CHAPTER 2

Leveraging Remittance Technologies for Financial Inclusion in Asia

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Remittances are one of the driving factors behind labor migration, especially within Asia. Of the $593 billion of global remittances projected in 2017, around 75% or $443 billion came from developing countries, particularly in the East Asia and Pacific and South Asia regions. It is expected that remittances sent home by international migrants from developing countries will continue to grow by 3.5% to $459 billion by 2018 (World Bank 2017a). Such inflows are significant not only because of their size, but also because of their development impact. Remittances increase household income that can be spent for social services such as education and health. They can also contribute to expansion in financial services and inclusive finance. According to the United Nations Conference on Trade and Development, a 10% rise in remittances may lead to a 3.5% reduction in the share of people living in poverty.

Unfortunately, the development impact of remittances is undermined by high costs. Costly remittances not only reduce migrants' earnings substantially, but also prevent their efficient flow. Although remittance costs have decreased in all developing regions, they still remain substantial at 14%–20%. In Asia, remittance costs have gone down to 8%, but are still above the global average (7.4%) and the targets set by the United Nations' Sustainable Development Goals (3% by 2030).

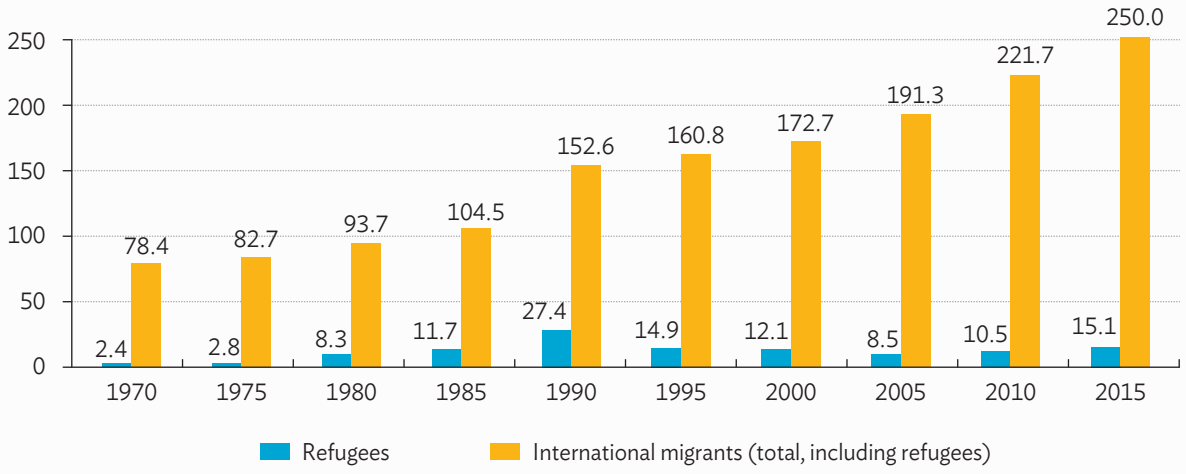
Reducing remittance costs is central to development. Evidence shows that a 5% decline in remittance costs will generate $15 billion in savings. While migrants own their remittances and they decide, with their families, how to spend them, there is ample scope to promote solutions that meet migrant needs and support the country of origin. One possible solution is to use information and communication technology to make labor channels and remittances more accessible to migrants. Though remittances are traditionally sent via banks, money transfer operators, and informal channels, mobile and financial technology companies now provide attractive alternatives (Mondato 2017).

2.1 Migration and Remittances in Asia: Recent Developments

2.1.1 Migration Trends and Drivers

International migrants, that is, people residing in a country other than their own, have increased significantly over the last two decades. Out of the 247 million migrants in the world estimated in 2015, around 30% or 75 million lived in Asia (Figure 2.1). This represents a 39% increase from 48 million migrants based in Asia in 1990. The majority of international migrants in the region are found in South Asia and Western Asia, accounting for 19% and 51% of the region's total migrant stock, respectively.

Figure 2.1: International Migrant Stocks (million)



UNCHR = United Nations High Commissioner for Refugees, UNPD = United Nations Population Division.

