

Determinant of Tax Revenue in Tanzania (1997- 2014)

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ABSTRACT

The aim of the study was to investigate the determinants of tax revenue in Tanzania. The study employed only secondary data which covered the period of 18 years (1997/98-2014/15). Currently, Tanzanian total tax revenue is collected under TRA's three department namely, domestic revenue (direct tax and VAT), Customs and Excise, and Large taxpayers department. Therefore, the total of four regressions analysis were run; three to investigate the determinants of tax revenue collected under each department and one for the determinants of total tax revenue. The total of ten variables which are GDP, inflation, agriculture, industry, service, manufacturing, FDI inflows, trade openness, urbanization, and official exchange rate were used as independent variables. The variable which stood as a dependent variable was the ratio of tax revenue to GDP. Data used were collected from the World Bank's and TRA's website. Data were analyzed using SPSS software and multiple regression models were used to estimate the relationships which exist between dependent and independent variables. The findings revealed that, two variables which are urbanization, and service are positive statistically significant influencing domestic revenue, revenue collected from large taxpayers, and total tax revenue. The findings also show that, urbanization is positive statistically significant influencing custom and excise revenue while official exchange rate is negative statistically significant influencing the same. Other variables which are GDP, inflation, agriculture, industry, manufacturing, FDI inflows, and trade openness were found to be statistically insignificant influencing tax revenue. This study provides new additional information about the determinants of tax revenue in Tanzania which can be very useful to policy makers in the future.

Keywords: Tax, growth, GDP, exchange rate

1.0 INTRODUCTION

All countries worldwide are now aware of the fact that, in order to achieve sustainable economic development they should increase their efforts in domestic resources mobilization (Bothole, 2010). Studies carried by Tanzi and Zee (1997) and Semboja (2001) concluded that, governments which raise domestic revenues have the greater chance of attaining fiscal sustainability. One of the domestic sources governments use to raise revenue is taxation. Taxation is a compulsory levy charged by the government to its people so that it can use it to meet its fiscal responsibility (Bothole, 2010; Muibi and Sinbo, 2013). It is through taxation, the government is able to transfer funds from private to public sector to finance public expenditures. Apart from taxation; other sources of revenues to the government include fees, fines, penalties, and dividends (Chijoriga, 2012). Regardless of the fact that there are other sources of government revenue, taxation is considered to be the most important source of government revenues (Muibi and Sinbo, 2013). In Tanzania for example, taxation contributed for about 90% of total government revenues and non-taxation revenue contribute only for about 10% in 2003 (URT, 2004).

In Tanzania, Tanzania Revenue Authority (TRA) is the one which is responsible to collect tax since 1996. Ministries, Departments, and Agencies (MDAs) on the other hand are responsible for the collection of non-taxation revenue (URT, 2004). Prior to the commencement of operation by TRA in 1996, the responsibility of collecting taxation was vested to the Ministry of Finance. The Ministry had three revenue Department which were the Income Tax Department, Customs and Excise Department and the Sales Tax and Internal Revenue Department. TRA was formed in 1995 by the Act of Parliament, No. II of 1995. One among of several objectives of establishing TRA was to enhance revenue collection by strengthening tax administration (URT, 2004).

In Tanzania, both in Tanzania mainland and Zanzibar; revenues collected from taxation have been gradually increasing since the establishment of TRA in 1996. Table 1 below shows the total revenue collection performance from Tanzania main land and Zanzibar from 2004/05- 2012/13.

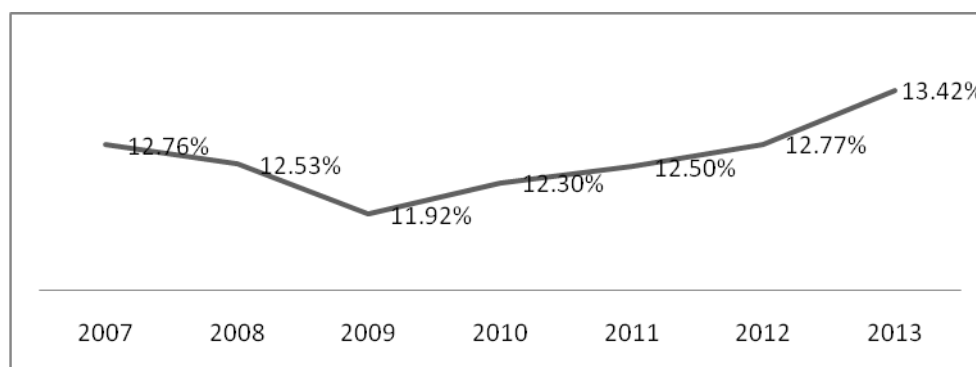
Table 1: Revenue collection performance 2004/05 to 2012/13 (in million TZS)

