



POLICY BRIEF

The Monetary Economics of E-money and Implications for Monetary Policy in Uganda

EPRC

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Key Messages

- E-money distorts the transmission of monetary policy even though money demand remains stable.
- There is need to incentivize agents to switch to e-money platform as it reduces the cost of currency.
- The current transition to e-money is likely to affect the efficiency of monetary policy if there is market differentiation in the credit market.

Introduction

The evolution of e-money in Uganda effectively commenced in 2000 but it only started drawing the attention of policy following the introduction of mobile money and FinTech products in 2009. Since then, the growth in e-money usage has tremendously transformed behaviours of agents in terms of the process of credit creation, demand, and transactions motive of holding money. It is observed that at its current pace of adoption, e-money is likely to significantly substitute hard currency (notes and coins), which has been central to current monetary system. This is likely to affect the money multiplier, velocity, and transmission mechanisms of monetary policy. Whereas the mobile money platform offers convenient, secure, fast, and widely acceptable platforms for retail payment, the switch in the mode of payment ideally implies there is substitution between the demand for cash and e-money. This affects the composition of money supply, liquidity, and the monetary policy transmission mechanisms. The size of the stock of currency in circulation, demand deposit, and their relative weight, i.e., the (central bank) currency-to-deposit ratio are the most likely indicators to be affected by the growth in e-money. This might require policy reform in the conduct of monetary policy, payments systems, regulation of financial institutions and assessment of stability.

The transition to e-money at the international level has enhanced efficiency of cross-border payments, trade and capital flows. It has created a payment system where virtually all international transfers and clearance are made through e-money platforms with little or no requirements to move physical cash. However, these financial innovations expose the economy to risk of imported shocks and cyber-attacks transmitted through exogenous shocks and cyber-attacks. The changes brought about by the switch to e-money requires investigations for evidence-based policy formulation. The question is whether the money demand and supply relationship will continue to be stable? How will the interest rate channel operate? These are genuine concerns in view of the growth of e-money with its influence on payment

systems, policy transmissions, financial markets, and stability. The empirical evidence to underpin these policy concerns, however, remain scanty. The study sought to contribute to literature by analysing the linkage between e-money and policy, an area that has received little attention. It provided a macroeconomic dimension of e-money's growth, interaction with monetary supply and key macroeconomic variables in the money demand function as well as the policy transmission.

Research approach

The policy brief summarizes findings from a study titled, "*The Monetary Economics of E-money and Policy Implications: Evidence from Uganda.*" The study examines the monetary economics of e-money and its policy implications for over the period 2009Q1-2022Q4. The research approach involves theoretical and empirical literature reviews. Quantitatively estimated and tested the stability of the money demand function using the Autoregressive Distributed Lag (ARDL) model and the monetary transmission through Vector Autoregressive (VAR) model. The qualitative aspect is based on the key informant interviews.

Key findings

Long run money demand

In the long run, a unit increase in money demand increases output by 0.94 percent. This low-income elasticity of demand indicates low transaction demand for money, implying transition of Ugandan financial sector to e-money. The fact that the financial sector is transiting to e-money suggests that reforms in the conduct of monetary policy are inevitable. Similarly, the coefficient of the policy interest rate produces the expected signs and is significant at five percent level. A unit increase in nominal exchange rate increases the demand for broad money by 0.54 percent. A depreciation (appreciation) of the local (foreign) currency uses more local currency to attract foreign currency (US\$) per unit. If the increase in local currency translates into increased disposable income, then the local currency demand by households increases and the exchange rate coefficient becomes positive. The foreign interest rates suggest substitutability between agents' demand of the local unit and investment in high yielding foreign assets. This implies that the medium of e-money as a money transfer mechanism, is critical in this process and therefore should be observed in monetary policy.

Short run money demand

In the short run a one percent increase in real output decreases the money demand by 0.47 percent while a depreciation by one percent increases the demand for money by 0.16 percent. The effect of e-money is thus negative and destabilizing to the economy. In the short-run, approximately 66 percent of the disequilibrium caused by the previous quarters shock converges to the long run equilibrium within the quarter. The results indicate that lagged M2, real GDP, e-money, foreign exchange rate and foreign interest rates are significant at various levels from 1 percent to 10 percent. This means that a one percent increase in e-money in the short-run decreases money supply by 0.08 percent within the current quarter. There is a long-run and short run relationship among the variables and the ARDL model diagnostics indicated stability, however, there are some dynamics created by the introduction of e-money in the short-run which could have implications on the transmission of policy shocks.

Implication e-money on the transmission of policy

Consistent with monetary economics, a unit monetary policy shock result into declines in output and monetary stock as credit conditions tightens. The effect of the shock on these variables tends to be persistent over several quarters, suggesting high rigidities in adjustment of lending rates. Similarly, exchange rate appreciates, suggesting portfolio switch to take advantage to the improved relative interest rates. However, the effect of the monetary shock on exchange rate dissipates after 2.5 quarters probably due to arbitrage condition arising from price differentials.

When the narrow money supply is disaggregated, currency in circulation experiences persistent decline similar to the broad monetary aggregates M2 but remain low. However, e-money rises with hump-shaped response following unit monetary policy shock instead of declining. The e-money response falls below zero and begins to decline only after 10 quarters. This irregular response is likely to expand as the share of e-money increases and could adversely affect the monetary policy transmission mechanisms. The irregular response could be due to the actions of the fintech that are currently willing to under-price their credits in the short-run to capture more share of the market. If this is the driver, then the behaviours would even out once a regulatory framework for fintech activities have been entrenched in the financial system.

Even though the interest rate channel is very important under the inflation targeting lite framework, the credit and foreign exchange markets are crucial for the transmission of policy innovations to the real economy. Availability of

e-money credits is likely to affect the speed and distribution of the effect of monetary policy shock. This could render policy ineffective in a situation with large structural liquidity that makes it possible for intermediaries to provide credits at rates not aligned to market forces. There could, however, be efficiency gains arising from the ease of identification, rating, competitive pricing, and access to credits. The effect of e-money on Uganda's is likely to continue to evolve with increase adoption.

Policy Implications

The study reveals low-income elasticity of money demand in contrast to theory suggesting a switch away from a cash-based economy. In other words, the low-income elasticity of money demand sends a signal that e-money has penetrated a large share of the economy, even though the informal economy remains large. This suggests improved level of inclusion that could facilitate the transmission of monetary policy to the real economic activities through its impact on aggregate demand of borrowers. Similarly, the nominal exchange rate was found to have a positive and statistically significant relationship with broad money.

This indicate that e-money initially rises following a monetary policy shock before gradually declining in contrast to the other monetary aggregates. This could be induced by efficiency and competition in the digital segment of the credit market creating higher rigidities to upward interest adjustments.

The estimate of the money demand function shows low-income elasticity of 0.9, which demonstrate switch from cash to e-money eco-system. This implies there is need to incentivize agents to switch to e-money platform since it reduces the cost of currency while at the same time enhances the transmission of money policy. The transition to e-money may affect the efficiency of monetary policy if there is market differentiation in the credit market. There is need to integrate the rating and pricing of credits in both segments.

Given the short-term distortive effect of e-money, and to gains from the long-term benefits of e-money, policy should target close regulation and monitoring of the e-money ecosystem to dampen and mitigate the distortive effects in the short run.

References

Okot N, Shinyekwa I, Luwedde J, and Bulime E. (2023). The Monetary Economics of e-Money and Policy Implications: Evidence from Uganda. (Fourth Coming)



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