Sources: UNPD 2015, World Bank 2015, World Development Indicators, UNHCR. Refugee data are as of June 2015; they exclude Palestinian refugees numbering 5.1 million.

Among the top 10 migrant origin countries, 7 are from Asia, led by Bangladesh, the People's Republic of China (PRC), and India. These countries represent around 30% or 7 million of the total migrant population in the world. The magnitude of migration trends is also evident when assessed against the local population, as in the case of some Pacific countries. In Samoa, Tonga, and Tuvalu, the emigrant population is at 60%, 53%, and 39%, respectively (Ozaki 2017).

In terms of destination, the United States (US) and the Gulf Cooperation Council (GCC) countries still attract strong migration flows for Asian migrants, although the magnitude of flows varies across regions. Migrants from the East and Southeast Asia and the Pacific regions are mostly found in the US partly because of historical ties with the country. The majority of South Asian migrants live in GCC countries, particularly those from India. Intra-regional migrants have also become evident over the years such as those going from Cambodia to Thailand, Indonesia to Malaysia, Myanmar to Thailand, and Bangladesh to India.[1]

Regardless of their destinations, the majority of Asian migrants move to improve their income potential, particularly to "earn more income"[2] (Belanger et al. 2010), or to "attain financial solvency"[3] (Asia Foundation 2013). Non-economic factors also influence migration decisions, such as the need to provide for a better future for their family (as in the Philippines' case), better working conditions abroad (Nepal), and chain migration (Kazakhstan).[4]

[1] Traditionally Asian migrants go to Europe, the Middle East, and North America, but this has changed over the years, as shown in flows to Asian industrialized countries such as Hong Kong, China; Japan; the Republic of Korea; Singapore; and Taipei,China in recent years. India, Malaysia, and Thailand have also absorbed many Asian migrants who work in agricultural areas (ADB 2012).

[2] As in the case of Vietnamese migrants who moved to other Asian countries (Belanger et al. 2010).

[3] As in the case of migrants from Bangladesh and Nepal (Asia Foundation 2013).

[4] For example, in a pre-migration survey for Filipino migrants, more than 50% of respondents indicated providing for their family's future as a major reason for migrating. Other reasons cited include low salary at home (21%), inability to find a job at home (20%), and others, including exposure to foreign culture (5%). For more details, see Asis (2005).

2.1.2 Magnitude and Development Impact of Remittances

Reflecting the huge migration flows, remittances in the East and Southeast Asia and the Pacific region grew significantly from $98 billion in 2006 to $241 billion in 2017, or approximately 12% average growth per year over the last 12 years (2006–2017). In 2017, remittances from Asia are expected to account for 41% of total global flows and 54% of those from developing countries (Table 2.1), a trend that has increased over the last decade. Thus, it is not surprising that Asian countries are among the top remittance recipients in the world, led by India ($63 billion), the PRC ($61 billion), and the Philippines ($29 billion). As a share of gross domestic product, the Kyrgyz Republic, Nepal, and Tajikistan top the list of countries (Figure 2.2).

Table 2.1: Estimates and Projections for Remittance Flows to Developing Countries

