

# EXAMINING THE RELATIONSHIP BETWEEN FOREIGN AID INFLOWS AND TAX REVENUE IN KENYA: Evidence from a Vector-Autoregressive Approach

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## Introduction

- The model of taxation conceptualizes an optimizing policy maker working with a budget constraint to balance costs and benefits of taxation. From this, aid can be seen as a rational substitute for domestic revenue
- Studies on the interaction of tax revenues and external flows have focused on cross-country approaches
- Cross-country approach assumes long-run homogeneity of aid and fiscal situations across countries making it difficult to derive country-specific policy implications
- The main aim of this paper is to assess this interaction in Kenya.

## Data and data sources

- The principal data sources for this paper are the Central Bank of Kenya government statistics which provide detailed total external debt and tax revenues from 2001 to 2018. Data on Official Development Aid (ODA) were obtained from the OECD's development statistics and the IMF's concessional Trust fund data obtained from the IMF's Government Finance Statistics (GFS) database.
- Tax revenue data consists of import duty, excise duty, income tax and VAT
- The ODA data incorporates flows from both bilateral and multilateral donors. It does not include other official flows (OOF)
- IMF's concessional Trust Fund Data is used to reflect on the effect of grants to the tax revenue in the country. IMF is the largest grant donor to Kenya.

## Econometric Methodology

- A Vector-Autoregressive approach (VAR) is used to establish the relationship between tax revenue, ODA, external debt and the concessional loans.
- The VAR model takes the following empirical specification:

$$1) \text{taxrev}_t = \alpha + \sum_{i=1}^k \beta_i \text{taxrev}_{t-i} + \sum_{j=1}^k \phi_j \text{ext\_debt}_{t-j} + \sum_{m=1}^k \varphi_m \text{ODA}_{t-m} + \sum_{n=1}^k \tau_n \text{imf\_conce}_{t-n} + \epsilon_{it} \quad 3) \text{ODA}_t = \alpha + \sum_{i=1}^k \beta_i \text{ODA}_{t-i} + \sum_{j=1}^k \phi_j \text{ext\_debt}_{t-j} + \sum_{m=1}^k \varphi_m \text{taxrev}_{t-m} + \sum_{n=1}^k \tau_n \text{imf\_conce}_{t-n} + \epsilon_{it}$$

$$2) \text{ext\_debt}_t = \alpha + \sum_{i=1}^k \beta_i \text{ext\_debt}_{t-i} + \sum_{j=1}^k \phi_j \text{taxrev}_{t-j} + \sum_{m=1}^k \varphi_m \text{ODA}_{t-m} + \sum_{n=1}^k \tau_n \text{imf\_conce}_{t-n} + \epsilon_{it} \quad 4) \text{imf\_conce}_t = \alpha + \sum_{i=1}^k \beta_i \text{imf\_conce}_{t-i} + \sum_{j=1}^k \phi_j \text{ext\_debt}_{t-j} + \sum_{m=1}^k \varphi_m \text{taxrev}_{t-m} + \sum_{n=1}^k \tau_n \text{ODA}_{t-n} + \epsilon_{it}$$

- Where: *taxrev* denotes the total taxation revenue in Kenya at year *t*, *ext\_debt* represents the country's external debt in time *t*, *ODA* denotes the total official development aid and *imf\_conce* represents the IMF's concessional Trust Fund which stands in for the grant element in the model.
- The number of lags in the VAR model is 2 as given by the Akaike & Schwarz criterion. The coefficients  $\phi_i, \varphi_i, \tau_i$  represent the parameters to be estimated by the model.  $\alpha$  is a constant and  $\epsilon_{it}$  the classic error terms of the set of variables included.

## Results and Discussions

Table 1: Interaction effect of tax revenue and foreign aid inflows

	(I)	(II)	(III)	(IV)
Dep. Variable	taxrev	ODA	ext_debt	imf_conce
ODA t-1	-0.1435 (1.33)	.	0.04949** (.018)	-201.7826 (201.626)
ODA t-2	0.8837 (1.14)	.	0.07149** (.0162)	-7.1442 (173.986)
ext_debt t-1	0.8209 (6.16)	-2.158** (0.811)	.	-3222.02** (932.89)
ext_debt t-2	11.4395** (5.31)	-0.534** (0.69)	.	-2144.47** (803.64)
imf_conce t-1	-0.0022 (0.002)	0.0049 (0.0002)	.000124** (.00003)	.
imf_conce t-2	0.0002 (0.002)	0.00016 (0.0003)	.000132** (.000034)	.
taxrev t-1	.	-0.0602** (0.021)	0.0044** (.00227)	71.66594** (24.424)
taxrev t-2	.	-0.0100 (0.025)	-0.0163** (.0027)	87.699** (29.12)
Constant	-0.0530 (0.18)	-0.0015 (0.024)	-0.0018 (.0026)	-5.1714 (28.069)
R-squared	0.8907	0.9731	0.9745	0.9702

Tax revenue has

- a positive and significant relationship with external debt,
- a negative and significant interaction with ODA,
- A positive and significant interaction with concessional funds and grants.

Table 2: Robustness Checks: Granger causality Wald tests

	Degrees of freedom	chi-squared statistic	probability value
Dependent variable: taxrev			
ODA	2	3.378	0.185
Ext_debt	2	6.366	0.041
imf_conce	2	22.464	0.000
All	6	31.449	0.000
Dependent variable ODA			
taxrev	2	12.741	0.002
ext_debt	2	61.114	0.000
imf_conce	2	24.941	0.000
All	6	71.095	0.000
Dependent Variable ext_debt			
taxrev	2	0.000	
ODA	2	0.000	
imf_conce	2	0.001	
All	6	0.000	
Dependent variable imf_conce			
taxrev	2	10.453	0.005
ODA	2	4.1974	0.123
ext_debt	2	12.935	0.002
All	6	31.325	0.000

The Granger causality Wald tests support unidirectional and bidirectional causalities between the variables studied.

- External debt influences tax revenue
- IMF grants positively influence tax revenues

## Discussion and Policy Implications

### Official Development Aid

- ⇒ Negative interaction of ODA to tax revenues
- ⇒ Aid inflows disincentivize tax efforts
- ⇒ Endogeneity of aid; poor countries receive the most aid and they tend to face the greatest challenge in raising tax efforts
- ⇒ Point of further interest; look into how ODA interacts with different components of tax revenue

### External Debt & Concessional Grants

- ⇒ Positive interaction with tax revenues
- ⇒ Loans encourage tax effort to meet repayments
- ⇒ Majority of debt is tied with policy implications for the fiscal structure of the country.
- ⇒ Conditionalities enforcing tax policy reforms can enhance tax revenues
- ⇒ IMF's Executive Board in support of the FY2023/24 Budget and the controversial 2023 Finance Act.

## Conclusion

- To encourage efficient taxation measures, conditionalities should be attached to foreign aid emphasizing on the increasing of tax efforts.
- Additionally, project-specific flows to domestic resource mobilization efforts could see to an improvement of taxation reducing the negative correlation of ODA.

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