

# Digitalisation of taxes: Does mobile money tax payments affect tax revenue mobilisation?

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## Introduction/Motivations

# Penetration of mobile money

## Mobile money services

- Life quality enhancing services: Payment of communication airtimes, online payments, and transfers with or without commercial counterpart and cash withdrawals, P2P funds transfers.

## Extension of mobile money services

- African tax administrations attempt to leverage the potentialities offered by mobile money services in making it easier for taxpayers to fulfill their tax obligations.
- To do so, these tax administrations introduce digital payment of taxes via mobile money

## Benefits from paying taxes through mobile money

- For taxpayers, tax payment through mobile phone aims at reducing costly displacements of taxpayers' to and from tax offices (timely and cost-effective)
- For tax administrations, the introduction of tax payment through mobile phone is likely to secure and increase tax revenue mobilisation by stimulating tax compliance, reducing fraud and increasing transparency.

## Challenges to achieve these benefits

- Tax payment platform via mobile money may experience significant outages (near filing and payment deadlines), and thereby prevents and disincentives taxpayers from using mobile money for tax payment
  - Some tax authorities have not yet made mandatory tax payment through mobile money, but rather encourage taxpayers to move to this payment method (struggle of prerogative: tax administration vs parliament)
  - This may slow down the transition towards harnessing the full benefit of this tool and thereby limiting the potential tax enhancing effect from adopting tax payment via mobile phones in the short run
- \*\* With the above, the impact of allowing tax payment through mobile money on tax revenue performance and collection efficiency is not so obvious and systematic.

## Objective of this paper

**Estimate the impact of allowing tax payment through mobile money on tax revenue performance in Sub-Saharan Africa** - something which, to our knowledge, no previous study has done.



How do taxes payment through mobile money  
affects tax revenue mobilisation?

# How do taxes payment through mobile money affects tax revenue mobilisation?

- Using mobile money for paying taxes could potentially reduce fraud and enhance transparency in tax administration
- Tax payments via mobile money reduce the possibility for abuse and corruption
- Allowing taxes payment through mobile money may increase tax compliance by enhancing the ease of paying taxes (good for DB indicators).

# How do taxes payment through mobile money affects tax revenue performance ?

- Digital payment of taxes makes control easier help in detecting discrepancies and tax evasion and tax avoidance symptoms.
- In addition to plugging leakages, Digital payment of taxes could generate significant operational gains by reducing tax administration costs and thereby increase collection efficiency.

## Tax payments through mobile money and government revenue collection: stylized facts

# Tax payments via mobile money and government revenue collection: stylized facts

## Deployment of tax payment through mobile money

| Country       | Mobtax | Mobile money |
|---------------|--------|--------------|
| Tanzania      | 2011   | 2008         |
| Rwanda        | 2013   | 2009         |
| Cameroon      | 2014   | 2009         |
| Kenya         | 2014   | 2007         |
| Mauritius     | 2014   | 2010         |
| Uganda        | 2015   | 2009         |
| Madagascar    | 2017   | 2010         |
| Burkina faso  | 2017   | 2012         |
| Côte d'Ivoire | 2018   | 2008         |
| Liberia       | 2018   | 2011         |

## Tax payments via mobile money and government revenue collection: stylized facts

- In Tanzania, one year after "mobtax", 15% of the tax base was using the new mobile tax payment option and, among those, some did not have a history of paying taxes and mobile payment contribute to a decrease in tax avoidance (Scharwatt, 2014).
- In Cameroon, "mobtax" increased property tax collection for the fiscal year 2016 up to 4 billions CFA franc against an average property tax revenue of 1.7 billions CFA franc before the reform (Famkam Sideu, 2017).
- In Burkina faso, despite the digitalisation of tax declaration and tax payment in Burkina faso, as of end of the year 2018, the country has not experienced an increase in tax revenue collection performance which has remained stable in 2018 (AFRITAC WEST, 2019)

## Empirical analysis

# Empirical model specification

- We specify a panel fixed effect model

$$Tax_{it} = \alpha + \delta Mobtax_{it} + \beta X_{it} + \vartheta_i + \mu_t + \varepsilon_{it}$$



$$Mobtax_{it} = \begin{cases} 1, & \text{Existence of paying taxes via mobile money} \\ 0, & \text{otherwise} \end{cases} \quad (1)$$

- The variable Mobtax is potentially endogenous in the baseline equation.
- IV technique; Instruments: mobile cellphones subscriptions per 100 people and Lewbel's heteroskedasticity-based instruments.

# Control variables

- $X_{it}$  : GDP per capita growth, inflation, trade openness, agriculture, fisheries and forestry value added and natural resources rents, domestic credit to the private sector.

## Data and sample

- Tax variables: UNU-WIDER GRD (Prichard et al, 2014)
- Macroeconomic data : WDI, World Bank
- Information on the adoption of tax payment through mobile money are collected from 03 main sources:
  - ① Tax administrations websites and tax officials,
  - ② The GSMA's mobile money deployment tracker database
  - ③ Study reports on pay to governments payments and press reports on tax payment through mobile money.
- We run regressions on an unbalanced panel dataset of 41 SSA for 1980-2018.

