Value Added Tax Incidence in Malawi: An Empirical Estimation and Analysis

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Abstract

This paper aimed at analyzing incidence of Value Added Tax (VAT) in Malawi. Using third integrated household survey (IHS3) data from Malawi government and economic data from Malawi Revenue Authority, Reserve Bank of Malawi and World Bank, the paper analyzed incidence of VAT on households' consumption and inequality. The average rate of progression, effective VAT rates, relative burden index, Lorenz curves and inequality indices were estimated which then formed the basis of the analysis. The conclusion is that VAT in Malawi is less progressive but not regressive. Furthermore, rural areas are less burdened by VAT than urban areas and VAT slightly reduces inequality in rural areas compared to urban areas though the difference is minimal. The nature of the informal transactions and subsistence activities that are dominantly carried out in rural areas may explain the low inequality observed. As for the general households' population, the VAT system is affecting households in low income groups more compared to households in middle income groups. These results point to the need for deliberate policies that will ensure that the inequality gap is reduced and all households are paying a good share of their income as VAT. Taxation of the informal sector and enforcement of VAT compliance may also help in improving the VAT system. Further research can be done in analyzing the incidence of different taxes to feed into tax policy decisions without compromising the need for more revenues to finance developments in developing countries.

Keywords: VAT Incidence, Inequality indices, Average rate of progressivity, Effective tax rates and Lorenz curves

1.0. Introduction

Tax revenue is by far the most reliable source of revenues in both developed and developing countries. Over 80 percent of Government expenditures are financed by tax revenues and this has resulted into governments around the globe putting much emphasis on tax revenues. Furthermore, taxes are used as one way of distributing income from the rich to the poor. Increases in taxes is usually associated with both increase in public expenditures and provision of some basic services in developing countries like security, health, education and infrastructure among others. At the same time excessive taxes may be detrimental to growth and social welfare (especially among the poor) hence there is need for caution and creativity when designing taxes. To get the most revenues with less tax burden and efficiency requires well thoughtful designs of the tax code and enforcement.

African Tax and Customs Review
Issue 1, October – December, 2018
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In most non-resource rich developing countries income taxes and value added tax are the main sources of tax revenues with the two categories contributing to over 50 percent of tax revenues in these countries. For instance, in Sub Saharan Africa, non-resource-rich countries have steadily increased public revenues by diversifying from trade sources to direct income and profit taxes, as well as indirect consumption based taxes (African Development Bank, Economic Outlook, 2016). This broadening of tax base has contributed to an increase in average tax ratio from 8.2 percent in 2010 to around an average of 10.2 percent in 2014. The trend is expected to continue as non-resource rich developing countries are continuing focusing much on domestic revenue collections. Moreover, the African Union Agenda 2063 is paying special attention on domestic revenue collections.

Malawi tax revenues have also been in line with regional trends. As share of GDP, Malawi has experienced an improvement though a small one. Tax revenue as share of GDP has been consistently below 20 percent for the past two decades. Traditionally tax systems have a huge impact on poverty levels whether directly or indirectly. In Malawi, the poverty rate has gone down by a mere 1.7 percentage points from 52.4 percent in 2004/05 to 50.7 percent in 2010/2011 and went up to 51.4 percent in 2016/17 (World Bank WDI, 2018), while the percentage of households still considered ultra-poor has increased from 22.3 percent in 2004/05 to 24.5 percent in 2010/2011 and the down to 20.1% in 2016/17 (NSO IHS4 Report, 2018). One issue that has been coming out is the need to improve Malawi's VAT system which many claim is contributing to the stagnant poverty levels. These improvements should both be in terms of enforcement (collecting enough revenues to provide basic public services to the poor population) and design of the VAT system (to reduce the burden of VAT on the already struggling households). On the contrary, there have been calls that the VAT system is loaded with exemptions which if adjusted/removed may improve revenues but this is largely at the expense of poor households. Therefore, taking a deeper analysis of the VAT incidence is a very important step to feed into the discussions on how to fight poverty at the same time collecting enough revenues for Government operations and investments which in theory trickles down to the poor households through provision of public services like free health care and free primary school education.

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Issue 1, October – December, 2018
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This paper therefore seeks to estimate and analyze the VAT incidence so as to add input to the debate on how Malawi Government as well other developing countries can improve the VAT system both in terms of VAT design, VAT administration and efficiency. Usually, tax incidence analysis seeks to find who really pays the tax in real terms and a tax is progressive if poorer households pay a proportionately smaller share of the income than do wealthy households. The study will help to provide answers on whether the VAT system is regressive, proportional or progressive and consequently the effects on inequality. It is the author's understanding that there is no recent study which directly tackled the VAT incidence analysis in Malawi using recent datasets.

1.1. VAT system and reforms in Malawi

Before introduction of VAT, Malawi used to have surtax until in 2005 when the VAT Act of 2005 was enacted and implemented. During the surtax era, the average surtax rate rose from around 5 percent to 10 percent in the 1970s before increasing further to an average of 20 percent in the 1980s and 1990s (Chipeta, 1998). In 2001, the Surtax Act of 2001 was enacted and implemented and expanded the coverage of surtax to include commodities as well as goods and services with different rates being applied (Centre for Social Concern, 2010). The 2005 VAT Act replaced the 2001 Surtax Act and this categorized goods and services into taxable, zero rated and exempt categories. In 2008 fiscal year, the VAT applicable rate was changed from 17.5 percent to the current 16.5 percent. Nevertheless, the tax categories under VAT have been frequently amended (almost every fiscal year there are some changes) as one way of expanding the tax base, tackling inequality and improving the efficiency of the VAT system. The registration threshold for VAT is an average annual taxable supply of MK10, 000,000 which is approximately US$13,605.

Fiscal experts including IMF and World Bank have argued so often that the VAT system in Malawi is full of numerous and unnecessary exemptions and zero ratings which in the end affect the revenue collections as it erodes the tax base. On the other side, the Government has been slow in adjusting the VAT system due to outcry from the citizenry mostly when goods and services deemed basic for households and are in the exempt and zero rated categories are brought into the taxable category. For instance, in the 2016/17 budget, the VAT Act was amended and the standard 16.5 percent rate was introduced on: tap piped water supplied by the country's state owned water

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Issue 1, October – December, 2018
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boards, ordinary bread, newspapers, laundry soap, non-infant milk and magazines. These changes brought outcries from the citizens and in an effort to address the discontentment, and in response to the outcry; Government among other efforts removed import VAT on Cooking Oil and Milk in 2017/18 fiscal year.