	Tanzania main land			Zanzibar		
	Actual	Targeted	Variance	Actual	Targeted	Variance
2004/05	1,625,239.3	1,602,876.5	22362.80	20,734.9	28,456.3	-7721.40
2005/06	1,968,592.7	1,905,274.9	63317.80	22,181.2	29,187.8	-7006.60
2006/07	2,575,648.6	2,316,322.8	259325.80	30,494.9	25,768.1	4726.80
2007/08	3376568.30	3,333,135.6	43432.70	39,858.0	36,179.7	3678.30
2008/09	4051963.90	4,497,069.3	-445105.40	53,945.8	49,220.9	4724.90
2009/10	4437933.40	4,855,935.0	-418001.60	60,089.9	62,937.5	-2847.60
2010/11	5315000.00	6,160,100.0	-845100.00	76,300.0	73,700.0	2600.00
2011/12	6502600.00	7,406,400.0	-903800.00	91,600.0	92,700.0	-1100.00
2012/13	7739200.00	8,936,800.0	1197600.00	103,900.0	117,00.0	92200.00

Source: TRA(2016); Chijoriga (2012); and TRA (2008)

From Table 1 above, it can be seen that even if tax collections have been increasing yearly, there have been some variances in performances between actual and targeted one. Some variances are favorable (+ve) and others are unfavorable (-ve). It should be noted that, even though taxation revenue has been increasing on monetary terms yearly; revenue collections of around 13% of GDP falls far short of the average for the East African region, which is around 20% of GDP(URT, 2004). Figure 1 below presents the trend of taxation revenue (% of GDP) from 2007/2008 to 2013/2014.

Figure 1: Tax Revenue (% of GDP) from 2007/2008 to 2013/2014



Source: Authors' construction from World Bank's website data

From Figure 1 above, it can be seen that the trend of tax revenues as the percentage of GDP from 2007/2008 to 2013/2014 has been fluctuating and fall short of the East African Region.

This study therefore, aimed at investigating determinants of tax revenue in Tanzania. Limited information exist these aspects in Tanzania . Furthermore, many studies carried worldwide in these aspects (Botlhole, 2010; Wawire, 2011; and Aamir, *et al.*, 2011; Muibi and Simbo, 2013) focused on investigating the principal determinants of tax revenue in general. This study is different from these previous studies due to the fact that it investigated independently determinants of domestic tax revenue (direct taxes and VAT), custom and excise revenue, and tax revenue from large tax payers. Findings of this study are useful for informed decisions among policy makers.

2.0 METHODOLOGY

The study was carried in Tanzania and covered the period of 18 years (1997/1998-2014/2015). It employed only secondary data. Data in regard to tax revenues were collected from TRA website and data in regard to elements of tax base and structured factors were collected from World Bank website. Sources of this data can be said to be almost 100% reliable since were obtained from relevant and reputable authorities. The econometric technique used to test the relationships which exist between dependent variable and independent variables was Regression analysis. This technique was adopted from several studies (e.g. Botlhole, 2010;Wawire, 2011; and Aamir, *et al.*, 2011; Muibi and Simbo, 2013) carried on the same topic. Since the objectives of the study were to investigate the determinants of domestic revenue, custom and excise revenue, tax revenue collected from large taxpayers, and total tax revenue; a total of four regressions were run.

