The Role of Central Banks in Digital Financial Services

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ABSTRACT²

The mobile phone has evolved from its basic telecommunications utility to take on a new enhanced role as a ubiquitous payment and value transfer instrument in the economies of developing countries.

These facilities, now mostly known as Digital Financial Services (DFS), involve complex interplays of telecommunications, financial services and related components, necessitating reassessment by a range of affected national regulators on whether and how to apply or adapt their sector-specific regulatory precepts to DFS and its providers.

Overall, the purpose of this study is to provide a fresh perspective on the role of the Central Bank as one of the primary DFS sector regulators and to systemize the understanding of the role of central banks within the context of DFS. It examines the specific and evolving roles the central bank may have in regulating DFS and similar value transfer and payment mechanisms.

This study is part of a series by the author on the role of the primary regulators in the DFS ecosystem, intended to systemize each of their roles.³

We find that as the primary regulator of DFS, the model of licensing and regulation the central bank choses for provision of services will ultimately impact the success of DFS provision. In most markets, central banks have evolved from a more restrictive bank-based (institutional) model to an open (functional) 'enabling' regulatory model, where an entity is licensed or authorized *ex ante* to provide services and then regulated according to whether it (functionally) provides a service described in a law or regulation. Coupled with proportional 'enabling' regulations, this holds the most promise for meeting national financial inclusion goals.

The central bank's role however becomes more complex as the DFS ecosystem develops, in particular in relation to competition and interoperability issues, where the central bank has to undertake further policy enhancements to allow non-banks in national payment systems to create a fully integrated financial market infrastructure. Emerging 'regtech' solutions using automated regulatory tools to replace manual processes may assist central banks in navigating this increased complexity.

And with the introduction of new cryptographic-based systems, central banks may ultimately issue their own emoney in the form of digital fiat currencies. The impact on banks and Digital Financial Services Providers (DFSPs) is also discussed.

Due to the multi-sectoral and cross-cutting nature and increasing complexity of DFS, we argue for increased cooperation between implicated regulators and agencies as well as increased capacity building for central banks.

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³ See thereto, Perlman, L (2018a) *The Role of Regulators in Competition-Related Matters in Digital Financial Services*, available at www.dfsobservatory.com; Perlman, L (2018b) *The Role of the Telecommunications Regulator in DFS*, available at www.dfsobservatory.com. These studies all have common introductory sections.

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ABBREVIATIONS

2G	Second Generation Mobile
3 G	Third Generation Mobile
4 G	Fourth Generation Mobile
ACH	Automated Clearing House
AML	Anti-Money Laundering
ATM	Automated Teller Machine
BIS	Bank for International Settlements
BMGF	Bill & Melinda Gates Foundation
BoP	Bottom of the Pyramid
ВоТ	Bank of Tanzania
BoU	Bank of Uganda
CA	Communications Authority of Kenya
CAK	Competition Authority of Kenya
СВ	Central Bank
CBJ	Central Bank of Jordan
СВК	Central Bank of Kenya
CBN	Central Bank of Nigeria
CGAP	Consultative Group to Assist the Poor
CGAP	Consultative Group to Assist the Poor
CICO	Cash In / Cash Out
CIV	Customer identification and Verification
CPMI	Committee on Payment Market Infrastructure
DCB	Direct Carrier Billing
DFID	Department for International Development
DFS	Digital Financial Services
DFSP	Digital Financial Services Provider
DLT	Distributed Ledger Technology
EAC	East African Community
ECOWAS	Economic Community of West African States
EDGE	Enhanced Data for Global Evolution
EMI	Electronic Money Issuer
ETSI	European Telecommunications Standards Institute
FATF	Financial Action Task Force
FCC	Federal Communication Commission
FRAND	Fair, Reasonable and Non-Discriminatory
FSB	Financial Stability Board
G20	Group of Twenty
G2P	Government To Person
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPFI	Global Partnership for Financial Inclusion
GPRS	General Packet Radio Services
GSM	Global System for Mobile Communications
GSMA	GSM Association
	Identity
	International Telecommunications Union
TTU FG DFS	International Telecommunications Union Focus Group on Digital Financial Services
	Interactive voice Kesponse
	Know Your Customer
LUNU	Letter of No Objection

MFS	Mobile Financial Services
ML	Money Laundering
MM	Mobile Money
MNO	Mobile Network Operator
MoU	Memorandum of Understanding
MVNO	Mobile Virtual Network Operator
NFC	Near Field Communication
NFIS	National Financial Inclusion Strategy
NPC	National Payment Council
NPS	National Payment System
NSDT	Near Sound Data Transfer
NTA	National Telecommunications Authority
OTT	Over the Top
P2P	Person to Person
PAFI	Payment Aspects of Financial Inclusion
POS	Point of Sale
QOS	Quality of Service
RBI	Reserve Bank of India
RIVR	Remote IVR
RTGS	Real Time Gross Settlement System
SIM	Subscriber Identity Module
SMS	Short Message Service
SOV	Store of Value
SP	Service Provider
SRA	Sector Regulatory Authority
SSB	Standard Setting Body
SS7	Signaling System 7
STK	SIM Toolkit
SVA	Stored Value Account
TRAI	Telecom Regulatory Authority of India
TSP	Technical Service Provider
UCC	Uganda Communications Commission
UFA2020	Universal Access for All 2020
UI	User Interface
USAID	United States Agency for International Development
USSD	Unstructured Supplementary Service Data
UX	User Experience
VAS	Value Added Services
VAT/GST	Value Added Tax / Goods and Services Tax
WAP	Wireless Access Protocol

1. Introduction⁴

Digital Financial Services (DFS) has emerged in developing countries as a new, low-cost means of digital access to transactional financial services provided by banks and non-banks aimed at those at the Bottom of the Pyramid (BOP)⁵ in emerging and developing countries,⁶ with an aspirational goal of improving financial inclusion.⁷ The core access mechanism to services in these countries is via a mobile phone.

The need for alternative means of access to financial services in many parts of the developing world has its genesis in the challenges and constraints of predominantly cash-based economies using informal means of financial access

DFS often fills a gap left by banks who have been unable or unwilling to service those at the BOP, and features non-banks now providing the financially excluded with an alternative to reliance on cash as a means of payment and transfer.

⁴ **Study Scope Note for Readers:** The study uses an evidence-based approach to ventilate issues of concern and interest for entities and national regulators in the DFS ecosystem around the world. It also explores how these issues have been addressed – or not, as the case may be – either through market dynamics and/or regulatory intervention. This includes a description of the impact of regulatory overreach or forbearance. Given then the evidence-based nature of this study, the study does not look beyond the 'basics' of central bank remits, law and policy and related issues. The footnotes in this study though refer the reader to more comprehensive studies that provide a deeper understanding of the role of the central bank in policy, regulation and enforcement, and related issues.

⁵ The bottom of the pyramid (BOP) refers to the bottom of the wealth pyramid or the bottom of the income pyramid is the largest, but poorest socio-economic group. The term BOP was introduced sometime in 1999 by Prahalad and Hart to describe what they observed were 'Four Consumer Tiers.' At the very top of the world economic pyramid, they said were 75 to 100 million affluent Tier 1 consumers from around the world, comprising a cosmopolitan group of middle- and upper-income people in developed countries and the few rich elites from the developing world. In the middle of the pyramid, in Tiers 2 and 3, are poor customers in developed nations and the rising middle classes in developing countries, the targets of past emerging-market strategies. Tier 4, they indicated, were the 4 billion people at the bottom of the pyramid who had an annual per capita income — based on purchasing power parity in US dollars — is less than USD 1,500, the minimum considered necessary to sustain a decent life. See Prahalad, C & Hart. S (1999) *Strategies for the Bottom of the Pyramid: Creating Sustainable Development*, available at https://bit.ly/2OdTYsV. For an analysis of the BOP concept years later with revised figures, see Kolk, A, Rivera-Santos, M & Rufin, C (2012) *Reviewing a Decade of Research on the 'Base/Bottom of the Pyramid' (BOP) Concept*, available at https://srn.com/abstract=2193938. In global terms, this is the three billion people who live on less than USD 2.50 per day. London, T (2008) *The Base-Of-The-Pyramid Perspective: A New Approach To Poverty Alleviation*, available at https://bit.ly/2KUAAjX

⁶ 'Financial inclusion' is often defined as the provision and use of formal accounts operated by regulated entities that cater to those at the Bottom of the Pyramid. National financial inclusion goals are aimed at lowering account costs, allowing for greater proximity to financial intermediaries, enforcing stronger legal rights, facilitating better management of financial risk to lead to more politically stable environments; and to drive development through access to more capital. See World Bank Group (2018) *The Global Findex Database 2017*, available at https://globalfindex.worldbank.org; and Franklin, A, Demirguc-Kunt, A, Klapper, L, *et al.* (2016) *The Foundations Of Financial Inclusion: Understanding Ownership And Use Of Formal Accounts,* available at https://bit.ly/2LTBLRr. For an overview of national financial inclusion schemes and policies, see World Bank (2015) *Overview: National Financial Inclusion Strategies,* available at https://bit.ly/2LXjBOm The Global Partnership for Financial Inclusion (GPFI) describes a generalized path approach to financial inclusion, based on the assumption that there is one path that describes a country's journey toward full financial inclusion which is applicable to all countries. Each country follows the path – usually in its own financial inclusion strategy - but is at a different position on the path. See GPFI (2103) *Financial Inclusion Targets and Goals: Landscape and GPFI View,* available at https://bit.ly/2ABa0co. Many central banks signed what is now known as the 'Maya Declaration,' a statement of common principles regarding the development of financial inclusion's 2011 *Global Policy Forum held* in Mexico. See AFI (2011) *Maya Declaration,* available at https://bit.ly/2Dism4S

⁷ The GPFI says that an appropriate range of quality financial services helps household's smooth consumption, mitigate and manage risks, build assets, and create the peace of mind needed to make effective decisions about the future. Financial inclusion goals may include. Ibid. There are other international bodies that have developed financial inclusion principles for countries to follow. For example, the UN's Sustainable Development Goals (SDGs) at https://sustainabledevelopment.un.org/sdg16, , and the Better Than Cash Alliance (BTCA).

that do not involve bank accounts.⁸ They are variously referred to as being 'unbanked,' 'unserved' or 'underserved.'9

With the determinants of informal finance used by those at the BOP differing from those of formal finance, DFS has required careful responses by central banks (CBs) as the primary financial services regulator in a country.¹⁰ xxx

This has manifested in the emergence of what has become known in many regulatory analyses as 'enabling and proportional' regulatory regimes that allow non-banks to collect customer funds through agents operating on behalf of non-banks, convert those funds into electronic money (e-money)¹¹ to be stored in customer stored value accounts (SVAs) to be used for primarily transactional purposes. The CB will also specify any safety and soundness measures such as how customer funds can be used and where the cumulative value collected from customers by non-banks may be stored. In some cases, these measures mean that a non-bank has to partner with a licensed bank to provide services.

DFS invariably also impacts other regulators, requiring the CB to coordinate with at the very least, the financial integrity regulator on anti-money laundering (AML) matters and with a national telecommunications authority (NTA) because of the core mobile access scheme of DFS. As DFS provision evolves in a country, additional regulators may be impacted.

This study looks at how CBs devise policies around DFS with a financial inclusion lens; which structural components of the CB are impacted and how they coordinate to implements DFS; the licensing and regulatory schemes have emerged; and any challenges are percolating as the DFS ecosystem evolves.

2 The DFS Ecosystem

2.1 Overview

Financial inclusion¹² is the aspirational goal of national governments, supra-national bodies and philanthropists to facilitate and promote the provision and use of formal accounts operated by regulated entities that cater to those at the BOP in many markets. 'Financial inclusion' is often defined as the provision and use of formal accounts operated by regulated entities that cater to those at the BOP. There are however variations: Digital Financial Inclusion is the enabling component for financial inclusion, described by Consultative Group to Assist the Poor (CGAP) as 'digital access to, and the use of, formal financial services by the excluded and underserved population.'¹³

⁸ Since banks have traditionally been the front-line for the provision of financial services such as savings accounts and for remittances, the financially excluded have also been referred to as being unbanked, unserved and underserved. Sahay, R, Čihák, M, N'Diaye, P, *et al.* (2015) *Rethinking Financial Deepening: Stability and Growth in Emerging Markets*, available at https://bit.ly/1K4Gb3d

⁹ For a discussion of these terms, see Lyman, T & Kate Lauer (2015) *What is Digital Financial Inclusion and Why Does it Matter?*, available at https://bit.ly/1GX1xdJ; and Evans, O (2016) *Determinants of Financial Inclusion in Africa: A Dynamic Panel Data Approach*, available at https://bit.ly/2sEiD0V; and Sahay, R, Čihák, M, N'Diaye, P, *et al.* (2015) *Rethinking Financial Deepening: Stability and Growth in Emerging Markets*, available at https://bit.ly/1K4Gb3d

¹⁰ Evans, O (2016) Determinants of Financial Inclusion in Africa: A Dynamic Panel Data Approach, available at https://bit.ly/2sEiD0V

¹¹ E-money is a prudential construct usually derived from a regulatory process. Examples of the unit of account of a fiat currency may be for example the US Dollar, British Pound, Kenyan Shilling. In DFS context, any fiat value received by DFSP acting as an EMI from a customer directly or via an agent or super-agent must be placed in a ring-fenced current account at a licensed and approved bank, or series of banks. E-money is created from this placement.

 $^{^{12}}$ Financial Inclusion where there is a 'digital' component to it – that is using inter alia DFS - also known to some as digital financial inclusion

¹³ Lauer, K & Lyman, T (2015) Digital Financial Inclusion, available at https://bit.ly/2OcEZiG

The goal is to migrate the excluded at the BOP away from cash¹⁴ and paper-based payment instruments towards an integrated 'formal' digital financial ecosystem that facilitates sustainable, seamless and low-cost transactions. Some country-specific 'National Financial Inclusion Strategies'¹⁵ include in these goals a broader suite of financial services to enable customers to pay, save, borrow, insure against risk, manage their financial life. In many cases these are coincident.

The need for alternative means of access to financial services in many parts of the developing world has its genesis in the challenges and constraints of predominantly cash-based economies using informal means of financial access that do not involve bank accounts.¹⁶ They are variously referred to as being 'unbanked,' 'unserved' or 'underserved.'

The early 2000's saw the emergence of the first iterations of low-cost financial and transactional methods that allowed mobile phones to be used as general purpose payment instruments using value stored in a customer electronic wallet – known as a stored value account (SVA) – provided operated by non-banks.¹⁷ Core to this nexus between mobile phones and access to financial services is that while 1.7 billion adults do not have a (formal) account with a financial institution, more than 1 billion¹⁸ of them have a mobile¹⁹ phone.²⁰ Similarly, while around 230 million 'unbanked' adults work for businesses and get paid in cash, 78% of them own a mobile phone.²¹

Given its ubiquity, the mobile phone has evolved from its basic telecommunications utility to take on a new enhanced role as a ubiquitous payment and person-to-person (P2P) value transfer instrument in emerging economies.

The first service to recognize the potential of this phone-finance nexus was 'Smart Money,' launched in 2001 in the Philippines by mobile network operator (MNO) Smart Communications. The official launch however, of Safaricom Kenya's M-PESA system in 2007, is seen by many as igniting global initiatives towards ubiquitous

¹⁴ Cash transactions present financial and personal risks for those unbanked, since individuals have no recourse if the funds are stolen. Gross, M, Hogarth, J & Schmeiser, M (2012) *Use Of Financial Services By The Unbanked And Underbanked And The Potential For Mobile Financial Services Adoption,* available at https://bit.ly/2Ld5NOF

¹⁵ See the collection of such strategies curated by the World Bank. World Bank (2018) *National Financial Inclusion Strategies Resource Center*, available at https://goo.gl/xSgFsG

¹⁶ Since banks have traditionally been the front-line for the provision of financial services such as savings accounts and for remittances, the financially excluded have also been referred to as being unbanked, unserved and underserved. Sahay, R, Čihák, M, N'Diaye, P, *et. al* (2015) *Rethinking Financial Deepening: Stability and Growth in Emerging Markets*, available at https://bit.ly/1K4Gb3d

¹⁷ The first iteration in this transformation were 'walled garden' payment systems for digital value added services now known as Direct Carrier Billing (DCB) controlled by mobile network operators (MNOs) and using a SVA based on the MNO's mobile airtime value. The value in the airtime SVA is non-redeemable.

¹⁸ Gallup (2018) Global Findex: Technology Can Bridge Financial Inclusion Gap, available at https://bit.ly/2IhCoVE

¹⁹ The phones primarily use GSM (Global System for Mobile Communications) technology, a phone standard developed in the 1980s by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones. Originally Groupe Spécial Mobile, the first GSM implementation was in Finland in 1991 on a network built by Telenokia and Siemens and operated by Radiolinja. In 1992, the first Short Messaging Service (SMS) message was sent; Vodafone UK and Telecom Finland signed the first international GSM roaming agreement. See GSMA (2016a) *History*, available at https://bit.ly/1sHjxSC

²⁰ Developed initially in the 1980s, these digital technologies have since evolved to include second generation (2G) mobile technologies that include technologies such as Unstructured Supplementary Service Data (USSD), Short Message Service (SMS) and various low data speed capabilities. Together, these technologies constitute the enabling infrastructure for DFS.

²¹ Some 100 million 'unbanked' adults worldwide receive government social-grant or subsidy payments (known as G2P) in cash, including 67 million who have a mobile phone. Gallup (2018) *Global Findex: Technology Can Bridge Financial Inclusion Gap*, available at https://bit.ly/2IhCoVE

financial access provision and introducing the term 'mobile money'²² into the developmental lexicon. DFS was initially known as 'mobile money' and 'mobile financial services.²³

2.2 The DFS Scheme

As this mobile-based financial ecosystem has evolved, so too has the terminology: it has been known as 'mobile money' and 'mobile financial services,' but is now more formally known as DFS, Providers of DFS known as digital financial services providers (DFSPs).²⁴

Depending on when they were formulated, definitions of DFS vary throughout developing market sector role players. We see DFS as an ecosystem providing low-cost, national access to a broad range of financial and related services using primarily text and graphical based user interfaces, digital access devices such as mobile phones, and digital value transfer channels. DFS can be offered by banks and non-bank providers – known as DFSPs - who may be licensed or authorized by a range of regulators to provide these services, either on their own or in mandated partnerships. The GSMA-popularized term 'mobile money' is now considered one of the components of the DFS ecosystem, itself a far broader term beyond mobile-only (and MNO-only) provision and may often include DFSPs and bank offering basic accounts.

Some DFSPs may be classed as electronic money issuers (EMIs) and be allowed to issue e-money. Other DFSPs may only provide payment services and thus be licensed or authorized as payment service providers (PSPs). MNOs in most jurisdictions fulfil both roles as a DFSP. The central bank is usually the lead regulator in DFS, often seen to be providing an enabling regulatory environment lowering barriers to entry for new participants and novel services.

