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#### TAX INSTRUMENTS FOR TANZANIA'S INDUSTRIALIZATION GROWTH

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#### *Abstract*

Tanzanian government aims to reshape the economy into a semi-industrialized nation by 2025. As a policy measure to support this reform, the government exempted producer capital commodities from value-added tax in 2017/2018 fiscal year. This aims to foster utilization of these commodities in the manufacturing sector in order to generate economic growth, employment, and social well-being of the nation. This research examines the impact of macroeconomic fiscal instruments on the Tanzanian economy, by applying a static “Partnership for Economic Policy 1-1” standard Computable General Equilibrium model. We simulate a reduction of the value-added tax rate on producer capital commodities (electricity, machinery, electrical equipment, vehicles, and other equipment) under two different government closure rules. In the first simulation, government expenditures are fixed while government savings are flexible and adjust to changes in government revenue. Results show a decline in investment expenditure following a decrease in government savings and thus a negative impact on macroeconomic indicators. In the second simulation, government savings are fixed to maintain the budget deficit. The results show a decline in real Gross Domestic Product partly because of a decrease in output in governmental, some agricultural and service sectors. Conversely, output increases for all manufacturing sectors, resulting in lower the average unemployment rate.

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**Keywords:** Capital commodities, Computable General Equilibrium (CGE) modelling, industrialization, social accounting matrix, Tanzania, value added tax.



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## 1. Introduction

Tanzania has begun serious efforts to reform fiscal policy over the past two decades. However, the success of these reforms (i.e. economic stability, increased budget revenue, and a boosting income share) only gained momentum in the last ten years (Bevan, 2010). Within the last decades, fiscal reforms have been the subject that has attracted so much attention in a number of developing and developed countries. Reforms in public expenditure and taxation directed at fastening and improving growth prospects, and reducing poverty particularly in low-income economies (UNCTAD/TDR, 2012). The government of Tanzania has in the same way been using fiscal policy instruments to directly intervene in the economy. Various fiscal reforms have been implemented in the country since the independence, and can be summarized in the following four main epochs:

- 1961 to 1966 epoch (Post-independence) was marked as a market-oriented economy with the economic policy's emphasis on private sector development;
- 1967 to 1985 epoch (Socialism/Nationalization) was characterized by the transition towards from market-driven economy to state-driven economy;
- 1985s to 2005 epoch in which the shortfalls of the socialism approach were addressed and the country adopted a number of economic reforms (e.g., Structural Adjustment Policy);
- 2005 to date epoch intends to generate sustainable economic growth as well as a reduction in income poverty.

All these reforms across the aforementioned epochs contributed to a number of achievements, including macroeconomic stability, steady economic growth, increased government revenue (Budget Brief: Tanzania 2016 Economic Highlights, 2016). In 2016, the World Bank came up with a report that showed growth of Gross Domestic Product (GDP) to be averaging at 7% for the last decade with a slight reduction in 2016 to 6.6%. This growth rate is above the average for Sub-Saharan Africa rate of 4.4%, thereby making Tanzania among the countries with the fastest-growing economy. However, the present economic growth rate is not directly related to essential improvements in quality of life for the vast majority of the people. While the poverty rate has declined from 28.2% in 2012 to 26.9% in 2016 (World Bank, 2016), the number of poor people remains high primarily because of high population growth. Thus, poverty alleviation, productivity gains, and the creation of decent jobs are still need to be realized.

The achieved economic growth does not conform to the target of the Tanzania Development Vision (TDV) 2025 of achieving a high and a quality livelihood for all. Furthermore, it is not in line with the second National Five-Year Development Plan (FYDP II) 2016/17 – 2020/21, which aims at fostering industrialization and human development (Budget Brief: Tanzania 2016 Economic Highlights, 2016; United Republic of Tanzania, 2016). Thus, different objectives form TDV and FYDP II are still not reached and there is still a need for further economic policy reforms and implementation of fiscal policy instruments.

Further reforms of the economic policy are necessary for economic situation of the country to improve. Evaluation tools such as the Computable General Equilibrium (CGE) models are used to assess

these policy reforms. CGE models are widely used since the early 1970s for economic effects analysis of changes in taxation in different countries (Shoven & Whalley, 1984).

