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Financial development and tax revenue in Tanzania: Analyze the impact of financial depth on tax revenue.

Ramadhan Makame Hussein
MBA Student, Zanzibar University
Email: **ramamecky@gmail.com** **& Phone: 0777196537**

Zuhura Mohammed Abdallah
Email: **zuhma85@gmail.com** **& Phone: 0773868868**
Faculty of Bussiness Administration, Finance Department,
Zanzibar University, Tanzania.

ABSTRACT

Purpose: *The purpose of this research was to consider the influence of financial development on Tanzania's tax revenue. To accomplish the intent of this study, the main specific objective was concerned about the effect of financial depth on tax revenue in Tanzania.*

Design/methodology: *This study adopted quantitative approach and time series as research design, this study was conducted in Tanzania. Because of the accessibility of the data for the time of 1996-2020. The annual time series data for the Tanzanian financial development and tax revenue were obtained from secondary sources which include the World Development Indicators (WDI) and Tanzania Revenue Authority (TRA). The method was employed to make the estimation is the Dynamic Ordinary Least Square (DOLS).*

Findings: *The financial characteristics were considered to be relevant tax revenue parameters based on the study's aims. As a consequence, the examination of the estimation findings revealed that financial depth had a beneficial influence on increasing tax revenue in Tanzania. As a result, this paper recommends that the government place a greater emphasis on financial development, as it may be a vital instrument for increasing tax revenue for social welfare, poverty reduction, and macroeconomic stability. The Bank of Tanzania has maintained its monetary policy stance, which aims to increase lending to the private sector to encourage economic activity.*

Key Words: *Financial development, financial stability and depth, tax revenue, DOLS, Tanzania*

Introduction

Taxes are mandatory payment that government agencies impose on the income, profits, or wealth of individuals, groups of people, and corporate organizations through their agents in order to achieve some development goals. Tax revenues are the primary source of money for governments in both developed and developing countries, as they are required to raise expenditure in order to maintain acceptable levels of public investment and social services. Increasing tax revenue remains a challenge for many governments, especially low-income countries. A number of measures have been implemented in order to raise tax revenues, reduce reliance on foreign aid, and improve the creditworthiness of public and private non-concessional loans. In order to raise the country's low tax-to-GDP ratio, financial development must be considered and viewed as a significant tool for generating tax collections.

In recent years, the government has been focused about increasing tax revenue, with the overall goal of improving Tanzania's development. This occurs after it is realized that the tax system's efficiency and collection mechanism are critical.

Given the significance of the financial sector development in improving and accelerating tax collection, alongside the fight against tax evasion, the government is working to improve it by building on the importance of banks and financial institutions as important components of any economy to deliver liquidity to both businesses and consumers through a variety of payment systems that are necessary for noncash transactions. In fact, the presence of developed, transparent and efficient banks and financial institutions could encourage taxpayers (businesses and individuals) to use them to carry out their transactions, particularly with a view to obtaining high quality services; this would prompt the authorities to promulgate laws obliging banks and financial institutions to disclose, upon request, the necessary information from their customers to the tax authorities. Financial institutions provide several types of payment systems that are necessary for noncash transactions as part of their basic functions of financial intermediation (Elliott, 2010). In this context, many researchers believe that a developed financial system can be considered as a determining factor in the increase in taxable economic activities, as well as an increase in the tax base due to increased demand for products and services, which leads to new investments.

In addition to that, As a result of its functions in aiding record monitoring and tax collection, financial sector development could have a direct impact on increased tax revenues (Capasso&Jappeli, 2013). Also, believing that a well-developed, transparent, and efficient financial system will encourage corporations and individual taxpayers to conduct their financial transactions with them. In exchange, tax payers reveal their genuine names, including sources of income and business transaction transactions, for a specific time period. As a result, the Tanzanian government has passed legislation requiring financial firms to give their customers' genuine identities to tax officials upon request. This data aids in bringing previously undiscovered taxpayers into the tax net. As a result, the tax authorities acquire vital information on the income and assets of taxpayers from these institutions. Although, when combined with other tax measures, this phenomena has enhanced the government's tax revenue to some amount.

From the above information, the development of the financial sector can be regarded as one of the major determinants of tax revenue pointed out by some researchers when trying to investigate and analyze the impact of financial development on taxes. Is obvious. This relationship has received little attention in developing countries and has not yet been covered by our sources related to the Tanzania economy, . This leads to consider the problematic nature of this study by asking the following question: What is the impact of the activities of the financial institutional on the perception of tax revenues in Tanzania?