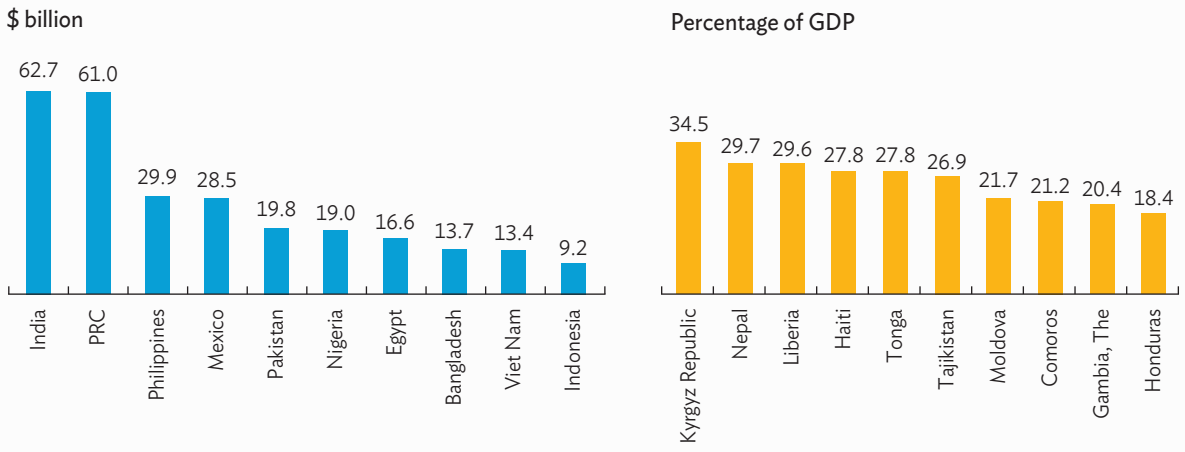
Region	2010	2013	2014	2015	2016e	2017f	2018f
	($ billion)						
Developing countries	340.3	426.4	444.3	439.8	429.3	443.6	459.1
East Asia and Pacific	94.9	114.3	122.7	127.3	125.8	129.0	132.7
Europe and Central Asia	37.8	54.6	51.7	40.3	38.4	41.0	43.6
Latin America and the Caribbean	56.5	61.5	64.5	68.3	73.1	75.5	78.2
Middle East and North Africa	39.0	50.5	54.4	51.1	48.8	51.8	53.5
South Asia	82.0	110.8	115.8	117.6	110.1	112.3	115.3
Sub-Saharan Africa	30.1	34.7	35.3	35.1	33.0	34.1	35.7
World	466.7	574.8	598.3	582.4	575.2	593.8	615.9
Low- and middle-income countries	334.2	419.0	435.9	432.3	422.5	436.3	451.1
	(Growth rate, percent)						
Developing countries	11.2	5.2	4.2	–1.0	–2.4	3.3	3.5
East Asia and Pacific	19.5	6.7	7.4	3.8	–1.2	2.5	2.9
Europe and Central Asia	4.8	17.1	–5.3	–22.1	–4.6	6.6	6.4
Latin America and the Caribbean	2.6	2.1	4.8	6.0	6.9	3.3	3.6
Middle East and North Africa	18.2	3.4	7.8	–6.1	–4.4	6.1	3.3
South Asia	9.4	2.6	4.5	1.6	–6.4	2.0	2.7
Sub-Saharan Africa	9.6	1.0	1.7	–0.4	–6.1	3.3	4.9
World	8.3	5.3	4.1	–2.7	–1.2	3.2	3.7

e = estimate, f = forecast.

Source: World Bank. 2017a. Migration and Remittances Brief 2017. April.

In theory, remittances are driven by different motives (De 2017), which can also explain their behavior during business cycle fluctuations. For example, if the motive is largely altruistic, remittances are likely to be countercyclical, i.e., they increase when a recipient economy is in a downturn. A different view looks at remittances as an investment by migrants in their home country, encouraging them to send more money to reap higher future returns. In these cases, remittances can be procyclical.

Figure 2.2: Top Remittance Receivers in 2016

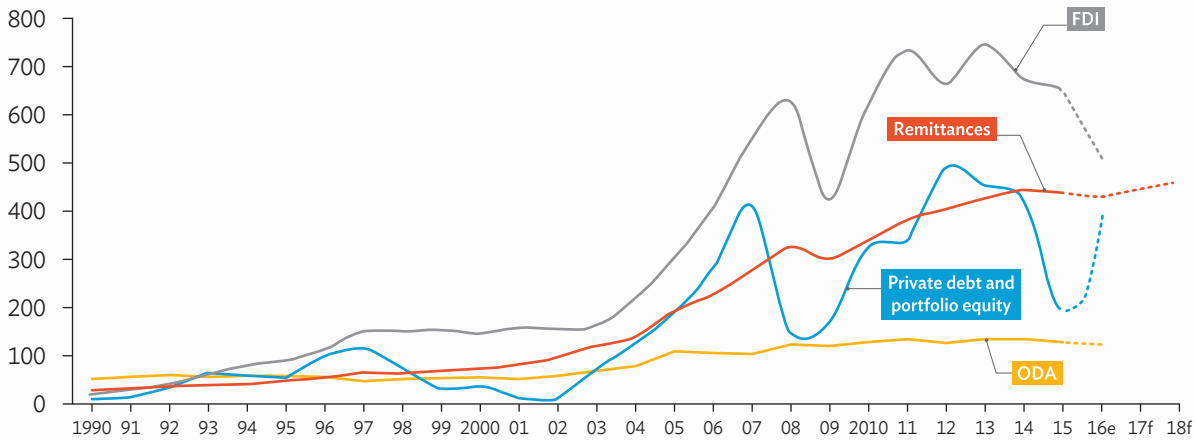


PRC = People's Republic of China, GDP = gross domestic product.