## 2. Problem Statement

The Tanzanian government is actively working towards to foster industrialization development under the TDV 2025 plan. The aim is for the industrial sector to contribute 40% to GDP by 2025. The priorities of the Government include policy measures to encourage the country's industrial development and create conditions for improving the business environment.

One of the industrial development initiatives is a value-added tax (VAT) exemption on producer capital commodities to reduce the procurement costs of machines and equipment used for production. The exemption applies to producer capital commodities used in the production of food-grade oil from plants, textiles, leather, pharmaceutical, and veterinary products. It aims to promote the use of these goods – especially in industry – to encourage the production, employment, and investment necessary to enhance the population's well-being. Sectors that use producer capital commodities contribute a lot to Tanzania's GDP, with manufacturing contributing over 25%.

In our study, we developed and used a CGE model and a Social Accounting Matrix (SAM) of the 2015 Tanzanian economy to analytically examine a reduction in the VAT rate on producer capital commodities. We sought to understand the impacts of a partial VAT reduction, rather than a complete exemption, on capital commodities. We also investigated whether a partial VAT reduction would provoke the intended economic benefits of the policy, without reducing government revenues too much. According to 2015 SAM, one of the main contributors to the national GDP is the producer capital goods. Therefore, we simulated to only reduce the VAT rate on producer capital commodities by 10% instead of exempt them completely.

## 3. Research Questions

Simulation scenarios address the following research questions.

- 3.1. What is the impact of a 10% reduction of the VAT on producer capital commodities?**
- 3.2. Can a 10% reduction of the VAT on producer capital commodities generate economic benefit without losing too much governmental tax revenue?**

## 4. Purpose of the Study

The purpose of the study presented in this article is to examine a reduction in the VAT rate on producer capital commodities and its impact on the main macroeconomic variables (GDP, Investments, Exports, Imports, and Unemployment rate) and on cross-sectoral effects.

We simulated two scenarios for how the government could adapt to the losses of governmental income due to a 10% reduction in the VAT rate on producer capital commodities:

*Simulation Scenario 1:* 10% decrease in the VAT rate on producer capital commodities under flexible government savings and fixed government expenditure. According to this scenario, the government could enhance its borrowing to finance inadequate tax revenue but would be required to pay off those debts in the future.

*Simulation Scenario 2:* 10% decrease in the VAT rate on producer capital commodities under fixed government savings and flexible government expenditure. Under this scenario, the government can adapt to the losses (caused by the decrease in VAT tax collection) by reducing spending.

## 5. Research Methods

### 5.1. Model

This study used a static “Partnership for Economic Policy 1-1” (PEP 1-1) standard CGE model (Decaluwé, Lemelin, Robichaud, & Maisonnave, 2013). Because one of the assumptions of the standard PEP 1-1 CGE model is full-employment in the labour market, we modified the model to account for unemployment in Tanzania. Given that unemployment does not fit a general equilibrium framework, we introduced the forced unemployment rate in order to make the model a more realistic schema of the Tanzanian economy. In this case, the labour market was modeled excluding trade unions as they cover only approximately 27% of formal employees. PEP 1-1 Model was extended by including the equation of the unemployment rate via a wage curve equation (Cicowiez, Decaluwé, & Nablil, 2017). This modeling approach is appropriate to represent trade-offs between forced unemployment and wage rate. A detailed description of equations, variables, and parameters, including modeling the labour market, please refer to (Maskaeva, Mmasa, Lema, & Msafiri, 2018).

### 5.2. Data

We used 2015 SAM for the Tanzanian economy developed by International Food Policy Research Institute (IFPRI) researchers (Randriamamonjy & Thurlow, 2017), for this study. The SAM for Tanzania consists of 70 sectors and 68 commodities that have been aggregated into 55 sectors and 56 commodities. Out of these, 25 sectors are agricultural, 19 sectors are industrial, and 11 sectors are services. The service sector contributes about 44.4% of the GDP – the highest of all – while agriculture and industry represent 30.3% and 25.3%, respectively. The industrial sub-sector is the main contributor to the GDP within the construction sector and accounts for about 15.7% of the GDP.

A new term “producer capital commodities” was introduced here. This term includes vehicles, machinery, and electrical and transportation equipment that is used in the production of final goods. Producer capital commodities also include infrastructure items (i.e. the supply of electricity, gas, and steam). According to the 2015 SAM, the contribution of the capital commodities sector to the GDP is about 1.3%; therefore, fiscal policy reforms focused on producer capital commodities would have overall macroeconomic effects in Tanzania.