Some of the challenges the VAT system has been facing are falsification of sales receipts, non-issuance of receipts and use of manual receipts in accounting for business transactions and taxes. As one way of solving numerous challenges, Government introduced Electronic Fiscal Devices to registered VAT operators. This was accomplished by amending Section 25 of the 2005 VAT Act in 2011 and this amendment required all VAT operators to use EFDs in accounting their business transactions. The introduction of the devices is seen as one of the effective ways of dealing with the compliance problems as the devices have an in-built fiscal memory which prevents the recorded information from being tampered with and the devices can also automatically transmit information and have an irreversible date mechanism. In addition, the device issues unique identifiable invoices and also automatically issues a "Z" report after every 24 hours. MRA rolled out the EFDs in March 2014 after two years of preparation. However, the implementation process delayed by another five months to August 2014 as some taxpayers obtained a court order to stop the process. Despite the initial resistance, about 13,000 VAT operators bought the devices and are fully utilizing them as of end 2017.

2.0 Empirical Review

A number of studies have recently focused on estimating and analyzing the incidence of VAT in both developed countries and developing countries. This section will briefly discuss the recent papers and the findings of the studies with much focus on the methodology, data and results of the findings.

The tools frequently used in estimating VAT incidence have ranged from basic analysis, OLS regressions as well microsimulation and general equilibrium modelling. For instance, Siemers (2014) developed a general microsimulation model for European Union VAT system with special application to the Germany economy. Decoster, Loughrey, O'Donoghue and Verweft (2009) used the EUROMOD Microsimulation model to estimate the incidence and welfare effects of indirect taxes and found that indirect tax system is regressive for all countries in the model. Shah and

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Issue 1, October – December, 2018
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Whalley (1989) proposed a tax incidence analysis approach for developing countries where much focus was on modifying the existing analysis tools to fit the conditions and quality of data in developing countries. The main take away from their paper is that in developing countries there are a number of non-tax policy features like price controls, black markets and credit rationing which make it difficult for firms to shift the whole tax burden to consumers or factor incomes. Using their adjustments, the VAT is found to be progressive in many developing countries while the traditional assumption of shifting taxes to consumers yield a regressive VAT system. Another paper that used CGE model was by Quatrebarbes, Savard and Boccanfuso (2011) which attempted to analyze whether the removal of VAT exemptions in Niger can support the poor. Using social accounting matrix 2004 for Niger and 2005 household consumption survey data, they developed the micro-simulation CGE model and found that VAT on basic food items increases poverty incidence.

Gemmel and Morrissey (2005) summarized the major approaches to analysis of tax incidence in developing countries that are commonly used and how the approaches may bias the results. Overall, they found that most studies done in developing countries have concluded that VAT is regressive when the Average Rate of Progression (ARP) is used. ARP is a common measure of tax incidence and is the difference between marginal tax rate and average tax rate for a given good/service. Thus $ARP_j = m_j(y) - a_j(y)$ where $ARP_j > 0$ implies marginal rate of tax exceeds the average rate so the average tax rate increases with increases in income. Gemmel and Morrissey categorized tax incidence measures into distribution measures and social welfare measures and this was an extension of their work on frequently used measures in tax analysis (Gemmell and Morrissey, 2001). Under distribution measures there is the Lorenz curve, concentration curves and dominance (which is a comparison between the Lorenz curve and concentration curves). On the other side, social welfare measures include marginal social cost using CGE models. In summary using dominance approach, VAT in guinea, Madagascar, Tanzania and Uganda was found to be progressive.

The use of household data and input-output tables is a common trend in VAT incidence analysis. For instance Younger, Sahn, Haggblade and Dorosh (1999), thoroughly analyzed tax incidence in Magadascar using household data and input output tables. The authors used household

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Issue 1, October – December, 2018
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expenditures (per capita) as a measure of welfare and used the welfare dominance method developed by Yitzhaki and Slemrod (1991) (A discussion on Slemrod and Yitzhaki approach will be handled later in the paper in the methodology section). To determine the concentration curves positions, they used Davidson and Duclos (1997) variance-covariance estimator. They found that VAT and Individual Income taxes are progressive while import duties were found to be less progressive.

Similarly, Jenkins, Jenkins and Kuo (2006) used 1998 household expenditure survey data for Dominican Republic and found that the burden of VAT is progressive over all the quintiles of households' expenditure even when the base of the VAT model is made comprehensive. Their paper was built on the Engel's Law which proposes that people with low income levels tend to spend a larger proportion of their resources on consumption of food than do the rich. Among others, the authors ranked households into five expenditure quintiles and estimated the effective tax rate paid on each of the household expenditure items. Using $tC_p/Y_p > tC_R/Y_R$ ------- (1) as condition for VAT regressivity where the expression (1) means that VAT is considered regressive if the poor (p) tend to consume a large proportion of their income (Y) compared to the richer groups(R) and t, C and Y stand for tax rate, consumption and income, respectively.

Ssewenyana and Okidi (2008) developed a microsimulation model for Uganda Tax System and used this model to analyze tax incidences for the major tax types in Uganda for the Period 1999 to 2003. The household survey data of 1999/2000 was used and household total expenditure per adult was used as a measure of wellbeing. Their major finding was that increases in VAT result into an increase in the tax burden for the poor compared to the rich. Furthermore, they found that largest tax burden for poor households comes from VAT taxes compared to the other type of taxes like income tax (eg Pay as You Earn) and Excise taxes.

Altiparmakov and Arsic (2011) estimated the equity aspects of VAT in Serbia using a microsimulation model and 2009 household survey data for Serbia. They also developed average effective VAT rates (by taking the ratio of estimated total VAT burden to total income) for different income groups in the dataset. The main conclusion of the study was that the common beliefs that VAT is regressive in the public eyes is overstated since in Serbia they found that VAT is progressive. Nevertheless, as pointed out in their paper, there is empirical evidence from other

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Issue 1, October – December, 2018
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EU member states that confirm that VAT is regressive. As such it is important to make sure that when analyzing tax incidences, correct data and assumptions as well as methodology should be given enough attention.

Margain Acosta (2011) analyzed tax benefit incidence of VAT on food and medicine in Mexico using national consumption and income survey data of 2008. To estimate the tax incidence, the author first estimated the tax burden which is to do with tax equity rather than tax efficiency and then assumed that the tax burden is the same as the tax revenue collected on the goods and services of interest. Furthermore, another assumption was that the entire tax burden falls on consumers but the tax burden was assumed to be different for different income deciles of the households. Using this line of thinking, the author found that VAT is regressive but the regressivity of VAT can be offset by targeted expenditures.

Other studies have used the marginal cost of funds like Thierfelder (2005) who found that VAT is mildly regressive in South Africa using the marginal cost of funds and CGE model. The Social Accounting Matrix of 2001 and national household expenditure survey data were also used to construct the CGE model. The elasticity of supply and demand of the taxed goods also played a role in the magnitude of the regressiviness or progressivity. Salti (2009) used Almost Ideal Demand System to show that VAT increases will have a limited impact on extreme poverty due to the mostly progressive nature of existing exemptions in the VAT system in Lebanon. The author used the Lebanon national household survey data for the year 2004/2005. Vermaeten and Gillispie (1995) attempted to determine whether the broad historical pattern of tax incidence in Canada has changed over the past 40 years (from 1951 to 1988). They found that the average tax burden for the poorest 10 percent of families and the richest 2 percent of families fell over time while those in between rose significantly. They used effective tax rates to trace how these rates have been changing over time across the different income deciles.

