# New Thinking for Institutional Distress of Mobile Money Firms

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## Abstract

We need new thinking for the regulation of mobile money because of the novelty of the service. Banking has existed for at least 800 years. Over that time policymakers have developed a deep understanding of risks from banking, tools that address those risks, and how such tools fit together in a regulatory framework. By contrast, mobile money emerged in 2004, creating a range of risks to users and surrounding economies that we are only just starting to understand and requiring new regulatory tools.

New thinking is required now because of the rapidly growing size of mobile money sectors. Initially launched in 2004, there are now over one billion mobile money accounts in 95 developing countries, processing a combined $US2 billion in transactions every day.

This paper aims to stimulate new thinking by identifying the functions of mobile money and risks to users' funds and surrounding economies that can emerge through failure of a mobile money firm (MM firm). The paper also explores four regulatory issues created through mobile money: appropriate governance tools for trusts instruments, legal instruments civil law countries can use in the place of trusts, potential systemic risk that can arise through collapse of a major MM firm, and crisis management tools that can address such a collapse.

This paper draws upon mobile money contractual and regulatory material from fourteen countries. These are Kenya, Tanzania, Uganda, Rwanda, Nigeria, Bangladesh, India, Pakistan, Indonesia, Tonga, Samoa, Vanuatu, Papua New Guinea and Fiji.

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# Introduction

'Mobile money' is a mobile phone-based electronic funds storage and transfer service.[1] A user can deposit, store, transfer and withdraw funds from her mobile money account, much like a bank deposit. The firm providing the service is normally a mobile network operator or another type of non-bank, called a 'mobile money firm' ('MM firm') in this paper. Users can normally deposit and withdraw funds through 'cash merchants.' These are corner stores, petrol stations, and other outlets operating on behalf of MM firms.

'M-Pesa' in Kenya is a particularly famous mobile money service. Safaricom, a phone company, provides this service. Launched in 2007, there are now 31.6 million M-Pesa users in Kenya.[2]

This paper explores three interrelated questions surrounding the protection of users' funds stored with an MM firm. 'Users' includes customers and cash merchants. One, what are the *risks* to users' funds stored with an MM firm and the surrounding economy should the firm become bankrupt? Second, what *tools*, if any, can we use to address this potential problem? And what *trade-offs* arise in using these tools?

As will be explored below, these questions, particularly the first, revolve around potential loss of funds or a delay in returning them to customers. Either event would disrupt a mobile money service. Recent events suggest even a short-term outage of mobile money could have significant consequences for the surrounding economy, suggesting we now need to begin developing comprehensive answers to the questions discussed above. For example, on 7 December 2018, M-Pesa experienced a six-hour network outage in Kenya.[3] This outage halted M-Pesa's transactions, estimated at 679.3 million Kenyan shillings every hour. Millions of Kenyan M-Pesa users could not make payments to utility firms, hospitals, banks, government agencies, and other actors in Kenya. In 2016, the Ugandan Government shut down mobile money for several days.[4] Anecdotal consequences of that failure included country-wide and sudden inability to pay school fees, electricity and water bills, resulting in widespread loss of access to these utilities. There was also extensive loss of confidence in formal financial services; many people withdrew funds from their mobile money accounts.[5]

The protection of users' funds is relevant to a large number of economies because of the rapid growth of mobile money. Initially launched in 2004, there are now over one billion mobile money accounts in 95 developing countries, processing a combined $US2 billion in transactions every day.[6]

The newness of mobile money means we need 'new thinking' for protecting users' funds. A comparison with banking is useful here. Banks have existed for at least 800 years and, on some definitions, much longer, potentially 3,000 years.[7] Over that time banks have moved through many cycles of prosperity and failure, enabling policymakers to develop a relatively extensive regulatory toolkit. Mobile money has existed for a much shorter period of less than 20 years, providing limited insights for regulators of risks and appropriate regulatory and supervisory frameworks. There have not been any court cases clarifying many important legal and regulatory issues for mobile money

which will be discussed in this paper. And we cannot directly implement many banking regulatory tools to mobile money because of important differences between these services, which the paper explores.

The author's previous work, supported by the Pathways for Prosperity Commission at Oxford University's Blavatnik School of Government, provided an initial foray into new thinking on mobile money by introducing the functional approach to regulation.[8] This approach involves focusing on the services or functions of a financial system or service rather than the institutions providing it.[9] The functional approach facilitated an analysis of the basic services of mobile money, risks to users' funds from institutional distress of a MM firm, and tools that can address those risks. Here 'institutional distress' means major liquidity and potentially insolvency problems facing a MM firm.[10]

This paper develops this initial work and new thinking more generally in a number of ways, focusing primarily on institutional distress of a MM firm. The paper provides additional detail on the functions of mobile money as emerging from the contractual terms that underpin the service and the surrounding regulatory environment. This combination reveals that mobile money functions as a shadow limited-purpose deposit. It means a mobile money account provides similar customer-facing functions as a bank deposit, but without access to bank regulation, particularly crisis management tools such as deposit insurance, lender of last resort, and accelerated bankruptcy regimes. By extension, the main risks to users' funds are liquidity (the MM firm has insufficient liquid assets to perform one or more of the core functions of mobile money), and risks that arise if/when the MM firm enters bankruptcy proceedings, which include loss of value (some or all of users' funds may be used to repay debts that the firm owes to third party creditors), and illiquidity (users face a delay in accessing their funds during the insolvency process).

The paper also moves further than the author's earlier scholarship[11] by delving into four issues raised by mobile money. One issue is appropriate governance tools for trusts instruments. This question is relevant to 'common law' countries, namely those that follow the British legal tradition. Many common law countries require MM firms to store users' funds in a trust.[12] However, many trusts have limited governing rules and supervisory arrangements, exposing users' funds to a range of risks. The paper proposes rules and supervisory mechanisms that can strengthen the performance of trusts in protecting users' funds.

Another issue is determining which legal instruments civil law countries – which follow Continental European traditions – can use in the place of trusts. The paper explores a patchwork of different tools that, collectively, can provide some of the protections of a trust.

Potential systemic risk is also emerging as a key issue in larger mobile money schemes, but we have little understanding of the form it might take. The paper begins building such an understanding by claiming that realization of illiquidity risk during bankruptcy of an MM firm can potentially have 'systemic' consequences by halting a very large number of transactions in an economy.

Crisis management tools – normally used on banks in institutional distress – is another frontier regulatory issue for mobile money. Some countries have attempted to adapt crisis management tools from banks to mobile money but their effectiveness is unclear. The paper proposes an accelerated funds transfer mechanism that could comprise part of a crisis management toolkit for MM firms.

This paper explores each regulatory issue by reference to the original M-Pesa contractual arrangements and later regulatory frameworks that have emerged in fifteen countries in Africa, Asia and the Pacific. These are Kenya, Tanzania, Uganda, Ethiopia, Rwanda, Nigeria, Bangladesh, Pakistan, Indonesia, Malawi, Tonga, Samoa, Vanuatu, Papua New Guinea and Fiji (collectively, the 'focus countries').

The broad conclusion is that we are still at an early stage in addressing the regulatory issues in the paper. On some we have primarily ideas of basic legal structures. Even then there are a range of unresolved policy questions. Other tools, such as accelerated bankruptcy regimes, still need to be designed. We need to attend to these issues now given the rapidly growing size of mobile money sectors across the developing world. This paper also provides starting points for understanding these regulatory issues.

The paper has six parts. The first outlines the functions of mobile money, risks created to users' funds and potentially the surrounding economy, and the basic objective of most regulatory frameworks. The second explores appropriate governance tools for trusts instruments. The third proposes legal instruments civil law countries can use in the place of trusts. The fourth examines potential systemic risk that can arise through collapse of a major MM firm. The fifth proposes crisis management tools that can address such a collapse. The sixth concludes and suggests next steps in developing new thinking in mobile money. This section emphasizes that we need to understand how regulatory tools operate both individually and as part of a toolkit.

# 1. Functions, risks, and the purpose of regulation

## 1.1 Functions of Mobile Money

Money provides a 'shadow limited-purpose deposit' service to users. Let us examine each component of this definition, based on the M-Pesa contractual terms and conditions.[13] This discussion below is broadly generalizable to most other mobile money schemes. This is because such schemes tend to provide the same basic functions as M-Pesa and are subject to broadly similar regulatory schemes.[14] M-Pesa is a useful starting point because the service discloses a range of contractual terms that apply to the service.[15]

### 1.1.1 Shadow

M-Pesa is *shadow* in nature because a firm provides core functions of banks but is not subject to bank regulation, particularly 'crisis management tools' such as lender of last resort, deposit insurance, and bail out. The original M-Pesa documentation specifically states that M-Pesa 'is neither a bank nor a deposit-taking institution.'[16] To give effect to that intention, Kenyan policymakers did not apply crisis management tools to M-Pesa.

This interpretation of 'shadow' as involving the provision of core functions of banking outside of bank regulation – particularly crisis management tools – draws upon definitions of other so-called shadow systems. For example, Pozsar et al (2009; 2013) define the 'shadow banking system' as comprising firms performing credit, maturity, or liquidity transformation – traditionally key functions of banks – outside the perimeter of the regulated banking system.[17] Similarly, Awrey and van Zwieten (2017) define the 'shadow payments system' as performing payment functions – also core functions of banks - outside the ambit of bank regulation.[18]

Usually, *some* regulation applies to shadow systems such as mobile money. For example, originally Safaricom was subject to Kenya's Communications Act and the Central Bank of Kenya (CBK) closely monitored the contractual arrangements operating between Safaricom and other actors in the service, comprising a form of enforced self-regulation.[19] In 2014 the CBK implemented mobile money regulations, an approach taken in other countries.[20] However, mobile money is not normally subject to bank regulation, particularly crisis management tools.

### 1.1.2 Deposit

A mobile money account is a *deposit* because it provides the basic services of a bank deposit. A user can deposit, store, transfer, and withdraw funds from her mobile money account.[21] These are the same basic functions a depositor can access from her bank deposit.[22] Other mobile money schemes provide broadly comparable functions to M-Pesa.[23]

## 1.1.3 Limited purpose

Mobile money is a *limited purpose* deposit because usually a user cannot access the full functionality of a bank deposit. Put alternatively, a mobile money account provides the same basic functions as a bank deposit. However, contractual rules mean that a mobile money account provides more limited versions of those functions than a bank deposit. Usually these limitations are implemented to help ensure that people use mobile money for transfer rather than storage purposes. Safaricom and the CBK took this approach for M-Pesa.[24]

There are two sets of differences between a mobile money account and bank deposit. The discussion below focuses on both.

### i. User-facing

There are four main user-facing limitations that apply to M-Pesa and usually most other mobile money accounts. By 'user-facing' this means services that a user can access through a mobile money account, similar to what a depositor can do with her bank deposit.

One is restrictions on how much a user can store in her mobile money account. For example, in 2007 a user could only store a maximum of KSH 50,000 in her M-Pesa account.[25] Kenyan regulation now permits a user to store KSH 300,000 in her mobile money accounts.[26]

Another is that an M-Pesa user does not receive interest payments, unlike Kenyan bank deposits. This means M-Pesa provide less functionality than a Kenyan bank deposit, which tended to provide interest payments of around 8.5 to 8.75% in Kenya in 2007.[27]

The original M-Pesa service was non-interoperable. This means that an M-Pesa user could not transfer money to other mobile money systems that later emerged in Kenya. In contrast, in 2007, a Kenyan depositor could make payments across all banks in the country.

Finally, an M-Pesa account does not come with the full theoretical availability and safety of a bank deposit because crisis management tools do not normally apply to this service. This point requires additional explanation.

Usually, regulation that applies to mobile money is *ex ante* in nature. These instruments operate at the time the user provides money to an MM firm.[28] Normally, ex ante instruments operate to minimize the likelihood of 'financial distress' – liquidity or bankruptcy problems – of a firm. For example, portfolio requirements – involving requiring an MM firm to store funds in liquid assets, increases the probability that the firm has sufficient liquid assets to honour a user's request to withdraw funds without facing financial distress. Some of these instruments also protect users' funds in bankruptcy. For example, as will be discussed below, storing users' funds in a trust can help ensure such funds are available if the MM firm enters bankruptcy proceedings.