The SAM has four types of institutions: Households, Firms, Government, and Rest of the World. There are fifteen household categories, disaggregated by rural and urban areas and income groups and differentiated into national per-capita-expenditure quintiles.

The government collects direct taxes on households' and firms' income, indirect taxes on activities and commodities (VAT, excise duties, and other indirect taxes), and import tariffs; makes remittance to other economic agents, and purchases commodities and saves.

For the purpose of this study, the indirect tax account was further disaggregated into VAT, excise duties, and other taxes. From the SAM, we found that the VAT share of total indirect taxes was 73.2%, excise duties stood at 18.6%, and other taxes were 8.2%.

Analysis of Tanzanian budget revenue indicates that the government relies heavily on indirect taxes, especially on VAT, as a source of income. Consequently, indirect taxes, and specifically VAT, could be one of the tools of tax reform that addressed in increasing government revenue. Thus, additional revenue might be reallocated to reduce poverty and inequality.

## 6. Findings

The results of the simulated scenarios enable us to draw the conclusion about the effects on the Tanzanian economy caused by a policy measure in the VAT reduction on producer capital commodities. The effects of the simulated reforms are identified by key macroeconomic variables (Section 6.1), with respect to the different sectors (Section 6.2), and effects on the different economic agents (Sections 6.3 and 6.4).

### 6.1. Macroeconomic effects

Table 01 shows that the decrease in VAT rate by 10% on producer capital commodities in both scenarios, reduces the consumer price index by 0.1%, total government receipts from indirect taxes by 1.3% and total government receipts from VAT by 1.7%. This decrease negatively affects the total government income by 0.5% in Simulation 1 and by 0.6% in Simulation 2. While holding the government expenditure fixed in Simulation 1, the reduction of government income reduces government savings by 26.4% and thus increase government deficit. This reduction is relatively high because, the base value for government savings is very small, thus any negative shock strongly affects this variable. As for Simulation 2, government savings are fixed, the decrease in government income reduces the current government expenditure by 0.7%.

**Table 01.** Effects on macroeconomic variables, percentage changes

Macroeconomic variables	Simulation 1	Simulation 2
Total government income	-0.5	-0.6
Total government receipts of Indirect taxes on commodities	-1.3	-1.3
Total government receipts of VAT on commodities	-1.7	-1.7
Real current government expenditures	+0.1	-0.5
Current government expenditures	Fixed	-0.7
Government savings	-26.4	Fixed
Firms savings	-0.03	-0.06
Households savings	-0.03	-0.02
Total Investment	-0.3	-0.1
GDP at basic prices	-0.03	-0.1
Real GDP at basic prices	+0.04	-0.01

Real GDP at market prices	-0.02	-0.1
Consumer price index	-0.1	-0.1
Unemployment rate	+0.1	-0.03

Source: Authors calculation

In both scenarios, total investment decreases due to a 10% reduction in the VAT rate on producer capital commodities. This results in the reduction in GDP at basic prices by 0.03% in Simulation 1 and by 0.1% in Simulation 2. As a result of a 0.1% fall in the consumer price index for both simulations, the real GDP at basic prices increases by 0.04% in Simulation 1 and declines by 0.01% in Simulation 2.

In Simulation 1, despite the wage rate reduction, the unemployment rate increases slightly by 0.1%. The reason is that the government reduces the savings and the investment expenditures for construction sector, as the main consumer of construction commodities, and as a result, the construction sectors' total output declines. This leads to decrease demand for labour in the construction sector which employs a large number of workers.

Total investment expenditures reduce in both scenarios due to the reduction in government revenue. In Simulation 1, the decline in investment expenditure (-0.3%) is mainly due to the decrease in public savings that results from declining government revenue. On the contrary, as government savings are fixed, total investment expenditure in Simulation 2 is determined by firms' and households' savings. These savings decrease by 0.06% for firms and by 0.02% for households, thereby decreasing the total investment expenditure (-0.1%) in the economy.

A reduction in governmental investment expenditure in Simulation 1 lowers the demand for commodities (i.e. cattle, construction, and business services) by 0.2%. Moreover, the final demand for producer capital commodities increases by 0.8% because of a relatively higher decrease in consumer price due to the reduced VAT rate (Table 02). There are more positive impacts on the final demand for commodities in Simulation 2. Fall in the price of producer capital goods leads to increase production which in turn results in rising final demand.