Johannes, Joseph Nju and Theresia (2006) used household survey data for Cameroon for the years 1983, 1996 and 2001 to analyze the distribution of expenditure and tax burden in Cameroon. Their main conclusion was that consumption taxes became more progressive in Cameroon over time. In their paper, they first computed household tax by assuming an ad-valorem tax rate applied uniformly across the goods, and then used concentration curves given by $C_T(p) =$

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$(\int_0^p \bar{T}(q)dq)/\mu_t$ where $\mu_t = \int_0^1 Q_T(p)dp = \mu_X - \mu_N$ is the average taxes across the population with $Q_T(p)$ is p-quartile function for taxes and X, N represent post tax and pretax expenditures. The authors also constructed a Lorenz curve which they used as the benchmark. The Lorenz curve is given by L(p)=$(\int_0^{p1} Q(q)dp)/\int_0^1 Q(q)dp = (\int_0^p Q(q)dp)/\mu$ where μ is the average standard of living. Slemrod and Yitchaki (2005) showed that if the concentration curves for different type of taxes are compared and each of the curves is also compared with the Lorenz curve benchmark, then a tax T is said to be progressive if the concentration curves lie everywhere below the benchmark Lorenz curve. Thus for two taxation schemes, the more progressive one is the one whose concentration curve is the lowest. Using this kind of reasoning, Johannes, Nju and Theresia (2006) found that indirect taxes tend to be more progressive.

Finally, Faridy and Sakar (2011), using household income and expenditure survey of 2005, assessed the progressivity of VAT in Bangladesh and found that VAT is relatively high for people in lower income deciles compared to those in high income deciles. They also compared results with and without VAT exemptions and still found that VAT is regressive in both cases but the degree of regressiviness is high when there are no exemptions. Another interesting finding was that VAT is more regressive in urban areas compared to rural areas. Their approach to assessing progressivity of VAT involved computation of effective VAT rate (which is given by the ratio of actual VAT paid to per capita consumption). Then they compared the effective VAT rates for different income groups to establish whether the VAT is regressive or not. Furthermore, they computed the Relative Tax Burden (RTB) of a tax which they defined as the ratio of the share of total taxes to share of total income. This RTB was computed for different income groups and also computed the Suit's Index of Progressivity ($S_x = 1 - (\frac{L_x}{k})$) where K is the area of the triangle in a Lorenz Curve and L_x is the area covered below the Lorenz Curve. Using these three indicators, they ranked the 19 income groups in their dataset to establish progressivity of the VAT in Bangladesh.

3.0 Methodology
The paper used welfare dominance indicators and average rate of progression (ARP) as the main approaches in analyzing the incidence of VAT in Malawi.

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3.1. VAT Incidence Estimation

This paper slightly adopted the approaches used in Gemmel and Morrissy (2005), Yitzhaki and Slemrod (1991), Cho and Munoz (2003), Younger and Sahn (2003) and Davidson and Duclos (1997) in estimating the VAT incidence in Malawi. The VAT incidence relies much on the household data (the Third Integrated Household Survey Data) by the Malawi Government. The first approach is in Gemmel and Morressy (2005) where they provided steps and advantages (as well as disadvantages) of using the Average Rate of Progression (ARP). The ARP measures tax incidence by comparing the marginal tax rate and average tax rate on the items in the consumption basket for the different income groups. By formula, $ARP_j = m_j(y) - a_j(y)$ where $ARP_j > 0$ implies marginal rate of tax $(m_j(y))$ exceeds the average rate $(a_j(y))$ so on average tax payment increases with increases in income within income brackets thus the tax system is progressive.

In order to calculate the total VAT paid by a household, this model $T_{i,j} = t_j p_j x_{i,j} = \frac{t_j}{1+t_j} e_{i,j}$ is usually used, where $T_{i,j}$ is the actual tax paid by $household_i$ on good (j) which the household consumes, $p_j x_{i,j}$ is the household expenditure before tax, t_j is the VAT rate and $e_{i,j}$ is the post-tax amount of expenditure on the good (j) which is usually the expenditure reported in household survey data. Once the tax being paid by the households is estimated then the effective tax rates for each household decile in our sample can be examined. The next step is to generate the generalized Lorenz curve for expenditure and the concentration curves for VAT which can then be compared to decide whether the VAT is progressive or not. In short, if the concentration curve lies below the Lorenz curve then the tax is said to be progressive.

Assuming a representative household (i) has an expenditure function; -

$y_i = e(p, u) \dots \dots \dots (1)$ Thus the minimum expenditure for the household to enjoy utility (u) given prices (p) for the household's consumption basket.

Then assume that a household has an amount of income that it would need in case of tax increases to keep its utility constant. This amount is usually referred to as Compensating Variation (CV);

$cv = e(p_1, u^0) - e(p_0, u) - - - - - (2)$ Where 0 and 1 indicates the two periods with different tax regimes.

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From (ii) using Taylor estimation to come up with compensated demand function;

$$cv \approx x_i^c(p^0, u^0) * \Delta p_i + \left(\frac{1}{2}\right) * \frac{\partial x_i^c((p^0, u^0)}{\partial p_j} * \Delta p_i^2 + \cdots$$ where $x_i^c(p^0, u^0)$ is the compensated

demand function and Δp_i *is* the change in the price for good (i) caused by the tax. The CV of this change in price can be seen as the change in the consumption budget if the household want to maintain its utility. In this model, behavioral aspects are not taken into account and the focus is purely looking at the effect of tax on the consumption basket. By grouping the households into different income groups it is easier and possible to see how these different income groups are being affected by the VAT rate. As observed by many authors including Sahn and Younger (2003), use of household income is uncommon due to the tendency of many households to hide their income. Household expenditure is usually used because most households correctly report their expenditures compared with income hence this study has adopted household expenditure as proxy for welfare.

4.0 Data and Trend Analysis

The study used the Malawi 2010/2011 integrated household survey 3 (IHS3) data which was conducted and compiled by the National Statistical Office (NSO) of Malawi, tax revenue data from the Malawi Revenue Authority (MRA), World Development Indicators (WDI) by the World Bank, Macroeconomic data from the Reserve Bank of Malawi (RBM) and fiscal data from the Ministry of Finance, Economic Planning and Development. The IHS3 data is the national household survey dataset which contains information on household income, expenditure, consumption, poverty levels and household characteristics among others.

