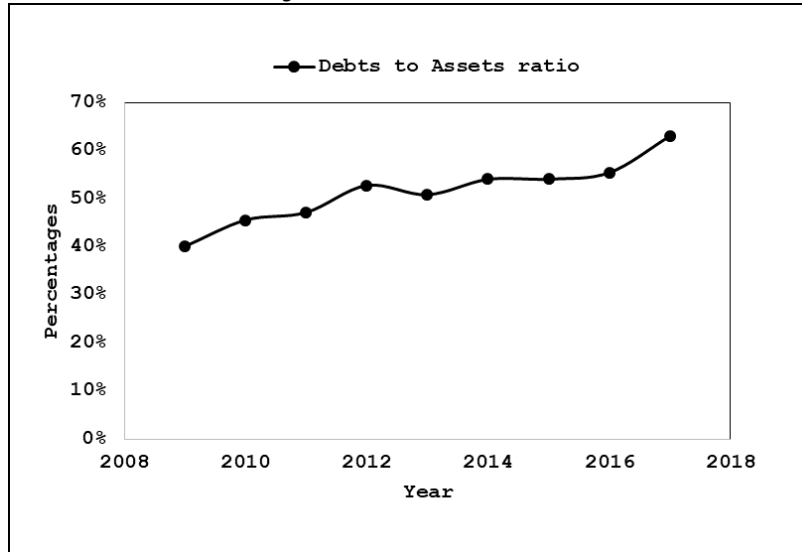*Figure 6. Debts service ratio*

Figure 7. Mortgages Loans

Figure 8. Debts to asset ratio

4.7. Granger causality test

The study investigates the direction of the relationship using simple pairwise Granger causality tests between financial stability and household debts using two lags for the Granger causality test. The GDP was used as a proxy used for measuring impact of the overall financial stability of the country.
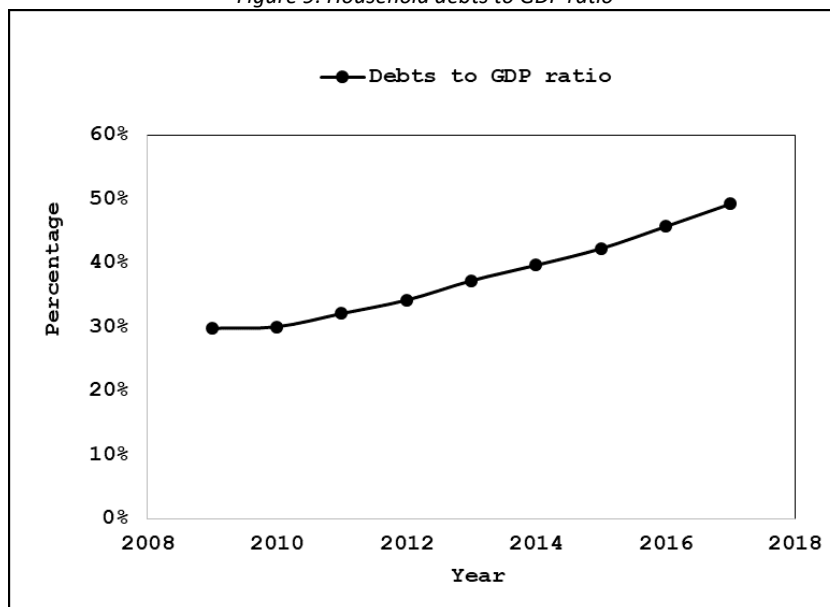
Figure 9. Household debts to GDP ratio

Table 3. Pair-wise Granger Causality Test (lag length: 2)

Null Hypothesis:	Obs	F-Statistic	Prob
Household Debts does not Granger Cause GDP	7	0.96382	0.5092
GDP does not Granger Cause Household Debts		0.20786	0.8279

The Table 3 indicates that household debts do not Granger cause GDP. The study fails to reject the null hypothesis that household do not Granger causes GDP and it is statistically insignificant. Therefore, the test reveals that there is no directional causality running from household debts to GDP neither directional causality running from GDP to household debts. However, in the short run there is a positive relationship between household debts or credit and the GDP of Namibia. This can be seen on Figure 1, when the household debts increase, GDP also increases although not at the same pace. This is because debts increase spending and hence household consumptions which boost the economic activity in the country thus results in increased GDP of the country. These consumptions though financed by debts help in the growth of local production which could increase exports.

5. Concluding remarks and recommendations

The main objective of this study was to present and analyze the main measures of indebtedness in Namibia, this study also provided an impact to the overall financial stability for Namibia using annual time series data from 2009 to 2017. Different ratio was used in the process. Debt to income ratio remained high throughout the period; this implies that most of disposal income is used to pay for debts. It was found that most of Namibian household with high incomes or with more wealth tends to have high debts as they are confident that they will pay back these loans or their credits. At the same time a rise in household debt starts by increasing aggregate demand which seems to indicate that an economy can continue to grow as long as debts are sustained at a higher rate than they are repaid. The Granger causality test results indicate that household debts do not Granger cause economic growth.

The study fails to reject the null hypothesis that household do not Granger causes financial stability and it is statistically insignificant. The test reveals that there is no directional causality running from household debts to GDP neither directional causality running from GDP to debts. Additional measures need to be executed to prevent households from falling into over- indebtedness. Loose debt conditions and unaware customers were found to be the main drivers of arrears of debt growth over the last ten years. Therefore, guidelines, rules and strategies for lenders with regard to the kind of information about possible risks that is pro- vided to customers as well as debt analysis and financial education for individuals should be established and adopted to prevent severe household debt. Future investigation towards the relationship between household incomes, household debts additional explanatory variables on financial stability of Namibia is strongly recommended. This study also can be improved by checking the distribution of debts and assets in relation to households' characteristics such as income, age, education, and employment vulnerability and how it affect the whole economy.

6. Acknowledgements

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