Source: World Bank. 2017a. Migration and Remittances Brief 2017. April.

While the cyclicality of remittances with respect to the receiving country is less conclusive, evidence still suggests their potential to stabilize an economy when capital inflows decline (De 2017). As shown in Figure 2.3, remittances are reliable sources of external funds for developing countries. Although they are second only to foreign direct investment inflows in terms of scale, they are more than three times official development aid and eight times private capital. Remittances are also more stable than all other external flows, and are more resilient against global headwinds and macroeconomic volatility. For example, a year after the global financial crisis in 2008, remittance inflows to emerging markets continued to grow by 6% while capital flows declined by 14% (De 2017).

Figure 2.3: Remittances and Other Capital Flows in Developing Countries ($ billion)



e = estimate, f = forecast, FDI = foreign direct investment, ODA = official development assistance.

Source: World Bank. 2017a. Migration and Remittances Brief. April.

In addition to smoothing consumption over time, remittances have an equalizing effect on income distribution, poverty alleviation, and individual welfare.[5] While this evidence is not fully conclusive, large remittances are still likely to exhibit less volatility in managing consumption and output during the business cycle, thus enhancing general economic welfare.

Aside from their direct impact on foreign exchange earnings,[6] remittances can be leveraged to achieve higher levels of investment, productivity, and economic growth. One way is by channeling remittances to investment-linked products that target migrant workers and can benefit both individual households and the economy, such as diaspora bonds, which are debt instruments issued by the governments of remittance-receiving countries and by private entities. These bonds are usually tied up in specific projects that require long-term financing such as infrastructure and public investments. In Asia, the Government of India made the most successful diaspora bond issuance, with $32 billion raised between 1991 and 2000.

Intermediating remittances through other financial assets is another way to enhance their development potential. Unfortunately, only a fraction are invested in financial assets in developing countries, as most are sent through informal channels, with households usually preferring to keep the funds as cash rather than as bank deposits. Thus, a key challenge is how to develop financial products to attract investments by receiving households (Ozaki 2017). For example, in Bangladesh and Sri Lanka, foreign and local currency savings accounts, with preferential interest rates or tax incentives, have been offered to overseas workers. In Kazakhstan and Pakistan, securitized instruments on future remittances have been developed where banks issue remittance-backed bonds. The money raised is then invested to create multiplier effects on output and employment.

Although remittances play a major role in Asian economic development and are likely to become more important in the coming decades, one negative effect is the increasing dependence on them by households in receiving countries (ADB 2012). Indeed, there is evidence that remittances are used mainly to finance consumption in receiving countries instead of being channeled to increase productive capacity. Some economists also argue that unfettered migration can have adverse impact on long-term growth and human development due to departure of highly educated workers, and the tendency of sending countries to value education less.[7]

2.2 Addressing the Issue of High Remittance Costs

Along with migrant workers' poor job conditions and low earnings, the high costs of sending remittances are also a major factor limiting their development potential. In general, migrant transfer channels range from informal ones such as hand delivery by migrants themselves or third parties, to formal mechanisms such as banks, credit unions, postal services, and international money transfer operators (IMTOs). While the remittance costs vary, evidence suggests that migrants are not only concerned with costs, but also with the security of their remitted money (ADB 2012).

[5] For example, Adams (2006) and Adams and Page (2005) estimated that a 10% increase in per capita remittances leads to a 3.5% decline in poverty head count. In another study by the World Bank (2006), it was shown that a decline in moderate poverty and extreme poverty by 0.4% and 0.3%, respectively, was associated with a 1 percentage point increase in remittance-to-GDP ratios.