Crisis management tools provide a special role to a bank, which is the type of firm normally subject to them. Crisis management tools are so-called *ex post* in nature, meaning they apply to a bank in financial distress. Such instruments can be termed 'crisis management', because they apply on

the grounds that failure of one or more banks can cause wider systemic consequences, amongst other reasons.[29] And crisis management tools provide a special role to a bank by enabling this type of firm to continue operating during periods of institutional distress where most, or all other types of firms would be required to enter bankruptcy proceedings.[30] Particularly common tools on a bank include one or more of deposit guarantee schemes, emergency liquidity assistance facilities, and special resolution regimes.

In turn, assuming crisis management tools operate effectively, the special role given to a bank then means bank deposits are available and safe in ways not shared by most or any other services. Theoretically, ex ante regulation means bank deposits are available in so-called 'good times' – when a bank is operating effectively. Crisis management tools means bank deposits are also available, in some form, when a bank is in institutional distress.[31]

In contrast, an MM firm is not normally subject to crisis management tools which means, theoretically, a mobile money account is potentially available in 'good times' but not necessarily accessible during periods of financial distress of the firm. This is an important functional difference between a mobile money account and bank deposit, discussed further in Section 5. This point is theoretical because, in practice, a policymaker may quickly adapt crisis management tools from banking on a financially distressed MM firm. This may be done from a realization, at the time, that collapse of this firm may have important, negative consequences for the economy.

### ii. Limitations on the MM firm

Limitations on the functions of mobile money – i.e. its limited purpose nature – also emerge on the asset side of the balance sheet of an MM firm – namely what it can *do* with users' funds. Banks can engage in credit creation, creating loans and providing a claim to a depositor. Safaricom and other firms are usually prohibited from engaging in credit creation. Instead, beginning with M-Pesa, usually all users' funds must be stored in a trust account and held in liquid assets such as bank deposits and/or government securities.[32]

Over time, regulatory frameworks have gradually blurred the functional differences between a mobile money account and bank deposit. For example, mobile money has become interoperable in an increasing number of jurisdictions, including Bangladesh, Indonesia, Pakistan, and most recently, Tanzania.[33] Interest payments can now be paid to users in some countries, such as Tanzania and Ghana.[34] And some countries, including Nigeria and Kenya, have extended some crisis management tools for banks to mobile money, particularly pass through deposit insurance.[35]

However, there still remains broad functional distinctions between most mobile money accounts and bank deposits. For example, interest payments from funds stored within mobile money systems tend to be banned in most jurisdictions or must be paid to charities, such as in Kenya.[36] And overwhelmingly countries require MM firms to store users' funds in liquid assets and prohibit them from engaging in the type of credit creation traditionally the preserve of banks.[37]

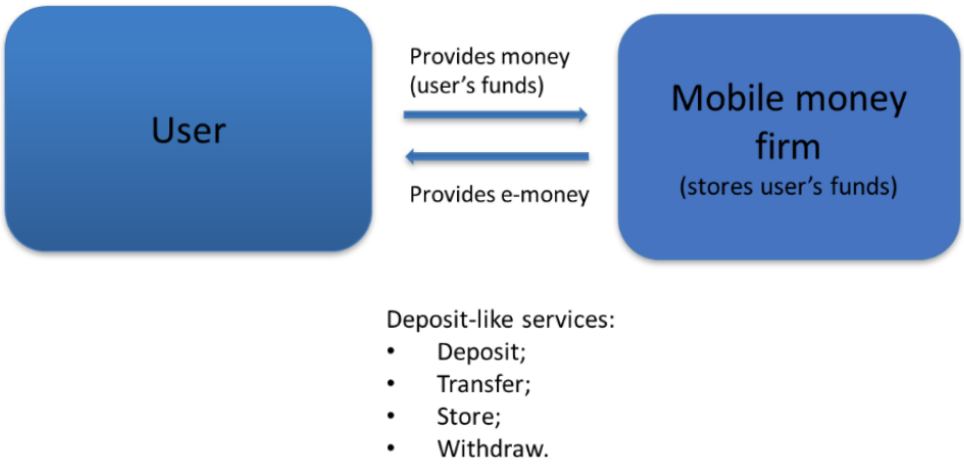
Classifying mobile money a shadow limited-purpose deposit system helps uncover risks to users' funds that arise from collapse of the service. These are outlined below.

## 1.2 Risks

We can better understand the risks to users' funds by putting ourselves in the shoes of a user engaging with an MM firm. In this case, the user accesses the functions of mobile money by handing over cash and receiving an equivalent amount of e-money on her phone. She normally does so by contracting with cash merchants operating on behalf of an MM firm, as discussed above.

The diagram below begins the process of mapping out the user's experience, focusing on the functions that she accesses through mobile money. We can then move onto risks that arise in the course of her doing so. Later we can analyze regulatory arrangements that countries have used to address these risks.

Diagram 1: Accessing Functions




By accessing these functions, users' funds become exposed to a range of risks, although the newness of mobile money means we are still working out exactly what forms these risks would take. We know that these risks emerge through the way the MM firm invests users' funds and otherwise manages its assets. The discussion below examines these risks, focusing on a state of nature analysis. This involves analyzing potential investment choices open to an MM firm without any governance or regulatory tools, such as trusts. Doing so can help us more closely analyze the risks to customers' funds. We can later build on that analysis by identifying regulatory tools that can respond to those risks. Two types of investment choices generates two sets of risks to users' funds.

### 1.2.1 Liquidity

An MM firm may invest users' funds in illiquid business assets, such as a mobile phone tower, creating so-called 'liquidity' risk. This means the MM firm may not be able to liquidate its assets in time to pay out users' funds. This liquidity problem means the firm is insolvent on a cash flow test, meaning it cannot pay debts as they fall due.[38]

Regulation often aims to address this problem by requiring MM firms to store funds in a bank.[39] In theory, doing so can ensure that an MM firm always has sufficient liquid assets to cash-in users' funds if and when required.

The problem is that usually a bank deposit can be liquid but banks are themselves a source of liquidity and bankruptcy risks which in turn creates risks to user' funds. This problem arises due to the nature of the bank account. An MM firm collects funds from multiple users and stores them in one pooled bank account. The MM firm is the relevant depositor because the deposit is in its name.[40] The bank uses this bank deposit to fund its operations just like any other non-mobile money deposit. This means institutional distress of the bank can create two lots of risks to the MM firm and, through it, users' funds:

• **Bank liquidity:** creates a potential liquidity problem for the MM firm. This is because the asset in which users' funds are stored (a bank deposit) is not readily available to be converted into cash;

• **Bank insolvency:** creates a potential balance sheet insolvency problem for the MM firm. This is because one of the firm's assets (a claim against a bank) has lost value, thereby diminishing the asset base of the MM firm.

As discussed above, crisis management tools can address a bank in institutional distress but may not provide the protection of mobile money users' funds that policymakers may desire. Often such tools are not available in developing countries. For example, only 29 African countries have deposit insurance.[41] Even if crisis management tools exist, they may not operate in ways that protects users' funds. And ultimately the MM firm's pooled bank account and through it, users' funds have even less protection than regular deposits. In particular, the pooled bank deposit may greatly exceed a country's deposit insurance ceiling. For example, in September 2013, there were £4.8 billion of M-Pesa's users' funds stored in a bank deposit with the Commercial Bank of Africa. Kenya's deposit guarantee scheme insures funds up to a maximum of KSh100,000, or about £695.00. This meant M-Pesa users' funds were virtually uninsured against bank failure.[42]

### 1.2.2 Bankruptcy risks

An MM firm can invest users' funds in risky assets and otherwise mismanage its assets so that it becomes balance sheet insolvent.[43] This means the firm's assets are worth less than its liabilities.[44]

A comparison of the treatment of banks and MM firms in financial distress become crucial at this juncture. A policymaker can use crisis management tools to enable a bank in financial distress to avoid entering a country's regular bankruptcy regime. In contrast, without access to crisis management tools, an MM firm in institutional distress will usually enter a country's regular bankruptcy regime. 'Regular' means the type of bankruptcy regime that applies to all non-banking firms.

The corporate bankruptcy regimes of most countries contain two sets of provisions which in turn exposes users' funds to two main risks. The discussion below explores these risks by reference to M-Pesa and Kenya's bankruptcy regime.

### 1.2.2.1 Loss of value risk

Loss of value risk means during bankruptcy proceedings some or all of users' funds may be used to repay debts that the MM firm owes to third party creditors. That means users will only obtain a fraction of what they originally provided to the MM firm. So a user who deposited $100 into a mobile money scheme may only receive $50 at the end of bankruptcy proceedings. The remaining $50 is lost to third party creditors of the MM firm.

Loss of value risk arises in two conditions. One of these is that mobile money users are classified as unsecured creditors of the MM firm. The other is that the country's bankruptcy regime has a provision which states that unsecured creditors share in any subsequent distribution of the debtor's assets on a pro rata basis. This means, users, as unsecured creditors, are repaid after other creditors of the MM firm have been paid. Kenya has such a provision, meaning M-Pesa users are exposed to loss of value risk.[45]

New thinking is required in relation to loss of value risk. This is because it is not clear whether mobile money users are unsecured creditors of the MM firm and more generally their ranking when compared to other creditors of that firm. Users of other non-bank payment and financial services, such as the Mt Gox crypto currency exchange, have been classified as unsecured creditors.[46] By analogy, depositors usually have a relatively low standing in the hierarchy of bank creditors. For example, Ethiopia's Banking Business Proclamation has the following ranking: secured claims, remuneration, necessary and reasonable expenses of the receiver, creditors who extended new credit to the bank after the appointment of the receiver, salaries and other benefits of non-managerial staff for 3 months prior to insolvency, deposits, taxes owed to the Federal/ Regional Governments, other claims against the bank, and interest on claims. The classification will depend upon a range of factors including the nature of the funds being deposited, the terms of the relationship between users and the MM firm, and domestic law that governs these terms. The legal consequences of alternative classifications also requires additional research.

### 1.2.2.2 Illiquidity risk

Illiquidity is a second key risk that can arise through bankruptcy proceedings. This means users face a *delay* in accessing their funds. Illiquidity risk arises because bankruptcy proceedings in most countries will require creditors of the firm – such as mobile money users – to wait for bankruptcy proceedings to conclude before they can access any moneys that they are due to receive at the end of the process. Kenya's Insolvency Act has such a provision.[47]

M-Pesa users face significant illiquidity risk due to the relatively slow pace of Kenya's bankruptcy proceedings. The average bankruptcy proceeding in Kenya – judged by reference to a mid-sized hotel chain – takes 4.5 years.[48] Safaricom, as a very large firm processing many millions of transactions, may take much longer than this time frame. Unless there were regulatory frameworks to the contrary, M-Pesa users would be unable to obtain their funds from Safaricom during this time.

The table below provides a basic definition and explanation of bankruptcy risks, focusing on the legal effect and then 'real world' consequences for M-Pesa users.

Table 1: Basic Risks to Users' Funds in Kenya

| Type of risk | Legal Effect | Real World Consequences |
|---|---|---|
| **Loss of value** | Some or all of users' funds are *'lost'* i.e. paid to third party creditors during bankruptcy proceedings. | Mobile money users lose a significant portion of their funds to third party creditors of the MM firm. |
| **Illiquidity** | Users face a *delay* in receiving their funds; they must wait until bankruptcy proceedings conclude. | Mobile money users face a long delay – potentially around 4.5 years – to obtain their funds. |

Realization of these risk can potentially cause various forms of systemic risk. Section 5 explores potential systemic risk in greater detail.