To answer this problem, this study based on the following objective: to examine the direct influence of financial depth on tax income in Tanzania.

The research was carried out in Tanzania, and it looked at the impact of financial depth on tax income from 1996 to 2020, this research was focused more on the financial institution sector than another sector in the financial development and was use financial development proxy domestic credit by a bank to private sector percent of GDP as a measure of financial depth as an indicator of financial development in Tanzania.

Empirical review

(Karamelikli and Bayar, 2017) From 2006 to 2016, they looked at the relationship between financial development and tax income in Turkey. As a financial development variable, they employ the banking sector and stock market development. The findings show that financial progress and tax income have a nonlinear positive connection.

Ajide and Bankefa (2017) examine the impact of the financial sector on tax revenue in Nigeria. They discover that financial system characteristics such as stock market development, banking sector development, financial crisis, and financial integration variables all play a critical influence in tax revenue collection using the ARDL approach.

Ebi and Okon (2018) show that in Nigeria, financial development boosts tax income. Data were gathered during the years 1993 to 2017. They're used with error correction model (ECM) technical data and Granger causality. Overall, the rise of the financial industry has aided Nigeria's taxation, according to the findings.

 Nnyanzi et al (2018) Between 1990 and 2014, looked at the relationship between financial development and tax income in East African countries. They demonstrate that financial development has a favorable impact on tax collections.

Gamze (2019), This study examines whether changes in tax revenues are linked to changes in financial inclusion in nations throughout the world, using vast data sets from 137 countries from 2011 to 2017. The file makes use of the Global Findex database and panel data methodologies to accomplish this. The empirical findings reveal that inclusive finance and taxation, which is one of the causes of taxes, have a substantial positive link.

Tsaurai(2020), The influence of tax income on financial development was explored in this article. The nonlinear dynamic generalized methods of moments (GMM) methodology was used to analyze panel data from 2001 to 2017. In emerging economies, the impact of tax complementarity on financial development was shown to be large and favorable.

Toufik & Benatek (2021) Using the Autoregressive Distributed Lag Model, study the influence of financial system activities on regular tax revenue collection in Algeria from 1999 to 2017. (ARDL). The findings revealed no link between non-oil tax revenue and financial growth indicators (stock market development, banking sector development).

Methodology

This study adopted quantitative approach and time series as research design. Time series research design is a design that examines the relationship between variables over equal time intervals and time is an important factor in this case. Time series research design makes use of available secondary data and due to the availability of secondary data, the researcher adopted a time-series design. The merits of using time series design include understanding the past and predicting the future. Time-series study use secondary data which was readily available.

Due to the availability of the data for the period of 1996-2020. The annual time series data for the Tanzanian financial development and tax revenue were obtained from secondary sources and converted into annual data to fit the robustness results and were collected from the World Development Indicators (WDI) and Tanzania Revenue Authority (TRA) the data collected is an annual report and other tax information.

Model specification

According to a prior study of the research, there is a correlation between tax income and financial progress. As a result, we use and adopt an empirical model developed by Taha et al (2013) and Akram (2016).

Because financial development is made up of several components including financial institution and other component plus other control variables (this control variable includes, foreign direct investment, foreign aid, Population, and Trade Openness) and later all variable is transformed into the logarithmic form to simplify the interpretation, we further re-specify our model as follow:

TR= f (FDp, FDI, FA, POP, TO) …………………. (1)

Where:

TR= Tax revenue, FDp = financial depth, FDI = Foreign direct investment, FOA = Foreign aid. POP = population, TOT = Trade openness.

This equation can be reformulated as follows:

$TR= \beta_0 + \beta_1 X1t + \beta_2 X2t + \beta_3 X3t + \beta_4 X4t + \beta_5 X5t + \beta_6 X6 + \mu t$………………. (2)

Where:

Dependent variable.

TR= Tax revenue percentage of GDP

Independent variables.

X1 = Financial depth, X3 = Foreign direct investment, X4 = foreign aid, X5 = Population, X6 = Trade Openness, β_0 = constant, μt = Error term, and β_1 to β_6 are the coefficients of the various variables to be estimated.

