Back to bank: digital currency, deposits substitution and credit

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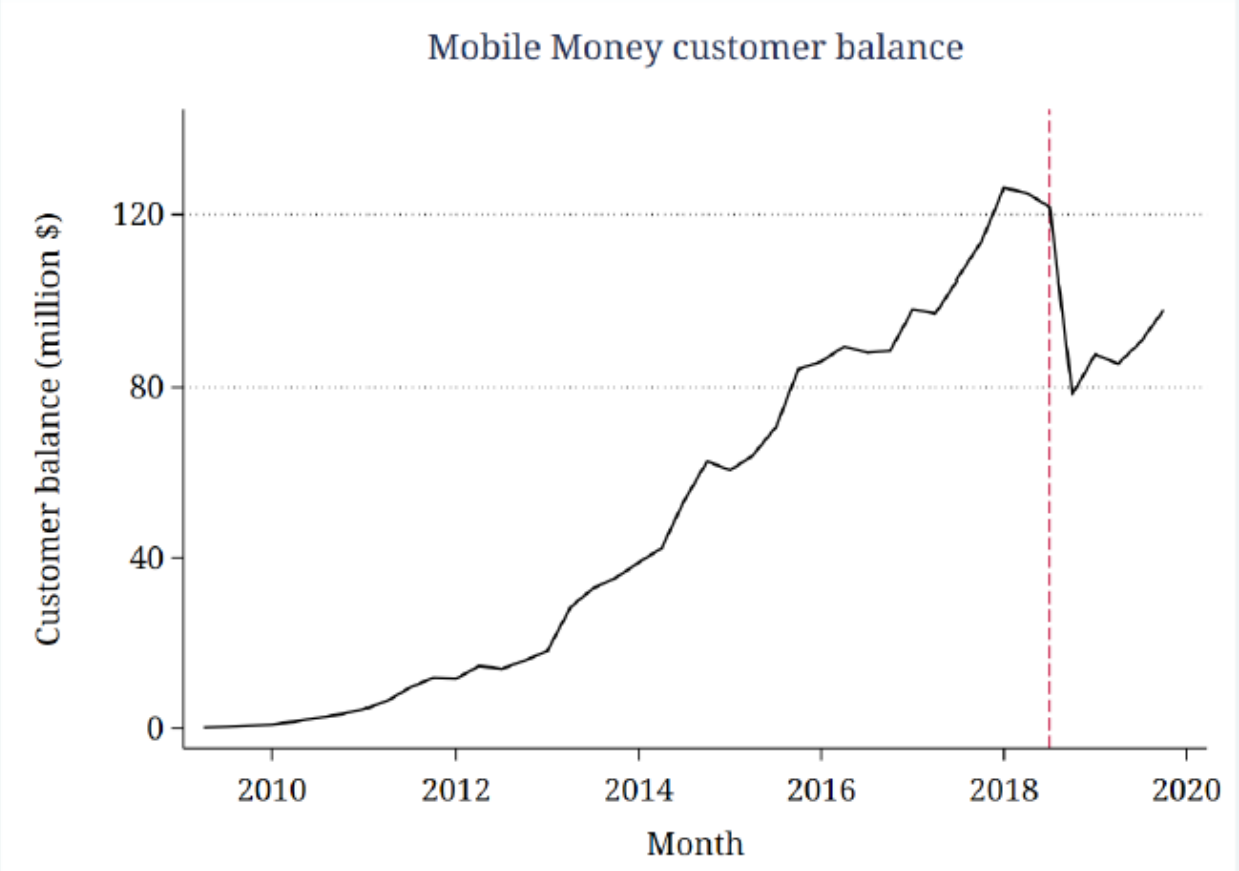
[1] The views in this paper are solely the responsibility of the author and should not be interpreted as reflecting the views of the Federal Reserve System.

The What

- Households can hold bank deposits, cash, and digital currency/mobile money as a means of payment
  - Mobile money is more efficient than cash and has lower access cost than deposits
  - But deposits earn interest
- Given the potential substitution between them,
  1. How does changes in the cost of mobile money trigger a shift to cash and bank deposits?
  2. How does this substitution affect banks' liquidity and credit provision?

