

# ***2022 GLOBAL DEVELOPMENT CONFERENCE***

*Theme: Tax Policy for Sustainable Development*

## **Resources Mobilization and Mobile Financial Services in Africa: Does Financial Innovation Matter?**

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# Outline



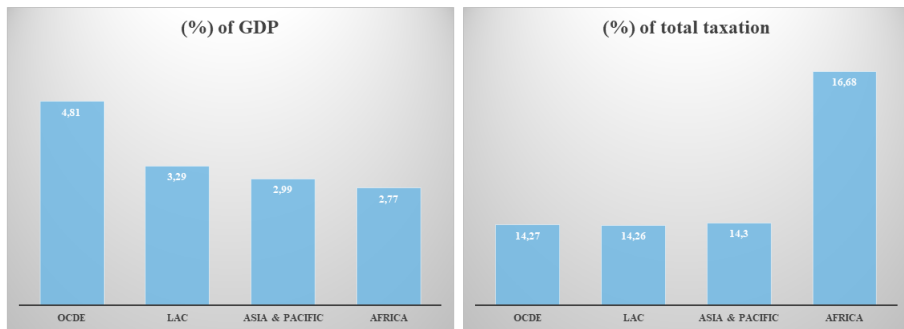
- 1 Motivations
- 2 Data and empirical strategy
- 3 Empirical Results
- 4 Conclusion and Policy implications

# Motivations

- The Tax revenue mobilization is a central concern of economic policymaking in many, especially in developing countries ([Akitoby et al., 2019](#)).
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- The importance of building tax capacity was underscored by the G-20 leaders in 2010, who called on the IMF and development institutions to monitor revenue mobilization efforts ([IMF, 2020](#)).

# Motivations

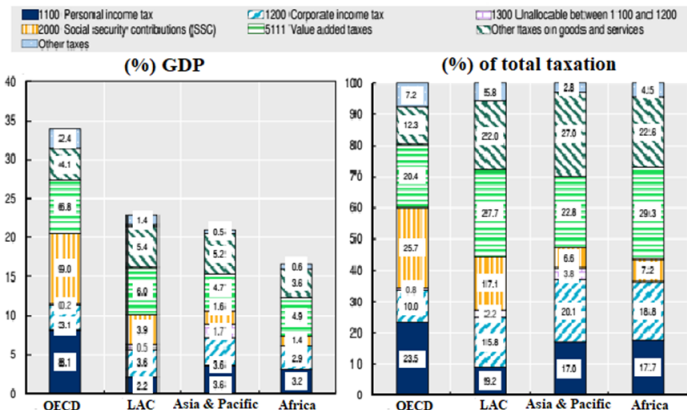
Figure: Comparative analysis of tax structure in 2019



Source: Authors' construction with OECD tax statistics

# Motivations

Figure: Comparative analysis of tax structure in 2019 (by components)



Source: Authors' construction with OECD tax statistics

# Motivations

- **How to mobilize sufficient tax revenue?**
- **What have other countries done to increase revenue collection?**
- **Does tax reforms matter?**

# Motivations

## Build Trust and provide Proof

Citizens must trust their governments. They need proof that their hard-earned resources are being used wisely and that in the long run they will benefit from projects completed using taxpayer funds.

## Keep it simple

Complex tax system foster a culture of evasion and create opportunities for corruption.

## Broadening the tax base

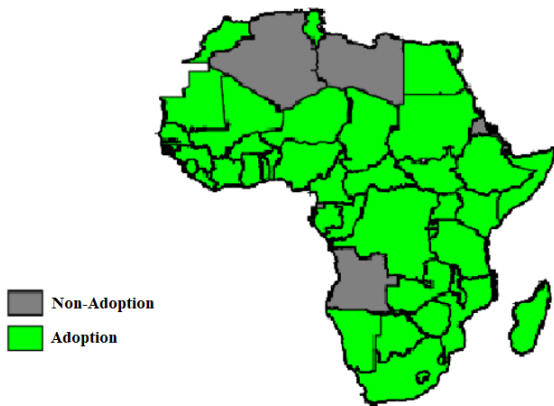
The broadening of tax base make it possible to reach a significant proportion of the population, particularly those engaged in small-scale informal activities, which generate profits.

## Go digital

The simpler the tax system is, the easier it is to enable electronic tax payments.

