Review of: "Impacts of Innovations in Financial Services Delivery on the Macroeconomy in Nigeria"

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Potential competing interests: No potential competing interests to declare.

This papers seeks to understand the causal impact of financial innovation in payment system on economic growth. The authors consider two key outcome variables — money demand and GDP growth. In my opinion, the authors are exploring a very interesting and important question. The growth of technology, particularly in the financial sector, raises important questions about the mechanics of monetary policy transmission and the authors use an interesting setting in Nigeria to answer these questions.

Major comments:

1. Contribution: There is existing literature on the effect of payment system technology on economic growth. E.g., Alvarez and Lippi (2009) use a structural model estimated from micro data to estimate the impact of financial innovation on money demand. The authors should explain their contribution with respect to the existing work in more detail.
2. Methodology: The paper uses an ARDL bound test to study the relationship between financial innovation and the economic growth. However, the ARDL test suffers with the endogeneity issue. Both financial innovation and money demand (or economic growth) can be correlated with broader structural changes in the economy. These endogenous structural changes (e.g., increase in the money supply) can act as omitted variables and make the estimates biased and inconsistent. The authors should find an exogenous change in the access to payment systems (e.g., see Jack and Suri (2014)) to determine the causal impact of interest.
3. Results: The authors show that financial innovation lowered money demand and real GDP growth in the long run. This is a surprising result. The authors should explain what frictions are driving this negative correlation. Broader finance literature has documented positive impacts on financial innovation on economic growth (see Higgins (2019) for POS and and the authors should explain why their results differ from those in the established literature.
4. The authors should provide more background on how they quantify the velocity of money. Since the velocity of money may change over time, the authors need to specify a dynamic measure of the velocity of money and use that in their estimation.

Minor comments:

1. Awkward statement: To answer this question, the broad dimensions of the macroeconomy are proxies by the impacts of the FI on the real money demand and real GDP growth rate as macroeconomic indicators following (Nazir, Tan, and

Nazir 2020).

2. Typo: Since the ``lunch'' of financial innovation in 2014 the transactions have generated…other innovative channels.
3. Typo: Earlier studies opined a bi-directional correlation between financial innovation and economic growth where FI ``causal causes'' economic growth and vice versa.

References:

1. Alvarez, F., & Lippi, F. (2009). Financial innovation and the transactions demand for cash.*Econometrica*, *77*(2), 363-402.
2. Higgins, S. (2019). Financial technology adoption. *Northwestern University: Kellogg School of Management*
3. Jack, W., & Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. *American Economic Review*, *104*(1), 183-223.