[6] As an important source of foreign exchange, remittances help stabilize balance of payments, particularly to finance trade deficits and bolster reserves, as in small Pacific islands and even large countries such as the Philippines and Viet Nam (Ahsan 2014).

[7] These negative effects are examined in detail by Chami et al. (2005), and De Bruyn and Wets (2006).

Banks tend to charge the highest among the various service providers. The average cost of bank transfer worldwide is 11%, a slight decline from its 2008 level of 14.6%. In contrast, IMTOs' total average costs are around 6%, with post offices' being 7%.

South Asia, Latin America and the Caribbean, and Europe and Central Asia are the cheapest receiving regions, with costs remaining below the global average. Meanwhile, despite the significant decline in costs in sub-Saharan Africa, the Middle East, and the East Asia and the Pacific region since 2000, their average costs remain above the global average.

Addressing high remittance costs is an important policy issue in Asia given its large share of migrant workers who regularly remit money. These workers also have generally low salaries. Thus, even with a $200 remittance, an 8% average cost of sending money can be substantial. Further, migrant workers do not have easy access to other formal remittance channels due to the tendency of some banks to discourage "low ticket" transfers (Plaza and Ratha 2017).

Among the different ways to address the issue are regulations that serve the needs of low-earning migrant workers. For example, there is a need for regulators in each country to adopt a more flexible approach to customer due diligence (CDD) and know-your-customer (KYC) checks by banks, like having different CDD and KYC norms for small and large remittances. This is the case in the Philippines, where registered remittance agents are allowed to conduct KYC checks on e-money and mobile transactions in rural areas (Ozaki 2017). Another way is through the linkages of all institutions involved in remittances such as banks, IMTOs, exchange houses, non-bank financial institutions, and agents.

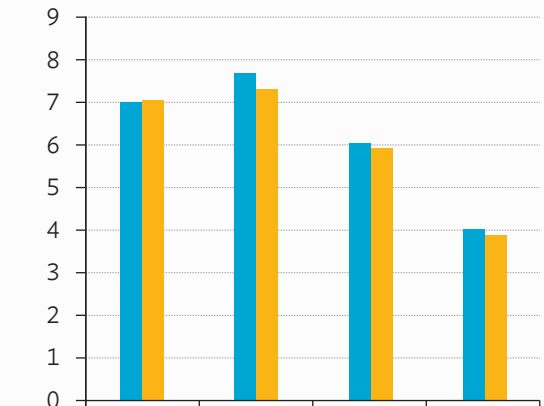
The most innovative approach is to leverage mobile phones, ATMs, and points of sale to reduce costs and expand formal remittance outreach (Ozaki 2017). As shown in Figure 2.4, mobile money is the cheapest method to fund a remittance transaction (3.8%) compared to using bank accounts (7.3%), cash (7.1%), and debit/credit cards (5.9%). On average, sending remittances through mobile money also turns out the cheapest (5.2%), as against the costs charged by banks (7.8%) and cash disbursements (6.5%; Figure 2.5).

2.3 Role of Remittance Technologies

These remittance products are normally being developed by IMTOs and by payment service providers (PSPs) for domestic transactions (this latter category generally offering a wider set of services than the former, but focused on intra-market services). For example, in the Philippines, the IMTO Western Union has partnered with local PSP Smart Communications since 2008 to develop the use case of cross-border remittance services for Smart Money. With Smart Money, remittance recipients can then use their mobile phones to receive funds into their mobile money accounts to be cashed out at any partnering commercial banks or Smart Money agents in the country. A similar scheme called bKash has been developed by BRAC Bank in Bangladesh, Master Card, and Western Union since 2016 to enable remittance recipients to receive cash and make other services, e.g., transfer funds, pay bills, or even shop in-store (Ozaki 2017).

Technology also plays an important role in expanding or combining existing payment infrastructure and instruments. One example is dual cards that can be used by migrants' families to withdraw remittances and make payments. New companies have also emerged that fill the gaps in remittances markets through existing banking and payment infrastructures.