# Motivations

Figure: Mobile Money adoption in Africa

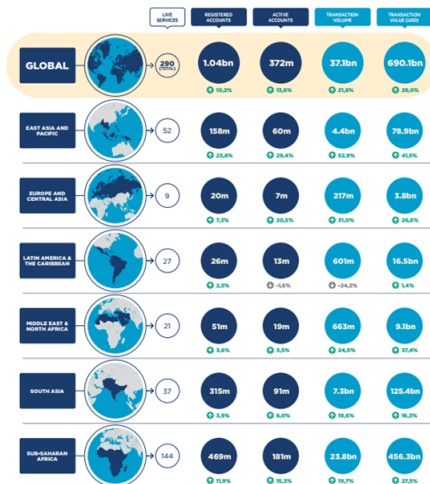


Source: Author's construction with GSMA (2019) data.



# Motivations

Figure: Regional differences in Mobile Money



Source: GSMA (2019)

# Data

## Sources of data

- ① Global System for Mobile Communications Associations (GSMA)
- ② International Center for Tax and Development (ITCD)
- ③ World Development Indicators (WDI)
- ④ Worldwide Governance Indicators (WGI)

## Sample

- 42 African countries

## Period

- 2000-2018

# Empirical strategy

Let  $Taxrev_{1,i}$  be the potential level of tax revenue in country  $i$  if MoMo is adopted, and  $Taxrev_{0,i}$  the potential level of financial inclusion in country  $i$  without MoMo.

$$Taxrev_i = Taxrev_{0,i} \quad \text{if} \quad MoMo_i = 0 \quad (1)$$

$$Taxrev_i = Taxrev_{1,i} \quad \text{if} \quad MoMo_i = 1 \quad (2)$$

The effect of MoMo for a country  $i$  is given by:

$$\theta_i = Taxrev_{1,i} - Taxrev_{0,i} \quad (3)$$

# Empirical strategy

The average treatment effect on the treat (ATT) defined as the mean of the difference in outcome (tax revenue level) between the two groups (treated and control groups), is computed as follows:

$$ATT = E[Taxrev_{1i} | MoMo_i = 1] - E[Taxrev_{0i} | MoMo_i = 0] \quad (4)$$

The ATT is based on two assumptions namely, the unconfoundedness assumption or conditional independence assumption (CIA) and the common support assumption (CSA). the propensity score - PS (or probability to adopt MoMo) under the CIA is defined as:

$$p(X) = pr(MoMo = 1 | X) \quad (5)$$

The CSA is reflected by equation :

$$0 < pr(MoMo = 1 | X) < 1 \quad (6)$$

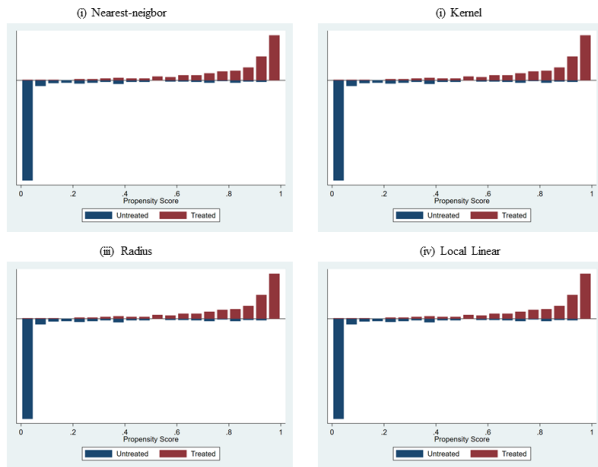
# Empirical Results

Table: Logit estimates of PSM

VARIABLES	Mobile Money
Mobile phones	6.6394*** (0.920)
GDPPC	-0.3261 (0.296)
Education	2.5633* (1.391)
Urbanization	0.0261 (0.196)
Social Globalization	-11.1035*** (2.362)
Labor Force	4.5376*** (1.077)
Rule of Force	1.0730** (0.499)
Consumption	1.2791 (0.946)
Inflation	-0.1999 (0.486)
Constant	-17.3290* (9.614)
Observations	475

# Empirical Results

**Figure:** Distribution of the estimated propensity score and the region of common support



# Empirical Results

Table: Propensity score matching estimates

	Nearest-Neighbor			Radius			Kernel	Local Linear
	N=1	N=2	N=3	R=0.045	R=0.090	R=0.018	BW=0.06	BW=0.06
<b>Mobile Money (ATT)</b>	<b>0.1060***</b>	<b>0.1087***</b>	<b>0.1177***</b>	<b>0.1250***</b>	<b>0.1352***</b>	<b>0.1496***</b>	<b>0.1225***</b>	<b>0.1135***</b>
	(0.024)	(0.024)	(0.024)	(0.021)	(0.021)	(0.020)	(0.022)	(0.020)
Number of Treated	201	201	201	201	201	201	201	201
Number of Controls	274	274	274	274	274	274	274	274
Total Observations	475	475	475	475	475	475	475	475
Bootstrap replications	500	500	500	500	500	500	500	500