## 1.3 The Purpose of regulation

While we are learning about the risks to mobile money users' funds there is significant consensus on an appropriate objective of regulation: the so-called 1:1 relationship. This means the amount of funds received from the public, which is stored in liquid assets (usually bank accounts), should be equivalent to the amount of so-called 'e-money', i.e. funds stored in people's mobile money accounts. The original M-Pesa model contained the 1:1 relationship, later reflected in a wide number of regulatory frameworks across the focus countries.[49]

The question then becomes: what regulatory tools can support the 1:1 relationship and what trade-offs arise in using them? The next section explores this question, beginning with using trusts to protect users' funds.[50]

## 2. Trusts

Storing users' funds in a 'trust' has emerged as a key regulatory tool across common law countries.[51] Common law countries follow the British legal tradition. When applied to mobile money, a trustee will hold users' funds (trust assets) on behalf of users (as beneficiaries of the trust). Users will then hold a beneficial interest in the trust fund. M-Pesa pioneered this approach.[52]

Trusts can address loss of value risk. This is because, effectively drafted and implemented, a trust has asset segregation effects – it ring-fences users' funds from the assets of the MM firm. This means creditors cannot access users' funds during bankruptcy proceedings.[53] In turn, this means users' funds will retain their full value during corporate bankruptcy proceedings and will be available for users at the conclusion of those proceedings.[54]

The challenge is that many countries require funds to be stored in a trust but provide little, if any guidance, of what should comprise the rules of this instrument and how to ensure that the MM firm and/or a trustee complies with them. For example, Bangladesh's mobile money regulations require users' funds to be stored in a trust account.[55] However, there is no guidance about what rules or supervisory arrangements apply to the trust account. Instead, regulatory provisions simply state that the amount of e-money issued to the public must be equivalent to the amount stored in the 'nominated trust cum settlement accounts of the [MM firm] with scheduled commercial bank(s) and invested amount in Government Securities.'[56]

Insufficient rules and/or oversight matters because of the potential for commingling, which can make a trust legally invalid. Here commingling means the MM firm and/or trustee may mix users' funds – stored in the trust account – with the firm's other assets. A firm may be particularly interested in doing so if it is facing liquidity problems and needs more assets, such as users' funds. Commingling can make the trust legally invalid which in turn means this instrument does not protect users' funds against loss of value risk.[57]

A policymaker can take several steps to effectively design and supervise a trust account. We look at three below.

### 2.1 Establishing a trust

A policymaker can require an MM firm to take two main steps to support the legality of a trust. One is, require the MM firm to use a *trust* deed. This is a legal document that outlines how the trust relationship between the trustee and users (as 'beneficiaries' of the trust) will operate. A second is, require that this trust deed contains a *declaration of trust*. This means the trustee declares that it holds users' funds ('trust assets') on behalf of users.[58]

A trust deed and declaration of trust are useful because they provide strong intention to establish a trustee relationship between the trustee and users, which in turn contributes to the legality of the instrument.[59] Alternatives involve a person using a non-trust document (such as a regular contract) and/or not including a declaration of trust. These alternatives provide weaker intention to establish a trust arrangement.

## 2.2 Terms of the trust

Trust legislation can provide guidance on the type of rules that should be involved in a mobile money trust. Such rules comprise 'trustee duties' towards users and so, by extension, users' funds. Legislative instruments can be useful because they codify a range of trustee duties which have evolved over centuries of trust law. Such duties can be imported into a mobile money trust instrument. For example, New Zealand's Trusts Act contains particularly useful trustee duties, including:

- Know the terms of the trust;
- Act in accordance with the terms of the trust;
- Act honestly and in good faith;
- Act for the benefit of beneficiaries or to further the permitted purposes of the trust;
- Exercise powers for proper purposes;
- A general duty of care;
- Invest trust assets prudently;
- Avoid conflicts of interest;
- Do not exercise power for his/her own benefit;
- Act for no reward; and
- Do not profit from activities performed as trustee.[60]

Two factors are particularly important when considering the design of rules for a mobile money trust. One of these is that any trust rules must be consistent with the general law of trusts as well as domestic trusts and insolvency legislation. In Samoa, these obligations come from the *Trustee Act* (1975) and *Trustee Companies Act* (1988). In Vanuatu, such obligations are contained in the *Trustee Company Act* (1971). A trust can only address loss of value risk if a country's insolvency law recognizes that a trust has fund segregation effects: ring fencing beneficiaries' assets (namely users' funds) from the claims of other creditors of a firm in bankruptcy proceedings (in this case an MM firm).

Second, there may be a trade-off involved in requiring an MM firm to implement more extensive rules of the type extracted from New Zealand's Trust Act. This trade-off applies between consumer protection and 'financial inclusion', which tends to involve helping communities without financial services (known colloquially as the 'unbanked') to access such services.[61] More extensive trust governance rules and supervision may complement financial inclusion by encouraging policymakers to permit mobile money to launch and grow. To the extent that unbanked and other low-income communities learn about and take notice of governance rules for mobile money, more extensive trust rules and supervision may also build trust amongst such communities towards the service. However, trust governance rules may impede financial inclusion for users 'at the margins.' This is because regulation, in this case mandated trust terms, can raise compliance costs on MM firms. Such costs may be passed onto users in the form of higher fees. In this situation, users at the margins may be unable to afford the service. Alternatively, if MM firms shoulder the cost, they may find it unprofitable to develop and implement mechanisms to reach unbanked communities.[62]

## 2.3 Supervision of the trust

Any trust rules implemented above must be monitored and enforced, making supervision important. This section explores different supervisory options.

One option involves permitting entirely private arrangements, in which users are solely responsible for monitoring how the trustee manages trust assets and maintains the 1:1 relationship. Users would also be responsible for enforcing the terms of the trust by suing the trustee.

Several factors suggest that mobile money users may be unlikely to effectively monitor and enforce trust terms. Most mobile money users have very limited previous experience with formal financial services and trusts, making it less likely that they will know when and how to enforce trust terms. A significant portion of these users also tend to live in dispersed, rural areas, making it costly for them to co-ordinate their monitoring and enforcement activities.[63] And low education levels amongst users means they may be unable to make effective use of disclosed information about how to monitor and enforce the trust.[64]

Challenges with courts in developing countries may also be relevant. Users would need to take the trustee to court, prove that there has been breach of the trust duties, and seek relief. Limitations with courts in developing countries may increase costs on mobile money users seeking to sue the mobile money trustee, making the process slow, cumbersome, and potentially ineffective.

The World Bank's Doing Business Survey provides a proxy for identifying the quality of courts. This survey measures the time and costs of enforcing a contract, judged as a portion of the value of those costs against the overall claim value. In Kenya this figure was 41.3% in 2007[65] and is now 41.8%.[66]

In response, a public actor can monitor and enforce trustee duties in a mobile money trust on behalf of users, using administrative powers. One model is the United Kingdom's Charity Commission. This actor registers and regulates charities in England and Wales. The Charity Commission also removes charities that are not considered to be charitable, no longer exist or no longer operate.[67] The UK Charity Commission can take a number of actions should it believe that a charity is no longer operating in a charitable way, including:

- Restrict the transactions into which a charity may enter;
- Appoint additional trustees;
- Freeze a charity's bank account;
- Suspend or remove a trustee; and
- Appoint an interim manager.

A regulator could adopt a role similar to the UK's Charity Commission in relation to the mobile money trust. It could monitor the trust arrangements, checking both compliance with trustee duties and the 1:1 relationship in general. The state could then take similar actions to those listed above in the event that the trustee was not complying.

## 2.4 Technology

Technology could also be particularly useful at this juncture. A regulator could invest in an automated check of the 1:1 relationship. This involves reconciling the total of all trust investments against the amount of e-money issued to the public. This could potentially be done daily and could come with an in-built warning notification for the trustee and/or regulators if the 1:1 relationship has been breached.

## 3. Civil law countries

As discussed in Section 2, in common law countries trusts can protect mobile money users' funds through asset segregation. Doing so then protects such funds from loss of value risk.

We need new thinking for asset segregation in 'civil law' countries because trusts are not generally recognized in such jurisdictions.[68] Civil law countries follow Continental European legal traditions. Some civil law countries have tried to implement trusts through international treaties, but usually there are very few members of such arrangements.[69] This means that civil law countries cannot simply codify common law features of a trust in domestic regulation due to differences between these types of legal systems.[70]

The newness of mobile money means we have little understanding of which alternative instruments civil law countries can use to segregate assets and protect users' funds from bankruptcy of the MM firm. Reflecting that lack of understanding, civil law countries often state that asset segregation must take place but do not specify an instrument that makes such an arrangement legally valid. For example, Ethiopia states that users' funds 'belong to users… and [are] managed on behalf of the mentioned users,[70] an MM firm must segregate its own funds from that of users,[72] and an MM firm must 'not co-mingle users' funds with those of third parties and must insulate them against the claims of other creditors of the firm.'[73] Brazil gives users the right to segregate their assets from the assets of the insolvent firm's estate.[74] Yet another approach, used in the European Union, involves specific rules that ban the comingling of funds.[75] Furthermore, in Chad, Congo, and El Salvador, users' funds must not be subject to 'attachment' by creditors of the MM firm.[76] In other countries, such as Paraguay, users' funds must be treated as 'autonomous assets' that are not subject to seizure by creditors of the MM firm.[77]

The central problem is that there is no legal instrument – such as a trust – that actually translates these asset segregation requirements into specific legal obligations. This means these provisions appear to have little or no effect in law.

The discussion below begins new thinking on this topic by mapping out a patchwork of tools, outlined in Table 2, that civil law countries can use to protect user's funds. The legal effectiveness of many of these tools is unclear, however classifying them in the manner discussed below can potentially provide an initial framework for exploring their operation.

Table 2: A Patchwork of Tools for Civil Law Countries

| Purpose | Legal Instrument |
|---|---|
| Minimize exposure to risks | Storage caps |
| Minimize the likelihood that an MM firm becomes financially distressed | Restrictions on use |
| | Custodian |
| | Mandate contract |
| | Capital |
| Apply if/when an MM firm enters financial distress | Fiducia/fideicomiso contracts |
| | Private law arrangements |
| | Insurance |

The discussion below provides additional details on these different tools.

## 3.1 Minimize exposure to risks

Limits on how much money people can store and transfer through mobile money can minimize people's exposure to risk that come from failure of a MM firm. By analogy, a person can generally store as much of her personal wealth as she wants in her bank deposit. This means collapse of the bank can destroy her asset base. Limitations on how much someone can store in her mobile money account reduces her exposure.

Storage and transaction caps on mobile money can also facilitate other innovations that can leverage surrounding regulatory frameworks. One model is a partnership between Safaricom and the Commercial Bank of Africa (CBA), launched with the CBK's approval on 27 November 2012.[78] A customer can transfer funds from her M-Pesa account to a linked M-Shwari bank deposit provided by the CBA. Unlike M-Pesa, M-Shwari was specially designed, regulated, and marketed as a savings service.[79] A customer can obtain an interest rate of 6% through her M-Shwari deposit and her funds are fully protected by bank regulation. A key benefit is that she can transfer any savings in her M-Pesa account into her M-Shwari bank deposit which is then protected by bank regulation.

## 3.2 Prevent institutional distress

A second set of tools operate to minimize the likelihood of financial distress (liquidity or bankruptcy problems) of a MM firm in a civil law country. They operate by requiring the MM firm to invest user's funds in safe, liquid assets and otherwise operate in ways which minimize the likelihood of financial distress.

### 3.2.1 Restrictions on use

Restrictions on use specify that users' funds cannot be used for anything other than mobile money transactions and are stored in liquid assets. Effectively implemented, this reduces the likelihood that users' funds are used for the type of illiquid or risky investments that can lead to liquidity and bankruptcy problems for the MM firm, respectively. For example, Indonesia and Ethiopia have extensive provisions surrounding restrictions on the use of funds.[80] In Indonesia, funds must be stored as an immediate liability post or various liabilities, at least 30% of float funds in cash or on demand deposit at deposit taking 'BUKU banks' (meaning core capital of $2.308 billion), and a maximum of 70% of the float funds must be placed on securities / financial instruments issued by the Government or Bank of Indonesia (Indonesia's central bank), or an account with Bank Indonesia.

### 3.2.2 Custodian

Most regulatory frameworks permit an MM firm to store users' funds within one if its own business units. So, for example, a mobile phone company providing mobile money can store users' funds in one of its general accounts. Regulatory frameworks in civil law countries appear to permit this model. For example, some Latin American jurisdictions require MM firms to provide the service through a separate firm.[81] However, this separate firm may provide a range of transactions in relation to mobile money, such as registering accounts, dealing with complaints, and addressing fraud *in addition to* storing, transferring and receiving users' funds. Conceivably, users' funds could be mixed up in those other transactions. For example, an MM firm may reimburse one user for fraud by drawing upon the general pool of funds received from users.

A 'custodian' model can strengthen protections against distress of an MM firm. This model involves storing funds with a separate firm.[82] This separate firm would simply receive, store, transfer and withdraw funds.

