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A Note on Macro-financial implications of mobile money schemes

by

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Content

1. Introduction

Across the world mobile money schemes are being launched. In such schemes financial service providers interact with clients via mobile phones or other mobile devices such as tablets. Service offerings include payments and saving as well as basic insurance products and sometimes credit based on scoring methods that use information about the client's payment history.

The world of mobile money is still in the experimental stage. Some schemes like M-PESA in Kenya have, at least initially, been run-away successes. Some three quarters of all adults in Kenya signed up within little over four years after M-PESA was launched. Other schemes in Kenya and elsewhere have produced more modest results. Yet the promise of mobile financial services is sufficiently strong for currently over 200 mobile deployments counting just the cell-phone based ones.

Much experimentation is still needed to find the best business models. Hence room for such experimentation is desirable. At the same time policymakers and regulators need to be clear about possible ramifications of the mobile revolution for the design of financial regulation and its implementation.

This note discusses several systemic issues that arise from mobile payment schemes:

- The impact of "e-money" on money supply
- Problems posed by financial distress of mobile money schemes, and
- The impact of mobile money schemes on money-laundering and illicit finance

2. Basics of mobile money schemes

Mobile money schemes can be decomposed into core segments or functions, which help elucidate regulatory implications[1]:

- exchange of mobile money against cash and other forms of money (book entry money or BEM[2])
- storage and safe-keeping of money
- transfer of money to other parties
- investment of money

As long as societies are not completely "cashless", there need to be places where people can exchange cash against mobile money. A key challenge is thus the timely and adequate provision of cash and e-money so that customers can obtain the form of money they wish to hold and use at any time. This may affect the way possible bank runs unfold.

The storage and safe-keeping function can be approached in three basic ways:

- **The safe-deposit box or cash-backed model**: When e-money is created in return for a cash deposit, the cash may simply be held in custody by the mobile money provider, in effect in a "safe-deposit" box.
- **The narrow bank model:** Alternatively, the cash may be invested in safe assets provided by the relevant monetary authority
- **The investment model:** Third, the cash may be invested in other assets, for example, through the banking system. This last case is equivalent to the one where existing book entry money (BEM) that is invested in bank assets is used to create "mobile" money.

[1] Klein, M. and C. Mayer (2011) "Mobile Banking and Financial Inclusion: the Regulatory Lessons" World Bank Policy Research Working Paper 5664, Washington D.C., May

[2] The term book-entry money (BEM) is used to denote any form of money that is not cash, but recorded, for example on paper or in electronic form. The terms "mobile money" or "e-money" are used interchangeably to denote the transfer of money by an electronic medium. For the relevance of the terms to explore issues of regulation of "mobile money" see Dittus and Klein (2011) "On harnessing the potential of financial inclusion" BIS working papers 347, May

The way the safe-keeping function is fulfilled determines the risk exposure of deposits in a mobile money scheme and thus systemic risk. It also affects how the introduction of mobile money affects the money supply.

3. Mobile money and monetary policy

a. Impact of e-money on monetary aggregates

The introduction of mobile money schemes raises the question of whether and how it may affect monetary aggregates, for example, the money supply and whether the central bank can exercise control with its existing instruments. When a mobile money scheme is run on the safe-deposit box model, no new money is created. Cash is withdrawn from the financial system and replaced with an equivalent amount of e-money. It may still be the case that the velocity of money changes. For example, the speed of payments and thus the speed of circulation of money may increase as people start using mobile phones to make payments.

When mobile money is backed by central bank assets or bank assets rather than “cash in a vault”, money may be created. People may reduce their net cash holdings in exchange for e-money. The cash thus deposited in banks provides them with the option to create net new credit and thus increase the money supply. So far this is the same effects as if people invest their cash in a traditional bank deposit. In addition, mobile money may affect the velocity of money for the same reason as in the safe-deposit box model, namely due to the extra speed with which payments can be made. This effect is currently small, but may become significant once mobile money is used massively.

b. Controls of the monetary authorities

Faced with the emergence of e-money, monetary authorities can exercise control over monetary aggregates using the same instruments as before. The main change required is the collection and analysis of information related to performance of mobile money schemes.

Monetary authorities already analyze the characteristics of money supply and velocity of money. When mobile money schemes are introduced it may be of use to assess whether and how this affects velocity so that the authorities then have the option to compensate for changes in velocity by use of monetary policy instruments.

Where mobile money affects the deposit base and thus potentially money creation by banks, the monetary authorities will obtain that information from bank balance sheets in the course of routine data collection.

No new instruments are required to deal with the impact of mobile money on monetary aggregates. It is simply the same as before when banks attracted new customers that reduced net cash holdings and thus enabled the creation of net new credit.

When the mobile money scheme is run on the narrow bank model, monetary authorities, of course, have the option simply not to expand creation as a result.