Figure 2.4: Average Cost by Instrument Used to Fund a Remittance Transaction (%)

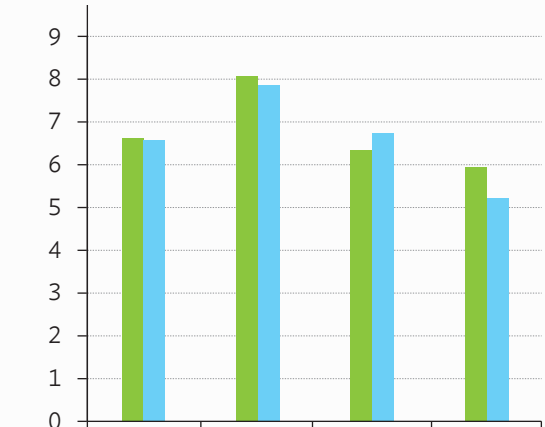


	Cash	Bank Account	Debit/ Credit Card	Mobile Money
Q217	7.02	7.68	6.04	4.02
Q317	7.06	7.32	5.94	3.88

Q = quarter.

Source: World Bank 2017b.

Figure 2.5: Average Cost by Means of Disbursing the Funds for Remittance Transaction (%)



	Cash	Bank Account	Bank Account (same bank)	Mobile Money
Q217	6.62	8.05	6.33	5.95
Q317	6.57	7.85	6.73	5.21

Q = quarter.

Source: World Bank 2017b.

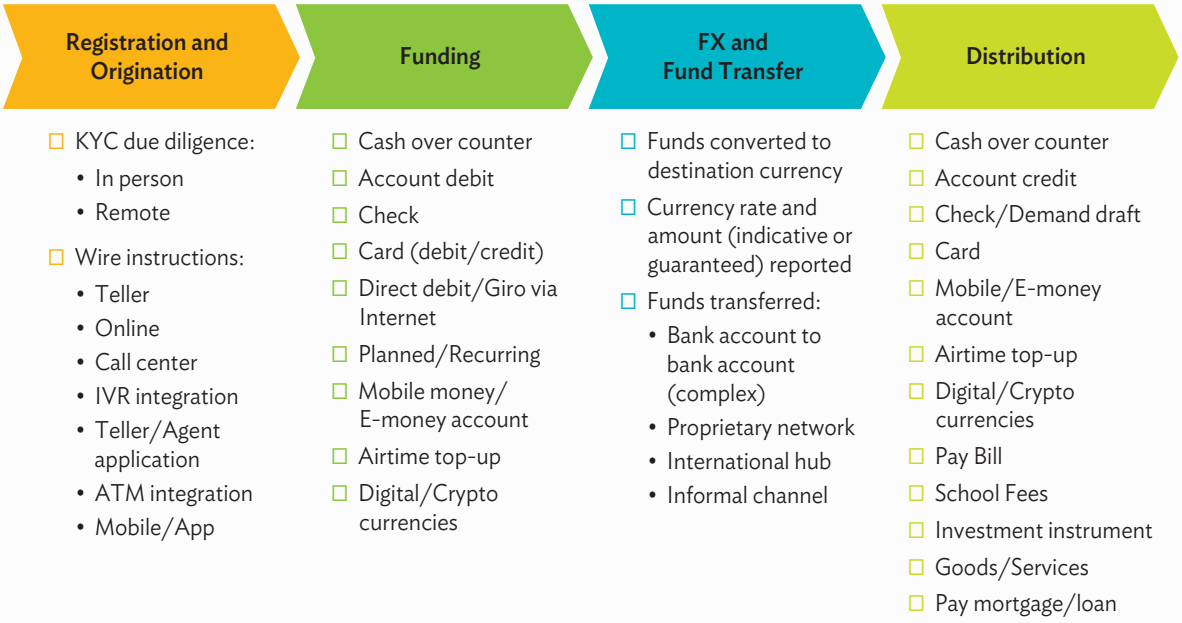
Remittance Processes

It should be noted that cross-border remittances are still transacted much as they were decades ago, with recent innovation focused on repackaging efficiencies within the international financial infrastructure (Figure 2.6). Banking architecture relies on back-end clearing and settlement entities that add a degree of opacity to remittance cost structures. Fluctuating foreign exchange rates obscure this further, and the disclosure or estimation of such rates varies substantially across remittance service providers (RSPs).