The M-Pesa service in Kenya uses this approach. Safaricom, the firm providing M-Pesa, never receives users' funds. Instead, they are paid directly to another firm, called the 'M-Pesa Holding Company' (MPHC).[83] This approach creates the following distinction. Safaricom performs mobile money services and facilitates mobile money transactions. The MPHC actually performs payment functions because this firm, not Safaricom accepts, stores, transfers, and pays out funds.

The M-Pesa custodian model can strengthen protections against distress of an MM firm in the following ways. One of these is users and/or policymakers can more easily monitor whether the MM firm is complying with the 1:1 relationship and wider requirements in regulation. This is because users and/or policymakers must only monitor how the custodian deposits, stores, transfers and withdraws funds, not other transactions that an MM firm might perform in the course of providing the service. Addressing fraud is a useful example, as discussed above.

Furthermore, collapse of the MM firm does not, in itself, directly cause loss of value or illiquidity risk. This is because users' funds are stored within a separate firm, which presumably, is not insolvent.

And finally, storing funds with a custodian makes it is easier for a regulator to transfer users' funds to another, solvent firm which can address liquidity, loss of value and illiquidity risks if and when they arise.  Section 5 below explores this point in greater detail.

Civil law countries appear to have legal arrangements for other types of services that are similar to custodians, but their precise legal effect is unclear. For example, in the Netherlands, an investor and intermediary can establish and jointly own a collective pool of eligible securities. Since these securities are jointly held, they are not legally classified as the intermediary's assets. Thus, intermediary's creditors have no claim against the jointly held securities even if they have one against individually held securities.[84] Other civil law regimes such as Mexico, France, Italy, Bolivia, Peru and Quebec allow for the existence of a separate patrimony that is protected from insolvency.[85] Since neither the settler, fiduciary nor beneficiary has any real property rights over the assets, they are not affected if the fiduciary becomes bankrupt.

France and Germany also use civil law asset securitization frameworks which can potentially operate as a custodian. Selected assets are transferred to a "Special Purpose Vehicle", which can either be created for a specific securitization transaction or reserved for use for multiple transactions. This Special Purpose Vehicle can then be registered as a separate legal entity in the form of a corporation, a partnership or a limited liability company.[86]

We need new thinking on how different custodian models can be adapted to mobile money. This is because we do not know exactly how such models operate during bankruptcy proceedings. For example, under certain conditions, insolvency of a firm can be extended to other companies within the same group, potentially including a custodian. These circumstances can include so-called 'piercing the corporate veil', when a court holds a shareholder responsible for the actions of the corporation as if it (the corporation) were the actions of the shareholder, and potentially fraud.[87] Further research and possibly one or more court cases will be required to clarify the precise legal effectiveness of custodians.

### 3.2.3 Mandate contract

Many civil law countries have 'mandate contracts' which operate in the following way:

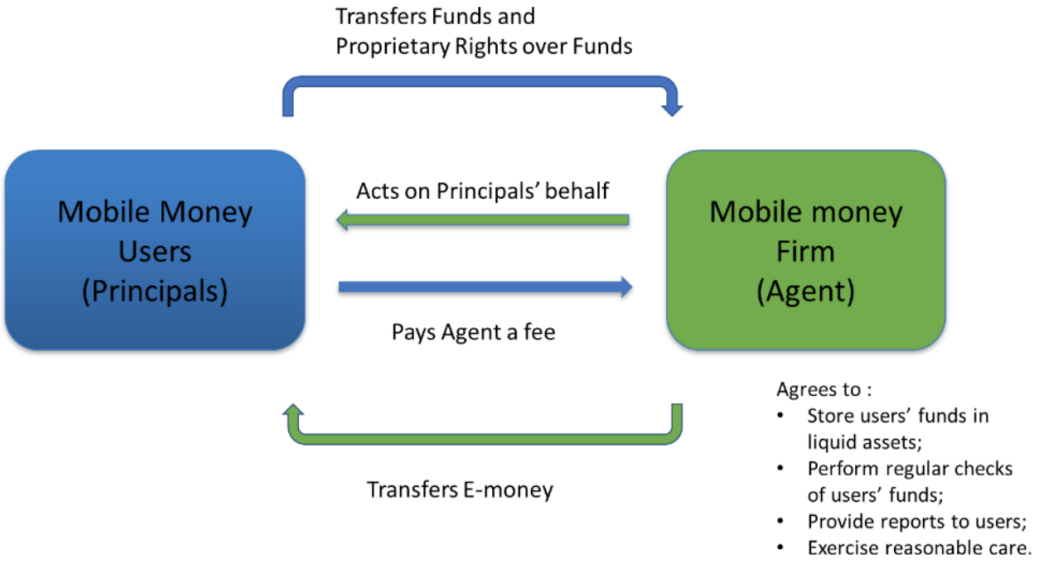
- One party (the agent) commits to act in the interests of another (the principal) in exchange for a fee;
- The agent is responsible for carrying out the objectives mandated by the principal and under the conditions outlined in the contract.

A mandate contract can be tailored to mobile money. This is because users (principals) will hand over funds to an MM firm (agent).

A mandate contract cannot achieve funds segregation and so cannot protect users' funds against loss of value and illiquidity risks. This is because, when the user purchases e-money from the MM firm, he/she exchanges proprietary rights over the funds for the right to transact using e-money. Thus, the user no longer owns the funds – they become the assets of the MM firm.

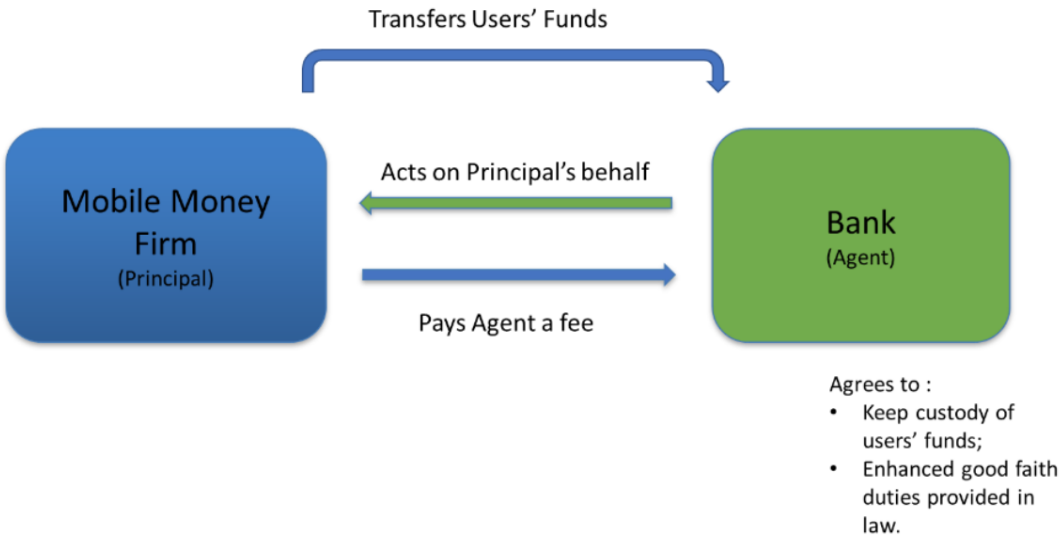
However, a mandate contract can contain rules requiring the MM firm (as agent) to operate prudently and protect users' funds, which reduces the likelihood that this actor enters financial distress and ultimately insolvency. For example, provisions in a mandate contract could state that the MM firm must store users' funds in liquid assets, perform regular checks of users' funds, provide reports to users, and otherwise exercise reasonable care.

Diagram 2: Mandate Contract between Mobile Money Users and Mobile Money Firm




A mandate contract could also be used between the MM firm and the bank(s) in which users' funds are stored. The MM firm could require the bank to keep custody of user's funds according to the duties outlined in the contract. The bank (as an agent) would be bound by the duties listed in the contract or the more advanced good faith duties stipulated by law, similar to a fiduciary under a fiduciary contract. Such tools may reduce the likelihood that the bank enters financial distress, which in turn protects users' funds stored in the bank account.

Diagram 3: Mandate Contract between a Mobile Money Firm and a Bank



### 3.2.4 Capital

Capital buffers are another method to protect users' funds. This involves requiring the MM firm to hold capital against its mobile money liabilities.

Capital is a form of private insurance and so can reduce the probability that an MM firm enters financial distress. Such obligations require the MM firm to use its own capital to meet losses of users' funds.[88] Put alternatively, capital acts as a buffer, reducing the risk that the MM firm will become insolvent as a consequence of a decrease in the value of its investments. This instrument does not, in itself, operate in bankruptcy proceedings to address loss of value or illiquidity risks.

There are also a number of important considerations involved in capital requirements, one of which is: how much capital is appropriate for MM firms? As of yet, there is no policy guidance on this point because it will depend upon the likelihood of failure of the MM firm's investments, which will vary across asset classes and jurisdictions. Potential capital levels will also depend upon the likelihood of loss due to internal actions of the MM firm. The absence of failure of MM firms means it is difficult to predict what capital levels are required. There is also a potential trade-off between capital levels. Higher levels of capital can have consumer protection benefits. It builds the credibility of the 1:1 relationship by increasing the likelihood that the MM firm can fully reimburse users in the event of financial distress. Doing so can also have financial inclusion benefits because regulators and/or unbanked people may be more likely to trust the service.

However, greater capital requirements can increase compliance costs on the MM firm which may impede financial inclusion.[89] These greater compliance costs may be passed onto users in the form of higher fees, making the service unaffordable for users 'at the margins'.[90]

Higher capital requirements may also prevent smaller, potentially more innovative MM firms from entering the sector. Barriers to entry of this kind may inhibit competition and innovation in mobile money, which in turn impairs the spread of this service to larger numbers of low-income and unbanked users.

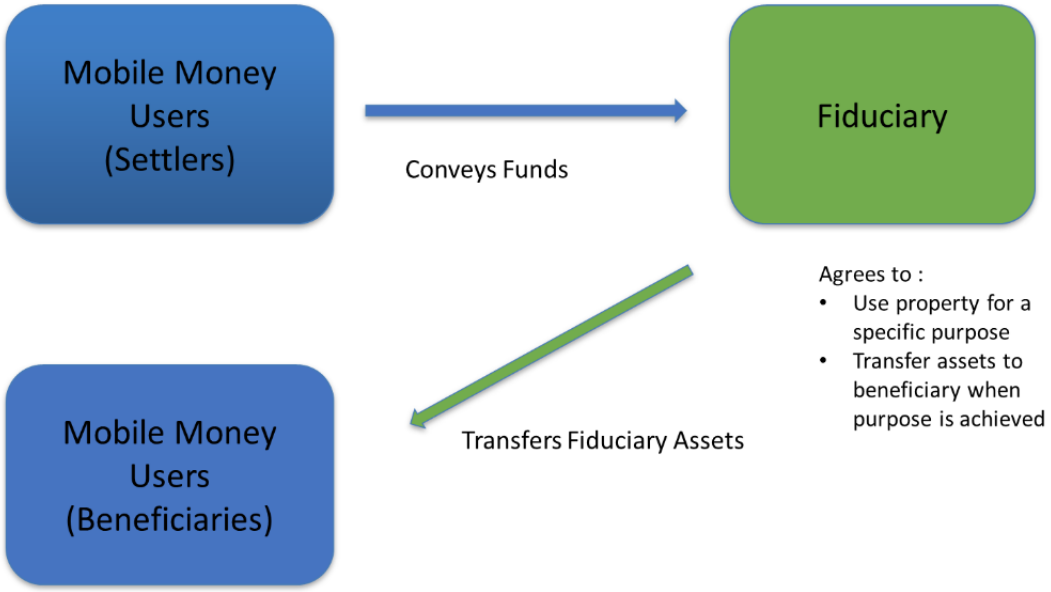
## 3.3 Tools for institutional distress

The second bundle of tools can become part of a civil law country's patchwork of protections for users' funds by operating if and when an MM firm becomes insolvent. This material below comprises new thinking because it involves discussing tools that are yet to be designed for mobile money. Further research is required into their potential operation.