To examine the direct influence of financial depth on tax revenue in Tanzania the model is employed are as follow:

$$TR = \beta_0 + \beta_1 FDp_t + \beta_2 FDI_t + \beta_3 FOA_t + \beta_4 POP_t + \beta_5 TOT_t + \mu t$$

Estimation techniques

The study used the unit root test to evaluate the stationarity of the data then run the cointegration. Furthermore, the most appropriate approach for making the estimation was the Dynamic Ordinary Least Square (DOLS), which was presented by Stock and Watson (1993). Because of the following reasons, this method is preferred over Static OLS and the Johansen and Juselius methodology. For starters, it is more resilient and suitable for small sample sizes, implying more efficient and unbiased estimations (Singh, 2010). Furthermore, DOLS was later shown to be more potent than Ordinary Least Square (OLS) methods. It is advantageous in estimating both homogenous and heterogeneous data. Also, this study used Fully Modified Ordinary Least Square (FMOLS) and Conical Cointegration Regression (CCR) to check robustness results.

Data and variables description

We utilized yearly data from 1996 through 2020 to conduct this research. This period was chosen based on the data's availability. It assesses the influence of financial development on tax collections based on this. Table 1 lists the variables that were used.

Table 1: Descriptions of variables, their symbols, and data sources

VARIABLES	SYMBOL	MEASURE	DATA SOURCE
Tax revenue (TR)	TR	Tax revenue percentage of GDP (Independent variables)	World Development Indicators (WDI) & TRA.
Financial depth	FDp	The proxy selected is domestic credit to the private sector as a percentage of GDP	WDI
Trade Openness	TOT	It is calculated as the sum of exports and imports of goods and services, in % GDP.	WDI
Foreign aid	FOA	Amount of official development assistance (grants plus concessional loans, measured in U.S. dollars)	WDI

Foreign direct investment	FDI	FDI flows are measured in USD and as a share of GDP	WDI
Population	POP	Population density (people per sq. km of land area	WDI

Source: Authors

Findings and Discussions

Descriptive statistics

Generally, the value of all variables used in this study has the lowest standard deviation than the mean value, which explores the slight variation among the studying variables from time to time. Starting with tax revenue, the average value has been reported as 15.02 percent which is almost equivalent to the median value which reflects the normality distribution of the series. Moreover, the maximum share of TR was 16.54 in 2018 which is attributed to the increment indirect tax (NBS, 2018), and the minimum percent of TR is 13.32 reported in 1998 due to limited components of taxation. Moreover, Financial depth (FD) as a domestic credit to private sector percent of GDP maintains the mean value of 3.11 percent and 2.97 percent correspondingly, this demonstrates that FS performs between than financial depth in financial institutions in Tanzania between 1996 and 2020. With regards to Foreign Aids (FOA), the statistical table below reveals that out of all selected variables in this study, the FOA maintains the mean values and this demonstrates how Tanzania benefited from the donor grants towards rolling the wheel of development. The maximum share of FOA was received in 2013 which rebound of the net official development assistance (ODA) from donor countries (OECD, 2014). Trade openness (TOT) and Foreign Direct Investment (FDI) appear to account for the lowest average percent compared to other variables in this study. That is Tanzania receives 1.73 percent of GDP as the maximum ratio and 0.33 as a minimum ratio. Whereas the TOT takes only 0.53 percent as the maximum openness and 0.24 percent as the minimum ratio. The standard deviation of TR is 1.18 which is the highest than 0.41 which represents FDI in addition to that the lowest standard deviation is 0.08 representing the TOT.

Table 2: Descriptive Statistics

	LNTR	LNFDp	LNFDI	LNFOA	LNPOP	LNTOT
Mean	15.02113	3.118713	1.028690	21.47268	17.55616	0.407469
Median	15.16885	2.986121	1.028584	21.52373	17.54970	0.405896
Maximum	16.54809	3.732889	1.734082	21.91740	17.90542	0.531156
Minimum	13.32262	2.440005	0.339494	20.81035	17.23142	0.243609
Std. Dev.	1.182403	0.450893	0.412947	0.295222	0.209360	0.085512

| N | 25 | 25 | 25 | 25 | 25 | 25 |

Source: author's computation

Stationarity Tests

Although there are many unit root tests ADF and Phillip-Perron (PP) were appeared to be robust and sufficient for this study. the series were nonstationary at the level because their probability is above 5%. However, the result in **table 3** indicates that all series become stationary after taking the first differences, this reveals almost there is an indicator of a long-run link, and all variables are integrated at order one I (1). The results of the unit root test support the use of the Johansen cointegration test to assess whether a long-run relationship exists, and if so, the cointegration equation.