The How

- Exploit a mobile money tax introduced in Uganda
- The shock increased the cost of mobile money, led to a significant drop in its usage



- Use diff-in-diff and event study approaches

The findings

- Post tax,
  - Mobile money usage dropped for individuals residing in higher-ATM-density districts
  - The surge in agent banking is more pronounced in higher-ATM-density districts
  - Bank demand deposits through agent banking increased more in higher-ATM-density districts
  - Cash withdrawal is higher in higher-ATM-density districts
  - Banks with high-ATM share increase lending to low-risk customers and decrease lending to high-risk ones

[Density of ATMs: proxy for heterogeneous access to mobile money alternatives]

A very interesting work

- Rely on novel and highly detailed regulatory data
- Important contributions to the literature on CB digital currency and banking
- Well written with a very thorough empirical implementation
  - Whatever I was thinking, I read it later in the paper
  - Results are in 13 tables and 11 figures!
  - It makes you think that "the findings are robust"
- I still have a few suggestions, at your disposal

Suggestions

Bank liquidity and credit dynamics

- The narrative is: Post tax $\rightarrow$ the cost of mobile money $\uparrow\rightarrow$ the usage of the mobile money $\downarrow\rightarrow$ HHs switch to cash and/or bank deposits $\rightarrow$ bank liquidity$\uparrow$
- Literature says the larger the bank liquidity, the higher the credit provision
- The authors find: increased lending to low-risk customers, decreased lending to high-risk ones. But,
  1. What is your aggregate affect, $+$ or $-$?
  2. Also why the asymmetry?
     Volatile deposits argument can explain the negative relationship (if it is) like in Choudhary and Limodio (2022) but not the asymmetry

Heterogeneous effects of the tax

- The focus is on the heterogeneous effects of the mobile money tax on HHs that have an easier access to banking
- "Post tax, mobile money usage dropped in higher ATM-density districts (than lower ATM-density districts)"

$$Y_{idt} = \alpha_i + \gamma_t + \beta PostTax_t \times 1[HighATMDensity]_d + \varepsilon_{idt}$$

- "Post tax, bank deposits increased more in higher ATM-density districts (than lower ATM-density districts)"

$$Y_{dt} = \alpha_d + \gamma_t + \beta PostTax_t \times 1[HighATMDensity]_d + \varepsilon_{dt}$$

Heterogeneous effects of the tax

- But, what about the aggregate figures?
- How did money tax affect deposits, banking agents development, bank lending—irrespective of the ATM access (or share)?
- Possibly helpful: Bertrand, Schoar, and Thesmar (JF, 2007) that examines the impact of 1985 French banking deregulation on the behavior of borrowers and banks

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- Also, we can explain the heterogeneous effects with HH wealth, rather than the access to ATMs
  - Districts with a higher number of ATMs $\Longleftrightarrow$ districts with wealthier individuals residing in
  - For those individuals, tax on mobile money is even more important as the opportunity cost of not holding their money in bank deposits is higher

Generalization of the results

- Credit cards can substitute for mobile money services
- The effects of the tax on banks and credit provision are also very much related to the credit card usage
  - You noted that the Points of Sales (POS) are still underdeveloped and credit/debit card usage is very limited in Uganda $\rightarrow$ HHs need cash
- Do you have data on credit card usage? Do you see any patterns post tax?
- Does it mean that your findings would be vastly different for developed (and even emerging) economies given the wide usage of credit cards and POS machines?

Analysis on banking agents

- I did not know what banking agents were, I checked some references
  - "Agent banking system was first approved in December 2017 and launched in April 2018" (*The Independent*)
- *"We show that the mobile money tax triggers the adoption of...banking agents that facilitates the growth in bank deposits"*
- But, mobile money tax is introduced in July 2018

$\rightarrow$ It is not possible to differentiate the effects of these two development

$\rightarrow$ Also, I found it difficult to understand why banking agents usage increases in high ATM districts. Is not it supposed to be the opposite?

Also...

1. How to identify the districts? Are they comparable in terms of size? Population?
2. Figure 2 tells me that HHs in high vs low ATM districts were already behaving differently on deposits and withdrawals. Can we see the parallel trends?
3. You consider the changes in deposits made through banking agents. What about the ones directly done through banks? I am confused
4. Typo in eqn (3). Tax dummy is missing
5. Missing reference in footnote 4

Overall...

- I think it is a very solid and interesting paper with massive data work that requires institutional knowledge
- In my view, it has a great potential
- Good luck!