## 3.3.1 Fiduciary transactions

Some civil law countries require MM firms to hold users' assets under a fiduciary contract, which then take the form of certain arrangements such as a *fiducia* in France and *fideicomiso* in Latin American countries.[91] A fiduciary transaction is an arrangement under which one party – the settlor – conveys property to another – the fiducia – and the latter agrees to use that property for a specific purpose. In addition, the fiduciary agrees to transfer the fiduciary assets to one or more beneficiaries upon fulfillment of the agreed purpose.[92]

Diagram 4: Fiduciary Contract




Civil law countries can use fiduciary arrangements for mobile money if such contracts are drafted carefully. In this scenario, the MM firm will be considered a fiduciary and users will be beneficiaries.[93]

A fiducia contract can achieve fund segregation goals and so protect users' funds against loss of value risk, although two points require careful consideration. One of which is a lack of background governance rules for fiducia contracts. Usually, trusts outline a range of explicit and implicit duties of a trustee to beneficiaries. In contrast, fiduciary contracts do not have general background rules outlining the fiduciary's duties to users.[94]

As a result, a regulator wanting to protect users' funds through a fiduciary contract will need to specify clear duties of the fiduciary, potentially through a mandate contract. Such duties can include 'fit and proper' tests for the fiduciary and arrangements requiring the safe storage of funds.

A second, more fundamental problem is that fiduciary contracts are not universally recognised and do not necessarily have the same effect across civil law countries.[95] These factors depend on the will of the parties[96] and/or the operation of the law.[97]

Moving forward, a fiduciary contract can be effective when a country's jurisdiction:

- Recognises the legality of this legal instrument;
- Classifies fiduciary assets (users' funds) as separate from the assets of the MM firm; and
- Recognises the validity of a contractual clause that states that insolvency of the MM firm is a valid 'agreed purpose'. This may mean that insolvency of the MM firm permits users' funds to be transferred to users (as beneficiaries).[98]

The newness of mobile money means we do not know exactly how fiduciary instruments will operate during insolvency of an MM firm. Court cases involved with such insolvency may provide the type of clarity needed to determine the usefulness of this instrument.

## 3.3.2 Innovative contractual mechanisms

Another option involves using other innovative contractual mechanisms to try to achieve asset segregation. These are hypothetical at this stage and require additional legal attention and analysis.

One option involves novel contractual terms between the MM firm and creditors. For example, the MM firm could include terms with creditors which require them to relinquish any potential claims against users' funds. Contracts with mobile money users could include a clause that the MM firm has entered into such agreements with creditors.[99]

Civil law countries seeking to use innovative contractual mechanisms will need to identify the legal pre-requisites required for such arrangements to work. Such contracts will need to be consistent with contracts, insolvency, and other areas of law. Additional research is required on the form of such tools.

## 3.3.3 Insurance

Private or public insurance is another option for protecting users' funds. This option may be particularly attractive in jurisdictions in which implementing the other options discussed above, particularly a fiduciary, are not feasible due to legal or other constraints. Private or public insurance can protect users' funds by guaranteeing their availability. Private insurance would involve a firm or another type of private actor providing funds to an MM firm in institutional distress. Public insurance involves the state taking this role through, for example, deposit insurance schemes.

Private and public insurance does not feature widely in mobile money regulatory frameworks, however there are some exceptions. For example, Colombia covers mobile money funds under its public deposit insurance schemes.[100]

Several issues arise when implementing private or public insurance for mobile money. One is that an insurance scheme would not be cost-effective or suitable in markets with small numbers of mobile money. This is because insurance companies need large numbers of clients to avoid the risk of having to make simultaneous payouts across all clients. Doing so would rapidly deplete its resources.[101]

Another is that the cost of insurance might impede financial inclusion goals.[102] This is because MM firms may pass on the cost of mandatory insurance to users. Doing so may make the service unaffordable for some users, particularly those from low-income communities.

Insurance may address loss of value risk but does not necessarily address illiquidity risk. This is because, depending on the legal arrangements between insurance and insolvency law, users may need to wait until the end of insolvency proceedings in order to access their funds. So this means that funds are available but users face a delay in receiving them.

Insurance could lead to moral hazard whereby MM firms have less incentive to adequately protect users' funds according to the rules outlined above. Policymakers may then need to introduce additional capital requirements to address moral hazard, much like in banking. The additional regulatory costs from such requirements may impede financial inclusion goals, as discussed above.

Finally, insurance may not be feasible in some jurisdictions due to lack of local capacity. This is because the insurer itself – whether a private or public actor – could itself enter financial distress when seeking to support the firm which is using this instrument. Regulation can address this problem by mandating that private insurance companies must pass certain liquidity and solvency tests before they can serve mobile money users. Public insurance bodies, such as government deposit insurance agencies, would need to carefully consider whether they have sufficient funds and administrative ability to extend their support to mobile money schemes.

## 4. Systemic risk

A third, unexplored question is whether there is any justification for extending crisis management tools of the type that normally apply to banks, to MM firms. This is a next generation regulatory topic.

Clearly some of the justification of extending crisis management tools to banks do not apply to MM firms. For example, one justification is that banks' credit creation activities mean this type of firms have fragile capital structures.[103] Portfolio restrictions usually mean MM firms cannot engage in credit creation.[104]

However, crisis management tools may be appropriate if collapse of mobile money creates a form of systemic risk. By analogy, crisis management tools are imposed on banks partly to address potential systemic risk that can arise through their failure.[105]

This leads to a key question: what does systemic risk look like in mobile money sectors? This question tends to be unexplored because few people forecast the rapid growth of mobile money to the point that it may have systemic consequences.[106] Furthermore, many international standards on systemic risk tend to assume that banks underpin payment systems, not non-banking payment services, such as mobile money.[107]

We need a type of stress test enabling us to perform a 'what if' - predicting the effect of a shock on an MM firm, users' funds stored within it, and potential impact on the surrounding mobile money and wider financial systems. A better understanding of likely consequences of failure can help us design appropriate rules. Such rules can focus on individual firms (so-called 'micro prudential' regulation often applied to banks) and the system as a whole (so called 'macro-prudential' regulation).[108]

Such tools are applied on banks but have yet to be adapted to mobile money. Certain stress tests focus on individual banks, normally carried out by banks themselves or supervisors. Central banks and/or supervisory agencies also perform systemwide stress tests.[109]

This section provides new thinking for mobile money stress tests by claiming that realization of loss of value risk may cause significant economic damage to lower-income communities that have stored a substantial portion of their wealth within the service. However, it is unlikely to significantly damage the surrounding economy. In contrast, illiquidity risk from failure of a MM firm may disrupt a large number of transactions in the economy which could cause significant economic disruption. The discussion analyses M-Pesa in Kenya and notes that future research projects can take these initial findings much further.

## 4.1 Loss of value risk

Realization of loss of value risk (loss of users' funds to third party creditors of the MM firm) may cause significant economic damage to individual lower-income users, but is unlikely to significantly damage the entire economy. A lower-income person may store the majority of her wealth within her mobile money account. She may then lose much of her economic well-being should the MM firm collapse. However, usually mobile money storage caps mean more wealthy members of the public can only store a small portion of their wealth in the service. They will need to find alternative instruments in which to store the majority of their wealth, such as bank deposits. This suggests that the overwhelming majority of wealth in a country is likely to be stored outside of mobile money, probably in the banking system.

M-Pesa in 2013 provides a useful example of the effect of storage caps in limiting the amount of wealth held in mobile money. As discussed above, originally a significant portion of M-Pesa users were unbanked and otherwise of low-income background, suggesting they may lose a non-trivial component of their wealth through loss of value risk.[110] However, M-Pesa funds stored in Kenyan banks comprised around 0.2% of Kenya's depositor base, suggesting the overwhelming majority of the country's wealth was stored in other assets, probably the banking system.[111] This data is 6 years out of date and it is conceivable that M-Pesa and potentially other mobile money schemes now store a much greater proportion of wealth in the Kenyan economy.

## 4.2 Illiquidity risk

Realization of illiquidity risk (a delay in returning users' funds) may significantly damage a country's economy by halting payment transactions. By illustration, in 2018, M-Pesa processed 16 million transactions every day in Kenya.[112] Without effective regulatory frameworks, collapse of Safaricom would halt these transactions until insolvency proceedings are complete. This process may take several years given that the average time for completion of a bankruptcy procedure in Kenya is 4.5 years, as discussed above.[113] M-Pesa users, comprising the vast majority of Kenya's population, would be unable to make payments when due, obtain funds from family members to manage risk, and otherwise transact in the formal and informal sectors.

The growth of mobile money schemes in other countries means collapse of this service could damage jurisdictions beyond Kenya. For example, in 2019, there were 59 million mobile money accounts in Bangladesh out of a population of 164.7 million.[114]

There may also be significant follow-on effects of illiquidity risk for the informal economy. Disruption to mobile money may mean people cannot make transactions to counterparties with actors in the informal economy. Disruptions to those transactions may cause significant damage to the economy. This is because in many developing countries the informal economy comprises a significant portion of overall economic activity – often between 40-70%.[115]

We then need criteria for determining the potential consequences of illiquidity risk on an economy. We can borrow components of this criteria from international standards issued by the International Monetary Fund, Bank for International Settlements, Financial Stability Board,[116] the United Kingdom's Independent Commission on Banking (2011),[117] wider literature on the regulation of financial institutions and markets, and development economics.[118] Future research needs to develop this criteria in greater depth.

While future research is required on this topic, there appears at least a prima facie case for exploring crisis management tools, particularly those which can address illiquidity risk. The next section explores such tools in greater detail.

# 5. Crisis management

Section 4 has suggested that at least one of the justifications for imposing crisis management tools on banks may apply to a large MM firm. This is major realization of illiquidity risk.

The next question is: what form should crisis management tools actually take for mobile money? There are a range of potential options. These could include one or more of deposit guarantee schemes, emergency liquidity assistance facilities, and special resolution regimes.

Certain focus countries have implemented what appear to be crisis management tools but their precise legal and administrative operation is unclear. Such tools appear designed to address illiquidity risk. They return users' funds more quickly than might be the case if the firm goes through regular bankruptcy proceedings.

Kenya provides a suitable example. The CBK can take a range of steps in the event of insolvency of an MM firm such as Safaricom.[119] These include:

- Take over control of the business of the MM firm to safeguard and facilitate the distribution of money in the trust fund;[120]
- Notify the institution holding the trust funds to cease dealing with the funds until the institution receives directions from the CBK;[121] and
- Appoint any person, including another MM firm, to distribute the balances held in the trust fund.[122]

Kenya's funds dispersal mechanism has never been used in practice and so its effectiveness is unclear. Like other tools discussed in this paper, this is because of the newness of mobile money.

However, in theory, Kenya's funds dispersal mechanism has a range of limitations, one of which involves potentially impeding financial inclusion goals. This is because, in its current form, Kenya's scheme aims to *return* funds to users. For already banked users, this may not be a problem. This is because funds would be returned to her bank account. Presumably, she could still use these funds through other electronic means, such as bank payments. However, for unbanked users – namely those who do not have a bank account and only use mobile money –funds would be returned in cash form which is the opposite of financial inclusion goals.

Furthermore, the funds dispersal regime may not be feasible in practice. This revolves around the feasibility of returning funds to otherwise unbanked users in cash form. Many unbanked and other low-income communities may live a long way from Nairobi and other main Kenyan cities, making them costly to reach.[123]

Finally, and perhaps most importantly, the legal effect of this tool – which appears to be designed to ensure financially distressed MM firms do not enter Kenya's bankruptcy regime – is unclear. The provision appears designed to enable the CBK to disperse funds *before* a financially distressed MM firm enters bankruptcy proceedings. However, it is unclear whether and if so how these provisions conflict with other Kenyan legal frameworks particularly the Insolvency Act. Other laws in Kenya may prohibit the type of funds dispersal mechanism outlined in the country's mobile money regulatory framework.

Tanzania and Ethiopia have also introduced what appear to be accelerated funds dispersal procedures.[124] Such procedures also appear to face the same central challenges of Kenya's mechanism.