Regression analysis run to investigate determinants of domestic revenue, customs and excise revenue, and revenue collected from large taxpayers used the data which covered the period of 14 years (2001/02-2014/15). The reason for the exclusion of data from 1997/1998 was that, there was no large taxpayers department during that period. This department was established in 2001/ 2002. Even if from 2001/02-2004/05 TRA had four departments; in 2005/2006 two departments which are income tax and VAT were joined to form one department namely domestic department. Thus, in this study the income tax and VAT

collections of 2001/02-2004/05 were added together and considered as domestic revenues. The fourth regression run to investigate determinants of total tax revenue covered the period of 18 years (1997/98-2014/15).

Therefore, regression was run with the total of four dependent variables which are the percentage of domestic tax revenue to GDP (DT_GDP), the percentage of customs and excise tax revenue to GDP (CE_GDP), the percentage of large taxpayers to GDP (LTP_GDP) and the percentage of total tax revenue to GDP (TR_GDP). The model and independent variables are explained in equation (i) to (iv) below.

$$DT_GDP = \beta_0 + GDP_t + INFL_t + AGR_t + INDU_t + SERV_t + MAN_t + FDI_t + OPEN_t + URBA_t + EXC_t + \varepsilon_t$$

.....Eqn (i)

$$CE_GDP = \beta_0 + GDP_t + INFL_t + AGR_t + INDU_t + SERV_t + MAN_t + FDI_t + OPEN_t + URBA_t + EXC_t + \varepsilon_t$$

.....Eqn (ii)

$$LTP_GDP = \beta_0 + GDP_t + INFL_t + AGR_t + INDU_t + SERV_t + MAN_t + FDI_t + OPEN_t + URBA_t + EXC_t + \varepsilon_t$$

.....Eqn (iii)

$$TR_GDP = \beta_0 + GDP_t + INFL_t + AGR_t + INDU_t + SERV_t + MAN_t + FDI_t + OPEN_t + URBA_t + EXC_t + \varepsilon_t$$

..... Eqn (iv)

Where:-

GDP is the Gross Domestic Product

INFL is inflation expressed as a Consumer Price Index

AGR is Agriculture measured as Agriculture, Value Added (% GDP)

INDU is Industry measured as Industry, Value Added (% GDP)

SERV is Service measured as Service, Value Added (% GDP)

MAN is Manufacturing measured as Manufacturing, Value Added (% GDP)

FDI is Foreign Direct Investment expressed as FDI inflows (% GDP)

OPEN is Trade openness expressed as the percentage of imports plus exports to GDP

URBA is Urbanization expressed as urban population (% of total)

EXC is the official exchange rate (Local Currency Unity to US\$, period average).

ε is the error term.

The measurement of all variables used in the study were adopted from previous studies such as Bothole (2010) and Muibi & Simbo (2013) who carried their study on the same topic. It was important to use the same measurement of all variables as other researchers who carried their study on the same topic since it allowed the findings of the study to be compared with findings of other studies carried worldwide on the same topic.

From literature review the researcher had expectations of the direction of the relationship which could exist between dependent variables and independent variables identified above. The researcher expected a negative relationship between Agriculture; Value added (% GDP) and tax revenues. This is due to the fact that, it is difficult to tax this sector since most of farmers in the country engage themselves in subsistence agriculture. On the other hand, the researcher expected positive relationship between tax revenues and industry, service, manufacturing, FDI, and trade openness. This is due to the fact that, it is easy to tax goods and services produced or imported in the country and those exported out of the country.

The expected relationship between GDP and tax revenues was positive. This was due to the fact that, GDP is a measure of the country's economic development. Thus, as country economically develop; tax revenues collected will increase as well. The variable urbanization was expected to have a positive relationship with tax revenues. This is supported by the argument that, it is traditionally difficult to tax rural dwellers since most of them engage themselves in agriculture. On the other hand it is very easy to tax urban dwellers since they engage themselves on activities such trade or employment which are easily taxable. Therefore, as urban population (% total) increases, tax revenue increases as well. Inflation and official exchange rate were expected to be negative related with tax revenues. As inflation increases, it erodes the purchasing power of individuals in the country, thus it reduce indirect taxes which are levied on consumption.