Exhibit 3: Conceptions of DFS

DFS embraces themes of using low cost digital devices for low-cost access to financial services offered by banks and/or non-banks as DFSPs using prefunded Stores of Value (SOV) in SVAs holding electronic value under prudential supervision and operated and controlled by a DFSP.

As a proxy and replacement for bank accounts, the key transformative, differentiators of DFS versus traditional financial provision by banks include:

- Regulatory innovations
- Emergence of new actors
- Technological improvements and innovations
- Economic enablers

For DFS, the SOV is electronic money (e-money) which is created when sovereign²⁵ fiat²⁶ currency value is placed within an 'e-money' prudential regime.²⁷

²² 'M' is for money, and 'Pesa' is the Swahili word for money

²³ For distinction between these terms and between 'digital money' and 'e-money,' see Reiss, D (2018) Is money going digital? An alternative perspective on the current hype, available at https://doi.org/10.1186/s40854-018-0097-x

²⁴ DFSPs may provide payment services and/or e-money services, both of which may fall under different regulatory regimes reflecting their relative risks.

²⁵ Compared to national fiat currency, as national does not apply to for example the Euro

²⁶ *Fiat* means, in essence, currency (money) issued by a central bank and backed as a SoV by the state. Compare this to virtual currencies such as mobile airtime value 'issued' by an MNO; or to crypto currencies - such as Bitcoin and Ether - which are mostly cryptographically secured and derived, tradable currencies created and issued mostly without a central issuer. Digital fiat currencies are cryptographically secured versions of fiat currencies, issued by a central bank.

²⁷ As noted above, e-money is a prudential construct usually derived from a regulatory process. Examples of the unit of account of a fiat currency may be for example the US Dollar, British Pound, Kenyan Shilling. In DFS context, any fiat value received by DFSP acting as an EMI from a customer directly or via an agent or super-agent must be placed in a ring-fenced current account at a licensed and approved bank, or series of banks. E-money is created from this placement.

E-money issuance and storage is highly regulated, requiring the DFSP to hold an 'e-money issuer' (EMI) license from the CB. Any funds collected from customers by DFSPs (acting as EMIs) to be used for e-money purposes must be placed ('pooled') in a prudentially supervised bank account, that is, that the account is often, but not always, subject to ring-fencing protections that prevent the pooled funds from being used for operational or other nonprudential purposes.. Often the CB insists that a special financial services entity must be formed for operating as an EMI or for providing DFS.²⁸ And to prevent potential inflationary and systemic effects of allowing more spending for value received, 'e-money' is only issued if it is backed by an equivalent amount of fiat money in the pooled account - the so-called 1:1 ratio.29

In most jurisdictions, value placed in a SVA by a customer is not seen by the CB as constituting a deposit, and correspondingly will not automatically earn interest, nor will it automatically attract deposit insurance.³⁰ The 'pooled' customer funds placed by the DFSP as an EMI in a (trust) bank account is mostly - but not in all jurisdictions - seen as deposit, and may be eligible for deposit-related insurance.³¹ In jurisdictions where trust accounts are not available, EMIs must/may hold the pooled funds in the central bank or invest in other liquid assets such as government bonds/treasury bills.

Digital liquidity - the instantly accessible e-money value placed and stored in a SVA - within a DFS ecosystem is usually facilitated by electronic-human combinations of human 'agents' of DFSPs and banks. Agents provide what are known as 'cash-in/cash-out' (CICO) services, swapping cash for e-money and vice versa. Value in the SVA is redeemable on demand and on par at these agents.

Service bouquets for DFS have grown, in many cases resembling basic transactional features of a bank account but with primarily non-credit, transactional services at their core.³² For example, the fiat-based DFS SVA can be used for paying for digital and physical goods and services as well as to undertake P2P value transfers between recipients of the same DFSP,³³ or where interoperability is present, between other DFSPs and banks.³⁴

The SVA is subject to AML regimes, requiring in most cases formal identity documents for signup to obtain a SVA and for undertaking transactions. Entry-level DFS accounts characteristic of DFS have reduced or minimal forms of Know Your Customer (KYC) requirements, often called Simplified Customer Due Diligence (SDD).

2.3 **Emergence of New Actors**

The 'enabling' innovations of regulatory policy have allowed new actors to emerge to provide DFS and related services, breaking the traditional hegemony of banks in provision of financial services. At the foundational level of DFS - which we term here 'DFS 1.0' - these new actors include DFSPs, agents, and super-agents, and master agents.35

³⁴ See Section 4.3.7 on Interoperability.

²⁸ See Kumar, K & Raman, A (2015) Did India's Central Bank get Payments Bank Approvals Right?, available at https://bit.lv/2stdae7

²⁹ This is a safeguarding measure that aims to ensure that the pool funds are available to meet customer claims, on demand or in the event that the EMI goes insolvent.

³⁰ This strict interpretation is changing in some jurisdictions, with interest given and such DFSPs being allowed to provide credit in conjunction with a licensed bank.

³¹ See Section 4.3.4 on funds safeguarding

³² Unlike the value in most bank accounts, no interest is provided on SVA balances in most DFS implementations. ITU (2016) Digital Financial Services: Regulating For Financial Inclusion – An ICT Perspective, available at https://bit.ly/2w8ryfT

³³ MNOs uniquely can simultaneously operate both – but separate - mobile airtime- SVAs and fiat-based SVAs. The former, in the form of DCB can only be used for purchasing digital goods and services and doing mobile airtime-based airtime transfers. The CB regulates the fiat-based SVA, while the NTA usually regulates the airtime-based SVA.

³⁵ Different terminology is used for similar actors in different countries and there may also be other actors depending on the country context. For example, they may be master-agents, sub-agents, cash merchants, wholesale cash merchants, retail agents, wholesale agents, agent network manager.

DFSPs: A DFSP may be a bank or, usually, a non-bank providing DFS within an ecosystem with or without authorization to issue and store a customer's e-money in a SVA. The SVA is almost always prefunded, thus reducing any system risk due to non-payment of a counterparty. E-money can be created when the provider receives cash (a cash-in) from the customer - typically at an agent location - or when the provider receives a digital payment from another provider or bank. As noted above, issuers of e-money are often known as electronic money institutions (EMIs) operating under a separate authorization regime that features prudential safeguards and capital requirements. If an entity does not have authorization - as an EMI - to issue and store value as e-money, it is usually viewed through a regulatory lens as a payment service provider (PSP) offering services such as bill payment or remittances directly to customers. The PSP usually draws on an e-money SVA provided by an authorized EMI or from fiat bank money stored in a bank account as sources of value for a payment.³⁶ PSPs often fall under a different and lighter regulatory regime than EMIs, reflecting less risk that pose to a national financial ecosystem. Some DFSPs – such as MNOs or their financial subsidiaries – may act as both a PSP and an EMI either under one omnibus licenses, or under separate licenses if the regulatory regime reflects the different roles and risks.

Agents: DFSP agents may be informal vendors or small but formal businesses - versus bank branches in non-DFS environments - who provide frontline services to customers. Agents though may serve multiple principals, for example banks and MNOs.³⁷ Agents may often fall under different regulatory regimes (and restrictions)³⁸ depending on the services they provide. Services in the DFS domain they provide include signing up customers, ³⁹ receiving (cash) value to be converted and then stored as e-money in customer transactional SVA; and then to convert customer e-money to cash. Others may undertake - where licensed and/or allowed – what are known as Over-The-Counter (OTC)⁴⁰ transactions such as remittance transfers and bill payments. Agents may also be able to receive and submit to the DFSP or bank a deposit account application; receive and submit to the institution a loan application; open a customer account following the institution's policies; open a basic account; analyze and approve a loan following the institution's policies and limits; receive deposits; and disburse loans.⁴¹ Often they also sell mobile airtime vouchers on behalf of MNOs. Thirty countries now have ten times more active agents than bank branches.⁴²

Super-agents: In many cases, there is an additional layer of agent services provided by what have become known as 'super-agents.' At a prudential level they may act as principal agents for DFS agents in certain geographical areas whilst also facilitating and managing cash liquidity for these agents in rural areas.

2.4 Mobile Technology and User Interfaces

In countries where DFS is provided, the majority of phone usage in rural areas involve connections using low-speed (narrowband) second generation (2G) GSM technologies, with third generation (3G) and higher technologies mostly only available in urban and per-urban areas.⁴³ Lack of high speed mobile coverage is seen as embedding the

³⁶ The regulatory regime for DFS is often bifurcated to reflect payment-related activities that do not necessarily involve the provider accepting and storing value for an extended period, versus those undertaking such activities as well as storing customer value as 'e-money.'

³⁷ In a few markets such as Bangladesh there is still a debate on exclusivity/non-exclusivity of agents.

³⁸ For example prohibitions on providing services to only one provider. Their DFS role may also fall under the CB, while any MNO-related roles may fall under the NTA.

³⁹ Agents and other third parties are usually permitted to verify the identity of customers.

⁴⁰ OTC means the transaction is entirely facilitated by an agent on behalf of a customer, who may or may not be identifiable or have a SVA at a DFSP/PSP.

⁴¹ Staschen, S & Meagher, P (2018) *Basic Regulatory Enablers for Digital Financial Services*, available at https://bit.ly/2s8b2YX

⁴² GSM (2017) 2017 State of the Industry Report on Mobile Money, available at https://bit.ly/2sdS85g

⁴³ For a comprehensive overview on the role of mobile coverage in provision of DFS, see Perlman, L & Wechsler, M (2018) *The Role of Mobile Coverage on Digital Financial Services*, available at www.dfsobservatory.com

need for feature phones. Similarly, over 60% of user access DFS via 'basic' or 'feature phones'⁴⁴ whose design – shown in **Exhibit 1** - limits access to DFS to primarily text-based types user interfaces (UI) such as Unstructured Supplementary Service Data (USSD) and SIM⁴⁵ Toolkit (STK).

The UIs have varying degrees of ease of access, ease of use, efficacy, cost, security, and reliability. USSD for example can be used for transmitting information and accessing standard services and Value Added Services (VAS). Because USSD can be used across all generations of phones, it has been termed 'The Third Universal App.'⁴⁶ USSD and STK though and in particular are sensitive to poor mobile coverage, affecting the ability of DFS customers to reliably access and use funds in their SVA.⁴⁷ They are also competition-sensitive, with gateways required to provide USSD and STK controlled by MNOs who may compete with DFSPs.⁴⁸



Large DFS deployments that rely primarily on USSD as the UI include bKash in Bangladesh, WING in Cambodia, EasyPaisa in Pakistan, MTN Money and Airtel Mobile Money in Uganda, ZAAD in Somaliland, M-PESA and Tigo in Tanzania, and EcoCash in Zimbabwe.⁴⁹

⁴⁴ Feature phones include the voice, SMS, IVR, USSD and STK capabilities of basic phones, augmented though by features such as Bluetooth, and data-dependent MMS and Wireless Application Protocol (WAP). A few feature phones have 3G and higher data capabilities but most lack built-in Near Field Communication (NFC)-support. Basic phones are characterized by the total absence of any data capabilities.

⁴⁵ Subscriber Identity Module, a smart chip (card) issued and sold by MNOs directly or through agents. When they are placed in a phone, a SIM card facilitates the basic access to MNO and other services. SIM cards also house small applets used for STK-based access to DFS. For the role of the SIM card in DFS, see Perlman, L (2012) *LLD Thesis: Legal and Regulatory Aspects of Mobile Financial Services*, available at https://bit.ly/2KGfC8k.

⁴⁶ Perrier, T, DeRenzi, B & Anderson, R (2015) USSD: The Third Universal App, available at https://bit.ly/2vA3Skc

⁴⁷ For a comprehensive overview on the role of mobile coverage in provision of DFS, see Perlman, L & Wechsler, M (2018) *The Role of Mobile Coverage on Digital Financial Services*, available at www.dfsobservatory.com

⁴⁸ See also Perlman, L (2017) Competition Aspects of Digital Financial Services, available at https://bit.ly/2xxLcma

⁴⁹ Hanouch, M & Chen, G (2015) *Promoting Competition in Mobile Payments: The Role of USSD*, available at https://goo.gl/po24bd

3 Legal and Regulatory Environments

3.1 Overview

DFS implementations to date have highlighted the emergence of novel responses and innovations from regulators and lawmakers to facilitate the entry, and then supervision of, new non-bank market participants.⁵⁰

This evolving legal and regulatory environment usually include distinctions between the policy decisions, the legal frameworks to execute on these policy decisions, and a sector or market conduct regulator to issue specific regulatory instruments, and to enforce these instruments:

- Policy decisions by ministry, parliament or similar high decision-making body
- Laws that implement a decided policy framework
- Normative acts within the remit of particular regulators, such as regulations, circulars, and guidelines or inter-regulator MOUs to second powers.⁵¹
- Methods to check on the market conduct of entities under the direct remit of the regulator, for example, using oversight,⁵² supervision⁵³ and market-monitoring tools.⁵⁴
- Methods to monitor the market the market as a whole. These may include (new) regulatory technology (regtech) tools.⁵⁵

The extent to which a legislative framework exists for enabling DFS and its service and participatory components varies greatly around the world.⁵⁶ The regulatory exigencies of regulators differ though between the developed and developing world, with the latter focused on laws and regulations that fit national inclusion strategies.⁵⁷

Except for a few notable exceptions,⁵⁸ in many of the early implementations of DFS (when also known as 'mobile money'), laws, regulations, supervision and oversight fastening on the DFS ecosystem followed what is known as an *institutional* approach. Here specific sector regulators had supervisory oversight and rule-making capacity over institutions within their regulatory domain. The traditional *institutional*⁵⁹ approach to regulation of DFS that in

⁵⁰ Often though the regulatory innovations have been incremental or perfunctory, leaving incumbent banks to provide financial services directly but (now) allowing non-banks or agents to provide frontline customer services sign as CICO and account signup.

⁵¹ For an example of a model MOU between a NTA and CB, see Perlman, L (2018) *Model MOU Between a central Bank and National Telecommunications Authority For Digital Financial Services Regulation*, available at www.dfsobservatory.com

⁵² *Regulation* is said to be prescriptive, often quantitative, and generally not very flexible. It may prohibit an activity or prevent it. Definition from Federal Reserve Bank Of New York (1997) *Patrikis: Supervision and Regulation*, available at https://nyfed.org/2kAeozL

⁵³ Supervision is more qualitative and involves the safety and soundness of specific institutions. It depends upon the judgment of an examiner or inspector, needing close, first-hand, observation and analysis. Definition drawn from Federal Reserve Bank Of New York (1997) *Patrikis: Supervision and Regulation*, available at https://nyfed.org/2kAeozL

⁵⁴ Oversight is considered much less intrusive than supervision and might be viewed as surveillance, normally conducted at a distance. Definition drawn from Federal Reserve Bank Of New York (1997) Patrikis: Supervision and Regulation, available at https://nyfed.org/2kAeozL

⁵⁵ On the role of regtech in financial inclusion, see Perlman, L & Gurung, N (2018a) Use of Regtech by Central Banks and its Impact on Financial Inclusion, available at www.dfsobservatory.com

⁵⁶ See **Exhibit 8** on the types of regulatory schemes for DFS.

⁵⁷ Where the legal and regulatory framework for non-bank participation in DFS to catalyse financial inclusion goals does not directly exist however, this has often required a novel response from regulators, described below.

⁵⁸ For example in Kenya, where MNO Safaricom was given a LONO by the central bank in the absence of jurisdiction of the banking law over the planned service.

⁵⁹ The institutional and functional approaches are two broad approaches to the issue of regulation and which may also reflect variations in legal frameworks. The functional approach places the focus on the service received by the consumer regardless of the type of institution providing that service. This broad protection may be the remit of specific consumer protection agencies,

effect only allowed licensed banks to provide financial services under a bank license regime. Thus, for example, banks were regulated by the national banking regulator and telecommunications-related entities by the NTA. If a new non-bank market participant wanted to provide even basic transactional financial services that emulated basic bank account functions, they would invariably not fit into the institutional categorization described in the laws and regulations and thus invariable would not be able to independently offer DFS services, with a banking partner often required. Banks though saw the low-cost model of DFS as cannibalizing their account base, and often limited their resources in partnering with non-bank DFSPs.

As the dampening effects of the institutional approach to DFS enablement became evident,⁶⁰ a *functional*⁶¹ approach to regulation has been embraced by regulators. Here regulation is focused on the service offered rather than the entity providing it. The effect was to allow non-bank entities such as MNOs and DFSPs to offer banking-like financial and transactional services through DFS, subject to a proportional regulatory regime that matched the perceived risk of these services to the degree of required regulation and supervision. In this new disruptive formulation, the evolving regulatory environment in relation to facilitating DFS provision by non-banks is said to be 'enabling' or 'non-enabling,'⁶² with the institutional approach restricting DFS to a 'bank-centric'⁶³ approach

https://bit.ly/2CKPLqF

competition authorities, or ministries of trade and industry. The issue however, is that while this 'catch-all' appears to provide recourse insofar as all institutional types are concerned, the reality is that these entities may ultimately lack the necessary institutional capacity and specialized knowledge to pronounce on, for example, complicated aspects of financial consumer protection. Thus, multiple regulators may have (ineffective) remit over the same entity for different reasons, and may result in consumer ambivalence, corporate intransigence and posturing, and thus the effective maintenance of the status quo. A SRA may be overwhelmed when obliged to address financial sector complaints in addition to other economy-wide consumer protection issues. In contrast, the institutional approach focuses not on the service per se, but on the institutions providing any financial service. It supposedly leaves the regulation in the hands of specialized bodies, for example, the central bank (CB). which may implement consumer protection provisions in relation to regulated financial institutions. However, this approach may distort market dynamics by fragmenting responsibilities amongst too many regulators to the extent that some entities like nonbanks are not captured. Implementation may also be challenging insofar as multiple regulators with varying levels of capacity may be required. There is often, however, no one-size-fits-all solution to the design of a legal framework for financial consumer protection, and for coherence and maintenance of the financial system generally. It should reflect the structure of the financial system and the nature of each economy's overall legal framework. This may take the form of specific, single, dedicated agencies to deal with consumer protection issues relating to specific or general aspects of retail financial services. ⁶⁰ See the statistics within GSMA (2018) 2017 State of the Industry Report on Mobile Money, available at

⁶¹ See on the 'regulating by function' rather than by the institution providing that function (service), Schwarcz, S (2014) *The Functional Regulation of Finance*, available at https://bit.ly/2CTCDDq; Cunningham, L & Zaring, D (2009) *The Three or Four Approaches to Financial Regulation: A Cautionary Analysis Against Exuberance in Crisis Response*, available at https://bit.ly/2PD26rq; G30 (2008) *The Structure of Financial Supervision Approaches and Challenges in a Global Marketplace*, available at https://bit.ly/2QaQgSI; and Perlman, L (2012) *LLD Thesis: Legal and Regulatory Aspects of Mobile Financial Services*, available at https://bit.ly/2KGfC8k, and also CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9. CDG define this approach as functional approach (to financial services regulation) where 'services of the same nature are regulated in the same way, rather than, for example, according to the type of provider.' ⁶² These were terms first used by the GSMA in relation to the impact of local regulatory *Frameworks are More Conducive to Mobile Banking? Empirical Evidence from Findex Data*, available at https://bit.ly/2JV1WsF. See also Porteous, D (2006) *The enabling Environment for Mobile Banking in Africa*, available at https://bit.ly/2Jx02zz. For an assessment of how enabling environments have evolved and whether they have worked to enhance financial inclusion, see Staschen, S & Meagher, P (2018) *Basic Regulatory Enablers for Digital Financial Services*, available at https://bit.ly/2s8b2YX

⁶³ The notion of a licensed bank being the primary pivot (by regulation) in DFS provision – originally termed 'bank-led' - was introduced in CGAP's 2008 study of what was then commonly known as 'branchless banking.' See Lyman, T, Pickens, M & Porteous, D (2008) *Regulating Transformational Branchless Banking, available at* https://bit.ly/2LORgdn

seen as non-enabling.⁶⁴ Aspects of a foundational 'enabling and proportional' regulatory environment for DFS ignition and catalyzation are discussed below.