Table 3: Unit root outcomes (first difference)

Variable	Augmented Dickey-Fuller (ADF)		Phillip-Perron (PP)	
	Intercept	Intercept and trend	Intercept	Intercept and trend
lnTR	-3.758922***	-3.693949**	-3.748171***	-3.694007**
LnFDEPTH	-5.115022***	-5.260371***	-5.100858***	-5.237551***
LnFSTAB	-3.678944**	-4.407931**	-3.618925**	-3.495863*
LnFDI	-7.384498***	-7.498301***	-8.193038***	-16.66763***
LnAid	-5.366243***	-6.550686***	-6.823028***	-14.68409***
lnPOP	-2.791507*	-6.611054***	-3.046105**	-0.568030
lnTOT	-3.967435***	-6.656886***	-4.109709***	-6.598092***

Source: Author's computation

Cointegration test

The result of co-integration is presented in **table 4** below. Both Max Eigen and Trace test indicate, there is a long-run relationship between variables. The results reveal that there is only one co-integration equation for the variables because the likelihood is less than 5% in both Max Eigen and Trace tests, especially at none.

Thus, we can conclude that a long-run relationship exists among the variables, then the Dynamic Ordinary Least Squares (DOLS), Fully Modified Least Squares (FMOLS) and Canonical Cointegration Regression (CCR) can be carried out.

Table 4 Johansen cointegration test results

Unrestricted Cointegration Rank Test (Trace)					Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
Hypothes ized No. of CE(s)	Eigenval ue	Trace Statistic	0.05 Critical Value	Prob.**	Eigenval ue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.775554	64.06936	47.85613	0.0008	0.775554	34.36479	27.58434	0.0058
At most 1	0.568165	29.70457	29.79707	0.0512	0.568165	19.31339	21.13162	0.0881
At most 2	0.328514	10.39118	15.49471	0.2518	0.328514	9.160023	14.26460	0.2731
At most 3	0.052121	1.231159	3.841466	0.2672	0.052121	1.231159	3.841466	0.2672

* Rejection of hypothesis at 5 percent significance level. Trace and max-eigen test indicates 1 cointegration eqn(s) at the 0.05 level.

Source: Author's computation

The direct impact of financial depth on the tax revenue in Tanzania

Based on the result in Table 5 the financial depth variables that is domestic credit to the private sector has a positive and significant impact on tax revenue at 1% level of significance. This means that a one percent increase in financial depth will cause tax revenue to increase by 1.68 percent. This result was consistent with all other alternative estimators. This result supports the empirical findings of Akram, (2016) and Toufik & Benatek (2021).

Table 5: Direct impact of financial depth on the tax revenue in Tanzania

Variable	Dynamic Ordinary Least Squares (DOLS)	Fully Modified Least Squares (FMOLS)	Canonical Cointegration Regression (CCR)
LNF-depth	1.686658*** [0.284848]	1.829520*** [0.244827]	1.765920*** [0.279681]
LNFDI	-1.197710** [0.394381]	-0.577074** [0.285428]	-0.734537** [0.357950]
LNTOT	4.225084*** [1.206807]	2.494342*** [0.578175]	2.661070*** [0.607055]
C	14.94149 [1.681676]	12.23657*** [1.367045]	12.75481*** [1.591634]
Adj_R-	0.953994	0.899508	0.890492

square			

* , **, *** signify the level of significant at 10,5 and 1 percent level of significance.

Source: Author's computation

Conclusion

In conclusion, our findings show that financial growth, particularly financial depth (domestic credit to the private sector as a percentage of GDP), have played a significant impact on Tanzania's tax revenue collection. In terms of policy, the study's findings imply that Tanzanian authorities should continue to pursue measures that promote financial growth. The impact of financial development on tax revenue might be varied. For starters, economic progress leads to a rise in taxable economic activity, which increases direct tax revenue. Second, economic expansion generates wealth and increases demand for products and services, resulting in new investments. As a result, the income tax base will expand, resulting in more direct tax collection. This signified that all independent variables have a significant impact and theoretical be acceptable on the positive trend of tax revenue in Tanzania. The findings of this study and the scenario mentioned above would be the foundation to formulate the strong policy that will ensure the financial developments including financial depth contribute sufficiently to government revenue through tax. Therefore, this would help the government to inject sufficient money for development projects and welfare while creating a conducive environment for investors to invest in various sectors of the economy and financial institutions.

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