## Results

# Estimation results

| Log (direct taxes %GDP)                | (1)                    | (2)                    | (3)                    |
|--|------------------------|------------------------|------------------------|
|  | POLS                   | FE                     | IV+LEWBEL              |
| Mobtax                                 | 0.0459<br>(0.1180)     | 0.1068***<br>(0.0275)  | 0.1256**<br>(0.0583)   |
| GDP growth                             | 0.0108**<br>(0.0045)   | 0.0093***<br>(0.0026)  | 0.0080***<br>(0.0029)  |
| Inflation                              | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0016***<br>(0.0006) |
| Log(trade openness)                    | 0.1821***<br>(0.0496)  | 0.2383***<br>(0.0875)  | 0.2175***<br>(0.0705)  |
| Agri forest fish VA                    | -0.0146***<br>(0.0018) | -0.0109***<br>(0.0027) | -0.0090***<br>(0.0033) |
| Resource rents                         | 0.0036*<br>(0.0019)    | -0.0137***<br>(0.0039) | -0.0130***<br>(0.0040) |
| Log(DCPV)                              | 0.2630***<br>(0.0289)  | 0.1287***<br>(0.0406)  | 0.1532***<br>(0.0372)  |
| Net ODA                                | -0.0054**<br>(0.0026)  | -0.0056**<br>(0.0024)  | -0.0053***<br>(0.0019) |
| e-filing                               | -0.1046<br>(0.1121)    | 0.0007<br>(0.0549)     | 0.0255<br>(0.0677)     |
| e-payment                              | 0.1434<br>(0.0985)     | 0.1102<br>(0.0924)     | 0.1355**<br>(0.0674)   |
| Observations                           | 872                    | 872                    | 870                    |
| R2                                     | 0.5042                 | 0.375                  | 0.3274                 |
| Countries                              | 39                     | 39                     | 39                     |
| B-P test for 1st st. heterosc. p-value |                        |                        | 0.0000                 |
| CD stat                                |                        |                        | 245.6                  |
| K-P rk LM F-stat                       |                        |                        | 0.0125                 |
| Hansen, pvalue                         |                        |                        | 0.226                  |

## Robustness check

- Impact of digital payment of taxes through mobile money on tax collection: Non parametric approach estimation.  
**Differences-in-Differences: De Chaisemartin and D'Hautefoeuille (2020, AER).**

| Log (direct taxes %GDP) |        |        |        |        |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|
| Year after Mobtax       | F=0    | F=1    | F=2    | F=3    | F=4    | F=5    |
| Treatment effect        | 0.0408 | 0.0397 | 0.0126 | 0.0936 | 0.0712 | 0.143  |
| Standard error          | 0.0359 | 0.0601 | 0.067  | 0.0793 | 0.0530 | 0.0470 |
| t-statistic             | 1.1364 | 0.6605 | 0.188  | 1.1803 | 1.3433 | 3.0425 |

# Exploring transmission channels

|                      | (1)                    | (2)                    |
|----------------------|------------------------|------------------------|
| Probit:              | Tax compliance costs   | Corruption             |
| Mobtax               | -2.0243**<br>(1.0273)  | -0.7665*<br>(0.4462)   |
| GDP growth           | -0.0174<br>(0.0553)    | -0.0556<br>(0.0413)    |
| Inflation            | -0.0045<br>(0.0330)    | 0.0304<br>(0.0320)     |
| Log (trade openness) | 2.0987***<br>(0.7304)  | -0.5964<br>(0.5325)    |
| Agri forest fish VA  | -0.0408<br>(0.0302)    | 0.0626***<br>(0.0238)  |
| NR rents             | -0.0070<br>(0.0229)    | 0.0525**<br>(0.0221)   |
| Log (DCPV)           | -1.1008***<br>(0.3803) | -1.8180***<br>(0.4837) |
| Net ODA              | -0.1033**<br>(0.0439)  | -0.0165<br>(0.0124)    |
| e-filling            | -1.6713**<br>(0.6832)  | 1.5553**<br>(0.6088)   |
| e-payment            | -0.8405<br>(0.7139)    | -1.9550***<br>(0.4552) |
| Constant             | -3.7903<br>(2.9343)    | 4.8117*<br>(2.4699)    |
| Observations         | 460                    | 664                    |
| Countries            | 41                     | 41                     |
| Pseudo R2            | 0.71                   | 0.78                   |

## Conclusion



# Conclusion

- Tax payment using mobile money services has a positive impact on direct taxes revenue mobilisation
- This impact would tend to pass through better tax compliance and reduction of corruption
- These results exhort policymakers to act towards a widespread adoption of taxes payment through mobile money for better tax revenue mobilisation in SSA.

Thank you for your attention