4. Systemic financial risk and prudential regulation for mobile money

As other forms of money, mobile schemes may be plagued by solvency risk or liquidity risk and may be exposed to runs due to these risks or purely on the basis of rumor. The nature of mobile money schemes can give rise to new ways, in which these risks materialize and may require corresponding new ways to mitigate them.

a. The nature of regulation

A key requirement for safe mobile money schemes is operational security. To prevent fraud and invasion of privacy conduct regulation needs to require and supervise adequate operational and technology risk management procedures such as encryption protocols, authentication and verification procedures, back-up systems and the like.

Prudential regulation (capital requirements and liquidity requirements) is only needed when the mobile money scheme is run on the investment model[3]. In the case of the safe-deposit box and the narrow bank model, there are always sufficient funds available to serve all potential withdrawal requests by customers.

b. Dealing with runs

However, in the case of the safe-deposit box model funds could be stolen, for example, by the custodian or “bank robbers”. To prevent this, the above mentioned conduct regulation of operational risk is required. Yet, once money has been stolen, the scheme could no longer meet all requests for cash in case of a run. To guard against the risk, the safe-deposit box provider may take out insurance. A mobile money scheme run on the narrow bank model is safer. The central bank can assure that there is sufficient cash available to meet requests for withdrawals. In the latter case, e-money may still be stolen from individuals e.g. by hackers, but the system as a whole will not run out of money as long as the central bank is willing to provide liquidity in the form of central bank assets backing the deposits.

When the scheme is run on the investment model, the risk of a systemic crisis with runs on the mobile scheme is similar to that of banks. In this case the mobile money scheme becomes de facto an extension of the banks, which back the mobile money, whether the bank itself is the mobile money provider or a third party such as a telecommunications corporation. Prudential regulation is the defense against the concomitant risks. Requiring that an adequate part of the investment is funded with equity rather than debt provides a buffer that helps protect depositors.

The basic model on which the mobile money scheme is run determines the nature of systemic risks. In addition, the nature of mobile money schemes may affect the way runs happen, if and when they do. This poses special management challenges for which the authorities and the relevant financial service providers may usefully make preparations.

[3] For a more detailed discussion see Klein and Mayer, 2011

Mobile money schemes can reach much larger number of clients than banks. A mass market may arise. Rumors about troubles in the mobile money scheme may arise in unexpected ways from unexpected quarters. It is thus important to respond to rumors with a clear and credible communication strategy, which will, of course, need to vary depending on the true solvency and liquidity situation of the scheme.

Small depositors are often not the ones to instigate runs. A crucial consideration for any communication strategy is how to deal with the suppliers of cash exchange services. In cases like Kenya's M-PESA, merchants stand ready to exchange cash against mobile money. The individual cash merchants need to have enough cash on hand to meet withdrawal requests and they need enough mobile money to meet requests for deposits. The retail cash merchants are in turn supplied by wholesale cash merchants that help retail merchants balance their requirements of either cash or mobile money.

In case rumors start, the wholesale merchants are presumably particularly worried about continuing to supply mobile money, because this would require them to tie up their own cash in mobile money of dubious quality, if the rumors were correct. Refusal of the wholesale merchants to perform their function may quickly bring the mobile money system to a halt. Hence ways of communicating with such merchants may be of particular importance.

Presumably, the key means of informing all concerned parties about the situation at hand would be electronic messages delivered by the device used for mobile transactions, for example, the cell phone. When the scheme is run on the safe deposit box or narrow bank model, it should be relatively easy to dispel rumors and demonstrate credibility by providing cash to all merchants, precisely because these models have 100 percent backing of the issued e-money.

In the investment model, it may be harder to convince merchants and customers that the scheme is safe and sound. Also the incentives of a troubled bank to tell the unvarnished truth may be weak. It may thus be possible for a mobile money mass market to collapse rapidly driven heavily by wholesale cash merchants' reactions.

c. Deposit insurance

As in the case of banks, a key defense could be deposit insurance. In this model mobile money providers act like aggregators of deposits that place funds in a bank[4]. The individual deposits in the mobile scheme would typically fall below the threshold for deposit insurance where it exists. However, the aggregate amount of deposits would typically exceed the size of deposit covered by such insurance.

There are then the following options: First, one could "look through" the aggregate deposit to the individual small ones and declare them covered by the deposit insurance scheme. Alternatively, the small deposits collected by a mobile money provider might not be covered by deposit insurance. In this case, the issue is whether the provider is liable for maintaining the value of deposits. If not, then buyers need to beware just as in the case of no deposit insurance for banks.

If the provider were liable, then de facto, she assumes the same risk as a deposit insurance scheme. The provider would then have incentives to exercise governance on behalf of the depositors. This also means the provider should be free to choose where to keep the funds. She should be able to decide not to use banks and stay with the safe-deposit model or choose the banks that appear trustworthy.

d. Resolving distressed mobile money schemes

As anything else mobile money schemes may fail. As in the case of a bank, failure can mean inability to pay out depositors on demand. In addition, when a corporation with a different core business, like a telecommunications company or a supermarket chain, provides the mobile money service, the corporation may decide simply to get out of the mobile money business and focus on something else. This is typically not a risk with banks, although it is also possible that banks decide to shed the deposit business and become, for example, pure investment houses

[4] Where a bank itself provides mobile money the aggregation function is irrelevant and small deposits would typically be covered by deposit insurance, where it exists.

without a license to take retail deposits. On the other hand non-financial corporations typically have greater equity cushions than banks enabling them to withstand shocks.