Ethiopia's dispersal procedure, contained in the Payments Directive which was issued by the National Bank of Ethiopia (NBE) on 31 March 2020, is particularly complex. Regulatory provisions state that a payment provider who intends to terminate or wind up its operation shall: (a) notify users about how they can obtain their money, (b) give users 'at lease [sic] a period of three months' [sic], and (c) pay the outstanding amount to the users' account either in cash or transfer to another account as per user's instructions at no charge.[125] The payments provider must retain any unclaimed funds for 15 years and, at the end of that period, transfer unclaimed funds to the NBE and keep detailed information relevant to the account.[126]

Similar to Kenya, it is not clear how Ethiopia's arrangement would operate. A starting point involves clarifying the relationship between relevant Ethiopian regulations. As a central bank directive, the Payments Directive is unlikely to override insolvency legislation which in Ethiopia is contained in the Commercial Code. This suggests that the regular provisions of the Commercial Code would apply to a MM firm in financial distress and insolvency, *not* the provisions in the Payments Directive. This means this funds dispersal mechanism does not appear to protect users' funds from loss of value and illiquidity risks.

The United States' Federal Deposit Insurance Corporation receivership regime (FDIC regime) provides a starting point for thinking about funds dispersal mechanisms for users' funds. The FDIC regime focuses on waiving property rights to effect a very rapid transfer of complex assets and short-term liabilities to a purchaser, which stands behind these liabilities and thereby ensures stability.[127] The FDIC regime could be modified for mobile money. It would essentially involve implementing the type of license transferal mechanisms used for utility companies. In this case licenses – users' funds - are transferred from an insolvent to a solvent MM firm.[128]

A number of important policy issues arise when trying to design an accelerated transfer regime, including the authority of local policymakers to administer it. For example, it is not clear whether the CBK or any other policymaker has the legislative authority to transfer funds from an insolvent to solvent MM firm.[129]

Furthermore, an accelerated transfer procedure may impact other legislation. For example, a range of user data may need to be transferred from an insolvent to solvent MM firm. This would involve personal information and passwords. Procedures around such information will need to be consistent with other regulation in Kenya, particularly privacy legislation relating to the protection of people's data.

A range of additional research is required into the challenging task of unpacking the legal, policy and regulatory issues involved in designing and implementing ex post regulatory tools for mobile money. This section has provided a starting point. Additional research involves exploring potential bail out of MM firms, emergency liquidity, loosely termed 'lender of last resort', and other options commonly used on banks. We would also need to determine how such tools fit together, potentially in a form of macroprudential regulation.

## Conclusion

We can develop some clarity on regulatory frameworks for mobile money by understanding that the service operates a 'shadow limited-purpose deposit' system, creating a range of issues that require new regulatory thinking. We need to attend to these issues now given the rapidly growing size of mobile money sectors across the developing world. This paper has provided starting points for understanding four important regulatory issues: appropriate governance tools for trusts instruments, legal instruments civil law countries can use in the place of trusts, potential systemic risk that can arise through collapse of a major MM firm, and crisis management tools that can address such a collapse.

We need much more research on these key topics. Eventually, we will need to determine how the tools discussed in this paper, and others commonly used in mobile money schemes, fit together in a holistic toolkit. Such a toolkit can build stronger, more durable mobile money sectors across the developing world.

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7 See discussion in Awrey, Dan and van Zwieten, Kristin, 'The Shadow Payment System' (April 21, 2017). 43 Journal of Corporation Law, Oxford Legal Studies Research Paper No. 55/2016.

8 https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-09/regulating_mobile_money.pdf

9 Which in turn drew on: Robert Merton and Zvi Bodie, 'A Conceptual Framework for Analyzing the Financial Environment' in Dwight Crane, Kenneth Froot, Andre Perold, Robert Merton and Peter Tufano, *The Global Financial System: A Functional Perspective* (Harvard Business School Press 1995). See also John Armour, Daniel Awrey, Paul Davies, Jeffrey Gordon, Colin Mayer and Jennifer Payne, *Principles of Financial Regulation* (Oxford University Press 2017) Chapters 1, 10-11.

10 Other issues such as operational risk, cybersecurity and beyond are becoming increasingly important to policymakers. See, for example, https://www.cgap.org/blog/cybersecurity-mobile-financial-services-growing-problem.

11 See note 8.

12 See examples cited in Section 2.

13 The Terms and Conditions between Safaricom and M-Pesa users are a contract, as evidenced in Clauses 2.5 and 18.3. In accepting these terms and conditions, M-Pesa users consent to be bound to trust deeds relevant to the service, discussed in Section 3 (see M-Pesa Terms and Conditions, Clause 2.9).

14 See, for example clauses 8 of Airtel Money Tanzania: https://www.airtel.co.tz/airtelmoney/about_airtelmoney.

15 See particularly https://www.safaricom.co.ke/personal/m-pesa/m-pesa-legal.

16 M-Pesa Terms and Conditions, Clause 2.12.

17 Pozsar, Zoltan and Adrian, Tobias and Ashcraft, Adam B. and Boesky, Hayley, Shadow Banking (December 1, 2013). Economic Policy Review, Vol. 19, No. 2, 2013. The term shadow banking is contested. Zoltan Pozsar, Tobias Adrian, Adam B. Ashcraft, Haley Boesky, Shadow Banking, Federal Reserve Bank of New York Staff Report No. 458 (2010). See definition in Paul McCulley (2009 Paul McCulley, The Shadow Banking System and Hyman Minsky's Economic Journey, Insights into the Global Financial Crisis (CFA Institute, 2009)). (Daniela Gabor and Jakob Vestergaard, Towards A Theory of Shadow Money, Institute for New Economic Thinking (April 2016), available at https://www.ineteconomics.org/research/research-papers/towards-a-theory-of-shadow-money).

18 Awrey and van Zwieten, see above.

19 See John Armour, Daniel Awrey, Paul Davies, Jeffrey Gordon, Colin Mayer and Jennifer Payne, *Principles of Financial Regulation* (Oxford University Press 2016) 12 and 'self-regulation' in Chapter 24, section 24.4. For a more expansive view of the regulatory nature of private law, see H. Collins, *Regulating Contracts* (Oxford: OUP, 1999).

20 National Payment Systems Regulations. See other countries, e.g. Uganda: Mobile Money Guidelines 2013; Tanzania: Electronic Money Regulations 2015; Bangladesh: Mobile Financial Services Regulations, 2015.

21 See the full range of functions in the M-Pesa Terms and conditions: deposit e-money (Clause-5.1.1); send e-money (Clause 5.1.2 and 8.3), make payments (Clauses 5.1.5, 5.1.6 and 5.1.7), withdraw cash (Clauses 2.11, 5.1.3 and 5.1.5).

22 Note that Awrey and van Zwieten (2017) claim mobile money is part of the shadow payment system. This paper diverges slightly by arguing that, by providing a stand-alone storage function, mobile money provides more than payments alone.

23 See Footnote 13.

24 To that end, Safaricom markets M-Pesa to potential users as a transfer service. See a description of how M-Pesa Terms and Conditions, M-Pesa Trust Deed, M-Pesa Amendment Deed, and M-Pesa website emphasize that M-Pesa is a transfer and payment service: Text to n 127. The Safaricom website states that the 'core service' of M-Pesa is 'mobile money transfer'; Safaricom, 'M-Pesa', http://www.safaricom.co.ke/personal/m-pesa, accessed 7 April 2016. The M-Pesa Terms and Conditions between the Safaricom and user ('M-Pesa Terms and Conditions') also labels the service as a 'Mobile Money Transfer Service' (M-Pesa Terms and Conditions, Introduction and Clause 1). The M-Pesa Amendment Deed, on which MPHC declares it holds users' funds on trust for users states M-Pesa is an 'electronic money service' (M-Pesa Amendment Deed, Clause 1). Note 'M-Pesa' is usually in capitals in M-Pesa legal materials. This thesis uses 'M-Pesa' when citing such material. This enables consistency between legal materials and the thesis. The CBK and other Kenyan regulators used this definition when launching the service: CBK announcement, 2009. CA: This description of Safaricom's license was used by the Communications Commission of Kenya: see 'M-Pesa: Regulatory Framework' (World Trade Organization) http://www.wto.org/english/tratop_e/serv_e/wkshop_june13_e/wanjau_e.pdf, accessed 7 April 2016, 6. See, for example, other regulators that were involved in initial discussions surrounding the regulation of M-Pesa also used this distinction, such as the Kenyan Communications Commission.

25 See Safaricom's authority to impose transaction limits: M-Pesa Terms and Conditions, Clauses 2.11, 3.7, 3.8, 7.4, 8.1, and 10.3. See a discussion of transaction limits in Mas, Ignacio, and Kabir Kumar. Banking on Mobiles: Why, How, for Whom? SSRN Scholarly Paper, ID 1655282, Social Science Research Network, 2008. papers.ssrn.com, https://papers.ssrn.com/abstract=1655282. p. 26.

26 Maximum Account Balance is KSHs.300,000 - https://www.safaricom.co.ke/personal/m-pesa/getting-started/m-pesa-rates.

27 "Kenya - Key Rates 2020." Countryeconomy.com, https://countryeconomy.com/key-rates/kenya. Accessed 24 Aug. 2020. Safaricom's authority to impose transaction limits: M-Pesa Terms and Conditions, Clauses 2.11, 3.7, 3.8, 7.4, 8.1, and 10.3. Passed onto users: M-Pesa Trust Deed, Clauses 4 and 5; and M-Pesa Amendment Deed, Clause, 6.1. See calls for changes on this point: Ehrbeck and Tarazi (n 223).

28 Armour, see above, page 77.

29 Awrey and van Zwieten, see above, page 27.

30 Awrey and van Zwieten, see above, page 27.

31 The bank deposit may be helped by another bank due to accelerated bankruptcy regimes discussed below.

32 See the discussion on trusts in Section 2.

33 Omoneka Musa, Charles Niehaus, and Martin Warioba, *'How Tanzania Established Mobile Money Interoperability'* (2015) Consultative Group to Assist the Poor (CGAP) http://www.cgap.org/blog/how-tanzania-established-mobile-money-interoperability, accessed 15 April 2016.

34 See Tanzania: Section 30(1) of the Electronic Money Regulations 2015; see also Claudia McKay, 'Interest Payments on Mobile Wallets: Bank of Tanzania's Approach' on CGAP (28 June 2016); Bank of Ghana, 'Guidelines for E-Money Issuers in Ghana' (Guidelines, 6 July 2015) Article 10(10).

35 For Kenya, see amendments to the Kenya Deposit Insurance corporation Act. For Nigeria, see Nigeria Deposit Insurance Corporation (Pass Through Deposit Insurance) Regulations (2016). Pass through insurance is when funds which are deposited by a fiduciary acting on behalf of settlors are insured as if the deposit was made by the settlors.

36 Kenya's National Payment System Regulations, 25(5)(b).

37 For example, in M-Pesa, the MM firm is required to invest users' funds in commercial bank accounts and/or Government of Kenya securities: M-Pesa Amendment Deed, Clause 6.1. This provision was then codified in Kenyan regulations: see, e.g., National Payment Systems Regulations, Section 25(3)(f). As will be discussed below, diversification depends on the amount in the trust account. If the amount in the trust account is below 100 million Kenyan shillings, funds must be stored in a 'strong rated bank'. If the amount is greater than this amount, only 25% of total funds can be stored in a single bank. The funds must also be held in a minimum of two 'strong rated banks': Regulations Section 25.4 and Fourth Schedule.

38 This means the firm has an inability to pay debts as they fall due: Armour, see above.

39 See, for example, Kenya: NPS Regulation, Section 25(3)(f). As will be discussed below, diversification depends on the amount in the trust account. If the amount in the trust account is below 100 million Kenyan shillings, funds must be stored in a 'strong rated bank'. If the amount is greater than this amount, only 25% of total funds can be stored in a single bank. The funds must also be held in a minimum of two 'strong rated banks': Regulations Section 25.4 and Fourth Schedule.

40 Unless a custodian is used, explored below.

41 IADI | International Association of Deposit Insurers | Home.Html. https://www.iadi.org/en/deposit-insurance-systems/dis-worldwide/. Accessed 24 Aug. 2020.

42 William Jack and Tavneet Suri, 'Mobile Money: The Economics of M-Pesa', (2011) Massachusetts Institute of Technology, August 2010 https://faculty.georgetown.edu/wgj/papers/Jack_Suri-Economics-of-M-PESA.pdf, accessed 11 March 2016, 10.