# Empirical Results

Table: PSM Estimates with tax components

Dependent variable: Direct Tax								
	Nearest-Neighbor			Radius			Kernel	Local Linear
	N=1	N=2	N=3	R=0.045	R=0.090	R=0.018	BW=0.06	BW=0.06
<b>Mobile Money (ATT)</b>	<b>0.017***</b>	<b>0.017***</b>	<b>0.019***</b>	<b>0.020***</b>	<b>0.022***</b>	<b>0.024***</b>	<b>0.020***</b>	<b>0.018***</b>
	(0.004)	(0.003)	(0.004)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Number of Treated	201	201	201	201	201	201	201	201
Number of Controls	274	274	274	274	274	274	274	274
Total Observations	475	475	475	475	475	475	475	475
Bootstrap replications	500	500	500	500	500	500	500	500
Dependent variable: Indirect Tax								
	Nearest-Neighbor			Radius			Kernel	Local Linear
	N=1	N=2	N=3	R=0.045	R=0.090	R=0.018	BW=0.06	BW=0.06
<b>Mobile Money (ATT)</b>	<b>0.029***</b>	<b>0.029***</b>	<b>0.032***</b>	<b>0.034***</b>	<b>0.036***</b>	<b>0.040***</b>	<b>0.033***</b>	<b>0.031***</b>
	(0.004)	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Number of Treated	201	201	201	201	201	201	201	201
Number of Controls	274	274	274	274	274	274	274	274
Total Observations	475	475	475	475	475	475	475	475
Bootstrap replications	500	500	500	500	500	500	500	500



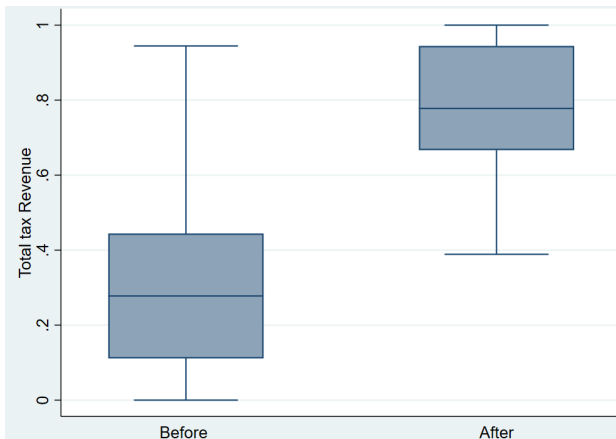
# Empirical Results

Table: Instrumental variable estimates

	(1)	(2)	(3)
	Tax Revenue	Direct Tax	Indirect Tax
<b>Mobile Money</b>	0.0471***	0.0207***	0.0264***
	(0.014)	(0.003)	(0.005)
<b>GDPPC</b>	-0.0691***	-0.0079***	-0.0103***
	(0.007)	(0.002)	(0.003)
<b>Population</b>	0.0094**	-0.0010	0.0072***
	(0.004)	(0.001)	(0.001)
<b>Trade Openess</b>	0.0865***	-0.0053*	0.0199***
	(0.016)	(0.003)	(0.003)
<b>Urbanization</b>	0.0434***	0.0212***	0.0187***
	(0.014)	(0.003)	(0.006)
<b>Control of Corruption</b>	0.0625***	0.0113***	0.0231***
	(0.011)	(0.002)	(0.003)
<b>Constant</b>	0.1185**	0.0345***	-0.0397**
	(0.055)	(0.013)	(0.018)
<b>Observations</b>	499	424	450
<b>R-squared</b>	0.191	0.506	0.192
<b>KP-LM Test</b>	0.000	0.000	0.000
<b>F-Stat</b>	160.9	128.0	161.4
<b>Hansen</b>	0.221	0.120	0.417

# Empirical Results

Figure: Tax revenue in Africa before and after the adoption of mobile money



Source: Authors' construction

# Conclusion and Policy implications

- **The adoption of Mobile Money has improved the mobilization of tax resources in Africa in about 11-15%..**

This work therefore emphasizes the following implications:

- ▶ The promotion of Mobile Money will contribute to the strengthening of transparency in tax mobilization, the reduction of corruption and tax evasion.
- ▶ There is therefore a need to invest in infrastructure development and to facilitate access to ICTs



**THANK YOU FOR YOUR KIND ATTENTION!**