If one wants to support depositors in case of failure or threat of closure, it needs to be possible for supervisors to intervene and rescue what is possible of the mobile money scheme and transfer it to some other entity that then continues to run it.

To make this feasible, regulators could require accounting separation and operational separation for the mobile scheme so as to be able cleanly to transfer it to someone else. For mobile phone based systems that may, for example, require providing access to the SIM card-based mobile money menu of the telecommunications company, if the scheme is transferred to a new provider. All this may, however, raise the cost of running the scheme and may undermine its financial viability, if significant synergies can be reaped from operational integration with other businesses of the non-bank provider.

Regulators thus need to weigh the pros and cons of different approaches to dealing with resolution in case of failure. They may require structural features, for example, operational separation and/or they may rely on undertakings of the provider. This would include notice periods to be given to supervisors in case of impending failure or decisions to get out of the business and responsibilities to come up with schemes enabling resolution.

5. Financial Integrity

Mobile money schemes allow small amounts of money to be moved rapidly. The speed and the options to disguise transactions, for example, by splitting them through "smurfing" can cause concern for the authorities concerned with money-laundering and terrorist finance. Two broad areas of anti-money-laundering and combatting the finance of terrorism (AML/CFT) regulation matter:

- establishing identity under agreed "know your customer" (KYC) rules; and

- "suspicious transaction reporting" under agreed protocols to detect suspect patterns of financial transfers

However, in many countries it may be impractical or costly to require people registering for an account to provide identity cards or provide proof of residence based on rental contracts or utility bills. Poor people may not as yet have that kind of documentation. Also, the amounts deposited and transacted by poor people may just be in the order of a few dollars. In M-PESA average deposit balances are so far in the order of 3$ per account. Typical transactions cluster around 20 to 30$, hardly the stuff of money-laundering. It may thus be appropriate to provide graduated exemptions with limits on amounts and frequency of transactions. Where documentation of identity is required, one may allow reliance on third party declaration and flexible types of documentation that are within reach of poorer people. One may also accept identity declarations without verification as a first step for small, infrequent transactions[5].

In fact, bringing transactions from the cash economy into the "electronic economy" enhances the possibility to track suspicious financial activities. Overly restrictive AML/CFT regulations may help maintain the more obscure cash economy. By pulling people into the net of AML/CFT it then becomes possible to use profiling techniques to help identify individuals who are critical in a network of transactions. Account providers may be placed under obligation to maintain records and copies thereof and they may be required to provide suspicious transaction reports (STR).

The financial action task force (FTAF) has started to embrace this overall approach[6]. The "pure" AML/CFT approach should be integrated with requirements under account opening regulations arising from consumer protection and/or banking regulation. This would aim at ensuring that the same documentation and processes are used to established identity under the different forms of regulation. In addition this may usefully be complemented by harmonization with registration procedures for SIM cards with telecommunication companies that are becoming more prevalent.

5 An example of a graduated approach to KYC is provided by Mexican regulation approved in August 2011

6 see Chatain L., Zerzan A., Noor W., Dannaoui N., and de Koker L. (2011) "Protecting Mobile Money against Financial Crimes" The World Bank, Washington D.C.

6. Monitoring tools for risk-based supervision

This note has set out basic considerations for the structure of regulatory interventions to deal with macro-financial risks arising from the introduction of mobile money schemes. These arguments apply to issues arising from mobile money schemes regardless of their size. However, as long as mobile money schemes remain small, they may not de facto present significant systemic risk. Today, mobile money schemes are still small relative to the size of financial systems. Even Kenya's M-PESA system accounts for only [2] per cent of the value of all electronic payments. Understandably, financial supervisors thus tend to focus on analyzing the traditional parts of the financial system, leaving mobile money schemes to the side. At the same time mobile money schemes hold the potential for massive adoption and for changing the nature of financial systems with new players in the market and new ways of interacting with customers.

It may thus be useful for supervisors and monetary authorities to collect basic statistics that provide an appreciation of the evolution of mobile money schemes. This would provide the basis for deciding on an appropriate risk-based approach to supervision and conduct of monetary policy.

Basic metrics to track the importance of mobile money would include the following:

- Total number of mobile money customers
- Total value of transactions, and
- The total value of deposits aggregated through mobile money schemes

This would allow the relevant authorities to assess whether the schemes are growing and whether they account for a significant part of the financial system. It would also allow studies of the velocity of money to be related to developments of mobile money.

Supervisors could then decide on the frequency and intensity with which to assess risks arising from mobile schemes and compliance with regulatory requirements.

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