Many of the less or non-enabling rationales are rooted in combinations of the political economy in the country where traditional institutional thinking is engrained in political considerations,⁶⁵ regulatory capture where banks successfully lobby their regulators to restrict non-banks from providing bank-like (non-credit) services.⁶⁶ Similarly, on the assumption that different providers do not necessarily entail the same risks.⁶⁷

Regulation here may refer to governmental actions to grant or place conditions upon the rights of firms to provide goods and services in particular areas of economic enterprise with the purpose of preventing decisions by private agents that would take insufficient account of the 'public interest'.⁶⁸

Available regulatory tools and models that provide answers to these regulatory challenges range from general principles to detailed rules.⁶⁹ Two theories of regulation of industry are widely held: positive theories of regulation and normative theories of regulation.⁷⁰ Positive theories of regulation examine why regulation occurs,⁷¹ while normative theories of regulation are

⁶⁷ See CDG (2016) Financial Regulations for Improving Financial Inclusion, available at https://bit.ly/2shcPL9

⁶⁴ See di Castri, S (2013) *Mobile Money: enabling Regulatory Solutions*, available at https://bit.ly/2kGPgqX . The non-bank DFSP may be restricted from providing any DFS services other than as a supportive agent network for a bank.

⁶⁵ For example in Moldova, where the author has seen very little political will to embrace DFS-type activities. Some politicians in Uganda have (unsuccessfully) to date, tried to foreclose on the ability of non-bank DFSPs to provide services. Daily Monitor (2017) *MPs pin BoU on unregulated mobile money transactions*, available at https://bit.ly/2AvvuaA; and Blizz Uganda (2018) *MP drags MTN, UCC and Bank of Uganda to Court, Seeks an Injunction against MTN License Renewal*, available at https://go.shr.lc/2Smqr3x

⁶⁶ There is anecdotal evidence of this happening in developing and emerging economies. In Kenya soon after the launched of Safaricom's M-PESA, major banks approached the Minister of Finance to shut down M-PESA, accusing it of being a Ponzi scheme. The minister reportedly approached the central bank on their behalf, but clearly the approach had no effect. On regulatory capture in banking in the US, see Igan, D & Lambert, T (2018) *Bank Lobbying: Regulatory Capture and Beyond*, available https://ssrn.com/abstract=3128829

⁶⁸ Breyer, S & MacAvoy, PW (1987) *Regulation and Deregulation*, in Eatwell, J; Milgate, M and Newman, P (eds) *The New Palgrave: A Dictionary of Economics*. As Lee notes, government's duty to safeguard the public interest can be traced to 1690 when John Locke said that governments are able impartially to distinguish between outcomes that are in the public interest and those that are not and, furthermore, are possessed of sufficient information and wisdom to determine the optimal form and level of regulation. See Locke, J (1690) *The Second Treatise Concerning Civil Government*, available at http://goo.gl/uu0z; and also Lee, B-C (2002) *Regulation in the New Economy*, available at http://goo.gl/WJSkL, and see also B-C Lee and O Longe-Akindemowo (1998) 'Regulatory Issues in Electronic Money: A Legal-Economics Analysis', available at http://goo.gl/EwuNO ⁶⁹ As a report by the Alliance for Financial Inclusion (AFI) indicates, a *principles-based approach* has a lighter touch and is a more market sensitive approach as it builds on the regulated industry's greater knowledge of the market and encourages thoughtful solutions rather than 'box-ticking'. However, it is more difficult for firms to know if they are in compliance and requires flexible supervision, which calls for greater capacity on the part of the supervisor and more maturity on the part of the industry. Further, they say, users may be confused with a principles-based approach, as each institution creates a unique system to comply with the principles. *A rules-based approach* has the advantages of being clear and uniform in application. See AFI (2010) *The AFI survey on financial inclusion policy in developing countries*, available at https://bit.ly/2qogbe1

⁷⁰ Hahn, RW (2006) *Theories of Regulation and Deregulation: A Critical Appraisal*, available at http://goo.gl/smnWm; Public Utility Research Center (2011) *Theories of Regulation*, available at http://goo.gl/slr9b; Stiglitz, J (2009) *Government Failure vs Market Failure: Principles of Regulation*, available at http://goo.gl/TsVr9 p2; see den Herto, J (1999) General Theories of Regulation, available at http://goo.gl/Slr9b; Stiglitz, J (2009) *Government Failure vs Market Failure: Principles of Regulation*, available at http://goo.gl/TsVr9 p2; see den Herto, J (1999) General Theories of Regulation, available at http://goo.gl/Slr9b; Stiglitz, J (2009) *Government Failure vs Market Failure*.

⁷¹ The positive theories attempt economic explanations of regulation and derive the consequences of regulation. They are said to include theories of market power, interest group theories that describe stakeholders' interests in regulation, and theories of government opportunism that describe why restrictions on government discretion may be necessary for the sector to provide efficient services for customers. In general, the conclusions of these theories are that regulation occurs because the government is interested in overcoming information asymmetries with the operator and in aligning the operator's interest with the

based on a theory of market failure.⁷² Famed economist Stiglitz notes that regulation begins with a simple question: Why is regulation needed and followed, and why do markets by themselves not suffice?; and then, if there is to be government intervention, why does it take the form of regulations?⁷³ Some would see the need for regulation⁷⁴ as a response to market failure, others as the need to provide the groundwork for growth and consistency in rule-making and policy. The argument is not yet settled, and puts into relief what has been called the 'regulator's dilemma'⁷⁵ which exists where a balancing act is required whereby the regulator enables innovation whilst still having to mitigate any risks.⁷⁶

These dilemmas arise because financial regulators are charged primarily with maintaining system stability as the price of systemic disruption is so high and the interdependencies great. Network externalities and the need for competition efficiency – which may be from market failure⁷⁷ – may greatly influence policy.⁷⁸

The regulatory rationale could be placed under the heading of public interest⁷⁹ which allows the public or some subclass of the public to interact with financial institutions with a degree of safety by increasing consumer awareness and information.⁸⁰

 72 They are called normative because there is usually an implicit assumption that efficient regulation would also be desirable. These theories are said to generally conclude that regulators should encourage competition where feasible, minimize the costs of information asymmetries by obtaining information and providing operators with incentives to improve their performance, provide for price structures that improve economic efficiency, and establish regulatory processes that provide for regulation under the law and independence, transparency, predictability, legitimacy, and credibility for the regulatory system. *ibid*

⁷³ Similarly, the questions could be phrased as 'how to fix it?' and the form that the solution or 'fix' will take.

⁷⁴ Regulation can be taken to mean the employment of legal instruments for the implementation of social-economic policy objectives. See den Herto, J (1999) General Theories of Regulation, available at http://goo.gl/8QjYD

⁷⁵ Porteous, D (2006) *The Enabling Environment for Mobile Banking in Africa*, available at . https://bit.ly/2JzNgMX

⁷⁶ The risk includes balancing the dual objectives of identification and traceability to allow financial integrity.

⁷⁸ Economists and economic theory greatly affect this debate, to which Keynes caustically remarked that 'Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economists'. See Keynes, J (1964) *The General Theory* at 383. Economists then especially see the debate of the varying functions of government regulation versus market regulation framed, *inter alia*, by Arthur Pigou who believed that government is assumed to be a neutral arbiter in providing regulation in response to the demand of the public for the correction of inefficient, fragile or inequitable market practices. This contrasts with the economist Ronald Coase who believed that efficient outcomes could be generated without government intervention when property rights are clearly defined. Coase, R (1960) The Problem of Social Cost, available at https://www.jstor.org/stable/724810. He is said to have invented the field of 'Law and Economics,' also known as the 'Economic Analysis of Law' which is said to differ from other forms of legal analysis in looking at efficiency and incentives. A component thereof is the 'Positive Theory' of legal efficiency which believes that the common law is efficient, while the Normative Theory says that that the law should be efficient. Most economists accept both. Coase believed thereto that markets are more efficient than courts, but when possible, the legal system will force a transaction into the market. When this is impossible however, the legal system attempts to 'mimic a market' and guess at what the parties would have desired if markets had been feasible. See further Zingales, L (2004) *The Costs and Benefits of Financial Market Regulation*, available at http://goo.gl/mgAIf.

⁷⁹ Malan, F (1989) Legal Aspects of the Regulation of Financial Institutions 18(4) *Tydskrif vir die Suid-Afrikaanse Reg* at 555. ⁸⁰ The 'public interest' approach says that the notion of externalities serves to define the proper role of government, and emphasizes the government's role in correcting market imperfections that result from externalities. In this view, regulatory agencies may or may not be well informed, but they are well intentioned. See Woodward, S (1998) *Regulatory Capture at the U.S. Securities and Exchange Commission*, available at http://goo.gl/um9Hh. See also Winn who notes that political scientists and economists distinguish between 'economic regulation' aimed at supporting competition in markets and 'social regulation' aimed at protecting health and safety. Winn notes further that consumer protection laws are now treated as a form of economic regulation in the US insofar as government intervention is appropriate only when it is clear that competition is not doing an adequate job of meeting consumer needs. By comparison, Winn notes further that European Union (EU) lawmakers appear to be skeptical that mere economic regulation provides enough support for online consumer markets in Europe. Winn, J and

government's interest; customers desire protection from market power when competition is non-existent or ineffective; operator's desire protection from rivals; or operators desire protection from government opportunism. *ibid*

⁷⁷ 'Market failures' are departures from the economists' notion of a perfectly efficient market where first, consumers and producers take decisions that reflect all possible, relevant information; secondly, prices reflect all costs, including costs to third parties; and thirdly, firms cannot profitably charge prices in excess of 'marginal' cost, ie where their 'market power' is absent. See Financial Services Authority (FSA) (2006) 'A Guide to Market Failure Analysis and High Level Cost Benefit Analysis' available at http://goo.gl/kFzus.

Regulation is an instrument of social policy⁸¹ intended to influence and control market and business behaviour, which may amount to strata of regulations, usually forms of self-regulation, co-regulation or pure statutory regulation.⁸² The latter especially is informed by public policy goals, which may in turn be influenced by national, regional or international trends. The need for consumer protection is especially considered to be a public policy response to a market failure.⁸³ Regulators must however balance the need to protect consumers whilst avoiding over-regulation,⁸⁴ or for that matter, effectively impractical regulation that may have the opposite of what is intended.⁸⁵

Exhibit 2: Theories of regulation⁸⁶

3.2 The Regulators of DFS

DFS is an emerging and evolving ecosystem, with a dynamically evolving regulatory environment.⁸⁷ Generally, the regulators may include prudential regulators, financial integrity regulators; sector regulators and market conduct regulators.⁸⁸

The core regulatory authorities required to provide a 'foundational' enabling environment for DFS include the country's CB, its NTA, and its financial intelligence unit (FIU) on AML matters.⁸⁹ This ensemble reflects the primarily transactional iterations of a DFS ecosystem in its foundational DFS 1.0 stage. The number of impacted regulators will increase as service offerings evolve beyond.⁹⁰

Webber, M (2006) The Impact of EU Unfair Contract Terms Law on U.S. Business-to-Consumer Internet Merchants, available at The Business Lawyer, available at http://goo.gl/zqFRJ.

⁸¹ Rubin says that legal rules, especially those in the commercial area, are instruments of social policy rather than an autonomous body of doctrine reflecting general and apolitical principles of law. See Rubin, R (1991) *Efficiency, Equity and the Proposed Revision of Articles 3 and 4*' 42 *Albany Law Review* 551 at 553-4, 560.

⁸² Since network industries like payments can provide socially important or utility services to the public and the economy, they may need to address broad public policy agendas over and above supporting effective competition, such as financial stability and consumer protection. See Australian Payments Clearing Association (APCA) (2009) *Competition and Coordination in the Australian Card Payments System*, available at http://goo.gl/fNzRI

⁸³ Eisner, M; Worsham, J & Ringquist, E (2000) Contemporary Regulatory Policy, available at https://bit.ly/2QbYLN3

⁸⁴ Over-regulation may occur when the cost of ensuring equality of information for both provider and consumer reduces the availability of products and services in the market and/or drives prices higher. AFI (2010) *The AFI survey on financial inclusion policy in developing countries*, available at https://bit.ly/2qogbe1

⁸⁵ See Rubin who 'analyses market failure generated by the structure of the legal system' where he says consumers will never be able to enforce their rights against a bank because it is too expensive to do so. Consumers must initiate any legal action, but invariably the action – especially for smallish amounts – cannot be economically pursued. The only thing, he says, that is economically more inefficient than failing to bring an action is when the consumer has an unjustified loss and initiates an action to recover that loss at large expense to himself and possibly costing more to pursue to recover that loss than the initial monetary loss. This, he believes, is effectively a market failure.

⁸⁶ Adapted from Perlman, L (2012) *LLD Thesis: Legal and Regulatory Aspects of Mobile Financial Services,* available at https://bit.ly/2KGfC8k.

⁸⁷ Laws, regulations, supervision and oversight though have traditionally followed an institutional approach, whereby specific regulators have had supervisory oversight and rule-making capacity over institutions within their regulatory domain. Thus, for example, banks have traditionally been regulated by the national banking regulator and telecommunications entities by the NTA.

⁸⁸ Regulators may 'extend' their remits over DFS and its enabling components even and especially where there is no direct legal basis for doing so: this reach is usually achieved by using omnibus powers in that regulatory bodies' establishment statute.
⁸⁹ There are of course other specialized laws and regulators who may have an omnibus remit over an entity, no matter the institution and service offered. For example competition regulators, tax authorities, financial services regulators, privacy and data protection regulators, trade and industry regulators, and consumer protection regulators.

⁹⁰ Service offerings and capabilities in DFS 2.0 and beyond may include bilateral interoperability between DFSP, G2P payments, and independent credit provision by DFSPs.

There may be co-jurisdiction between regulators over a similar domain or issue, for example on AML and competition issues. In most jurisdictions however, the CB as the apex bank in the country is the lead regulator in DFS. It will, at a minimum, set licensing and authorization criteria for DFSPs and e-money issuance; establish consumer protection mechanisms; set safety and soundness guidelines including schemes for safeguarding of pooled funds and user accounts; set customer identification and verification ((CIV) policies for SVA use; establish quality of service (QOS) and risk management guidelines for services; set agent standards; and set interoperability standards and policies. In some cases it may also act in a catalytic role of establishing or building a national interoperable platform or switch that integrates a DFS ecosystem with its e-money-based SVA and agent networks with 'traditional' financial ecosystems such as those involving ATM and card networks.

The NTA primarily acts in supporting role to the CB in DFS with its jurisdiction usually limited to issues related to the modalities surrounding access to primary DFS bearer channels such as USSD and STK. If the provider is a licensed MNO,⁹¹ the NTA may be directly involved in regulating that DFSP through some type of authorization for provision of DFS-type services as a value added services (VAS) license, alongside a license or authorization from the CB for that entity to undertake financial services.⁹² An NTA may also insert itself in discussions on interoperability between DFSPs and other participants.⁹³ And while it is usually the NTA or a technology ministry's primary competency, the CB may include security and risk management requirements for use of bearer services such as USSD in its licensing requirements for DFSPs.

The FIU - also known as a financial intelligence authority or AML Unit - will usually specify minimum standards to be followed for CIV as well as for specifying DFS transaction tier limits. The FIU policies – sometimes granular, but more often than not principles-based - would then 'trickle down' to the other regulators to apply in more granular form any rules based on a risk-based approach (RBA) to their own supervised entities. A RBA is generally based on guidelines and principles – rather than rules - for addressing a particular risk so as to lead to a desired outcome.⁹⁴ Oversight over fraud/cybercrime may sit, as it does in Bangladesh, with the FIU.

The omnibus complexity of DFS and its components has also necessitated closer cooperation between implicated regulators, usually codified as bilateral or multilateral memoranda of understanding (MoUs).

As service offerings, competition-based complexities increase and the DFS ecosystem generally evolves, additional regulators and authorities – some outlined in **Exhibit 3** - will be impacted and become part of the regulatory ecosystem for DFS. These may include other prudential regulators, financial integrity regulators; sector regulators; and market conduct regulators.⁹⁵

A market conduct regulator such as the competition authority may for example set parameters for provision of access to scarce resources such as USSD and STK or at fair, reasonable and non-discriminatory (FRAND) terms.

⁹¹ It may also intervene if there are competition-related concerns on that licensee not providing access to scare resources at FRAND terms.

⁹² See on the role of the NTA, Perlman, L (2018) *The Role of the Telecommunications Regulator in Digital Financial Services*, available at www.dfsobservatory.com

⁹³ The NTA in Kenya for example threatened to split up MNO Safaricom if it did not integrate its dominant M-Pesa DFSP subsidiary with other DFSPs in Kenya for interoperability purposes. Quartz (2018) *Kenya Won't Force A Spin-Off Of The World's Leading Mobile Money Service After All*, available at https://qz.com/1212396

⁹⁴ A feature of a RBA is that compared to a normative, rules-based approach, the supervisory entity does not specify the precise steps required to achieve the desired outcome, rather leaving it to the implementing entity to address the risks outlined in guidelines by implementing procedures and rules that are contextually relevant to it. The rules and procedure of each entity may thus differ, although the net effect of each variation is to address the risks outlined in the guidelines.

⁹⁵ An often-heard concern at many DFS conferences is that many of these regulators are either non-existent or functionally deficient in many markets, for example those regulating data protection, consumer protection and competition. This despite laws authorizing their activities.

Other regulators, agencies, or government ministries may also be drawn by happenstance into regulation, oversight, and policy-making of other components of the DFS ecosystem.