**Table 02.** Total Investment and the final demand for commodities

Investment and demand for commodities	Simulation 1	Simulation 2
Total Investment expenditure	-0.3	-0.1
Final demand for cattle	-0.2	+0.04
Final demand for producer capital commodities	+0.8	+1.0
Final demand for construction	-0.2	+0.001
Final demand for business services	-0.2	+0.01

Source: Authors calculation

## 6.2. International Trade effects

In both simulations, a reduced VAT rate decreases domestic price and import price of the producer capital commodities by 1.2% and 1.1%. Similarly, for the other commodities, the decrease in domestic prices is higher than the decrease in import prices. This makes domestic goods more attractive and thereby increases domestic demand of producer capital commodities by 0.8% in Simulation 1 and by 0.9% in Simulation 2 (see Table 03 and Table 04).

**Table 03.** Effects on prices and volumes (Simulation 1)

Commodities	Volume change, %				
	Domestic demand	Imports	Domestic supply	Exports	Total outputs
Wheat and burley	0.11	0.06	0.11	0.09	0.11
Other Oil seeds	0.13	0.06	0.13	0.10	0.12
Cash crops	0.12	0.06	0.12	0.11	0.12
Tea leaves	0.13	0.07	0.13	0.22	0.21
Cut flowers	0.07	0.04	0.07	0.07	0.07
Other crops	0.08	0.05	0.08	0.07	0.07
Meat processing	0.12	0.02	0.12	0.12	0.12
Fish and seafood processing	0.14	0.03	0.14	0.17	0.16
Fats and vegetable processing	0.11	0.05	0.11	0.11	0.11
Grain milling	0.07	0.02	0.07	0.09	0.07
Luxury foodstuff	0.14	0.08	0.14	0.12	0.13
Metal and metal products	0.27	0.01	0.27	0.28	0.28
Other manufacturing	0.13	0.02	0.13	0.16	0.13
Producer capital commodities	0.82	0.51	0.82	0.60	0.73

Source: Authors calculation

Similarly, as the price of imports decreases, import of some commodities (i.e. producer capital goods, manufacturing products, metal and some agricultural commodities like tobacco, wheat, flower, tea and other crops) as seen in Simulation 1 increases (see Table 03). In Simulation 2, the increase of imports is smaller and applies only to two sectors: metals and producer capital commodities (Table 04).

**Table 04.** Effects on prices and volumes (Simulation 2)

Commodities	Volume change %				
	Domestic demand	Imports	Domestic supply	Exports	Total outputs
Metal and metal products	0.30	0.03	0.30	0.30	0.30
Producer capital commodities (Aggregated: Electricity, gas and steam, electric equipment, machinery, vehicles and transport equipment)	0.89	0.56	0.89	0.65	0.79

Source: Authors calculation

With the current account balance fixed in both simulations, the increase in imports in some sectors is financed by the decrease in imports in the other sectors and increase in exports. In Simulation 1, imports decreased in 24 sectors compared to 35 sectors in Simulation 2. These sectors include cereals, vegetables, fruits, cattle, poultry, mining, dairy, food, non-metals, transport, financial, business and other services.

The increase in exports is a result of real depreciation which arise from a small country assumption (international prices are fixed), which makes export commodities cheaper. Thus, in Simulation 1 and 2, an increase in exports is noted in all export relevant commodities across all sectors. Generally, domestic prices decrease more in Simulation 2 for all commodities, while imports prices decrease more in Simulation 1. A Reduction of VAT rate on producer capital commodities and hence all prices decrease explains the increase in exports and the decrease in imports given that the international prices are fixed.

### 6.3. Production effects

In Simulation 1, the total output increases in 53 sectors, with a significant increase for producer capital commodities by 0.7%.

**Table 05.** Output, Intermediate consumption, Intermediate consumption price index, Value added, Price of value added of composite industries (Simulation 1)

Sector	Output	Intermediate consumption	Value added	Intermediate price consumption	Value added price
Producer capital commodities	0.73	0.73	0.73	-0.44	0.79
Construction sector	-0.18	-0.18	-0.18	-0.08	0.002

Source: Authors calculation

The reason for this decrease is that the lowering 10% VAT rate reduces the government income which is led to a decrease in the final demand for the construction sector's commodities.