4.1. VAT performance and Trends

Compared with neighboring countries, Malawi's VAT rate is slightly high as indicated in table 1 below which shows the sample of ten closest economies to Malawi. Uganda, Tanzania and Mozambique are the only countries among the 10 geographically closest economies to Malawi who have a higher VAT rate.

Table 1: VAT rates for selected economies in Southern Africa

	Uganda	*Tanzania*	*Mozambique*	*Malawi*	*Kenya*	*Zambia*	*DRC*	*Zimbabwe*	*South Africa*	*Botswana*	*Angola*
VAT rate	18%	18%	17%	16.5%	16%	16%	16%	15%	14%	12%	10%

Source: Revenue Authorities/Departments in the selected countries.

In Malawi, VAT has been the largest tax revenue contributor for the past decade with an average annual share of total tax revenues of 30 percent. Despite being the major source of government revenue, the VAT has not been expanding compared to personal income tax. Personal Income Tax share of total tax revenue has improved registering 26.8 percent in 2017 and 29 percent in 2015 from around 24 percent in 2011 while company tax has recently been on downward trend as share of total tax revenues. Within the VAT tax revenue, import VAT revenues have dominated domestic VAT suggesting that the increase in imports has been of benefits in terms of tax revenues. Large volumes of imports in Malawi are on second hand motor vehicles, second hand clothes and fuel which on average contribute over 70 percent of import VAT revenues. Figure 1 shows the composition of tax revenues during the just ended 2017/18 fiscal year and the significance of VAT can be appreciated from the figure.

Figure 1: Breakdown of Actual Revenue 2017/18 FY

SHARE OF MAJOR TAX TYPES IN 2017/18 FISCAL YEAR

IMPORT DUTY 9%
EXCISE 10%
PAYE 28%
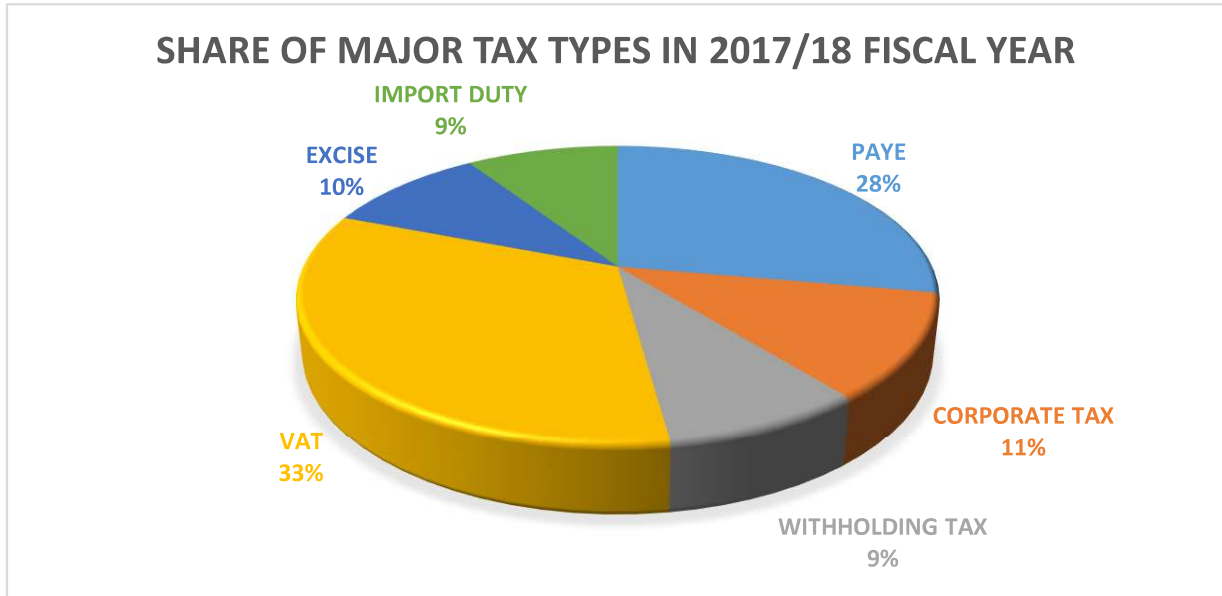CORPORATE TAX 11%
WITHHOLDING TAX 9%
VAT 33%

Figure 2 shows the trend in tax revenues as percentage of GDP and the growth in revenues. As percentage of GDP, overall tax revenues have recently dropped compared to the period 2000 to 2010. Nevertheless, tax revenues as percentage of GDP has been above 15 percent but below 20 percent for the past decade except in 2009 as shown in Figure 2. The trends in tax revenues also mirror the trends in VAT which (as percentage of GDP) has been on the downfall while PAYE has been increasing. Knowing the trends in taxes more especially VAT is an important part of this paper considering that the government is putting much effort in trying to increase VAT revenues at the same time ensuring that the very poor are not burdened.
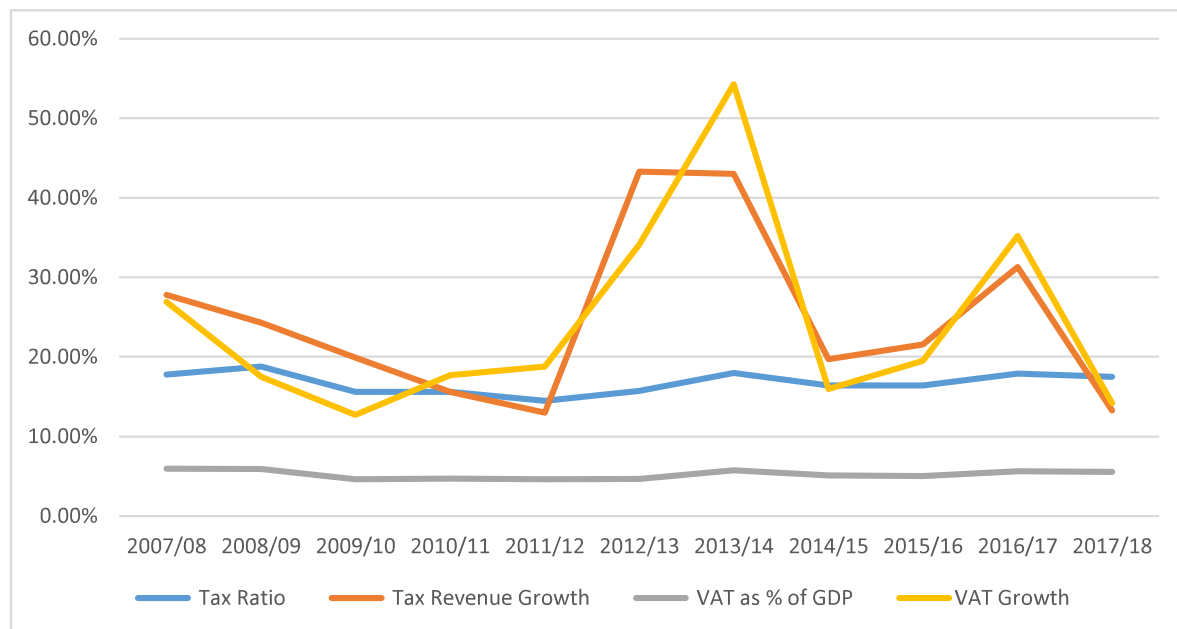
Figure 2: Tax Revenue Growth and share of GDP since 2007/08 FY

Source: Author's computation using Tax Revenue data extracted from Malawi Revenue Authority and GDP from Ministry of Finance, Malawi.