The need for and role of a national ID authority to issue a national identity and/or set policies for ID standards and use is becoming more important, as financial ecosystems grow and AML and derisking⁹⁶ become prominent policy concerns. A number of developing countries have launched biometric ID systems.⁹⁷

Remit/Authority	Competition	FIU	Data Protection	Consumer Protection	CB	NTA	Tax
Authorization To Operate Services	Yes				Yes	Yes	
Data Privacy	Yes		Yes	Yes	Yes	Yes	
Consumer Protection	Yes		Yes	Yes	Yes	Yes	
Quality of Service	Yes			Yes	Yes	Yes	
Competition	Yes		Yes	Yes	Yes	Yes	
CDD/KYC	-	Yes	Yes	Yes	Yes	Yes	
Security	-	Yes	Yes	Yes	Yes	Yes	
Taxation	-				Yes	Yes	Yes
Transaction Data Monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Exhibit 3: Cross-jurisdictional remits in DFS for DFS-impacted regulators and their direct and extended remits over DFS and its enabling components. Core foundational DFS -related regulators will include the CB, the NTA, and FIU.

3.3 Factors and Components in Regulatory Development

As noted above, an 'enabling' environment for DFS may relate to an activity of appropriate regulators to set down conditions for participation in a sector, but may also relate to the ability (enablement) of the regulator itself to produce any enabling laws for market participants to fairly participate. Here, organic growth in capacity, internal learnings, and an evolution of outlook/thinking by key policy makers within regulatory bodies has facilitated regulatory reforms and innovations that allow DFS and new players to emerge to challenge the primacy of licensed banks as exclusive providers of financial account services.

Even and especially where there is no direct legal basis for doing so, some regulators may in effect 'extend' their remits to *indirectly* include DFS and its enabling components. This reach is usually achieved by using omnibus powers in that regulatory bodies' establishment statute.⁹⁸ Often though the remit may extend further than allowed

⁹⁶ Perlman, L & Wechsler, M (2019, forthcoming) *Derisking and Its Impact on Financial Inclusion (draft title)*, available at www.dfsobservatory.com

⁹⁷ On these biometric IDs and their use in AML, see Perlman, L & Gurung, N (2018) *Focus Note: The Use of eIDs and eKYC for Customer Identity and Verification in Developing Countries: Progress and Challenges*, available at www.dfsobservatory.com; and ITU FG DFS (2017) *Identity and Authentication*, available at https://bit.ly/2KistMX

⁹⁸ This may be the result of the lack of an enabling law (for that remit), or lack of regulations, even to provide a critical component in development of a national financial inclusion strategy. The Bank of Uganda (BoU) for example uses its establishment act as the basis for regulating DFS in the absence of a directly enabling national payment systems act to directly license DFSPs. The DFSPs are forced then to partner with licensed banks, who are given a LONO by BoU for the partnership. See the Bank of Uganda Act at https://bit.ly/2J7dDZy.

or intended. Without a *direct* legal basis for their regulations and enforcement, any such activity impacting on the DFS ecosystem may precipitate regulatory arbitrage and even be subject to court review.⁹⁹

In many cases regulators have used regulatory forbearance – a regulatory device also known as 'test and learn'¹⁰⁰ – to allow innovations to progress to operational commercial products, even if there was no (direct) regulatory basis for providing these approvals. A contemporaneous incarnation of this approach known as 'regulatory sandboxing'¹⁰¹ is however now accepted regulatory practice in many jurisdictions. And in an even more direct approach, some regulators have themselves 'become' the third party, acting in catalytic role of financing and building the required financial infrastructure which is often then handed over to market participants to operate.¹⁰²

While many of the regulatory innovations that have emerged around DFS are mostly organic, internal initiatives, they often reflect impetus from (top-level) inputs, guidelines and strategies from banking and payment-oriented supranational standard setting bodies (SSB) such as the Bank for International Settlements (BIS), Committee for Payments and Market Infrastructure (CPMI) the Financial Action Task Force (FATF), and the World Bank Group.¹⁰³ Most CBs for example will in some form implement recommendations from these SSBs in national law, regulations or directives.

An overarching coordinating body – as a national financial inclusion secretariat, agency or ministry – may also be established.¹⁰⁴ Often the CB will have its own financial inclusion department.¹⁰⁵

Often overlooked though are the impact of policy makers, politicians and the Ministry of Finance who are equally and sometimes more important than the Central Bank in igniting and sustaining DFS. In Uganda for example delegated authority for regulating agent banking took years to be given by parliament, and there is still no national payment systems law to regularize the provision of DFS in Uganda. As a result, DFS provision in Uganda has been the subject of legal challenges.¹⁰⁶

⁹⁹ A Ugandan member of parliament unsuccessfully challenged in court the legality of DFS services provided by MNO MTN Uganda based on this method of authorization. Balancing Act (2015) *Uganda: Court Dismisses Case Against MTN Mobile Money*, available at https://bit.ly/2xvyE. And Kenya's high court struck down a legal amendment as part of the omnibus Statute Law (Miscellaneous) Amendment Act that required the NTA to consult the Competition Authority of Kenya before punishing any operator for abuse of dominance. The court ruling restored these powers to the NTA. See Tele Geography (2017) *Court Restores Market Dominance Powers to CA of Kenya*, available at https://bit.ly/2ssQlkj

¹⁰⁰ This was the approach of the Bank of Tanzania (BoT) in allowing non-banks to provide DFS in the absence of an enabling national payments law. A LONO was issued to them by the BoT and the NTA as an interim enabling measure.

¹⁰¹ The first sandbox-like framework was set up by the US Consumer Financial Protection Bureau (CFPB) in 2012 as 'Project Catalyst.' For an overview of sandboxes in developing countries, see Wechsler, M (2018) *The State of Regulatory Sandboxes in Developing Countries*, available at www.dfsobservatory.com; and on their use for financial inclusion, see Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0

¹⁰² The Central Bank of Jordan built and operated the IoMoPay interoperable switch for DFSPs in Jordan. It is now co-owned by the CBJ and the industry association in a vehicle called JoPAC.

¹⁰³ Other SSBs with impact on DFS include the Financial Stability Board (FSB), International Telecommunication Union (ITU), 3rd Generation Partnership Project (3GPP), and the International Organization for Standardization (ISO). See further below.

¹⁰⁴ See for example *Banca de las Oportunidades*, a program to enhance financial inclusion in Colombia run by the Bank for Foreign Trade, Bancoldex. See Banca de las Oportunidades (2018) *Who We Are*, available at https://bit.ly/2ymk8Xy. Nigeria's National Financial Inclusion Strategy mandated the creation of a 'Financial Inclusion Secretariat' supervised by the Financial Services Regulation Coordinating Committee, which reports to the National Economic Council. See CBN (2018) *Financial Inclusion*, available at https://www.cbn.gov.ng/devfin/fininc.asp. See also World Bank (2018) *National Financial Inclusion Strategies Resource Center*, available at https://bit.ly/2D2ur4l; World Bank (2015) *Overview: National Financial Inclusion Strategies*, available at https://bit.ly/2LXjB0m

¹⁰⁵ See Section 4.2.

¹⁰⁶ Some politicians in Uganda have (unsuccessfully) to date, tried to foreclose on the ability of non-bank DFSPs to provide services. Daily Monitor (2017) *MPs pin BoU on unregulated mobile money transactions*, available at https://bit.ly/2AvvuaA;

3.4 Capacity Building

Weak regulatory capacity for the implementation and enforcement of regulations are a current characteristic of regulatory oversight and supervision in DFS within a number of jurisdictions. Capacity building, as well as scaling up personnel to expertly handle disparate components making up each of these ecosystems and expanded remits, take time and money often not budgeted for by the CB or not provided for by the national treasury. Many of these CB-focused capacity building programs will involve licensing, competition policy, regulatory impact assessments, dispute resolution, universal service, and effective regulation.¹⁰⁷ Often their budgets are buffeted by unexpected and sustained legal clashes with licensees and/or the organizations that represent them. In many cases, given budget shortfalls and deficits in local expertise to undertake capacity building, it has been up to donors, such as the World Bank and its satellites,¹⁰⁸ to provide the funding for ongoing capacity building as well as to source and provide the external expertise¹⁰⁹.

4 The Central Bank in DFS

4.1 Overview

While there are differences across jurisdictions, central banks have evolved in the past decades to have primarily two main roles:

- To maintain financial stability and the soundness of the financial system.
- Development of financial market infrastructures

These roles are often enumerated within the CB's establishment statute and within laws and regulations relating to payments and banking.¹¹⁰

Most countries have a banking law that allows regulation of banks and financial institutions¹¹¹ where banks are supervised by the CB or a separate banking supervisor.¹¹² Prudential responsibilities over one or more types of non-

and Blizz Uganda (2018) MP drags MTN, UCC and Bank of Uganda to Court, Seeks an Injunction against MTN License Renewal, available at https://go.shr.lc/2Smqr3x

¹⁰⁷ On schemes for undertaking capacity building for developing country NTAs, see Goulden, B (2005) *Building ICT Regulatory Capacity In Developing Economies: A Learning Framework For Regulators*, available at https://bit.ly/2KpqBSW ¹⁰⁸ See for example, the International Bank for Reconstruction and Development who funded 'Telecommunications Regulatory Capacity Building' through a USD492,300 grant from its Institutional Development Fund. The program was aimed at supporting the Telecommunications Regulatory Authority of Lebanon in the streamlining of its internal processes, strengthening transparency, and building technical capacity on regulatory issues. The World Bank held a capacity building event for the NTA RURA in Rwanda in May 2018 alongside regional competition regulators where DFS and telecommunications-related completion issues were highlighted.

¹⁰⁹ See the GSMA's capacity-building activities at https://bit.ly/2L5h5FB , and https://bit.ly/2InrkTQ

¹¹⁰ The European Central Bank (ECB) outlines the supervisory role of CBs as belonging to three classes: (i) investor protection activities, which are focused mainly on the issuance and enforcement of rules on the conduct of business and the disclosure of information; (ii) micro-prudential supervision, which includes all on and off-site surveillance of the safety and soundness of individual institutions, aiming – in particular – at the protection of depositors and other retail creditors; and (iii) macro-prudential analysis, which encompasses all activities aimed at monitoring the exposure to systemic risk and at identifying potential threats to stability arising from macroeconomic or financial market developments. See ECB (2001) *The Role of Central Banks in Prudential Supervision*, available at https://bit.ly/2M3Xu8v.

¹¹¹ This includes regulating important banking functions such as capital and liquidity management.

¹¹² In some countries, the 'twin peaks' model of financial regulation, because of the two peak regulatory authorities it creates. One is the 'system stability' regulator that creates and enforces prudential regulations, designed to prevent a financial crisis. The other is responsible for deterring misconduct and protecting consumers of financial products and services. This model can however potentially cause coordination problems and regulatory overlap between these regulators. This is the case in Indonesia, where Bank Indonesia and the supervisory authority OBJ share competencies'. See further, Godwin, A (2017) *Introduction to special issue – the twin peaks model of financial regulation and reform in South Africa*, available at https://bit.ly/2P1g8ne

bank deposit-taking institutions may be assumed by the banking supervisor or by other authorities such as a specialized non-bank regulator, the finance ministry and, in some cases, a cooperative agency.

When it comes to payments, many countries do not yet have a proper legal or regulatory framework to oversee participants in a national payment system (NPS),¹¹³ nor even those providing payment services. Lack of a framework can lead to an asymmetry in competition, poor consumer protection frameworks and regulatory arbitrage, at a minimum. A CB's remit, indirectly as it may need to be, generally falls with boilerplate provisions in its establishment statute that enjoins the CB to promote integrity, safety and confidence in the banking system¹¹⁴ and to foster and ensure economic growth in the country.¹¹⁵

A CB's role often follows from supranational banking and payment guidelines derived from SSBs such the BIS, CPMI and FSB.¹¹⁶ The *Principles for Financial Market Infrastructures*¹¹⁷ issued by the CPMI and the International Organization of Securities Commissions (IOSCO) are seen as the operational and regulatory standards for payments and market infrastructure every CB should aspire to.¹¹⁸ The *Principles* are part of a set of 12 key standards overseen by the Financial Services Board (FSB)¹¹⁹ that the international community considers essential to strengthening and preserving financial stability.¹²⁰

In a financial inclusion context, the CB may take a developmental approach, where it is an active participant in national financial inclusion efforts and strategy.¹²¹ Often the CB will develop a multi-year plan – usually known as

¹¹³ The BIS defines a 'NPS' as including a country's entire matrix of institutional and infrastructure arrangements and processes for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities. The main elements of an NPS include payment instruments; payment infrastructures for transacting and clearing payment instruments, processing and communicating payment information, and transferring the funds between the paying and receiving institutions; financial institutions that provide payment accounts; market arrangements such as conventions, regulations and contracts for producing, pricing, delivering and acquiring the various payment instruments and services; and laws, standards, rules and procedures. See BIS (2006) *General Guidance for National Payment System Development*, available at https://bit.ly/2K4a22i .

¹¹⁴ Depending upon the jurisdiction, CBs may have oversight only over banks while in other jurisdictions it may also include other financial institutions. See further, Centre for Economic Policy Research (2013) *Regulation, supervision and the role of Central Banks*, available at https://bit.ly/2y1Rnzb.

¹¹⁵ As noted above, some CBs use their establishment statute to found jurisdiction over DFS.

¹¹⁶ See FSB (2018) *Key Standards for Sound Financial Systems*, available at https://bit.ly/2JNEWbI; and BIS (2003) *Policy Issues For Central Banks In Retail Payments*, available at https://bit.ly/2JNodt7. Other standards that affect oversight include the Society for Worldwide Interbank Financial Telecommunication (SWIFT) standards, the FATF recommendations on antimoney laundering and combating the financing of terrorism, as well as from ISO, for example on payment messaging standards such as ISO 2022.

¹¹⁷ BIS (2012) Principles For Financial Market Infrastructures, available at https://bit.ly/2JPXVGy

¹¹⁸ They encompass the international standards for financial market infrastructures (FMIs), comprising payment systems, central securities depositories, securities settlement systems, central counterparties and trade repositories.

¹¹⁹ FSB (2018) Key Standards for Sound Financial Systems, available at https://bit.ly/2JNEWbI

¹²⁰ A number of related documents and further guidance on how to implement the standards. These include, BIS (2017) Recovery of Financial Market Infrastructures, available at https://www.bis.org/cpmi/publ/d162.htm; BIS (2017) Resilience of Central Counterparties (CCPs): Further Guidance on the PFMI, available at https://www.bis.org/cpmi/publ/d163.htm ; BIS Guidance Cyber Resilience (2016)on for Financial Market Infrastructures, available at https://www.bis.org/cpmi/publ/d146.htm; BIS (2016) Clearing of Deliverable FX Instruments: Application of the Principles for Financial Market Infrastructures to CB FMIs, available at https://www.bis.org/cpmi/publ/d143.htm; BIS (2015) Public Ouantitative Disclosure Standards for Central Counterparties, available at https://www.bis.org/cpmi/publ/d125.htm; BIS (2014) Assessment Methodology for the Oversight Expectations Applicable to Critical Service Providers, available at https://www.bis.org/press/p141223.htm; BIS (2012) Principles for Financial Market Infrastructures: Disclosure Framework and Assessment Methodology, available at https://www.bis.org/cpmi/publ/d106.htm

¹²¹ For examples of national financial inclusion strategies, see World Bank (2015) *Overview: National Financial Inclusion Strategies*, available at https://bit.ly/2LXjB0m

a Vision Statement¹²² – outlining its goals for the national payment infrastructure and participants therein.¹²³ It may include provisions for supporting settlement finality, electronic payments, electronic records and electronic signatures.¹²⁴

4.2 Structure

A CB's mandate as outlined in its enabling statute will usually determine its structure. Its functions may range from setting macro-economic policy to ensure growth and stability in the economy, overseeing payments and banking in the country, to creating and targeting unemployment goals. From a financial inclusion perspective though, the CB in developing countries will typically have the following structures¹²⁵ and components.¹²⁶

A PRIMARY

Oversight Department: Usually the oversight department oversees the whole market, but in many developing countries may oversee some or all activity in other departments at the CB. They will often conduct off-site surveillance of supervised entities.

Payment Systems Department: Payment systems are where a CB is most participative in a national payment system alongside commercial participants. Usually, the Payment Systems Department (PSD) serve three principal roles in retail payment systems: as operator, or as catalyst, or as facilitators of market and regulatory evolution.¹²⁷ In most cases it will oversee all retail payment systems and arrangements (as a National Payment System) while in others its scope may be limited to only those payment systems considered systemically important¹²⁸

A CB's role as an operator of a payment facility within the NPS may fall along a spectrum that includes overseer, or direct participant, or catalyst. It may have roles then as operator; payment system overseer; and catalyst/facilitator of market and regulatory evolution. offer final settlement on their books¹²⁹ for some retail payment systems, or may provide direct clearing services for some retail systems;¹³⁰ while some also provide clearing and other related services. In some cases, the CB may build a payment switch, write the rules around

¹²² The typical components of the 'vision' include the vision itself, assessment of strengths and weaknesses, strategy objectives, coordination and implementation mechanisms, monitoring and evaluation systems, and an action plan. See ITU-T FG DFS (2017) *Cooperation Frameworks between Authorities, Users and Providers for the Development of the National Payments System*, available at https://bit.ly/2sKf0az.

¹²³ See for example the South African Reserve Bank's 'Vision 2025' statement, which sets nine goals that will guide the development of payment systems in South Africa to create a safer and more efficient system. See SARB (2018) *Media Statement- The National Payment System Framework and Strategy Vision 2025*, available at https://bit.ly/2FTlecE

¹²⁴ ITU FG DFS (2017) Cooperation Frameworks between Authorities, Users and Providers for the Development of the National Payments System, available at https://bit.ly/2sKf0az

¹²⁵ The head of the CB is usually a governor, with the oversight department ultimately ensuring that all the departments within the CB conform to local and international standards.

¹²⁶ Not all potential CB components and divisions are presented since the focus of this paper is on financial inclusion in the developing world.

¹²⁷ BIS (2003) Policy Issues for Central Banks in Retail Payments, available at https://www.bis.org/cpmi/publ/d52.htm

¹²⁸ Also known as Systemically Important Payment Systems (SIPS). See BIS (2001) Core Principles for Systemically Important Payment Systems, available at https://bit.ly/2zgzSsj; and BIS (2003) *Policy issues for Central Banks in Retail Payments*, available at https://bit.ly/2JNodt7.

¹²⁹ The Principles for financial market infrastructures are the international standards for financial market infrastructures, ie payment systems, central securities. They prescribe that final settlement of systemic important payment systems are in central bank money, that is - on the CB's books. See BIS (2012) *Principles for financial market infrastructures*, available at https://www.bis.org/cpmi/info_pfmi.htm

¹³⁰ Oliver, R & Weiner, S (2009) *The Role of Central Banks in Retail Payments: The Central Bank as Operator*, available at https://bit.ly/2HQhskx. They may also run or establish utilities for the payments industry for fraud management and AML purposes.

participation, risk management, and operation and then hand over part or all of the management and ownership of the switch in a public private partnership (PPP).¹³¹

Capital Markets: This department supervises and regulates the capital market to ensure that it is fair, transparent and efficient. They grant licenses to exchanges, clearing houses and central depositories and ensure the interest of the investors and the public are protected.¹³² In some cases, capital markets is an outside function, usually under a securities commission.