[43] External factors can cause MM firms to enter financial distress. These include competition from new regulatory changes that significantly reduce the profitability of mobile money, and wider financial and economic cycles which impact upon the assets and liabilities of MM firms. Competition concerns may become increasingly relevant if and when Libra launches across the developing world potentially prompting MM firms to adopt riskier strategies to compete.

[44] This means the firm has an inability to pay debts as they fall due. Armour, note above. In this case, it involves an inability to repay mobile money users on demand. This comprises insolvency on a cash flow test. "Principles for Effective Insolvency and Creditor/Debtor Regimes", The World Bank (2016). http://pubdocs.worldbank.org/en/919511468425523509/ICR-Principles-Insolvency-Creditor-Debtor-Regimes-2016.pdf. Note that usually liquidity risk is a temporary issue but can lead to a more permanent balance sheet insolvency problem and ultimately bankruptcy of the MM firm: Ronald Mann, Payment Systems and Other Financial Transactions: Case, Materials and Problems (5th ed, Aspen Publishers 2011) 21. See also Bollen ibid. 39-40 and Geva ibid. 427. This is because, in order to meet liquidity needs, an MM firm may then liquidate assets at a discount to 'hold to maturity' values. Losses on those investments can mean the MM firm is balance sheet insolvency in that its assets are worth less than debts.

[45] Substantive rule: Insolvency Act Section 247, 471. Other factors – particularly costs of administering insolvency - can amplify loss of value by reducing the asset pool that can be later distributed. Such costs can include professional fees and other expenses that users incur in making their claims. Delays in distribution may also mean assets depreciate and less is available for collective distribution.

[46] Awrey and van Zwieten, above.

[47] Insolvency Act Section 558. Several factors can amplify illiquidity risk. These include the relatively slow pace of bankruptcy proceedings in developing countries, users' lack of experience in filing claims for funds, administrative challenges in returning funds to users – many of whom may not have bank accounts and so must be reimbursed in cash.

[48] "Explore Economies - Kenya." World Bank, https://www.doingbusiness.org/en/data/exploreeconomies. Accessed 24 Aug. 2020.

[49] This is central to the disclosure in M-Pesa, namely that all of users' cash is held 'on trust' and can be redeemed: see M-Pesa Terms and Conditions, Clause 1 (''[E]-money' means the electronic monetary value depicted in your M-Pesa account representing an equal amount of Cash held by the Trustee and which may be redeemed through an M-Pesa Cash Merchant for an equal amount of Cash' and 'Trust Deed' means together the Declaration of Trust dated 23rd January 2007 and the M-Pesa Amendment Deed dated 19th June 2008 executed by the Trustee constituting the trusts under which the Trustee holds all amounts of cash received for your Account') and 2.9 ('Your cash represented as e-money is held in trust for you'). For Nigeria see: Guidelines on Mobile Money Services in Nigeria', Clause 7.5(f). Kenya: 25(3)(b) ensure all monies received are held in a Trust Fund; and 25(3)(c) that Trust balances be no less than total money balances at all time. Rwanda: E-money issuers must retain one hundred percent (100%) of electronic money in circulation (MFS Regulation, Section 17)); Bangladesh: MFS Regulations, Section 7.5(i).

[50] Future papers need to examine the 1:1 relationship in the context of other, more recent innovations in mobile money. See, for example: https://www.safaricom.co.ke/personal/m-pesa.

[51] See Bangladesh: Clause 7.5(i), Bangladesh Mobile Financial Services (MFS) Regulations, 2018; Kenya: NPS Regulation 25 requires all subscriber funds to be held in a Trust. Regulation 26 specifies the minimum requirements for the Trust. Tanzania: - Money Regulations, Part V.

[52] See discussion above about requirements in M-Pesa's trust terms.

[53] See a discussion of this point in Jonathan Greenacre and Ross Buckley, 'Using Trusts to Protect Mobile Money Users', (2014) Singapore Journal of Legal Studies, 59-78.

54 Ibid.

55 Bangladesh: MFS Regulations Section 7.5(i).

56 Ibid.

57 In such circumstances there a risk that the trust arrangement will not meet one or more of the three certainties. A court may conclude that an MM firm did not evince the necessary intention to hold the funds on trust, and/or, if the funds were mingled, that it is not possible to identify which funds it was supposed to have segregated: See the case of Re Goldcorp [1994] UKPC 3 in which the firm promised to hold assets on trust but failed to do so and the users received nothing in its insolvency: Roy Goode, Principles of Corporate Insolvency Law, 4th edn, Sweet & Maxwell, (2011) 213. See a discussion of the three certainties in Knight v Knight (1840) 49 ER 58. See earlier discussion in Wright v. Atkyns (1823) Turn. & R. 143, 157, per Lord Eldon: "...first... the words must be imperative...; secondly...the subject must be certain...; and thirdly...the object must be as certain as the subject". For additional discussion on various components of the three certainties, see Intention to Create a Trust Inferred from Circumstances, Re Kayford (1975) 1 WLR 279.

58 Using Trusts to Protect Mobile Money Users, Singapore Journal of Legal Studies 59 co-authored with Ross Buckley (2014). For example, in Papua New Guinea, Digicel PNG and Post PNG use trust deeds, each of which contains a declaration of trust. See Jonathan Greenacre and Ross Buckley, Trust Law Protections for E-Money, Pacific Financial Inclusion Program and Alliance for Financial Inclusion, co-authored with Ross Buckley (2013).

59 Using Trusts to Protect Mobile Money Users, Singapore Journal of Legal Studies 59 co-authored with Ross Buckley (2014).

60 See New Zealand's Trusts Act 2019.

61 United Nations Secretary-General's Special Advocate for Inclusive Finance for Development, 'Financial Inclusion' (UNSGSA, 2015) http://www.unsgsa.org/about/financial-inclusion, accessed 29 September 2015; see similar definitions from Centre for Financial Inclusion, 'Financial Inclusion Glossary' (Centre for Financial Inclusion, 2015) http://www.centerforfinancialinclusion.org/publications-a-resources/financial-inclusion-glossary, accessed 29 September 2015.

62 This term has been described as the regulator's dilemma; whether to implement measures that may hinder expanding access to non-users in the interests of protecting those who already have access. David Porteous, 'The Regulator's Dilemma' (2006) FinMark Trust, July 2006.

63 The Global Multidimensional Poverty Index 2014, assembled by Oxford University's Department for International Development, calculates across 780 sub-national regions across 69 countries that 85% of the world's poor live in rural areas: Sabina Alkire, Mihika Chatterjee, Adriana Conconi, Suman Seth and Ana Vaz, 'Global Multidimensional Poverty Index 2014' (2014) Oxford Department of International Development: http://www.ophi.org.uk/wp-content/uploads/Global-MPI-2014-an-overview.pdf, accessed 27 December 2017. Stefan Dercon, 'Rural Poverty: Old Challenges in New Contexts' (2009), Oxford University Press on behalf of the International Bank for Reconstruction and Development, 9 April 2009: http://documents.worldbank.org/curated/en/156151468159608168/pdf/767910JRN0WBRO00Box374387B00PUBLIC0.pdf, accessed 27 December 2016, 1 There is some slight variation in developing regions. For example, in Western and Central Africa this figure is 75%: International Fund for Agricultural Development (IFAD) 'Assessment of Rural Poverty: Western and Central Africa' (2001) IFAD Project Management Department https://www.ifad.org/documents/10180/60b3019f-9334-470e-8adc-b51f756523fc, accessed 27 December 2016, 2. See industry research in Jennifer Frydrych and Hege Aschim, 'Extending reach: Mobile Money in Rural Areas' (2014) GSMA: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/10/2014_DI_Extending-reach_Mobile-money-in-rural-areas.pdf, accessed 19 April 2016.

64 This is because the unbanked tend to be the 'poorest of the poor'. They also tend to work in the informal sector or be self-employed: Manroth and Solo (n 33) 45; Pickens (n 33) 1-2. See also comparable studies in developed countries, e.g. the United States: Marianne Bertrand, Sendhil Mullainathan and Eldar Shafir, 'A Behavioral-Economics View of Poverty' (2004) American Economic Review 94(1): 419-423 https://dash.harvard.edu/handle/1/2907437, accessed 14 December 2016.

65 World Bank Doing Business: https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB07-FullReport.pdf.

66 World Bank Doing Business: https://www.doingbusiness.org/en/data/exploretopics/enforcing-contracts.

67 "About Us." GOV.UK, https://www.gov.uk/government/organisations/charity-commission/about. Accessed 24 Aug. 2020.

68 I am indebted to David Ramos Muñoz, Javier Solana, & Ross Buckley et al., "Protecting Mobile Money Customer Funds in Civil Law Jurisdictions" (2016) 65 International and Comparative Law Quarterly 705 for a significant portion of the material in this section.

69 Such as the Hague Convention of 1985 on the Law Applicable to Trusts and on their Recognition. Italy has ratified the Convention. See Michele Graziadei, "Recognition of Common Law Trusts in Civil Law Jurisdictions under the Hague Trusts Convention with Particular Regard to the Italian Experience" in Lionel Smith ed., Re-imagining the Trust: Trusts in Civil Law (Cambridge: Cambridge University Press, 2012).

70 These differences emerge because the common law trust regulates both rights in personam (eg. customer rights against the provider of e-money services) and rights in rem (eg. customer rights over funds). In contrast, the civil law makes a sharp distinction between the Law of Obligations (for rights in personam) and the Law of Property or 'Real' Rights (for rights in rem). For additional discussion, see Muñoz, above page 707.

71 Payments Directive, Section 10(3).

72 Payments Directive, Section 10(12).

73 Payments Directive, Section 15(2).

74 See Reglamento de Fideicomiso contenido en la Recopilación de Normas para Bancos y Entidades Financieras (RNBEF), Chapter XVII, Article 7; in Brazil, Circulares BC Brasil No. 3682 and 3683; in Peru, Resolución SBS No. 6286-2013.

75 2007/64/EC Payment Services Directive, Article 9. https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32007L0064.

76 Chad: Regulation on E-Money Issuance 2011, Regulation 15; Congo: Instruction on E-Money Issuance (date unclear), Article 18; El Salvador Ley para Facilitar la Inclusion Financiera (undated), Article 10.

77 Ley No. 921 de Negocios Fiduciarios (undated), Articles 10 & 13.

78 Vodafone, 'Safaricom Launches M-Shwari - Offering Interest and Loans - On M-Pesa' (Vodacom, 27 November 2012) https://www.vodafone.com/news-and-media/vodafone-group-releases/news/m-shwari. As explained in Chapter 1, 'CBA' is an abbreviation for the Commercial Bank of Africa.

79 Ibid.

80 Section 14 of Bank Indonesia Regulation Number 20/6/PBI/2018 on Electronic Money. For example, in Ethiopia, users' funds must be deposited in an 'account maintained with a bank and invested in Government securities' Payments Directive, Payments Directive, Section 10(3).

81 See Reglamento de Fideicomiso contenido en la Recopilación de Normas para Bancos y Entidades Financieras, Chapter XVII, Article 7; in Brazil, Circulares BC Brasil No. 3682 y 3683; in Peru, Resolución SBS No. 6286-2013.

82 Joanna Benjamin, Financial Law (Oxford University Press 2007).

83 M-Pesa Amendment Deed, Clause (E); M-Pesa Trust Deed, Clause 2(i). Note that Safaricom has various contractual methods to control actions of the MPHC which could also lead to co-mingling. This is because Safaricom operates as an 'agent' of the MPHC. M-Pesa Amendment Deed, Clause 7.1. As a result, Safaricom gains the contractual right to operate the commercial bank accounts in which users' funds are stored. Safaricom can also effect payments from the trust fund back to users who wish to redeem their funds. Authorized Safaricom personnel are signatories of the bank account under the name of the MPHC. M-Pesa Amendment Deed, Clause 7.1(a).

84 The Netherlands' Securities Book-Entry Transfer Act Materially Amended. https://news.bloomberglaw.com/securities-law/the-netherlands-securities-book-entry-transfer-act-materially-amended. Accessed 16 Aug. 2020.