3.0 RESULTS AND DISCUSSION

3.1 Results

Prior to the analysis, data were checked to see if they satisfy all regression assumptions. All data satisfied all assumptions of regression except two variables (GDP and official exchange) which violated the normality assumption. Therefore,

these variables were transformed into natural logarithm. Descriptive statistics for variables under study are presented in Table 2 while results for regression analysis are shown in Table 3.

From Table 3, it can be seen that variables used fitted well in the model. The R square statistics provides the results for the model fit. To be more specific, variables used to predict the domestic, customs and excise, and total revenue fitted the model for more than 98%. This implies that, small percent (which is less than 2%) change in revenue is explained by other factors not included in the study.

3.1.1 Domestic Revenue (DT_GDP)

Ten independent variables were regressed against domestic revenue variable. Results show that, two variables which are urbanization and service were positive statistically significant influencing domestic revenue with $p < 0.01$, and $p < 0.05$ respectively. It should be noted that, not only urbanization was statistically significant influencing domestic revenue, but also it had the highest magnitude of about 386%. This means that, 100% increase in urbanization variable, domestic revenue variable is increased by 386%.

3.1.2 Customs and Excise Revenue (CE_GDP)

Among ten variables used in the study; two variables which are urbanization and official exchange rate were found to be statistically significant influencing customs and excise revenue with $p < 0.01$ and $p < 0.05$ respectively. URBA was Positive and EXC was negative influencing customs and excise revenue with 66.2% and 217% coefficients respectively.

3.1.3 Tax Revenue Collected from Lager Taxpayers (LTP_GDP)

Out of ten variables used in the study, two variables which are urbanization and service were found to be positive statistically significant influencing domestic revenue with $p < 0.01$ and $p < 0.05$ respectively. It should be noted that, not only urbanization variable was statistically significant influencing domestic revenue variable, but also it had the highest magnitude of about 489%. This means that, 100% increase in urbanization variable, domestic revenue is increased by 489%.

3.1.4 Total Tax Revenue (TR_GDP)

Out of ten variables used in the study, two variables which are urbanization and service were found to be positive statistically significant influencing total tax revenue with $p < 0.01$ and $p < 0.05$ respectively. The variable URBA had a coefficient of 276% and SERV had a coefficient of 69%. Furthermore, two variables which are GDP and OPEN were found to be negative statistically significant ($p < 0.1$) related with total tax revenue.

Table 2: Descriptive statistics for variables under study

Variables	Observations	Minimum	Maximum	Mean	Std. Deviation
TR_GDP	18	.93	6.59	3.0382	1.86374
DT_GDP	14	.40	1.21	.7111	.31151
CE_GDP	14	.43	2.62	1.3968	.71390
LTP_GDP	14	.37	3.50	1.6120	.92134
GDP	18	30.31	31.35	30.8090	.33633
INFL	18	4.74	16.09	8.5464	3.80498
AGR	18	22.22	60.88	47.0110	24.26267
INDU	18	14.28	24.99	21.2962	2.46729
SERV	18	36.39	49.55	45.0987	3.31585
MAN	18	6.09	10.55	8.1444	1.12329
FDI	18	1.77	5.77	3.7681	1.29679
OPEN	18	20.19	79.49	45.6215	13.70833
URBA	18	21.24	30.90	25.4887	3.13014
EXC	18	6.42	7.41	7.0073	.30903

Table 3: Regression coefficients for determinants of DT_GDP, CE_GDP, LTP_GDP, and TR_GDP

Variables	DT_GDP	CE_GDP	LTP_GDP	TR_GDP
(Constant)	65.899	-270.435	570.393	372.741
GDP	-2.082*	3.784	-6.140*	-2.524*
INFL	-.033	-.307	.257	.051
AGR	.127	.310	-.087	-.105
INDU	.246	-.107	.593*	.364
SERV	.122**	.389	-.103**	-.069**
MAN	.319	1.005	-.881	-.245
FDI	.011	-.138	.112	.049
OPEN	-.129*	.235*	-.621	-.302*
URBA	3.861***	.662***	4.888***	2.758***
EXC	-.470	-2.172**	1.245	.480
Model Fit				
R square	.994	.990	.914	.986
Adjusted R Square	.975	.957	.877	.967
Durbin-Watson	2.247	2.472	3.036	2.808
Observations	14	14	14	18

Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$

3.2 Discussion

From empirical results presented above, it is clearly seen that one variable which is urbanization was found to be statistically significant influencing tax revenues in all four regression run. This variable was not only found to be statistically significant but also was having the highest coefficient among all. The observed and the expected effect of this variable on tax revenues are in agreement. The observed positive and significant relationship between urbanization and tax revenues can be explained by the arguments put forward by Al-Hakami (2008). Al-Hakami (2008) documented that, as the percent of urban dwellers to total population increases, demands for goods and services increases as well. Therefore, the ability of the government to collect taxes increases. The results of this study are in agreement with that of Gupta (2007) and Khattry *et al.* (2002).

The findings also show that, the variable service is positive statistically significant influencing domestic revenue, tax revenue collected from large taxpayers and total revenue. The expected and the observed effect of this variable on tax revenues are in agreement. This finding can be supported by the argument put forward by Addison and Levin (2007) that tax in developing countries is easier imposed on service than agriculture sector. This can be the reason why, the variable agriculture was found to be statistically insignificant influencing tax revenues in all regressions run.

The variable official exchange rate was found to be negative statistically significant influencing customs and excise revenue. The findings of this variable are in line with expected one. Muibi and Sinbo (2013) argued that, as the exchange rate decreases; there is a probability of increasing imports which are charged import duty tax. In the case of Tanzania, exchange rates were increasing, thus discouraging imports. As the result, taxes collected from imports were affected as well. This variable was found to be statistically insignificant influencing domestic revenue and tax collected from large taxpayers because it is not directly related to income tax and consumption tax as these taxes are not directly collected from economic activities which involve foreign currencies.

Contrary to the expectation, two variables which are GDP and trade openness were found to be negative statistically significant influencing domestic, large taxpayers, and total tax revenue at $p < 0.1$. GDP was having the coefficient of -208%, -614%, and 252% in domestic's, large taxpayer's, and total's taxes revenue

regression respectively. This relationship impliedly tells us that, as these variables increases, tax revenues decreases. This could be due to the reason that, GDP figure which measure the level of the country's development do not really measure the improvement in the living standard of individuals in the country. Therefore, GDP figures are not reflected in the actual spending capacity of individuals. On the other hand, the variable openness which was expressed as the sum of imports and exports to GDP was found to be negative related to tax revenue due to the fact that the government is not charging VAT on exports of goods which are produced in the country. Taxes which are charged on imports have been negatively affected due to increase in exchange rates as explained in the above paragraph. Also other reason of falling of tax charged on imports could be due to excess tax reliefs and exemptions.

Foreign direct investment variable were found to insignificant influencing tax revenue. The data from World Bank websites indicate that the level of FDI have been increasing for the past decades. The observed insignificant influence on taxation could be due to the fact that, foreign investors are enjoying tax holidays which the government uses as incentives to attract FDI in the country. Therefore, FDI has not contributed much on tax revenue. The findings of this study are in line with of Gupta (2007).

4.0 CONCLUSION

Empirical results of regression analysis show that, two variables which are urbanization and Service are positive statistically significant influencing domestic revenue, revenue collected from large taxpayers, and total tax revenue. The findings also show that, the variable urbanization is positive statistically significant influencing custom and excise revenue while official exchange rate is negative statistically significant influencing the same. Other variables which are GDP, inflation, agriculture, industry, manufacturing, FDI, and trade openness were found to be statistically insignificant influencing tax revenues.

These results tell us that, currently TRA collects tax from urban areas. And this is the reason why, the variable of urbanization was not only statistically significant ($p < 0.01$) but also had a highest coefficient in all regression run. This shows that, rural dwellers who are engaged in agricultural activities are not adequately taxed. And this is the reason why; the variable agriculture was found to be statistically insignificant in all regression run. Therefore, TRA should increase tax base that

will reach every sector in the economy. Sectors such as manufacturing, industry and international trade did not seem to be statistically significant contributing to tax revenue may be because less effort of revenue collection have been directed to those sectors. This could be possibly due to the fact that, traders who are engaging themselves in such businesses are evading tax or there are so many tax reliefs and exemption in those sectors which affect negatively tax revenue collected from such sectors.

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