Supervision: The supervision department oversees banks and non-banks. It is mostly, but not always known as the 'Banking Supervision Department.' It usually conducts off-site, first-hand examination and analysis of supervised entities, and monitors for compliance with prudential standards, laws, and regulations to ensure financial stability. In some cases there may be a separate division dedicated to the supervision of non-banks.

Foreign Reserves Management Department:: Foreign reserves management is a characteristic of modern central banks in inflation targeting countries. Central banks store foreign exchange reserves to regulate exchange rates and control inflation. They buy and sell foreign currency depending on the supply and demand. Liquidity is the primary investment objective of the foreign reserves portfolio. As such, foreign currency reserves are invested to ensure that adequate liquidity is maintained to meet potential needs.¹³³

Forex/Exchange Department: This department is usually prevalent where capital controls - buying and selling forex - are in place. Typically it will regulate forex bureau and monitor capital inflows and outflows. It may also devise policies in relation to inbound and outbound remittances, particularly on settlement, fees, consumer protection and AML.

Financial Intelligence Unit: Some CBs have as a key element of the banking and payment regulatory system an administratively-independent Anti-Money Laundering and Terrorist Financing division, also known as a Financial Intelligence Unit (FIU).¹³⁴ Often though an FIU will be an independent entity, a structural design intended to keep an FIU independent from internal CB politicking and influence. Whatever its provenance and structure, its role may be to review suspicious activity reports and exercise investigative powers over financial and other impacted entities. Any predicate crimes resulting in an FIU investigation may be referred to a prosecuting authority. Most AML/CFT regimes are expressly modeled on recommendations from FATF who provide the international standards for combating money laundering and the financing of terrorism. These 'FATF Recommendations' as they are generally known are regularly updated by FATF. The FIU may also undertake a national risk assessment, to be provided to a mutual evaluation group that assesses a country's compliance with FATF standards.¹³⁵ A negative peer group¹³⁶ report that identifies deficiencies in an AML regime may ultimately result in that country being placed on a FATF watch-list until it remedies identified deficiencies, or be shut out of some critical components of the world's financial system.¹³⁷

¹³¹ The Central Bank of Jordan (CBJ) built and operated the JoMoPay interoperable switch for DFSPs in Jordan. It is now coowned by the CBJ and the industry association in a vehicle called JoPAC.

¹³² Often capital markets is an outside function, usually under a securities commission.

¹³³ NY Fed (2018) Foreign Reserves Management, available at https://nyfed.org/2AAO7dm

¹³⁴ In Jordan for example, the AMLU (their FIU) while housed in the CBJ, is under the supervision of the National Committee for Combating Money Laundering. The AMLU serves as Jordan's FIU. See http://www.amlu.gov.jo/

¹³⁵ See the FATF NRA Guidance at FATF (2013) *National Money Laundering and Terrorist Financing Risk Assessment*, available at https://bit.ly/1dYvb63

¹³⁶ Consisting of evaluation by other countries, often neighboring countries making up a mutual evaluation group.

¹³⁷ A FATF Eastern and Southern Africa Anti-Money Laundering Group mutual evaluation report of Uganda in February 2014 found deficiencies in its AML/CFT programs. These included deficiencies in its AML policies, DFS/Mobile Money operations and lack of AML-related regulations. It then placed Uganda on the 'high risk' category. Uganda addressed the concerns by *inter alia* amending its Financial Institutions Act to make its FIU the central agency for receiving STRs, issuing and implementing regulations for the freezing of terrorist assets, issuing AML regulations for implementation of AML

B SECONDARY

Financial Inclusion Department: The financial inclusion department aims to provide affordable, accessible and safe financial services to citizens, especially in unserved and underserved populations. They may contribute to formulating the National Financial Inclusion Strategy (NFIS), monitor proper implementation of NFIS, and conduct diagnostic research to better understand the challenges in achieving financial inclusion.

Microfinance Department: There are different types of institutions that provide microfinance services, for example commercial banks, non-bank financial institutions, financial cooperatives and nongovernment microfinance institutions. These are typically Microfinance Institutions (MFIs), Savings and Credit Cooperatives (SACCOS) or Microcredit Institutions.¹³⁸ Because of this range, some or all may be regulated by the CB¹³⁹ or a separate microfinance supervisory established especially for supervising certain types of MFIs.¹⁴⁰ While some may be regulated by the CB, the financial and risk characteristics of many semi-formal and formal MFIs differ from formal banking institutions and do not fall under the CB.¹⁴¹ Dedicated microfinance regulators will promote the development of the microfinance sector: they are either standalone authorities, or a specialized division in the CB.¹⁴²

Payment Councils: As part of their 'Vision Statements' missions, CBs will usually interact with participants in public-private multi-stakeholder forums where issues relating to efficient and reliable development of payment systems are discussed. Following from these discussion, a more permanent structure such as a national payment council (NPC) or similar to oversee implementation.

NPC activities include implementation of legal, regulatory and oversight infrastructures, often also in parallel with a self- or co-regulatory body acting as payments association for industry stakeholders.¹⁴³ Governance of these bodies is key to prevent large industry participants from monopolizing discussions and decisions. Due to its role as overseer and participant in payment solutions, the CB may have seat on the board of either a NPC or a payment association. Due to potential conflicts, its role may be limited to being a non-voting member.

Financial Stability Department: Financial stability is a primary goals of all CBs. The mandate of a CB's financial stability department is to ensure financial stability using macro-prudential policy. Applying macro prudential tools

requirements, and issuing AML/CFT inspection manuals for financial sector supervisors. It was removed from monitoring by FATF in 2017. President Museveni had to recall the parliament to pass AML legislation - which they did in almost a single day. See Daily Monitor (2017) *Uganda strengthens anti-money laundering law to avoid blacklist*, available at https://bit.ly/2qilWtF

For FATF's reports on high-risk and other monitored jurisdictions, see FATF (2018) *High-risk and Other Monitored Jurisdictions*, available at https://bit.ly/1RA355J

¹³⁸ CGAP (2012) A Guide to Regulation and Supervision of Microfinance, available at https://bit.ly/2KNRMa3

¹³⁹ CGAP (2018) Brazil, available at http://www.cgap.org/countries/brazil

¹⁴⁰ Such as the Microcredit Regulatory Authority in Bangladesh. See Microcredit Regulatory Authority (2018) *Microcredit Regulatory Authority*, available at http://www.mra.gov.bd. Supervisory roles and responsibilities may be added to an existing supervisory authority as is the case in Brazil.

¹⁴¹ CGAP (2018) India, available at http://www.cgap.org/countries/india

¹⁴² World Bank (2017) Global Financial Inclusion And Consumer Protection Survey 2017 Report, available at https://bit.ly/2jrwfoj

¹⁴³ See for example the Payments Association of South Africa, http://www.pasa.org.za, and the DFS Council in Jordan, https://bit.ly/2t80I3y

to reduce systemic risks¹⁴⁴ to the financial sector. This may include macro-prudential policy measures to ensure sustainable credit growth or prevent household over-indebtedness.¹⁴⁵

Prudential regulators have remit over licensed financial institutions, banks and similar institutions such as non-bank deposittaking institutions. In most countries the prudential supervisor is usually the CB or a separate banking supervisor.¹⁴⁶ In others the regulator may be a specialized department within the finance ministry, a specialized agency or other department.¹⁴⁷ There may also be separate functional supervisors – focusing on such topics as financial integrity, deposit insurance, consumer protection, competition and data protection – and sectoral supervisors that supervise financial institutions offering different types of financial products such as credit, insurance, securities, and payments¹⁴⁸

There is no uniform model of supervision though, nor uniform definitions that telegraph a mode or degree of supervision. Instead, it is often policy precepts that will dictate which entities are regulated, and by whom.¹⁴⁹ Models of supervision often depend on the expertise, policy and capacity in the jurisdiction. Traditionally this is done via the institutional model of regulation. Globally, there is an average of two authorities across all institutional categories.¹⁵⁰ From a world bank 2017 survey of 113 jurisdictions, the most common approach (59%) is where the prudential supervisory authority supervising commercial banks, also supervises other institutional categories, with at least one other supervisory department separate from the banking supervision department).¹⁵¹ In the remaining 46 jurisdictions (41%), a single department covers all supervised institutions. The diversity of supervision extends to other forms of prudential regulation, including for the constituent participants in DFS.

Exhibit 4: Prudential regulation of DFS

4.3 Specific Roles and Issues in DFS

4.3.1 Overview

As noted above, the role and competencies of CBs in the developing versus developed world vary greatly. CBs in the developing world must craft their strategies largely with a financial inclusion lens, and often do so with limited capacity and a inchoate legal and regulatory framework.

¹⁴⁴ Systemic risk is the risk of a breakdown of an entire (financial) system rather than simply the failure of individual parts. One part may however precipitate a breakdown.

¹⁴⁵ See for example Bank of Lithuania (2018) *Financial Stability Department*, available at https://www.lb.lt/en/financial-stability-department

¹⁴⁶ A 2013 survey of 136 countries showed that 89 countries had the CB as the supervisory authority for banks; 9 countries where the CB was amongst multiple supervisors; and 38 countries where the CB was Not the supervisory authority. Barth, J, Caprio, G & Levine, L (2013) *Bank Regulation and Supervision in 180 Countries from 1999 to 2011, available at* https://bit.ly/2lhqbTL. For a non-categorized up-to-date list of prudential authorities globally, see BIS (2018) *Regulatory Authorities And Supervisory Agencies*, available at https://bit.ly/2Mwhdi7

¹⁴⁷ CPMI-World Bank (2016) Payment Aspects Of Financial Inclusion, available at https://bit.ly/2JDRHJ4

¹⁴⁸ BIS (2016) Guidance On The Application Of The Core Principles For Effective Banking Supervision To The Regulation And Supervision Of Institutions Relevant To Financial Inclusion, available at https://bit.ly/2JUSmms

¹⁴⁹ Even banks have this striation: the definition of a bank (and its activities) may differ: the array of - narrow or broad - activities then defines whether they are a bank, with the scope of permissible activities differing across countries.

¹⁵⁰ These authorities include CB and banking supervisors, as well as specialized nonbank regulators. See World Bank (2017) Global Financial Inclusion and Consumer Protection Survey 2017 Report, available at https://bit.ly/2jrwfoj. With respect to prudential regulation and supervision, some degree of specialization often exists within prudential supervisory authorities that cover multiple categories of financial institutions. For example the National Bank of Rwanda's supervisory duties are spread across three departments: banking, microfinance, and payments systems.

¹⁵¹ World Bank (2017) Global Financial Inclusion and Consumer Protection Survey 2017 Report, available at https://bit.ly/2jrwfoj

In a financial inclusion context, CBs in the developing world may take a 'developmental approach' where it is an active participant in financial inclusion efforts and strategy.¹⁵² A contemporaneous incarnation of this approach however is now accepted practice: known as 'regulatory sandboxing,' this regulatory enabling tool is being used by regulators to grant limited-time and limited-feature consent for third party innovative products to be tested in a market before and if, proceeding to a live, unrestricted 'playbox' implementation.¹⁵³

An emerging trend in the tools of central banks and other regulators is the creation of what are known as 'regulatory sandboxes,' as flexible frameworks to facilitate beneficial innovation in the financial sector while still managing risks of newer technologies. Specifically, regulatory sandboxes can address regulators' challenges to understand existing and emerging innovations, as well as fintech innovators challenges to understand complex regulations and regulatory expectations. Innovations are housed in controlled, safeguarded environments to live test innovations which would ordinarily be stifled by regulatory uncertainty or incompatibility under the regulator's supervision for a limited duration. As of 3Q 2018, over 50 countries had operational or proposed regulatory sandboxes.¹⁵⁴

Exhibit 5: Regulatory Sandboxes

In an even more direct approach, some regulators have themselves 'become' the third party, acting in catalytic role of financing and building the required financial infrastructure (such as a payments switch), which is often then handed over to market participants to operate.¹⁵⁵

This changing role of CBs to focus on financial inclusion, particularly in emerging countries, is 'reshaping the approach of central banking, with a more participatory focus in financial inclusion for central banks in developing countries.¹⁵⁶

As noted above, the CB typically in respect of DFS handles, at a minimum, matters relating to:

- Determination of market entrants through instruments such as licenses, authorizations, or LONOs¹⁵⁷
- Issuing AML/CFT requirements and procedures
- Ensuring fair and reasonable access to the financial system
- Interoperability of accounts between DFSPs, and then eventual integration of DFSPs into the broader NPS

¹⁵² Critics initially believed that this approach was outside the supervisory-only mandate of regulators, potentially creating a conflict of interest between a CB's regulatory and (new) developmental roles. See Chatterjee, AK (2016) *Why The Sandbox Approach Works For Fintech Development*, available at https://bit.ly/1sNujNp. As noted above, stretching of regulatory remits has led to legal action against CBs who have used this tool to *indirectly* enable DFS innovation in the absence of specific laws directly allowing them to do. A Ugandan MP unsuccessfully challenged in court the legality of DFS services provided by MNO MTN Uganda. Balancing Act (2015) *Uganda: Court Dismisses Case Against MTN Mobile Money*, available at https://bit.ly/2xvyEfe. A new legal challenge was launched in May 2018.

¹⁵³ The first sandbox-like framework was set up by the US Consumer Financial Protection Bureau (CFPB) in 2012 as 'Project Catalyst.' For an overview of sandboxes in developing countries, see Wechsler, M; Perlman, L and Gurung, N (2018) *The State of Regulatory Sandboxes in Developing Countries*, available at www.dfsobservatory.com;; and on their use for financial inclusion, see Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0 ¹⁵⁴ For more insights into the use of sandboxes for developing countries, see Wechsler, M; Perlman, L and Gurung, N (2018) *The State of Regulatory Sandboxes in Developing Countries*, available at www.dfsobservatory.com;

¹⁵⁵ The CB of Jordan built and operated the IoMoPay interoperable switch for DFSPs in Jordan. It is now co-owned by the CBJ and the industry association in a vehicle called JoPAC.

¹⁵⁶ For a historical overview of the role of CBs, see Goodhart, C (2010) *The Changing Role of Central Banks*, available at https://bit.ly/2Jrn1by

¹⁵⁷ See further Section 4.3.3 on Licensing and Authorization

- Any safety and soundness requirements such as store of funds in designated licensed banks
- Risk management criteria
- Inspecting authorized or licensed institutions to ensure that the operations are safe and in compliance with legislation
- Reporting on the performance and condition of each licensed financial institution, and
- Regulation of agents

General-related Comp	oetencies	DFS-related Competencies		
Licensing of Banks	Yes	Authorization To provide DFS	Often	
Capital markets	Yes	Authorization To provide DFS as	Often	
		VAS		
Forex	Yes	Taxation of DFS consumer	Yes	
		transactions		
Consumer Protection Yes		Taxation of VAS	Yes	
Non-bank deposit-	Yes	DFS Transaction Data Monitoring	Yes	
taking institutions				
Licenses				
Competition	Often	DFS Interoperability	Yes	
Anti-Money	Yes	DFS Agent Registration	Sometimes	
Laundering (if no				
separate FIU)				
Infrastructure	Yes	Transaction Security Over	Often	
Security		Bearers		
Taxation of	Yes	FRAND Access to DFS Bearers	Yes	
airtime/SIMs				
Taxation of VAS	Yes	Data Privacy	Yes	
MVNO Licensing	Yes	Retail price control over DFS	Sometimes	
		bearers		
Infrastructure sharing	Yes	AML/KYC for DFS	Sometimes	
Spectrum	Yes	Cybercrime	Yes	
Allocation/sale				
Handset	Yes	Contribution to Financial	Often	
Approvals/SAR/QOS		Inclusion Policies		
Interest rates Often		Quality of Service	Yes	
		Fraud Detection	Yes	
		Ring-fencing of DFS pooled	Often	
		accounts		

Exhibit 6: Typical general and DFS-related competencies of developing world central banks.

4.3.2 Managing Regulatory Coordination

The diversity of those serving unserved and underserved customers means that supervision can quickly move beyond the remit of a traditional (banking) supervisor. This means that the CB may share some of its competencies with other regulators such as the NTA, FIU, a competition authority or a combination thereof. Lack of coordination between regulators may lead to inconsistent application and regulatory arbitrage.

A 2016 BIS guidance on the 2011 BIS 'Core Principles for banking supervision'¹⁵⁸ in relation to financial inclusion addresses these concerns: Principle 1¹⁵⁹ says that an effective system of banking supervision will have clear responsibilities and objectives for each authority involved in the supervision of banks and banking groups. In particular, the guidance says that when there is more than one authority responsible for supervising banks and non-bank financial institutions,¹⁶⁰ then the responsibilities and objectives of each supervising authority should be clearly defined in legislation and publicly disclosed, and that a credible and publicly available framework should be in place to avoid regulatory and supervisory overlaps and gaps.¹⁶¹

A PRUDENTIAL FRAMEWORKS

4.3.3 Licensing and Authorization

4.3.3.1 Overview

Many supra-national bodies have championed an 'enabling and proportional' approach to regulatory enablement for DFS. For example, the G20's 'Principles for Innovative Financial Inclusion' encourages regulators to:

'Provide an enabling and proportionate legal and regulatory framework for digital financial inclusion, taking into account relevant G20 and international standard setting body standards and guidance.'¹⁶²

How this manifests depend on the jurisdiction, but DFS ecosystem participants authorized to provide services under this approach may fall into broad categories of non-banks, with a major pivot on how there are supervised and authorized around whether the supervisory authority considers their activities to be deposit-taking. If they are deposit-taking, they may fall under different and stricter regulatory regime as a non-bank deposit-taking institution.¹⁶³ The various approaches are outlined below.¹⁶⁴

4.3.3.2 Scope of an Enabling and Proportional Environment

Now embedded into the DFS and financial inclusion regulatory paradigm are the terms *enabling* and *proportional* regulatory regimes. These generally refer to a regulator creating *ex ante*¹⁶⁵ regulations and a facilitative regulatory environment that allows new – usually non-bank – market participants to provide innovative financial access solutions that promote financial inclusion.

¹⁵⁸ Basel Committee on Banking Supervision (2012) Core Principles for Effective Banking Supervision, available at https://bit.ly/2JTOVfE; and BIS (2016) Guidance On The Application Of The Core Principles For Effective Banking Supervision To The Regulation And Supervision Of Institutions Relevant To Financial Inclusion, available at https://bit.ly/2K268H2

¹⁵⁹ See Principle 1 of the BIS guidance in relation to financial inclusion, BIS (2016) *Guidance On The Application Of The Core Principles For Effective Banking Supervision To The Regulation And Supervision Of Institutions Relevant To Financial Inclusion*, available at https://bit.ly/2K268H2

¹⁶⁰ In the DFS context, this could be DFSPs acting as EMIs, or as MFIs.