4.2. Data

The paper has largely used IHS3 data. Considering that the data was not designed for this analysis, a number of steps were undertaken to clean the data suitable for the analysis. Firstly, the IHS3 data has consumption patterns for all the 12,721 households in the sample and out of 12,721 households, 81.8 percent are categorized as rural households and the rest are in the urban category. This consumption information is on such items like food, beverage, alcohol, education, health, transport, clothing and vehicles among others. The Author used disaggregated data to construct before and after tax expenditures on the 300 consumption/expenditure items. From this disaggregated expenditure data, "after-tax total consumption of item per household and per capita" were constructed which is simply the difference between the gross total consumption (which include VAT if the item was subjected to VAT) and the total VAT revenue on each of the consumption categories (which were obtained by applying the standard VAT rate of 16.5). The standard VAT rate of 16.5 percent was only applied on the expenditure items which are not zero rated or exempt as stipulated in the relevant Malawi tax acts and regulations. Finally, marginal tax

rate (official VAT rate) and average tax rates (total taxes paid divided by the total consumption) were constructed for every household. These two tax rates were used to construct the average rate of progression which is the difference between marginal tax rate and average tax rate. As discussed in the methodology section, on top of inequality curves like Lorenz and concentration curves, the paper also used the average rate of progression and effective VAT rates as some of the tools for assessing the VAT incidence.

The analysis is using 2010/2011 fiscal year as the base year (the time the survey was conducted) but then adjustments were made to the price index, sampling weights and population dynamics to reflect the situation in any fiscal year.

5.0 Results and Discussions

This section presents the results from the VAT incidence analysis. The results have been grouped according to the progressivity indicators and welfare dominance indicators. In general, regardless of the indicators, VAT in Malawi is slightly progressive with the middle class being less burdened compared to the upper class and lower class income groups.

5.1. Average Rate of Progressivity (ARP), Effective VAT Rate (EVR) and Relative Burden Index (RBI)

The results show that using both the aggregated consumption data and detailed consumption data, VAT in Malawi is slightly progressive. The mean ARP is a positive of 0.08 from minimum of -0.0083 to maximum of 0.16 for the detailed consumption data while the aggregated data shows mean ARP of 0.05 with a range of 0.006 to 0.135. This also justifies the inclusion of detailed consumption data which gives a depth understanding of the consumption patterns of the households. The negative minimum ARP for the detailed consumption also mean that for some consumption items, there is some level of regressiveness which may explain the very low average rate of progression. Table 2 shows the average rate of progression while table 3 shows the effective VAT rate for income groups.

Table 2: Average Rate of Progression

	MEAN	MINIMUM	MAXIMUM	STANDARD DEV
Detailed Consumption ARP	0.0823	-0.0083	0.1620	0.1041
Aggregated Consumption ARP	0.0501	0.0062	0.1351	0.0133

Source: Author's computation

Table 3: Effective VAT Rates

Effective VAT Rates in Malawi				
Income Group	Income Range (MWK)	Per Capita Consumption (MWK)	Actual VAT Paid (MWK)	Effective VAT rate
1	0-20000	233,142.72	24,373.62	10.5%
2	20001-40000	2,416,948.43	358,531.76	14.8%
3	40001-60000	7,372,508.67	740,980.02	10.1%
4	60001-80000	16,235,227.80	1,142,480.05	7.0%
5	80001-100000	25,199,682.75	1,541,009.37	6.1%
6	100001-120000	44,677,268.59	2,791,869.82	6.2%
7	120001-140000	81,578,284.34	6,957,181.11	8.5%
8	140001-160000	24,383,394.08	1,424,540.25	5.8%
9	160001-180000	55,736,366.70	3,778,066.10	6.8%

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Issue 1, October – December, 2018
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10	180001-200000	9,520,563.56	1,088,126.89	11.4%
11	200001-500000	92,470,641.80	5,684,146.48	6.1%
12	500001-1000000	61,741,657.70	4,645,506.39	7.5%
13	1000001-1500000	19,020,400.54	1,448,759.24	7.6%
14	1500001-2000000	9,483,653.20	713,425.67	7.5%
15	2000001-2500000	9,196,531.18	804,659.77	8.7%
16	2500001-3000000	4,012,206.94	301,844.93	7.5%
17	3000001-3500000	4,883,946.00	402,401.94	8.2%
18	3500001-4000000	3,125,916.61	252,374.73	8.1%
19	4000001-6000000	6,901,332.55	726,938.34	10.5%
20	Above 6000000	2,474,481.63	272,358.18	11.0%
	Overall (sum of entire population)	480,664,155.77	35,099,574.65	7.3%

Source: Author's computation. MWK (Malawi Kwacha) is the currency for Malawi.

Results in table 3 reveals that for lower income households, the EVR is higher and is low for the medium income households and slightly high for the super-rich. If VAT was more progressive, the EVR was supposed to be increasing with income increases. It is evident from table 3 that the average EVR for the first four lowly ranked income groups is 10.6 percent which is above the average EVR (9.5 percent) for the last four highly ranked income groups. This means that there is

more burden on the very poor compared to the very rich. Suffice to say, the low EVR for the middle income groups takes out the huge EVR for the low income groups hence the average national EVR is 7.3 percent.

Figure 3 is a graphical presentation of table 3 and a trend line has been fitted onto the graph which does show the slight downward trend.