85 We can define a patrimony as an autonomous mass with a set of assets answerable for the set of liabilities. F. Barrière, 'The French Fiducie, or the Chaotic Awakening of a Sleeping Beauty' in LD Smith (ed), Re-imagining the Trust: Trusts in Civil Law (Cambridge University Press 2012), 251. For example, in Quebec, the arrangement used is known as a patrimoine d'affectation (patrimony by appropriation). This arrangement "constitutes a patrimony of autonomous use and distinct from that of the settlor, the trustee or the beneficiary, over which none of them has real rights." Civil Code of Quebec 1991, Clause 64, Article 1261.

86 See: Lina Aleknaite, Why the Fruits of Capital Markets are Less Accessible in Civil Law Jurisdictions or How France and Germany Try to Benefit from Asset Securitization, 5 DePaul Bus. & Com. L.J. 191 (2007), p. 196.

87 Ramsay, Ian, and David B. Noakes. Piercing the Corporate Veil in Australia. SSRN Scholarly Paper, ID 299488, Social Science Research Network, 8 May 2002. papers.ssrn.com, https://papers.ssrn.com/abstract=299488.

88 In this sense, capital requirements have a similar purpose to when it is imposed on banks and other financial institutions: Capital rules aim to ensure that shareholders' equity funds a minimum proportion of the current value of the bank's assets. This aims to increase the likelihood that a bank can absorb losses on the assets side of its balance sheet without becoming insolvent and triggering a run on its deposits or other short-term funding: Armour and others (n 2) Chapter 14, 296.

89 This is because equity capital is the most costly to raise for this firm, as an exception to the Modigliani and Miller theorem. Franco Modiglian and Merton H. Miller, 'The Cost of Capital, Corporation Finance and the Theory of Investment' (1958) 48(3) The American Economic Review 261 https://assets.aeaweb.org/assets/production/journals/aer/top20/48.3.261-297.pdf, 30 December 2016; Franco Modigliani and Merton H. Miller, 'Corporate Income Taxes and the Cost of Capital: A Correction' (1963) 53(3) The American Economic Review, June 1963, 433; Serena Fatica, Thomas Hemmelgarn and Gaëtan Nicodème, 'The Debt-Equity Tax Bias: consequences and solutions' (2012) European Commission Taxation Papers, Working Paper 33 https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_33_en.pdf, accessed 29 December 2016; and James A. Miles and John R. Ezzell, 'The Weighted Average Cost of Capital, Perfect Capital Markets, and Project Life: A Clarification' (1980) 15(3) The Journal of Financial and Quantitative Analysis, September 1980, 719 https://www.jstor.org/stable/2330405?seq=1#page_scan_tab_contents, accessed 29 December 2016.

90 See an introduction to the term 'at the margins' in Section 2.2.

91 See Peruvian E-Money Act, Article 6.1.

92 Note that usually the fiduciary contract will specify the identity of these beneficiaries. Sometimes the seller or any third party as specified in the contract may be beneficiary of the fiducia. Sergio Cámara Lapuente, "Trusts in Spanish law" in M. Cantin Cumyn ed., Trust vs Fiducie in a Business Context (Brussels: Bruylant 2000) 197. On other occasions, the fiduciary may be designated as beneficiary (See Code civil des Français, Article 2016). This approach is prohibited in many Latin American jurisdictions; See Article 8.1 of Paraguayan Ley 921/96 de Negocios Fiduciarios or Article 265.4 of Peruvian Ley 26.702, General del Sistema Financiero y del Sistema de Seguros y Orgánica de la Superintendencia de Banca y Seguros.

93 This approach is less common in Latin American jurisdictions. See, for example, Uruguay: Ley no 19.210 de Inclusión Financiera, Article 5.

94 See David Ramos Muñoz, Javier Solana, & Ross Buckley et al., supra note 30 at 725.

95 For an overview across jurisdictions; Maurizio Lupoi, Trusts: A Comparative Study (Cambridge University Press, 2000); M. Cantin Cumyn, "Reflections Regarding the Diversity of Ways in Which the Trust Has Been Received or Adapted in Civil Law Countries" in Lionel Smith ed., Re-imagining the Trust: Trusts in Civil Law (Cambridge University Press, 2012).

96 See Sergio Cámara Lapuente, supra note 33 at 195–8.

97 See Code civil des Français, Article 2012.

98 In jurisdictions such as France, regulatory provisions explicitly provide for the delineation of trust funds. See e.g. Code civil des Français, Article 2024.

99 Hansmann & Mattei "The Functions of Trust Law: A Comparative Legal And Economic Analysis", p 9.

100 Izaguirre, Juan Carlos, Claire McGuire, and David Grace. 2015. Deposit Insurance and Digital Financial Inclusion. CGAP Blog post. Washington, DC: CGAP.

101 Ramos Muñoz, David and Solana, Javier and Buckley, Ross P. and Greenacre, Jonathan, Protecting Mobile Money Customer Funds in Civil Law Jurisdictions (December 21, 2015). Global Economic Governance Programme Working Paper 2015/102, UNSW Law Research Paper No. 2015-79.

102 Usually financial inclusion focuses on providing a range of financial services to unbanked communities, such as payment, storage, insurance, and credit. United Nations Secretary-General's Special Advocate for Inclusive Finance for Development, 'Financial Inclusion' (UNSGSA, 2015) http://www.unsgsa.org/about/financial-inclusion accessed 29 September 2015; see similar definitions from Centre for Financial Inclusion, 'Financial Inclusion Glossary' (Centre for Financial Inclusion, 2015) http://www.centerforfinancialinclusion.org/publications-a-resources/financial-inclusion-glossary, accessed 29 September 2015. And See Basel Committee on Banking Supervision, 'Range of Practice in the Regulation and Supervision of Institutions Relevant to Financial Inclusion' (2015) Bank for International Settlements, January 2015, 3 http://www.bis.org/bcbs/publ/d310.pdf, accessed 20 April 2016.

103 Awrey and van Zwieten.

104 It is important to note here that services like M-Shwari do involve credit creation. However, this credit creation takes place through the Commercial Bank of Africa, not mobile money.

105 Awrey and van Zwieten.

106 See Michael Joseph, Reflections on The Technological Development and Subsequent Impact of the World's Leading Mobile Money Service, World Bank Blogs (2017). Nick Hughes and Susie Lonie, Launching M-Pesa (2011), 67. For a notable exception, see John Armour and Dan Awrey (2015) claim that a lack of analysis of the potential systemic consequences of collapse of MM firms is a potentially important 'lacuna' given the size of the service in many countries in which it operates. John Armour and Daniel Awrey, Prioritizing the Implementation of International Financial Regulation (The Commonwealth, Economic Papers Series, 2015). Concerns have been raised that mobile money may increase the velocity of payments in the money transfer system (see Klein and Mayer (n 58) 12). The initial research on this topic suggests mobile money does not increase such velocity substantively and so is unlikely to have macro-economic effects and inflation: see Janine Aron and John Muellbauer, 'Does Mobile Money Cause Inflation? Evidence from Inflation Models for Uganda: A Policy Brief' (2015) Said Business School, Oxford University; Janine Aron, John Muellbauer, and Rachel Sebudde, 'Inflation Forecasting Models for Uganda: is Mobile Money Relevant?' (2015) Said Business School, Oxford University.

107 For example, the BIS principles define payment systems 'as the means by which funds are transferred among banks': Bank for International Settlements, 'Core Principles of Systemically Important Payment Systems' (January 2001) Bank for International Settlements, Sections 1.1 and 3.0.1, http://www.bis.org/cpmi/publ/d43.pdf, accessed 8 April 2016.

108 Baudino, Patrizia, et al. Stress-Testing Banks a Comparative Analysis. 2018. Open WorldCat, https://www.bis.org/fsi/publ/insights12.pdf.

109 Ibid.

110 See endnote 42.

111 GSMA, 'Mobile Money: Enabling Regulatory Solutions,' (2013), 10.

112 "Zimbabwe and Kenya Lead the Way in Africa's Dash from Cash." The Guardian, 22 Feb. 2018, http://www.theguardian.com/world/2018/feb/22/kenya-leads-way-mobile-money-africa-shifts-towards-cash-free-living.

113 "Explore Economies. - Kenya" World Bank, https://www.doingbusiness.org/en/data/exploreeconomies. Accessed 24 Aug. 2020.

114 Usage also requires consideration: 52% of Bangladeshi mobile money accounts are considered 'active': IMF, 'Financial Access Survey,' https://data.imf.org/?sk=E5DCAB7E-A5CA-4892-A6EA-598B5463A34C&sId=1390030341854.

115 For example, in a World Bank report Laoyza, Serven and Sugawara (2009) estimate the informal economy in Latin America produces 40% of the GDP and employs 70% of the labor force informally: Norman V. Loayza, Luis Servén and Naotaka Sugawara, 'Informality in Latin America and the Caribbean' (2009) The World Bank Development Research Group Macroeconomics and Growth Team, Policy Research Working Paper 4888, March 2009 http://library1.nida.ac.th/worldbankf/fulltext/wps04888.pdf, accessed 29 December 2016. Other studies, such as La Porta and Schleifer (2008) emphasize the size of the informal economy may be around 29% to 57.3% compared to the overall economy: Rafael La Porta and Andrei Shleifer, 'The Unofficial Economy and Economic Development' (2008) Brookings Papers on Economic Activity, Fall 2008, 275 https://www.brookings.edu/wp-content/uploads/2008/09/2008b_bpea_laporta.pdf, accessed 28 December 2016, 2. However, these scholars also note the difficulties of measuring the informal economy given the prevalence of hidden firms and outputs. These may be hidden from police, tax authorities and regulators, to minimize tax and potentially for other reasons: 5.

116 See also IMF, BIS, FSB, 2009, Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations, Report to the G-20 Finance Ministers and Central Bank Governors.

117 See Independent Commission on Banking ('ICB'), Final Report: Recommendations (London: ICB, 2011) ('ICB Report'); http://webarchive.nationalarchives.gov.uk/20131003105424/https:/hmt-sanctions.s3.amazonaws.com/ICB%20final%20report/ICB%2520Final%2520Report[1].pdf.

118 Armour et al, see above.

119 NPS Regulations, Section 10(f). The trigger for using the accelerated bankruptcy regime is revocation of an MNO's license which can in turn emerge from institutional distress. This is because one of the grounds for revocation of license is that an MNO 'becomes insolvent or is unable to effectively conduct its operations'.

120 National Payment System Regulations (2014) (Kenya) Regulation 10(5).

121 National Payment System Regulations (2014) (Kenya) Regulation 10(7).

122 Ibid.

123 See reference above that most unbanked communities live in rural areas.

124 Ethiopia: Payments Directive, Section 16; Tanzania: E-Money Regulations, Section 11(2).

125 Section 16(5)(a)-(c).

126 Section 16(6).

127 See a discussion of bank resolution schemes in Armour and others, 2009 (n 2) Chapter 16, 340.

128 See Julian Franks, Colin Mayer, Luis Correia Silva, Asset Management and Investor Protection: An International Analysis (OUP 2007), 267. See discussion of the type of issues involved in such an extension: Ann Wardrop, 'Theorising Insolvency Law in the Context of Insolvent Utilities' (2014) 29(3) Banking and Finance Law Review 435. See also CMS, 'Does the Oil and Gas Industry Need a Special Insolvency Regime?' (CMS, 12 October 2015) http://www.cms-lawnow.com/ealerts/2015/10/does-the-oil-and-gas-industry-need-a-special-insolvency-regime?cc_lang=en, accessed 12 April 2016. John Armour, 'Making Bank Resolution Credible' in Moloney, Ferran and Payne, 2015 (n 191).

129 The Kenyan Deposit Insurance Corporation has explicit power to participate in lesser cost resolutions of banks such as purchase and assumption transactions (transfer and exclusion in the terminology of the Kenyan legislation): The KDIC Amendment Act 2013 amends section 50 of the KDIC Act to permit the fund to be used for lesser cost resolutions, thus providing explicit power to facilitate purchase and assumption transactions (called exclusion and transfer in the Kenyan legislation) that could transfer the MNO trust business to another bank. It would be useful to know how banks have been resolved since the introduction of KDIC, including whether banks have been resolved by the appointment of KDIC as receiver, and subsequently as liquidator. Furthermore, there does not appear to be any contingency plans for payment of insured deposits other than by direct payment. Such a payment would follow from an extensive process of verifying claims, with all assets of the bank being realized over an extended liquidation.

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