¹⁶¹ This includes the need to conduct ongoing supervision, address compliance with laws and undertake timely corrective actions to address safety and soundness concerns.

¹⁶² G20 (2016) High-Level Principles for Digital Financial Inclusion, available at https://bit.ly/2c9V0WB

¹⁶³ The World Bank gives as examples institutions authorized to collect deposits or savings that do not fit the definition of bank: Financial Cooperatives (Rwanda); Microcredit Deposit Organizations (Tajikistan); and Sociedades Financieras Populares (Mexico). World Bank (2017) *Global Financial Inclusion And Consumer Protection Survey 2017 Report*, available at https://bit.ly/2jrwfoj

¹⁶⁴ See Section 4.3.3.4 on regulatory models for DFS.

¹⁶⁵ For a distinction within financial sector between *ex ante* and *ex post* regulation, see CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9

Enabling in its most basic sense relates to an open DFS participatory/provision model, where qualified market participants can obtain licenses or authorizations to independently provide and operate DFS without being forced to partner with a licensed bank.

A bank's only role in the DFSPs operation is that regulations require that the DFSP – or a trust representing the DFSP - must store customer funds in a bank.

At a more granular level, an *ex ante* 'enabling environment' has evolved marginally from initial assessments¹⁶⁶ to now address¹⁶⁷ whether there is:

- Defined, transparent and predictable rules and regulations
- A functional, non-discriminatory approach¹⁶⁸ to regulation that facilitates non-banks¹⁶⁹ being able to offer payment services and undertake e-money issuance
- Support of a RBA to CIV and CDD based on FATF principles; and
- Consumer protection that involves consumer redress mechanisms and safeguarding of customer funds placed with DFSPs and banks as custodians of DFSP funds.

How these regulations are formulated is also a measure of how enabling they are. That is, regulations should establish a fair, non-discriminatory, and open, level playing field for market participants¹⁷⁰ where similar rules apply for functionally similar services regardless whether or not the provider of these DFS is a bank, an MNO, or another DFSP.¹⁷¹

¹⁶⁶ A CGAP published in 2008 of 7 jurisdictions of what was then commonly known as 'branchless banking' but which is functionally equivalent to what we call today DFS, scored the enablers to be (i) the authorization to use retail agents and (ii) risk-based AML/CFT rules as necessary, but not sufficient, preconditions for inclusive DFS, and classified several others as "next generation" issues, including (iii) regulatory space for the issuance of e-money particularly by nonbanks; (iv) effective consumer protection; and (v) policies governing competition. See Lyman, T, Pickens, M & Porteous, D (2008) *Regulating Transformational Branchless Banking, available at* https://bit.ly/2LORgdn

¹⁶⁷ These 'updated' criteria to determine whether a jurisdiction is enabling were identified by CGAP in a 2018 study. The authors see these criteria though as basic, but not sufficient for enabling DFS. See Staschen, S & Meagher, P (2018) *Basic Regulatory Enablers for Digital Financial Services*, available at https://bit.ly/2xmi8y2. They compare their identified enabling criteria to that of the GSMA, UNSW and CDG. The GSMA criteria for what it terms 'mobile money' is considered enabling if (i) nonbanks are permitted to issue e-money; (ii) capital requirements are proportional to the risks of the e-money business; and (iii) mobile money providers may use agents for cash-in and cash-out operations. See di Castri, S (2013) *Mobile Money: Enabling Regulatory Solutions*, available at https://bit.ly/2kGPgqX

¹⁶⁸ Non-discrimination may refer to not just applying a functional approach to regulation, but to allowing international fintechs to provide services be on par with local players. Constructive barriers may include local ownership criteria, localization criteria requiring servers to be housed in the licensing country, and well as required references from local partners vouching for the international entrant. Similarly, entities owned in full or partly by the state may be given unfair access or pricing. For a discussion on barriers to entry see, ITU DFS FG (2017) *Interoperability*, available at https://bit.ly/2LfZv0N

¹⁶⁹ This may also include banks, although banks often *de jure* ability to undertake these activities due to the omnibus nature of bank licensing regimes. In some countries – such as Colombia, Ghana, Rwanda - banks require authorization/approval by the CB to offer separate e-money accounts as an additional product. Another exception are specialized 'payment banks' introduced the Reserve Bank of India in 2015. These are specialized financial entities for provision of DFS and related transactions. Credit and interest is not provided to customers. The first Payment Banks are operated by entities linked to MNOs, for example Airtel Payments Bank. See www.airtel.in/money. See Kumar, K & Raman, A (2015) *Did India's CB get Payments Bank Approvals Right?*, available at https://bit.ly/2stdae7. In Bangladesh, even though non-banks cannot independently provide DFS, they can however provide DFS by partnering with banks as shareholders of a bank subsidiary that provides DFS.

¹⁷⁰ G20 (2016) *High-Level Principles for Digital Financial Inclusion*, available at https://bit.ly/2c9V0WB

¹⁷¹ Similarly, that different providers do not necessarily entail the same risks. See CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9

This approach to regulation is known as the *functional* approach,¹⁷² a pivot from the traditional *institutional* approach to regulation of DFS that in effect only allowed licensed banks to provide financial services. The latter scheme is known as a bank-centric (also known as 'bank-led')¹⁷³ model of DFS and is said to be 'non-enabling.'¹⁷⁴

Restrictions on independent, direct provision of DFS by non-bank DFSPs without a mandated, and thus effectively 'non-enabling') need to partner with a licensed bank to provide DFS still exists in some markets but are increasingly becoming the exception.¹⁷⁵

The regulatory evolution towards an 'enabling' environment has featured some interesting carve-outs that often represent the local political economy: for example allowing all non-banks except MNOs to provide DFS,¹⁷⁶ or requiring formation of financial entity vehicles to provide DFS.¹⁷⁷ **Exhibit 8** demonstrates implementation of these 'enabling and 'non-enabling' approaches in various forms and countries.

Coincident with the 'enabling' approach is that any enabling regulations need to be *proportional*. That is, lawmakers and regulators should craft rules that allow new market participants to participate in the DFS ecosystem¹⁷⁸ at a regulatory level 'proportional to' – that is, commensurate with - the perceived risk of allowing that new participant to provide services.¹⁷⁹ For example, as provision of credit by DFSPs - as non-banks - is seen as risky by CBs, they are mostly prohibited from providing credit directly to customers unless they partner with a licensed bank for these purposes. The mantra then is in effect this: less assessed risk in DFSP operations means that there is less need for regulations that are at the same prudential levels as for the higher assessed risk of the activities of licensed banks.

¹⁷² See on the 'regulating by function' rather than by the institution providing that function (service), CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9; and Greenacre, J (2018) *Regulating mobile money: a functional approach*, available at https://bit.ly/2CXs4zi

¹⁷³ See Section 4.3.3.4 The notion of a licensed bank being the primary pivot (by regulation) in DFS provision – originally termed 'bank-led' - was introduced in CGAP's 2008 study of what was then commonly known as 'branchless banking.' See Lyman, T; Pickens, M & Porteous, D (2008) *Regulating Transformational Branchless Banking, available at* https://bit.ly/2LORgdn

¹⁷⁴ See di Castri, S (2013) *Mobile Money: Enabling Regulatory Solutions*, available at https://bit.ly/2kGPgqX . The non-bank DFSP may be restricted from providing any DFS services other than as a supportive agent network for a bank.

¹⁷⁵ Liberia, Ghana, Colombia and possibly also Nigeria have or are moving away from the bank-centric model of DFS provision. ¹⁷⁶ For example in Nigeria where MNOs to date have not been allowed to directly offer DFS, instead allowed only to provide frontline agent services. This now appears to be changing in favour of a full enabling environment. As noted above, Nigeria may change this model to an open, enabling environment. See Techpoint (2018) *Central Bank Oks Telecom Operators For Payment System In New MoU*, available at https://bit.ly/2qnGCjE

¹⁷⁷ For example special transaction-centric 'Payment Banks' in India.

¹⁷⁸ That is, to provide services that are often functionally similar to that of licensed banks.

¹⁷⁹ The proportionality principle is one of the key regulatory criteria outlined in the World Banks' PAFI principles for retail payments and financial inclusion: (i) regulatory neutrality and proportionality; (ii) risk management; (iii) protection of deposits and e-money customer funds; (iv) financial customer protection; and (v) financial integrity. See CPMI-World Bank (2016) *Payment Aspects Of Financial Inclusion*, available at https://bit.ly/2JDRHJ4

A crucial component of enabling environment is a so-called risk-based approach (RBA) to customer identifications and verification (CIV) for prevention of money laundering. The RBA is a facilitator of balancing financial integrity with financial inclusion. These initiatives are variously known as Know Your Customer,¹⁸⁰ Anti Money Laundering/Counter Terrorist Financing (CTF), but now as generally CIV. The concept and rationale is relatively straight forward, but has divergent implementation around the world: a customer must produce a valid form of ID to participate in DFS, and the more that is provided, the more transactional and value storage capabilities they are provided.

Provision of the identity document, or biometric authentication of the customer if that is available, what will be acceptable for CIV purposes, and use of that identity across various sectors is the subject of – sometimes unsuccessful – regulatory coordination. Moves towards the provision of electronic ID (eID) cards to support financial inclusion while appropriately mitigating the ML/TF risks was recognized and supported by the Financial Action Task Force (FATF) in their November 2017 'Guidance on CDD.'¹⁸¹

These need a reliable national identity system¹⁸² that is not only capable of identifying, validating and attesting to a person's claimed identity but also will also allow some sort of authentication based on the presented identity. This may entail a live link to a national ID database, where images on an ID document or card presented by the customer at time of registration or transaction can be compared to the image on the national database. Some national ID's are biometrically enabled, using what is known as an eKYC processes of fingerprint or iris scans to validate identity.¹⁸³ In some cases, ATM machines may be iris enabled.¹⁸⁴ The world's largest is Aadhar in India, with some 1.2 billion people registered.¹⁸⁵

Exhibit 7: The Role of Customer Identification and Verification in DFS

4.3.3.3 Forms of Licensing and Authorizations to Provide Services

Providers of DFS can be authorized to provide services typical through the following regulatory devices:

¹⁸⁴ For example by Cairo Amman Bank in Jordan.

¹⁸⁰ For a recent sample list of KYC requirements for DFSP e-money accounts, see Staschen, S & Meagher, P (2018) *Basic Regulatory Enablers for Digital Financial Services*, available at https://bit.ly/2s8b2YX

¹⁸¹ The FATF *G*uidance provides country examples of simplified CDD (SDD) measures adapted to the context of financial inclusion. Those examples illustrate how SDD can support both financial inclusion and financial integrity policy objectives, especially where supported by alternative forms of identity verification, for example the use of e-identity tools. See FATF (2017) *Guidance On AML/CFT Measures And Financial Inclusion, With A Supplement On Customer Due Diligence*, available at https://bit.ly/2wLMObN

¹⁸² Lack of coordination between the internal/home affairs ministry developing policies and technical standards for national ID or the department or agency responsible for issuing standardized national ID can have unintended and negative consequences for DFS.

¹⁸³ See the Aaddhar system in India. Considered the world's largest biometric database. United Identification Authority of India (2018) *United Identification Authority of India*, available at https://uidai.gov.in. In Jordan the identity-issuing agency is the Civil Status and Passports Department. For an overview of eKYC implementations worldwide, see Gurung, N (2018) *FOCUS NOTE: eKYC for Financial Inclusion: Progress and Challenges*, available at www.dfsobservatory.com.

¹⁸⁵ A September 2018 ruling by the Supreme Court confirmed the constitutional validity of Aadhaar and emphasized that it does not violate the right to privacy of individuals.¹⁸⁵ But while the Court allowed some government-facing uses such as tax filing, it prohibited the mandatory use of Aadhaar for bank CIV and registration for SIM cards.¹⁸⁵ Financial and telecommunications providers have now reverted to use of the physical Aadhaar card for basic, visual-only identification of the holder, since they now do not have the ability to undertake any additional electronic verification. For the Supreme Court of India judgment, see https://bit.ly/2OM50Gx; Livemint (2018) *Supreme Court Verdict on Aadhaar: Constitutionally valid, doesn't violate privacy,* available at https://bit.ly/2CKBDIT; and Economic Times (2018) *Payments companies asked to stop Aadhaar-based services*, available at http://www.ecoti.in/tfgiUb. For the Supreme Court of India judgment, see https://bit.ly/2OM50Gx; Livemint (2018) *Supreme Constitutionally valid, doesn't violate privacy,* available at https://bit.ly/2CKBDIT; and Economic Times (2018) *Payments companies asked to stop Aadhaar-based services*, available at http://www.ecoti.in/tfgiUb. For the Supreme Court of India judgment, see https://bit.ly/2CKBDIT

- Letter of No Objection (LONO): Regulators can decide to issue a LONO when a law allowing a provider to provide services does not exist, or where an existing law is silent or inconsistent. It will be issued provided other requirements such as risk management structures and capital adequacy are met and where the provider is fit and proper. Such letters are often given within the CB's general mandate to oversee payments in a country.¹⁸⁶
- No Action Letter (NAL): Similar to a LONO, a no action letter (NAL) constitute assurances from the regulator that it has no intention at the time of the letter issuance of taking enforcement action against the company for introducing a new (financial) service.¹⁸⁷ NALs can however be revoked at any time if the regulator changes its mind or circumstances necessitate that the authorization be terminated or suspended.
- Licensing: This is issued where there are appropriate legal and regulatory frameworks for issuance of a license.¹⁸⁸ Most countries where DFS is prevalent have now put in place enabling legislation in the form of a payments or equivalent framework law which covers most or all electronic payments including DFS. The licensing may be temporary, for example, when used in a 'regulatory sandbox'¹⁸⁹ environment.

4.3.3.4 Types of Authorizations and Licensing

Depending on the jurisdiction, four broad types of DFS operational models have evolved. These include:

- 1. Open operating licenses or consent for non-banks to provide DFS
- 2. Mandated partnerships for non-banks with banks to provide DFS
- 3. Bank-centric provision of DFS, with non-banks providing support or agent services only¹⁹⁰
- 4. Open DFS licenses, except MNOs or MFIs

These DFS models each have their own complexities and challenges and varying success and efficacy for financial inclusion. An important consideration is that the regulations should establish a fair, non-discriminatory and open, level playing field for market participants. That is, similar rules should apply for functionally similar services, regardless whether the provider is a bank, an MNO or another DSFP.¹⁹¹

¹⁸⁶ The LONO and NAL could also be used where the 'test-and-learn' approach is being followed. See also Buku, M & Meredith, M (2013) *Safaricom and M-PESA in Kenya: Financial Inclusion and Financial Integrity*, available at https://bit.ly/2JQDjx7

¹⁸⁷ In 2016 the US Consumer Financial Protection Bureau issued a new policy on fintech innovation allowing the granting of such letters of no action. For a commentary thereto, see Sullivan & Cromwell LLP (2016) *Regulatory Guidance Regarding FinTech Products and Services*, available at https://bit.ly/2KvdAao x`

¹⁸⁸ For example, laws on payments or micro-credit provision.

¹⁸⁹ Regulatory 'sandboxes' are limited-activity authorizations by regulators for services to experiment with innovative product and services. The authorizations confine the service provide to provide limited services for a specified time only. The spectrum of regulations that could ordinarily apply to the innovation may be waived in part for the duration of the period of authorization. See further Wechsler, M (2018) *Role of Regulatory Sandboxes in Developing Countries*, available at www.dfsobservatory.com; and CGAP (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://goo.gl/XMAA2m

¹⁹⁰ Banks are also venturing into the MNO ecosystem, acquiring what are known as Mobile Virtual Network Operators (MVNO) licenses from the MNO regulator. Here the bank partners with a licensed MNO to provide telecommunication services to the bank customers. The primary reason in a DFS environment though is to access cheaper USSD and STK facilities, allowing the bank to offer DFS and other DFS directly, without having to rely on partnerships with competitor MNOs for the use of their networks. This may translate to a cheaper and more efficient method of offering the service. This model has been recently introduced in South Africa and East Africa, through First National Bank (as First Connect) and Equity Bank Limited (as Equitel) respectively.

¹⁹¹ Different providers do not necessarily entail the same risks. See CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9

Some markets have morphed from the more restrictive bank-centric model to the open DFS license model because of a change in regulatory approach, from the traditional institutional approach to regulation a functional approach where an entity is licensed and regulated according to whether it provides a service described in a law or regulation.¹⁹² The types of authorizations and licenses that have evolved from these models are outlined in **Exhibit 8**,¹⁹³ while the change in the number of accounts opened before and after the enabling approach was adopted in shown in **Exhibit 11**.

4.3.4 Funds Safeguarding

Prudential regulators may specify mechanisms to protect consumers and other financial service providers in case of inability of a key participants in the (DFS) value chain to provide sufficient liquidity to meet their financial obligations and prevent systemic risk. These may include the need for the participant to repay customer funds on par and on demand,¹⁹⁴ or to meet any settlement obligations between parties.¹⁹⁵

Since jurisdictions may be a mix of common law, civil law, customary, and sharia law, there is no consistent mechanism for protection of funds, rather themes and principles and mechanisms that regulators apply.

These include:196

- Limiting use of by service providers of customer funds
- Safeguarding of DFSP funds in approved vehicles
- Limiting SP/Fiduciary exposure to bank risk
- Limiting use by DFSP/Fiduciary's Bank of Stored Funds
- Deposit and agent insurance

Some, but not most, jurisdictions see customer funds stored by a DFSP/fiduciary¹⁹⁷ as a 'deposit,' such that the SVA may subject to some general protections and insurance cover in case of a liquidity squeeze or insolvency of the provider.

The pooled value placed by the DFSP in a bank is however seen as a deposit and thus subject to deposit insurance, where available.

¹⁹² See on 'regulating by function' rather than by the institution providing that function (service), CDG (2016) *Financial Regulations for Improving Financial Inclusion*, available at https://bit.ly/2shcPL9

¹⁹³ In some countries, DFS is seen by the NTA as a VAS license required not only of licensed MNOs but any entity providing DFS. Where the entity is an MNO, the VAS license may be part of their overall license. In all cases – even where an NTA does not require the entity to obtain a DFS-related VAS license – the entity still requires some type of authorization from the CB.

¹⁹⁴ In respect of customer fund safeguarding, the GSMA specifies these (liquidity) risks as being: (a) insufficient funds set aside in safe, liquid investments to meet customer demand for cash; (b) insufficient assets to repay customers in event of issuer's (or trustee/fiduciary's) insolvency; and (c) Insufficient assets to repay customers in event of bank's insolvency. GSMA (2016) *Safeguarding Mobile Money: How Providers And Regulators Can Ensure That Customer Funds Are Protected*, available at https://bit.ly/2JJgQSw

¹⁹⁵ That is, insufficient assets to repay customers in event of the insolvency of the banking holding the pooled and customer funds.