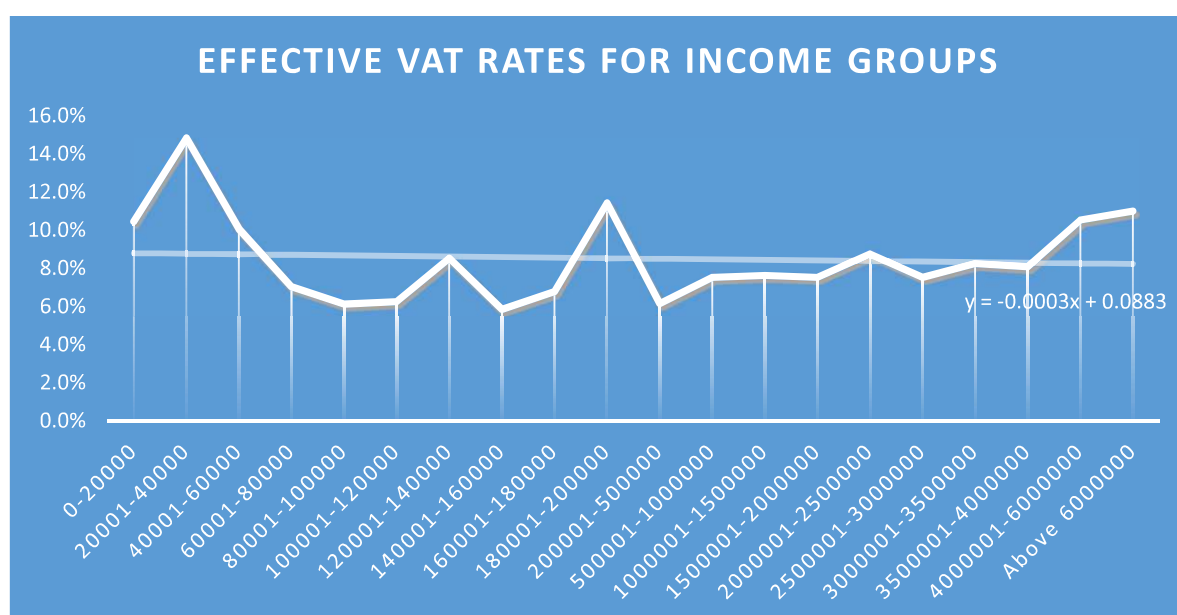**Figure 3: Effective VAT Rates for different income groups**

Table 4: Relative Burden Index of VAT

Relative Burden Index of VAT					
Income Group	Income Range (MWK)	Income Share	Actual VAT Share	Relative Burden	
1	0-20000	0.05%	0.07%	143.17%	
2	20001-40000	0.50%	1.02%	203.14%	
3	40001-60000	1.53%	2.11%	137.64%	
4	60001-80000	3.38%	3.25%	96.37%	
5	80001-100000	5.24%	4.39%	83.74%	

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6	100001-120000	9.29%	7.95%	85.58%	
7	120001-140000	16.97%	19.82%	116.79%	
8	140001-160000	5.07%	4.06%	80.01%	
9	160001-180000	11.60%	10.76%	92.83%	
10	180001-200000	1.98%	3.10%	156.52%	
11	200001-500000	19.24%	16.19%	84.18%	
12	500001-1000000	12.85%	13.24%	103.04%	
13	1000001-1500000	3.96%	4.13%	104.31%	
14	1500001-2000000	1.97%	2.03%	103.02%	
15	2000001-2500000	1.91%	2.29%	119.82%	
16	2500001-3000000	0.83%	0.86%	103.02%	
17	3000001-3500000	1.02%	1.15%	112.83%	
18	3500001-4000000	0.65%	0.72%	110.56%	
19	4000001-6000000	1.44%	2.07%	144.25%	
20	Above 6000000	0.51%	0.78%	150.73%	

Source: Author's own computation

Table 4 indicates the relative burden index of VAT for the income groups. Just like with EVR, the relative burden index is high for the poor households, low for the middle income households and slightly high for the rich households. For instance, the four lowest income ranges have an average relative burden index of 145 percent while the four top income ranges have relative burden index of 129 percent.

To consolidate the conclusion, tables 5A and 5B below re-calculates the effective VAT rate and Relative Burden Index by dividing the population into 20 equal parts and then ranking the population shared by income from lowest to highest instead of the income ranges used in tables 3 and 4 above. Thus in table 5A and table 5B, the population is demarcated into 20 segments comprising 5 percent of the population sample and then ranked from poorest to richest households. For instance, the first 5 percent represents the poorest five percent of the population while the last 5 percent represent the richest five percent of the population. The tables also have cumulative calculations where for instance, the cumulative effective VAT rate for 10 percent of the population

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ranked lowest by income is 9.33 percent while the effective VAT rate for the population ranked from first 5 percent (poorest) to next 5 percent (better off than the first 5 percent) is 7.1 percent. The same approach has been used for the re-calculation of Relative Burden Index. Though the results for the two approaches (tables 5A&B versus tables 3&4) are different, the conclusion is the same. For instance, the poorest 10 percent of the population have effective VAT rate of 9.33 percent which is below the effective VAT rate of 7.3 percent for the 50 percent of the population and 7.1 percent for the 90 percent of the population. Similarly the poorest 5 percent of the population have effective VAT rate of 12.2 percent while the reaches 5 percent of the population have effective VAT rate of only 7.9 percent. This confirms the earlier observation that poor households pay a huge share of their income as tax compared to rich households and the poor are relatively more burdened than the rich. Tables 5A and 5B contains detailed information of the calculations for EVR and RBI as discussed.

Table 5A. Effective VAT Rate based on Share of population

Population shares Ranked by Income	Per capita consumption (MWK)	Actual VAT Paid (MWK)	Effective VAT Rate	Population Shares Ranked by Income	Cumulative Per capita consumption (MWK)	Cumulative Actual VAT Paid (MWK)	Cumulative Effective VAT Rate
First 5%	8,025,577.48	975,772.84	12.2%	5%	8,025,577.48	975,772.84	12.16%
Next 5%	10,209,895.58	725,595.55	7.1%	10%	18,235,473.06	1,701,368.39	9.33%
Next 5%	12,165,441.21	823,488.09	6.8%	15%	30,400,914.28	2,524,856.47	8.31%
Next 5%	15,485,703.89	923,526.59	6.0%	20%	45,886,618.16	3,448,383.07	7.52%
Next 5%	20,370,853.65	1,223,465.87	6.0%	25%	66,257,471.82	4,671,848.93	7.05%
Next 5%	29,353,107.30	1,890,160.09	6.4%	30%	95,610,579.12	6,562,009.03	6.86%
Next 5%	74,808,696.21	6,431,320.36	8.6%	35%	170,419,275.33	12,993,329.39	7.62%
Next 5%	11,463,375.31	824,697.83	7.2%	40%	181,882,650.64	13,818,027.22	7.60%
Next 5%	16,007,318.26	928,869.80	5.8%	45%	197,889,968.89	14,746,897.02	7.45%

Next 5%	26,576,999.28	1,633,439.62	6.1%	50%	224,466,968.17	16,380,336.65	7.30%
Next 5%	36,353,666.30	2,782,643.85	7.7%	55%	260,820,634.47	19,162,980.49	7.35%
Next 5%	9,145,823.02	907,938.11	9.9%	60%	269,966,457.49	20,070,918.60	7.43%
Next 5%	9,552,711.99	729,505.77	7.6%	65%	279,519,169.48	20,800,424.38	7.44%
Next 5%	10,790,442.81	675,015.07	6.3%	70%	290,309,612.29	21,475,439.45	7.40%
Next 5%	12,043,470.66	720,840.62	6.0%	75%	302,353,082.95	22,196,280.06	7.34%
Next 5%	14,047,254.93	794,056.54	5.7%	80%	316,400,337.89	22,990,336.60	7.27%
Next 5%	17,268,448.65	994,468.49	5.8%	85%	333,668,786.54	23,984,805.10	7.19%
Next 5%	22,707,495.57	1,328,727.09	5.9%	90%	356,376,282.11	25,313,532.19	7.10%
Next 5%	38,390,198.46	2,963,296.97	7.7%	95%	394,766,480.58	28,276,829.15	7.16%