In Simulation 2 (Table 06) some sectors are most affected than others. The output of the public sectors decreases significantly and therefore the demand for labour is considerably reduced.

**Table 06.** Output, Intermediate consumption, Intermediate consumption price index, Value added, Price of value added of composite industries (Simulation 2)

Sectors	Output	Intermediate consumption	Value added	Intermediate price consumption	Value added price
Cattle	-0.01	-0.01	-0.01	-0.08	-0.08
Raw milk	-0.01	-0.01	-0.01	-0.08	-0.08
Meat processing	-0.12	-0.12	-0.12	-0.15	-0.15
Water supply and sewage	-0.02	-0.02	-0.02	-0.11	-0.11
Construction	0.00	0.00	0.00	-0.09	-0.09
Business services	0.01	0.01	0.01	-0.10	-0.10
Public administration	-0.53	-0.53	-0.53	-0.13	-0.13
Education	-0.38	-0.38	-0.38	-0.18	-0.18
Health and social work	-0.31	-0.31	-0.31	-0.12	-0.12
Other services	-0.02	-0.03	-0.03	-0.12	-0.12
Producer capital commodities	0.79	0.79	0.79	-0.45	-0.45

Source: Authors calculation

The reason is the decrease in the government expenditure (0.7%) and the decrease in total intermediate consumption. These sectors are highly labour intensive, so employment decreases to compensate for the fall in output.

Other sectors (water and meat processing) are highly capital intensive. Given that the wage declining more than the rent of capital, which explains why the labour more demanded in these sectors and the domestic price of commodity decreases.

### 6.4. Unemployment rate effects

Table 07 presents the impact of the simulated policies on unemployment rate in the economy.



**Table 07.** Unemployment rate for different labour categories (Simulation 1 and 2)

Labour	Unemployment rate	
	Simulation 1	Simulation 2
Uneducated rural households	0.10	0.05
Rural households with primary education	0.06	0.04
Rural households with secondary education	0.10	-0.04
Rural households with tertiary education	0.07	-0.10
Uneducated urban households	0.04	0.01
Urban households with primary education	0.03	0.02
Urban households with secondary education	0.08	-0.11
Urban households with tertiary education	0.05	-0.12

Source: Authors calculation

In Simulation 1, the unemployment rate increases for all labour categories. This is because of a high decrease in labour demand of 0.15% in the construction sector which employs the highest share of labour (74.1% out of the total labour). Conversely, the unemployment rate rises only for unskilled workers (uneducated and less educated households) in both rural and urban areas in Simulation 2. The reason is, these households are mostly employed in agricultural sectors (cattle and raw milk) and in all governmental sectors where the total production decreases compared to the increase in production in industries that employ skilled and high skilled workers.

## 7. Conclusion

A 10% decrease in the VAT rate under fixed government savings may be more favourable to Tanzania's economy than one in which government savings vary. The important economic sectors of manufacturing and construction (contributing 25.3% and 15.7% to GDP, respectively) are protected under this scenario while unemployment is reduced. In particular, the government can protect the construction sector from the negative effects of a relative price decrease of capital goods under this scenario.

Under flexible savings, however, despite a slight increase in the real GDP at basic prices, the construction sector suffers as it receives less government investment, leading to an overall increase in unemployment.

As such, the goal of establishing an industrialized economy in Tanzania is potentially attainable through a tax policy that reduces the VAT on producer capital commodities while fixing government savings.

Since Tanzania's budget relies heavily on indirect taxes, and VAT in particular, the government can promote the development of the industrial sector and retain its revenue by reducing rather than exempting the VAT rate on capital commodities.

The development of the industrial sector should go in hand with the increased support to the agriculture sector, especially livestock, so as to increase the employment rate for all labour categories.

Another policy to consider would be to tie VAT reduction to industry commitments in order to develop compensation measures supporting that the favourable of the VAT reduction would reach consumers, employees, suppliers, and the whole economy as well. These might include, for example, creating a number of new jobs or providing social services to poor households.

Tanzania's fiscal policy-oriented to tax faces a number of long-term issues and decreasing the VAT rate on capital commodities could help make the system more growth-supporting while requiring little or no rewriting of tax laws or the creation of new tax collection mechanisms.

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