¹⁹⁶ World Bank (2017) Global Financial Inclusion and Consumer Protection Survey 2017 Report, available at https://bit.ly/2JrwFOJ

¹⁹⁷ A fiduciary in this context is a special vehicle entity used for storing pooled user funds. An MNO for example may form such an entity at the behest of the CB, ring-fencing pooled user funds from any ability to use these pooled funds for operational expenses.

	License/Authorization	Description	Region/country
1	Open DFS Licenses	Any entity meeting qualification and ongoing due diligence criteria can be licensed by the CB (and NTA, as needed) to provide DFS. ¹⁹⁸	This is the most common method worldwide.
2	Bank-Non-Bank Partnerships	License is issued to a bank or other financial institution to provide DFS in partnership with a non-bank DFSP. The DFSP usually provides frontline CICO, do KYC for account signup and SVA services. The non-bank DFSP cannot offer DFS services on its own.	Southern Africa, LATAM, West Africa, Asia and the Caribbean
3	Bank-centric	License is issued to banks or other financial institution such as a Payment Bank to provide DFS. Non-banks cannot offer DFS at all but may in certain circumstances be able to provide ancillary services such as use of their agent networks for CICO and (sometimes) also KYC on customer signup, or they may be shareholders in a bank subsidiary providing DFS.	Pakistan, ¹⁹⁹ India, ²⁰⁰ Bangladesh ²⁰¹
4	Open DFS licenses, except MNOs or MFIs	Any entity – except MNO or MFIs - meeting qualification and ongoing due diligence criteria can be licensed by the CB (and NTA, as needed), to provide DFS. MNOs may be able to provide ancillary services though, such as use of their agent networks for CICO and (sometimes) also KYC on customer signup	Nigeria (ban set to be lifted), ²⁰²

Exhibit 8: Common license and authorization types in the DFS ecosystems worldwide, employing functional and/or institutional approaches.²⁰³

¹⁹⁸ This model is common globally. The *M-Pesa* DFS service in Kenya and Tanzania is regulated under this model via license issued by the respective CBs to Safaricom in Kenya and Vodacom in Tanzania.

¹⁹⁹ The two largest DFSPs in Pakistan are Telenor Microfinance Bank and Mobilink Microfinance Bank, which until recently were owned by MNOs.

²⁰⁰ In India, MNOs have formed 'Payment Banks' under Reserve Bank of India rules on DFS provision.

²⁰¹ The Bangladesh Bank's Mobile Financial Services Guidelines of 2011 indicate that 'only the bank- led model will be allowed to operate.' See Bangladesh Bank (2011) *Mobile Financial Services Guidelines (2011)*, available at https://bit.ly/2t6u0zJ. There is however a type of carve out that allows subsidiaries of banks to offer DFS. bKash, the largest DFS provider is majority-owned by BRAC Bank, with non-bank Money in Motion a minority investors alongside IFC, Bill & Melinda Gates Foundation and Ant Financial.

²⁰² Nigeria's ban on MNOs providing DFS is thought to be the primary reason for low volumes of DFS use in Nigeria and high rates of financial exclusion. The MOU reportedly also relates to co-remit over the banking and telecommunication industries in order to drive payment systems and increase financial inclusion. Leadership NGA (2018) *NCC*, *CBN Sign MoU On Mobile Money, Financial Inclusion*, available at https://bit.ly/2JAqRP8

²⁰³ In the licensing models above, the technical platform for facilitating payments may be owned an MNO, PSP or a TPP, and may or may not be interoperable within a country. There are examples of regulators implementing a central payment platform or hub such as JoMoPay in Jordan which enables all PSP's to connect and provide payment services, including mobile payments.

4.3.5 Interest Payments on SVA Balances

As noted above, most jurisdictions see the customer SVA as a transaction account and not as a deposit,²⁰⁴ meaning no interest is paid on the SVA balance.²⁰⁵ This appears to derive from concern that interest may be the prelude to intermediation. The strict approach is however slowly changing: a recent World Bank report²⁰⁶ indicates that 13% of EMI are allowed to pay interest on customers' SVA. In 8% of cases, they are allowed to share profits with their SVA customers.

In Liberia,²⁰⁷ the CB must approve the DFSPs proposal for how to use the funds to directly benefit customers, while in Ghana, the CB specifies when interest must be paid to customers.²⁰⁸

B ADDITIONAL FRAMEWORKS & ROLES

4.3.6 AML

A CB may and usually in conjunction with an FIU,²⁰⁹ devise CIV rules for AML and CTF purposes, specifying to DFSPs which forms of ID and any supporting documents are acceptable for initial registration of a DFS account. This may include procedures on processing the ID at a front and back office. Lack of proper ID verification – or access by customers to obtaining an appropriate ID issued by a state agency - may be a barrier to undertake proper CIV and thus be a barrier to financial inclusion.

The CB may also specify whether a 'basic' DFS account can automatically be opened when a new phone number is allocated to a mobile phone customer upon SIM card registration. This may include what is call Simplified Customer Due Diligence (SDD). If they are linked live to a national database operated by a national issuing authority,²¹⁰ biometric-based methods used for registrations for new SIM cards can often be used for opening DFS accounts.

The degree of transactional ability will also be determined by the CB based on the degree and attestation available from identity and supporting documents such as address and proof of income the customer is able to provide. Categorization of any high risk customers would need to be developed by a DFSP as part of its risk based approach to CDD, and similarly any enhanced due diligence (EDD) if the customer is high risk, or their transactional behaviour changes to warrant further scrutiny. The CB may also provide guidelines on implementation of a 'parallel' ID system to be used only for financial transactions.²¹¹

²⁰⁴ At a higher banking level, differences between a deposit accounts and transaction accounts are not necessarily whether there is paid interest however: the difference is rather regulatory. Deposit accounts at banks are in commercial bank money. Assets do not have not 1:1 linkage to liabilities on maturity. Transaction accounts usually require some link to central bank money, meaning corresponding balances may be kept at the central bank or government bonds.

²⁰⁵ Concomitantly, these jurisdictions may also specify that no interest can be paid by the bank to the DFSP on these ringfenced funds, and thus downstream to the customer. The usual scheme is that the DFSP (as an EMI) does not pay interest to the customer for their SVA. Rather the DFSP/EMI may pass on the interest revenue earned from holding the pooled fund in a bank account to the customer. DFSPs are usually not allowed to use the pooled funds for investing in other instruments.

²⁰⁶ World Bank (2017) Global Financial Inclusion and Consumer Protection Survey 2017 Report, available at https://bit.ly/2JrwFOJ

²⁰⁷*ibid*

²⁰⁸ See Annex B

²⁰⁹ Depending on the jurisdiction, the FIU may be an independent agency or a division within the CB. FATF recommends that the FIU exercise a measure of independence if it is within a CB.

²¹⁰ Such as a driver's license or passport-issuing authority.

²¹¹ See for example the Bank Verification Number (BVN) biometric identification system implemented by the CB of Nigeria to curb or reduce illegal banking transactions in Nigeria. Customers cannot transact at Nigerian banks without a BVN. The BVN is valid for 10 years. An international passport, National ID card, or Driver's license is required for enrollment which can

Often an FIU will allow the CB to set 'tier limits' or policies on transactions within the broad AML principles allowed a RBA often formulated by the FIU itself. The CB would then need to apply – through rules or regulations - this RBA to its supervised entities and provide reports to the FIU on the effectiveness of its RBA-derived policies or rules. Any suspicious activity reports (SARs) formulated by a DFSP and/or its agents as part of the reporting component of an AML regime would need to be sent by it directly to the FIU (even if the FIU is within a CB), and not to the payment systems or banking supervision departments in the CB.²¹²

4.3.7 DFS Interoperability

The ability to undertake seamless digital transfer of value between accounts held at different providers is generally known as interoperability. In DFS ecosystems, interoperability has been woefully lacking, characterized by a 'walled garden' silo approach by many large DFSPs,²¹³ which has meant that customers in a DFS ecosystem cannot undertake direct account-to-account 'interoperable' digital transfers of value between DFSPs,²¹⁴ with only 'token interoperability' - if available - provided.²¹⁵

CBs have various tools and mandates for interoperability. The CB of Nigeria for example has the legal mandate for DFS in Nigeria, including enforcement of interoperability, through the Central Bank Act of 2007. The CB first tried moral suasion to initiate interoperability, but when these efforts failed, they initiated the development of the NIBBS, the Nigerian central switch and then mandated existing (private) switches to interconnect to it for interoperability purposes. Licensing requirements for DFSPs in Nigeria also include requirements for connection to NIBBS.²¹⁶ In the Philippines, with some encouragement from the CB under its National Retail Payment System Framework, DFSPs were able to interoperate.²¹⁷ In Brazil, interoperability is seen as necessary for innovation and increasing competition.²¹⁸ In Uganda, the CB provided a date certain for beta testing of interoperability between DFSPs.²¹⁹

Exhibit 9: Central Bank Initiatives on DFS Interoperability and Integration

Interoperability is a core goal of the CB within its overall mandate to promote and ensure an efficient national payment system. This may manifest as, at the very least, the CB specifying the need for a market participant to *ready* their systems for interoperability.²²⁰

Or the CB may mandate modalities and/or components of interoperability, for example a date certain for market participants to be interoperable; the technologies to be employed in interoperability; price caps for off-us²²¹ transactions; or adherence to QOS and technical and security standards. The CB could even subsidize switch fees

be undertaken at any Nigerian bank branch, or internationally through the third party enroller, VFS Global. See VFS Global (2018) *Requirements For Enrolment*, available at https://bit.ly/2M6azOr

²¹² SARs ordinarily may not be shared with third parties, even if they are conducting a national review as a part of a mutual evaluation report.

²¹³ Some large DFSPs or MNO have what is known as significant market power (SMP).

²¹⁴ A transfer from accounts within the same DFSP is known as an 'on us' payment. If between accounts at different DFSPs, this is known as an 'off us' payment.

²¹⁵ With token interoperability, the sent value is in the form of a SMS-based token created by the sending DFSP, to be cashed out by the recipient at that DFSP's agents.

²¹⁶ ITU FG DFS (2017) Interoperability, available at https://bit.ly/2LfZv0N

²¹⁷ Enterprise Innovation (2016) *Philippines' Mobile Wallet Providers Announce Interoperability*, available at http://bit.ly/2HNT9DR

²¹⁸ ITU FG DFS (2017) Interoperability, available at https://bit.ly/2LfZv0N

²¹⁹ The CB in Uganda however does not have direct remit over these DFSPs due to the lack of a supporting legal framework. Its remit over DFSPs is indirect, via licensed banks who are given LONOs to do business with DFSPs.

²²⁰ As for example in Uganda and Rwanda.

²²¹ Meaning transactions with a third party counterparty.

if a switch is used where those fees may impact on the profitability for DFSPs to process micro-transactions that are often at the heart of DFS.

In other cases the CB may act as an interoperability catalyst – as was done by the central banks in Tanzania and Indonesia - by acting as a convener for, or endorsing third parties to organize meetings to discuss implementation of interoperability; or for building or financing an interoperable switch itself.²²²

4.3.8 Consumer Protection

In many jurisdictions where DFS is prevalent, prudential supervisors have incorporated consumer protection into their mandates, and include consumer protection-related market conduct rules in licenses and authorizations for DFSPs and banks.²²³

Consumer protection encompasses two broad components and objectives: to prevent unfair practices by service providers and to provide levels of comfort to consumers to transact.²²⁴ While there is no one-size-fits-all approach to effective institutional arrangements for financial consumer protection,²²⁵ regulators and even self- or co-regulatory bodies will step in to right any imbalance in consumer rights through *ex ante* regulation, *ex post* enforcement actions, or through moral suasion. This may also involve the CB handling consumer complaints as the point of first instance,²²⁶ acting as an ombudsman for consumer complaints, or ensuring terms and conditions and transaction pricing conform to fairness and disclosure standards.

These sectoral remits may co-exist even if there is a separate consumer protection authority.²²⁷ Often there are carve outs to the latter's remits for specialized markets. The consumer protection body though may act as a 'regulator of first instance,' passing along the initial consumer complaint to the sector regulator if not (properly) actioned by the DFSP.²²⁸ The consumer protection regulator may however take over that same complaint as an appeals body if the consumer does not accept the outcome of deliberations and actions by the sector-regulator and/or the DFSP.

4.3.9 Competition

Often competition powers are found in sectoral regulation, such that each of the sectoral regulators may have mandates that allow them to intervene in their sector if there is a competition-related concern. In some jurisdictions, competition policies or laws are available to guide sector regulators to help them deal with competition-related issues.

²²² The CBJ built the JoMoPay interoperable switch that *inter alia* DFSPs, ACHs and e-government services can connect to via a common API.

²²³ These track, at least, Principle #1 of the BIS' Core Principles for Effective Banking Supervision to Supervisiory powers, responsibilities and functions. 'Principle 1: Responsibilities, objectives and powers: See BIS (2012) *Core Principles for Effective Banking Supervision*, available at https://bit.ly/2thqIZN

²²⁴ AFI (2014) Consumer Protection in Mobile Financial Services, available at https://bit.ly/2sZSMBl. See also World Bank (2009) Good Practices for Consumer Protection and Financial Literacy in Europe and Central Asia: A Diagnostic Tool, available at https://bit.ly/2JF8YCx; and World Bank (2017) Global Financial Inclusion and Consumer Protection Survey, 2017 Report, available at https://bit.ly/2yiqlno

²²⁵ The World Bank notes that there are three main types of consumer protection supervisory activities: market monitoring, offsite supervision and on-site supervision. World Bank (2015) *Technical Note: Institutional Arrangements for Financial Consumer Protection*, available at https://bit.ly/2LSXc44

²²⁶ As is done in Malawi

²²⁷ See also BCBS (2016) *Guidance On The Application Of The Core Principles For Effective Banking Supervision To The Regulation And Supervision Of Institutions Relevant To Financial Inclusion*, available at https://bit.ly/2K268H2

²²⁸ In Jordan, the CB of Jordan and the Telecommunications Regulatory Commission have an MOU that specifies which regulator has which remit over which aspect of a consumer complaint, for example whether there is a value loss and the telecommunications component is the proximate or full cause of the loss.

Sectoral regulations may contain competition provisions which apply *prior* to the occurrence of actions that may require intervention to ensure a fair and level playing field.²²⁹ These are termed *ex ante*. Competition law is usually termed *ex post*, meaning that the competition authority or sector regulator has set rules in place to prevent and deal with anti-competitive behavior *after or when* it takes place.²³⁰ It applies *after* an infringement, possibly leading to a fine and remedies imposed on the infringers. Competition law may empower both sectoral regulators and competition authorities.

The CB – as a sector regulator – may have similar competition competencies, especially if there is no dedicated competition regulator. If there is a competition regulator however, coordination on competition issues is necessary to prevent jurisdictional conflicts and regulatory arbitrage. This is usually is facilitated through a MOU between the regulators which has outlined who has jurisdiction over a specific issue or sets of issues and the remedies available, if any.²³¹ Or, the legislature may intervene to specifically carve out competition-related roles.²³²

The CB may become involved to prevent potential anti-competitive behaviour in the DFS realm, for example in pricing and access to bearer channels; disallowing DFS agent exclusivity; or in forcing interoperability where an entity with SMP refuses to participate in interoperability arrangements.

The CB's competition-related activities may however have inadvertent effects, for example where the CB institutes fee caps that keep consumer prices artificially low, restricting the ability of DFSPs to provide services that are commercially viable. Or the CB may itself operate or have a share in a payment switch, creating an asymmetry in competition.²³³

4.3.10 Risk Management

While DFS has many positive effects on financial inclusion, it may also create some unique risks to the financial ecosystem and customers. These risks may arise through, *inter alia*, integrating non-banks into the national switches; the potential for money laundering (ML) due to the velocity of transactions in DFS; cyber-security vulnerabilities; the use of agents who are generally untrained in spotting suspicious behaviour; known technology vulnerabilities;²³⁴ and the increasing use of international remittances with unknown beneficial owners as recipients.

Potential risks²³⁵ in a financial inclusion context are usually identified, anticipated, mitigated and before systems are compromised include:

²²⁹ As noted by Bourreau and Valletti, *ex ante* regulation is used when a regulatory or other relevant authority establishes that absent such *ex ante* intervention, the abuse of a dominant position some or other market failure will occur. See Bourreau, M & Valletti, T (2015) *Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What* Doesn't?, available at https://goo.gl/jAcViG

²³⁰ Although in regards mergers and/or acquisition that create entities with large overlapping market share, the competition authority may need to be notified prior to being implemented.

²³¹ In Malawi, for example, there are MOUs between the Competition and Fair Trading Commission and other DFS regulators outlining their respective jurisdictions.

²³² For example, the CA, the telecommunications sector regulator in Kenya, lost its competition powers to independently monitor dominance and act against its abuse, leaving it with a narrow mandate of licensing new players and allocating frequencies. Under the new legal regime, the CA must consult the Competition Authority of Kenya (CAK) when assessing critical industry factors, such as SMP, before making a declaration of dominance. See Asoko Insight (2016) *Communications Authority Of Kenya Loses Power To Regulate Dominant Telcos*, available at https://goo.gl/OR5D14. In some jurisdictions such as India, consultations between sector regulator and competition authority are not mandatory but at the discretion of regulator in charge of the issue.

²³³ ITU FG DFS (2017) Cooperation Frameworks Between Authorities, Users And Providers For The Development Of The National Payments System, available at https://bit.ly/2sKf0az

²³⁴ For example the vulnerabilities related to SS7 and USSD.

²³⁵ These are top-level descriptions of risks: many others may be present, but are not described here.

- Settlement²³⁶
- Credit²³⁷
- Liquidity²³⁸
- Credit²³⁹
- Operational²⁴⁰
- Legal²⁴¹
- Reputational²⁴²
- Money Laundering²⁴³

The role of all sectoral regulators is to ensure that providers address and manage these risks. Tools used to identify and evaluate any risks should also be consistent such that consumer and industry confidence in all systems and financial entities is maintained. A CB may require for example that DFSPs establish a comprehensive risk management framework that requires conformity with technological and other standards. This may include a type of risk management toolkit that provides guidance and methodology on how DFSPs should anticipate, mitigate and properly respond to any of the enumerated risks.²⁴⁴ Emerging regtech solutions may provide real-time data to the CB on any risks to the ecosystem as well as DFDP responses.²⁴⁵

4.3.11 Payment Systems and Switches

4.3.11.10verview

Often the CB will operate, part-operate, or oversee a national payment switch to facilitate seamless interoperability between banks and non-banks participating in the financial ecosystem.²⁴⁶ As a general rule, a switch/interoperability

²³⁶ Risk of participants in payment, clearing and settlement systems that settlement in the system will not take place as expected. Settlement failure is usually because of a party defaulting on one or more settlement obligations. Settlement risk includes, in particular, credit risk, liquidity risk, operational risk and legal risk.