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	Population Shares ranked by Income	Actual VAT Share	Relative Burden Index	Population Shares ranked by Income	Cumulative Income Share	Cumulative Actual VAT Share	Cumulative Relative Burden Index
Last 5%	85,897,675.20	6,822,745.50	7.9%	100%	480,664,155.77	35,099,574.65	7.30%
First 5%	1.7%	2.8%	166.5%	5%	1.7%	2.8%	166.5%
Next 5%	2.1%	2.1%	97.3%	10%	3.8%	4.8%	127.8%
Next 5%	2.5%	2.3%	92.7%	15%	6.3%	7.2%	113.7%
Next 5%	3.2%	2.6%	81.7%	20%	9.5%	9.8%	102.9%
Next 5%	4.2%	3.5%	82.2%	25%	13.8%	13.3%	96.6%
Next 5%	6.1%	5.4%	88.2%	30%	19.9%	18.7%	94.0%
Next 5%	15.6%	18.3%	117.7%	35%	35.5%	37.0%	104.4%
Next 5%	2.4%	2.3%	98.5%	40%	37.8%	39.4%	104.0%
Next 5%	3.3%	2.6%	79.5%	45%	41.2%	42.0%	102.1%
Next 5%	5.5%	4.7%	84.2%	50%	46.7%	46.7%	99.9%
Next 5%	7.6%	7.9%	104.8%	55%	54.3%	54.6%	100.6%
Next 5%	1.9%	2.6%	135.9%	60%	56.2%	57.2%	101.8%
Next 5%	2.0%	2.1%	104.6%	65%	58.2%	59.3%	101.9%
Next 5%	2.2%	1.9%	85.7%	70%	60.4%	61.2%	101.3%

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Next 5%	2.5%	2.1%	82.0%	75%	62.9%	63.2%	100.5%
Next 5%	2.9%	2.3%	77.4%	80%	65.8%	65.5%	99.5%
Next 5%	3.6%	2.8%	78.9%	85%	69.4%	68.3%	98.4%
Next 5%	4.7%	3.8%	80.1%	90%	74.1%	72.1%	97.3%
Next 5%	8.0%	8.4%	105.7%	95%	82.1%	80.6%	98.1%
Last 5%	17.9%	19.4%	108.8%	100%	100.0%	100.0%	100.0%

Source: Author's computation

Finally, table 6 contains EVR and RBI for the three regions of the country as well as rural vs urban households. Malawi has three big regions namely South, Centre and North in order of population size (highest to lowest). Households in the central region have high EVR while those in the northern region have the lowest EVR. Looking at the rural vs. urban households, table 6 also shows that rural areas have a slightly lower relative burden index of 97.2 percent and lower effective VAT rate of 7.09 percent compared to the urban areas of 103.3 percent and 7.55 percent, respectively. This may imply that urban areas are burdened more by VAT compared with rural areas. Looking at the nature of rural households' consumptions and transactions, most of the transactions are informal hence in most cases VAT is not administered and this may likely explain the low EVR and relative burden index.

Table 6: Effective VAT Rate and Relative Burden Index for National Categories

	NATIONAL	URBAN	RURAL
Income	480,664,155.77	221,370,308.81	259,293,846.96
Tax	35,099,574.65	16,703,490.96	18,396,083.70
Effective Tax Rate	7.30%	7.55%	7.09%
Relative Burden		103.3%	97.2%
	SOUTH	CENTRE	NORTH
Income	222,849,104.37	169,178,053.47	88,636,997.94
Tax	16,342,518.50	12,863,662.18	5,893,393.97
Effective Tax Rate	7.3%	7.6%	6.6%
Relative Burden	100.4%	104.1%	91.1%

Source: Author's Computation

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5.2. Dominance Analysis: Lorenz Curves, Gini Coefficients, Atkinson Index and Concentration Curves

As indicated in the methodology section above, dominance analysis was used to understand the incidence of VAT and its implications on inequality. Table 7 shows two indicators namely Gini Coefficient and Atkinson index. Both shows that the VAT has widened the inequality with a Gini of 0.58 after netting off VAT and 0.57 on gross consumption. The difference in the Gini coefficients is also statistically significant. Similarly, at 90 percent significance level, the Atkinson index shows significant difference between the net tax consumption and tax inclusive consumption. The VAT does not only increase the households' expenditure but also the increase reduces inequality as evidenced by the slightly lower Gini coefficient and Atkinson index after introduction of tax. This also supports the observations made that VAT in Malawi is slightly progressive. If VAT was highly regressive, then the Gini and Atkinson indices would have been higher for the gross consumption compared to the net consumption.

Table 7: GINI and ATKINSON Coefficients before and after VAT

INDICATOR 1	ESTIMATE	P Value
GINI (Net Consumption per capita)	0.581	0.0000
GINI (Gross Consumption per capita)	0.579	0.0000
Difference	-0.002	0.0001
INDICATOR 2	ESTIMATE	P Value
ATKINSON (Net Consumption)	0.28454	0.0000
ATKINSON (Tax Inclusive Consumption)	0.28167	0.0000
Difference	-0.0028	0.0719

Source: Author's own Calculation

In terms of rural vs urban, figure 4 shows that group 1 (urban households) Lorenz curve is everywhere below the group 2 (rural households) Lorenz curve. This means that inequality is high among urban areas than rural areas. This can be explained by the impact of VAT on urban dwellers

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where they are much affected than rural dwellers due to the kind of transactions (eg consumption of basic goods) and formality of the transactions, which in rural areas are not usually subjected to VAT compared to urban areas. Rural households may also enjoy low inequality due to the limited opportunities in rural areas which usually mean most people depend on rain fed agricultural (subsistence) farming and there are little differences in their consumption baskets. In urban areas this is difficult due to high migration of people into the urban areas where in most cases they are involved in low income activities while few educated and business people have high income levels hence very different consumption baskets.

Figure 4: Lorenz Curves dominance for urban areas vs rural areas.

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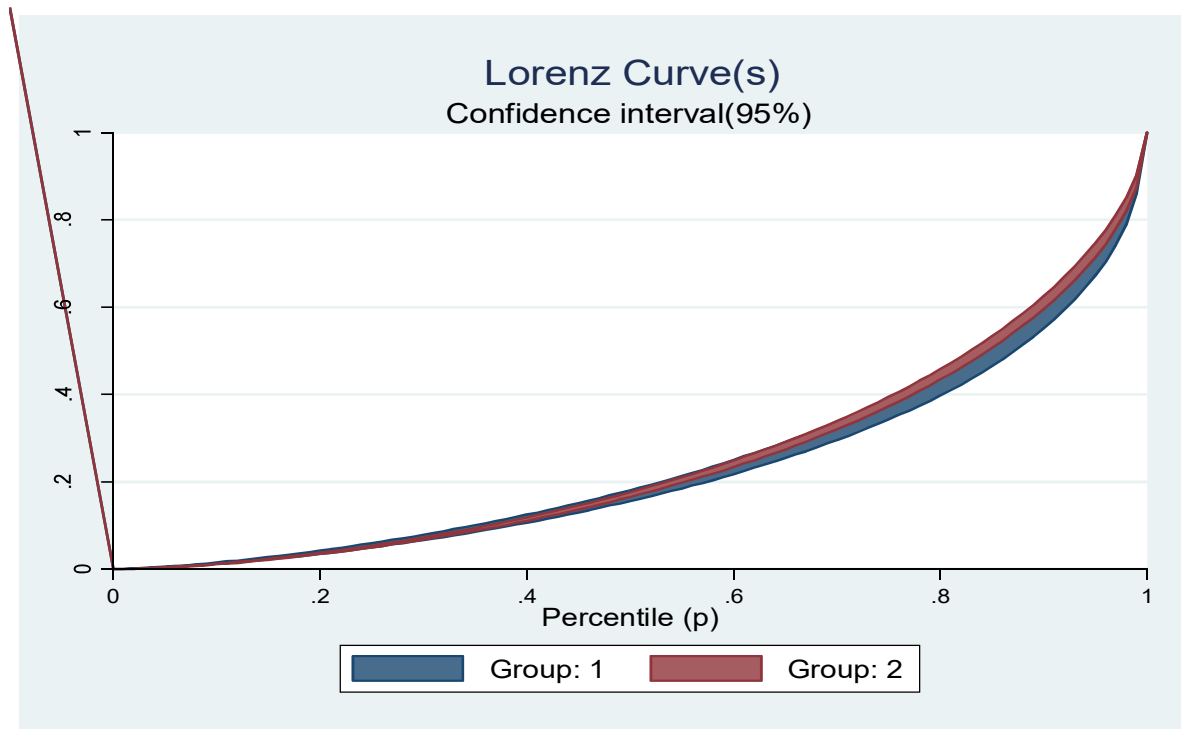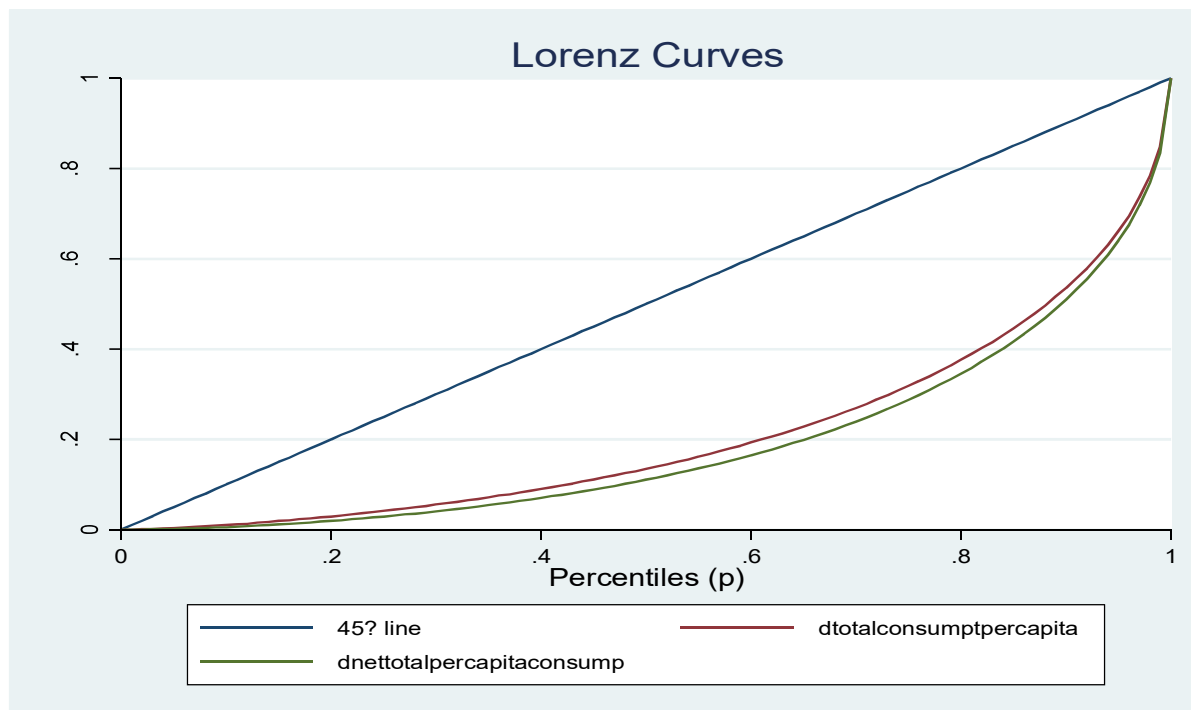*ATCR is a Publication of the Kenya School of Revenue Administration, KRA*

Figure 5: Net and Gross Consumption per Capita

Similarly, figure 5 shows that the net total per capita consumption Lorenz curve (green color) is continuously below the gross total per capita consumption Lorenz curve (red color). This, as discussed above, imply that application of VAT has slightly improved inequality as the Lorenz curve for gross consumption (inclusive of VAT) is everywhere above the one for net consumption. This is also in line with the observation that VAT in Malawi is slightly progressive.

6.0 General Conclusion and Recommendations

The study attempted to establish the incidence of VAT in Malawi using household data and macro variables. The results show that overall, the VAT in Malawi is less progressive and poor people are more burdened than the rich but inequality for rural households is lower with VAT compared to urban households. Furthermore, those in rural areas have a slightly lower tax burden compared with those in urban areas. This may be explained by rampant informal sector transactions and the dominance of subsistence farming activities in rural areas which means few consume goods subjected to VAT.

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Moving forward, there should be deliberate policy to improve the VAT system to make it more progressive. When giving out VAT incentives, it should be taken into account that households have different consumption baskets but in most cases there are food items largely consumed by the poor hence those should be considered as part of welfare state. There has to be a clear honest demarcation between necessity goods and luxury goods and policies should be aimed at taxing more of the luxury component. Furthermore, efforts should be made to tax the informal sector which is not properly taxed as a result the VAT burden is more on a few compliant individuals. Future studies can be done with the recent 2017/18 Integrated Household Survey (IHS4) and employ more analysis tools to deepen the understanding of tax incidences on households and how best to improve the tax system without compromising revenue collections.

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