²³⁷ The credit risk can be increased by activities based on anticipation of a receipt of funds but before the actual receipt takes

place ²³⁸ Liquidity risk is the risk that a counterparty will not settle (discharge) an obligation for full value when it becomes due. Liquidity is the immediately usable balances on an account (including available credit) with the settlement institution, available within the day to each of its members to fund its payment obligations and those of its customers.

²³⁹ Risk that a counterparty will not settle (i.e. discharge) an obligation for full value, neither when that obligation becomes due nor at any time thereafter.

²⁴⁰ The risk of negative financial, business and/or reputational impacts due to deficiencies in information systems, business processes or internal controls, human error or management failures which result in an inability to meet settlement obligations. Operational risk can be induced by both internal and external events. This could be especially challenging for newer and smaller PSPs.

²⁴¹ The risk that settlement of a payment obligation is not concluded due to lack of a law or legal source addressing a situation, or unexpected application of a law or regulation, or a law or regulation is outdated, or differences in laws or their interpretation regarding cross border payment systems, non-enforceability of a contract.

²⁴² A risk of loss resulting from damages to reputation, in lost revenue; increased operating, capital or regulatory costs as a result of adverse events.

²⁴³ See FATF (2017) Anti-Money Laundering and Terrorist Financing Measures and Financial Inclusion with a Supplement on Customer Due Diligence, available at https://bit.ly/2taubZM; and Lyman, T & de Koker, L (2018) KYC Utilities & Beyond: Solutions for AML/CFT Paradox?, available at https://bit.ly/2OqOgso For more detail on AML and identity systems see Perlman, L & Gurung, N (2018) Focus Note: The Use of eIDs and eKYC for Customer Identity and Verification in Developing Countries: Progress and Challenges, available at www.dfsobservatory.com

²⁴⁴ This could include a matrix of responsible persons within an organization for responding to particular risks.

²⁴⁵ See Exhibit 10 on Regtech

²⁴⁶ Such as MNOs, DFPSs, and MFIs. This will facilitate switching and interoperability for ATM transactions, Point of Sale (POS) transactions, mobile-banking, electronic-banking transactions, Visa and MasterCard Gateway and OTC.

arrangement should be designed to meet the current and foreseeable needs of its participants and the markets it serves, and include strategic capabilities to enable it to adapt to changing future needs of customers and markets.²⁴⁷.

There is a growing use of innovative technology for compliance and regulatory purposes by regulators and the entities they supervise, manifesting in the relatively new but rapidly evolving field of 'regtech' – or 'regulatory technology.' Initial uses of regtech – also known as 'suptech' when used by CB supervisors – have revolved around use by market participants such as financial institutions, and emerging fintech companies to reduce compliance costs by automating typically manual information gathering and reporting processes. For regulators, regtech may improve their efficiencies by automating components of their supervisory and regulatory tasks while significantly enhancing their internal reporting processes. Understanding and then adoption of regtech can however be challenging in many developing countries that have technology and capacity constraints. Even though the goal may be to introduce and use regtech solutions, legacy internal processes, lack of policy insights and lack of capacity may in of themselves handicap this goal.²⁴⁸

Exhibit 10: Regtech Use by Central Banks

And as DFS interoperability evolves from a simple bilateral method to a more integrated switch-based methodology involving a whole range of market participants within a national payment system where settlement accounts are required for clearing, netting and settlement, CB concerns may revolve around the following issues:

4.3.11.2 Role as Overseer and Supervisor

Management of Settlement Risk: As a general rule, all participants in a payment switch scheme should closely monitor, effectively measure, and manage the financial risks arising from the switch arrangement. In particular, assets used for settlement – or as collateral - should carry little or no credit or liquidity risk. There should also be adequate arrangements for managing and containing the risks associated with the inability of one of the participating entities to promptly fulfill its obligations.

AML and KYC Verification: To conform to KYC rules, a sending participant must be able to confirm that an intended recipient - the customer of another switch participant - has a valid AML 'tier status' that allows receipt of that value that does not exceed the tier status. This status query needs to be done in real-time lest the transactions later have to be reversed. Transaction reversals²⁴⁹ cumulatively, may have an impact on net settlement and may breach settlement finality rules.²⁵⁰

Governance and Dispute Arrangements: Governance and ownership arrangements ensure proper management and functioning of switches. These include voting rights, joining fees, membership fees, and board composition. Formulation of these arrangements should be based on the recognition that that the governance of a switch must be clear and transparent; must promote the safety and efficiency of the arrangement; and must support the objectives of relevant stakeholders and relevant public interest considerations.²⁵¹ A lack of representation at governance level, or through some other perceived discrimination or lack of participatory equality relating to new participant may ultimately trigger competition concerns and negative participant reactions. Preferably, an independent third party should be used to resolve any inter-participant disputes after all internal attempts have been exhausted.

²⁴⁷ This is done on the basis of non-discrimination in service pricing, for example relating to payment switch fees. A switch is distinct from a Large Value Transfer System (LVTS) operated by the CB as a Real Time Gross Settlement (RTGS) system.

²⁴⁸ For further insights into the use of regtech use by central banks, see Perlman, L & Gurung, N (2018) *Use of Regtech by CBs and its Impact on Financial Inclusion*, available at www.dfsobservatory.com

²⁴⁹ Rather than rollback, which is occurs if the Tier level check shows it may be exceeded if the transaction continues.

²⁵⁰ Reversals could also violate 'transfer finality rules' characteristic of switch systems.

²⁵¹ See thereto, BIS (2006) General Guidance For National Payment System Development, available at https://bit.ly/2JTOPEO

4.3.11.3 Role as Participant and/or Catalyst

Some CB have a dual role of overseers and participants in a payment switch and payments functionality. In some cases – as was done in Jordan - the CB may be the catalyst, then also build the switch, and then allow qualified participants to join.²⁵² A CB may also provide direct clearing services for some retail systems,²⁵³ while in other cases they may provide clearing and other related services.

4.3.12 System Security

A number of vulnerabilities in the DFS ecosystem have been identified that individually or in aggregate can potentially disrupt and exploit flaws in mobile phones and networks, resulting in system disruption, as well as data and financial loss to MNOs, SPs, and their customers.²⁵⁴ These risks and vulnerabilities are both at the MNO infrastructure and customer levels. At the MNO-level, these include SS7-based exploits; USSD-based exploits; and man-in-the-middle attacks using IMSI catchers.²⁵⁵

As an indication of how serious these security issues are on DFS (and elsewhere), a number of regulators with remit over DFS have signed MOUs to address means of implementing risk management safeguards and frameworks.²⁵⁶ In Nigeria for example, the CBN has in terms of its MOU with the NTA, the NCC,²⁵⁷ issued specific security guidelines on how to mitigate and prevent USSD-based attacks on the financial sector.²⁵⁸ The RBI and Department of Telecommunications in India also have a lab for testing infrastructure security vulnerabilities in the financial sector.

To integrate breach management responses and to develop cyber resilience frameworks, NTAs and CBs in a few countries have signed MOUs with other regulators and security-focused entities such as Computer Emergency Response Teams (CERTs).²⁵⁹

4.3.13 Cryptography-based Currencies and Assets

An emerging focus of CBs is how to control - or participate in - cryptography-based schemes that involve *inter alia* currencies ('crypto-currencies') and assets ('crypto-assets'). The former may be private crypto-currencies such as Bitcoin²⁶⁰ where there is no central controller.²⁶¹ Most use some form of distributed ledger technology (DLT) protocol,²⁶² such as blockchain or Ripple.²⁶³

²⁵² The CBJ built and implemented its central payment platform called JoMoPay that enables all PSP's to interconnect and provide payment services, including mobile payments. It is now co-owned by the CBJ and the industry association in a vehicle called JoPAC.

²⁵³ Oliver, R & Weiner, S (2009) *The Role of Central Banks in Retail Payments: The Central Banks as Operator*, available at https://bit.ly/2HQhskx. They may also run or establish utilities for the payments industry for fraud management and AML purposes.

²⁵⁴ Perlman, L, Traynor, P & Butler, K (2017) Security Aspects of Digital Financial Services, (DFS), available at https://bit.ly/2HH6Jtn

²⁵⁵ At the customer level vulnerabilities include application tampering and phone number spoofing.

²⁵⁶ See also the new framework from the European CB on dealing with cyber-attacks. ECB (2018) *ECB Publishes European Framework For Testing Financial Sector Resilience To Cyber-Attacks*, available at https://bit.ly/2HPW0AU

²⁵⁷ Vangaurd (2018) NCC, CBN Sign Agreement On Payment System In Nigeria, available at https://bit.ly/2tdnPsD

²⁵⁸ CBN (2018) Regulatory Framework for Unstructured Supplementary Service Data (USSD), available at https://bit.ly/2le9MQj

²⁵⁹ The first CERT was established in the US in 1988 to prevent attacks on internet backbones and sites. CERTs have now been established in a number of countries to provide national and regional responses to attacks. See Techtarget (2011) *What is CERT (Computer Emergency Readiness Team)?*, available at https://bit.ly/2Iufo6d

²⁶⁰ See www.bitcoin.org

²⁶¹ This is known as a 'trustless' environment.

²⁶² For an introduction to DLTs, see Perlman, (2017) *Distributed Ledger Technologies and Financial Inclusion*, available at https://bit.ly/2nyxpBG

²⁶³ Ripple connects banks, payment providers, digital asset exchanges and corporates via its RippleNet system. See www.ripple.com

There have been varied responses by CBs worldwide to these crypto-currencies, particularly in relation to trading thereof and AML concerns.²⁶⁴ CB and government responses range from embracing crypto-currencies, to banning their use, or their purchase using fiat-based money from bank accounts and credit cards.

There have however been initiatives by some CBs to create what are known as Digital Fiat Currencies (DFCs), also known as Central Bank Digital Currencies (CBDC). These are cryptographically derived forms of the national fiat currency, placed on blockchain or other evolving cryptographically secure technology solutions to be used as a currency for means of payment.²⁶⁵

The benefits are seen in AML, and e-money issuance: in the former, individual use of a DFC can be monitored by the CB, while in the latter use case, the need to interconvert from bank money to e-money may be removed as the fiat money is now already in electronic form (as a DFC).²⁶⁶ It also means that consumers can obtain 'e-money' (as DFC) directly from the CB rather than through a DFSP, lowering costs but bringing the CB into the commercial banking area where it could compete with commercial banks for depositor funds. Similarly, with a wider presence of CBs in financial systems, issuance of DFCs may impact monetary policy, financial stability, currency issuance, and the viability of commercial banks.²⁶⁷

Indeed, the BIS says that DFCs introduce a new type of CB money whose demand – like cash – would need to be accommodated because a general purpose variant competing with guaranteed bank deposits could impact the composition of commercial banks funding.²⁶⁸ This may cause instability in commercial bank deposit funding in periods of stress, precipitating a flight towards the CB DFC. Interest rate differentials could also challenge commercial banks and the CB to manage such situations.²⁶⁹ The control functions embedded in a DFC could also mean that the CB could restrict the use of the DFC when needed, for example disallowing use of a DFC for buying certain goods.

Crypto-asset classes – also known as Initial Coin Offerings (ICOs), a twist on Initial Public Offerings (IPOs) facilitated through regulated stock exchanges – are also coming under the glare of CBs and other prudential regulators. ICOs are largely seen as investment vehicles – a type of crowd-funding – that challenges existing views of how to regulate the raising of capital.²⁷⁰

²⁶⁴ The FATF published a guidance for a RBA to crypto currencies in 2015. This includes a number of recommendations: countries should consider developing national coordination mechanisms that facilitate appropriate AML/CTF regulation and supervision across various virtual currency products and services; CDD should also be conducted for exchanges, while transaction records should be maintained. The G20 have mandated the FATF to provide guidance on crypto-currencies. See FATF-GAFI (2015) *Guidance for a Risk-Based Approach to Virtual Currencies*, available at https://bit.ly/lelZfMz

²⁶⁵ This in contradistinction to a 'crypto asset,' an instrument or token to be used as a asset or security; or a 'crypto utility,' to be used for platform providing services.

²⁶⁶ This is the rationale for the CB in Barbados launching the Barbados 'Digital Dollar' in 2017. See BitsOnline (2018) How Bitt Plans to Use Digital Fiat to Rebuild the Caribbean Economy, available at https://bit.ly/2MwPm1j

²⁶⁷ BIS (2018) *Central Bank Digital Currencies*, available at https://bit.ly/2MwNTrw . This is a similar conclusion reached by the Bank of England study on DFCs. See Bank of England (2018) *Central Bank Digital Currencies - Design Principles And Balance Sheet*, implications https://bit.ly/2JU006M

²⁶⁸ BIS (2018) *Central Bank Digital Currencies*, available at https://bit.ly/2MwNTrw . This is a similar conclusion reached by the Bank of England study on DFCs. See Bank of England (2018) *Central Bank Digital Currencies - Design Principles And Balance Sheet*, implications https://bit.ly/2JU006M

²⁶⁹ BIS (2018) Central Bank Digital Currencies, available at https://bit.ly/2MwNTrw.

²⁷⁰ The US SEC's views on ICOs have evolved, but it has said that crypto-currencies Bitcoin and Ether are not securities subject to securities regulation. And in some circumstances, digital assets originally sold as securities may later be sold as non-securities. See Bloomberg (2018) *The SEC Will Leave Good ICOs Alone*, available at https://bloom.bg/2t9Qyig; and for the view in Thailand, where ICOs are allowed. See Coin Telegraph (2018) *Thai SEC Reveals 5 out of 50 ICO Applicants 'Ready' to Raise Funds Under New Laws*, available at https://bit.ly/2MsZLeo

Those undertaking ICOs could issues 'tokens' that are sold to investors in a 'token sale.' ICOs could be used as a means of raising capital by those in the developing world, for example for funding agricultural equipment, or for financing remittance companies servicing Africa.²⁷¹

4.4 Current Outcomes of regulatory enablement for DFS

Ultimately though, all these efforts must percolate into actionable regulations and laws.

Of the four broad types of DFS operational models that have evolved through regulation and policy. While each of these models have their own complexities and challenges and varying success and efficacy for financial inclusion, globally it is the non-bank-only DFS model²⁷² that has been the most successful, simply because they are able to serve the 'unbanked' population in (rural) areas that banks were unwilling to pursue.

	2011	2014	2017
Colombia	30%	39%	46%
Ghana	29%	41%	58%
Liberia	19%	No data	36%
Nigeria	30%	44%	40%

Accounts (% age 15+)

Exhibit 11: World Bank Findex 2017 comparative data showing growth of DFS markets using enabling or non-enabling regimes.²⁷³ Boxes in black show the bank-centric regulatory regime for DFS. Boxes in gray show an open, enabling regime for DFS.

As of July 2018, there were 276 DFS offerings live in 90 countries,²⁷⁴ providing DFS to over 690 million people, many of whom live in rural areas.²⁷⁵ Data from the World Bank's 2017 Findex Survey however suggest that while DFS accounts have grown from 2014,²⁷⁶ activity levels have fallen.²⁷⁷ While the reasons appear to be complex, one of the factors suggested for the decline are restrictive CIV and KYC regulations that make it harder for customers to transact beyond a basic account level. **Exhibit 11** also indicates that the Central Bank of Nigeria's ban on MNOs providing DFS may be the primary reason for low volumes of DFS use in Nigeria and high rates of financial exclusion. The CBN though is contemplating an open licensing model.²⁷⁸

²⁷¹ Bitcoin Africa (2018) Nigerian Blockchain Startup SureRemit Raises \$7 Million in Biggest African ICO To Date, available at https://bit.ly/2HUcLGm

²⁷² The majority of the non-banks providing DFS are MNOs.

²⁷³ World Bank Group (2018) The Global Findex Database 2017, available at https://globalfindex.worldbank.org/

²⁷⁴ GSMA (2018) 2017 State of the Industry Report on Mobile Money, available at https://bit.ly/2CKPLqF

²⁷⁵ ibid

²⁷⁶ Some 515 million new financial accounts were opened around the world. World Bank Group (2018) *The Global Findex Database 2017*, available at https://globalfindex.worldbank.org/

²⁷⁷ Analysis from the Center for Financial Inclusion at Accion found that roughly half of the new accounts — nearly 235 million — have not been used in the last year. The number of active account holders only increased by 285 million, much less than the overall growth, they say, in account ownership from 2011–2014. See Accion-CFI (2018) *Financial Inclusion Hype vs. Reality: Deconstructing the 2017 Findex Results*, available at https://bit.ly/2JAyB3n

²⁷⁸ Leadership NGA (2018) NCC, CBN Sign MoU On Mobile Money, Financial Inclusion, available at https://bit.ly/2JAqRP8

5 Conclusions

As the primary regulator of DFS, the model of licensing and regulation the central bank choses for provision of services will ultimately impact the success of DFS provision. In most markets, central banks have evolved from a more restrictive bank-based (institutional) model to an open (functional) 'enabling' regulatory model, where an entity is licensed or authorized *ex ante* to provide services and then regulated according to whether it (functionally) provides a service described in a law or regulation. Coupled with proportional 'enabling' regulations, this holds the most promise for meeting national financial inclusion goals.

The Central Bank's role however becomes more complex as the DFS ecosystem develops, in particular in relation to competition and interoperability issues, where the central bank has to undertake further policy enhancements to allow non-banks in national payment systems to create a fully integrated financial market infrastructure. Emerging 'regtech' solutions using automated regulatory tools to replace manual processes may assist central banks in navigating this increased complexity. Sandboxes which allow test financial technology innovations in a controlled, but regulatory-lite environment, show promise in developing solutions to enhance financial inclusion. And with the introduction of new cryptographic-based systems, central banks may ultimately issue their own e-money in the form of digital fiat currencies. The impact on banks and DFSPs is also discussed.

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Due to the multi-sectoral and cross-cutting nature and increasing complexity of DFS, regulatory coordination and increased cooperation between implicated regulators and agencies is needed. Critically important is increased capacity building for central bank personnel.

Annex A: Organizational Chart of the Central Bank of Jordan²⁷⁹



²⁷⁹ http://www.cbj.gov.jo/Pages/viewpage.aspx?pageID=181

Annex B: Interest Payment Schedule for 2018 from the Bank of Ghana²⁸⁰

SCHEDULE FOR PAYMENT OF MOBILE MONEY INTEREST TO CUSTOMERS - 2018

QUARTERLY ACCRUED INTEREST	PAYMENT DATE
1ST QUARTER 2018	SUNDAY, APRIL 29, 2018
2ND QUARTER 2018	SUNDAY, JULY 29, 2018
3RD QUARTER 2018	SUNDAY, OCTOBER 28, 2018
4TH QUARTER 2018	SUNDAY, JANUARY 27, 2019

²⁸⁰ https://bit.ly/2Mzbbgw