A cross-border transfer, as a single wire, travels a fairly straightforward journey through Society for Worldwide Interbank Financial Telecommunications (SWIFT) messaging services. As the communications component occurs simultaneously with the settlement process, the receipt of funds and counterpart deduction of funds experiences a time lag depending on the sophistication of a corridor's infrastructure. Banks pocket the flat transfer fee in addition to the foreign exchange spread and float (Denecker et al. 2016). SWIFT, too, propels correspondent banking, or "the provision of a current account (called a nostro account) by a bank to another bank, which uses this nostro account to facilitate cross-border payments and trade finance transactions of its customers" (Grolleman and Justra 2017). Correspondent banking relationships remain the skeletal backbone of international financial flows, including remittances.

De-risking, or the phenomenon where parties withdraw from or terminate a correspondent banking relationship, has weakened the core international remittance infrastructure. The uptick in de-risking is the consequence of a set of factors: the global financial crisis, intensifying regulation around KYC requirements, anti-money laundering, and Combating the Finance of Terrorism compliance and deteriorating trust in partner institutions (IMF 2017).

Figure 2.6: Key Activities in the Remittances Process



ATM = automated teller machine, FX = foreign exchange, IVR = interactive voice response, KYC = know your customer.

Source: Mondato (2017).

This has resulted in consolidated corridors, with the funneling of flows by both value and volume into fewer pathways. According to data by the Committee on Payments and Market Infrastructure, states that are either saddled with sanctions or destabilized by civil unrest have witnessed the most concentration in correspondent banking (IMF 2017).

These back-end trends may be problematic given that banks' most competitive challengers, that is, IMTOs, are also tethered to correspondent banking relationships. Both brick-and-mortar and digital IMTOs leverage pre-funded nostro accounts in a foreign currency to simplify immediate or next-day availability of funds.

For more established incumbent players, such as Western Union or MoneyGram, obtaining large credit lines at destination banks is usually manageable as long as certain thresholds of daily or monthly value turnover are met. For newer players, the barrier of entry in the form of banking fees can be debilitating.

Pain Points and Recent Evolution

Many, if not all, of these functions in developing markets depend on branch and agent infrastructure. This origination layer of a remittance consists of customer registration, KYC verification, pricing acknowledgments, generating transaction tracking details, and electronically digitizing cash if necessary. The "first evolution" of the remittance market, then, was the price reduction per transaction when a transfer was originated by an agent versus a branch.

Figure 2.7: Indicative Pain Points by Key Activity

Inefficiencies	Registration and Origination	Funding	FX and Fund Transfer	Distribution
No ID	■			■
Onerous KYC	■			■
Limited infrastructure/connectivity	■	■	■	■
No formal financial account	■	■		■
Limited relevant products	■	■		■
Limited distribution				■
Lack of market information	■	■		■
Lack of financial education	■	■		■

FX = foreign exchange, ID = identification, KYC = know your customer.

Source: Mondato (2017).

Currently, most first mile innovation that boasts a purely digital cash-in solution caters to high-income sending to middle- and low-income country corridors. The savings can be substantial, as illustrated by TransferWise advertising a flat 1% fee, though these favorable costs are still mostly limited to those able to deposit by local bank transfer, debit or credit card (in select currencies), or SWIFT international transfer. Savings with other providers are often similarly confined to that sub-segment. These business models, however, are tenable due to the high levels of banking penetration in developed markets, from which most remittances emanate, complemented by a regulatory climate that sanctions digital KYC authentication. Access to digitized cash-in remittance channels, though, has yet to fully translate to usage.

As for traditional cash-out, it is unlikely to disappear completely given that even the most advanced economies will not be fully digitized any time soon. Physical currencies will likely remain the fallback for situations where electronic acceptance is not available, either because one party lacks the proper means, or they find it uneconomical, inconvenient, or both.

Many obstacles remain, in part due to inadequate value propositions for merchants, weak stakeholder economics for card networks, insufficient aggregate customer demand, inconsistent infrastructure and regulatory frameworks, ineffective distribution models, and reluctance to pay full taxes on previously unreported revenues.[8] As a result, a significant share of remittance recipients will likely continue to withdraw those funds, especially since acceptance by informal small- to medium-sized enterprises is unlikely to accelerate significantly in the near term.

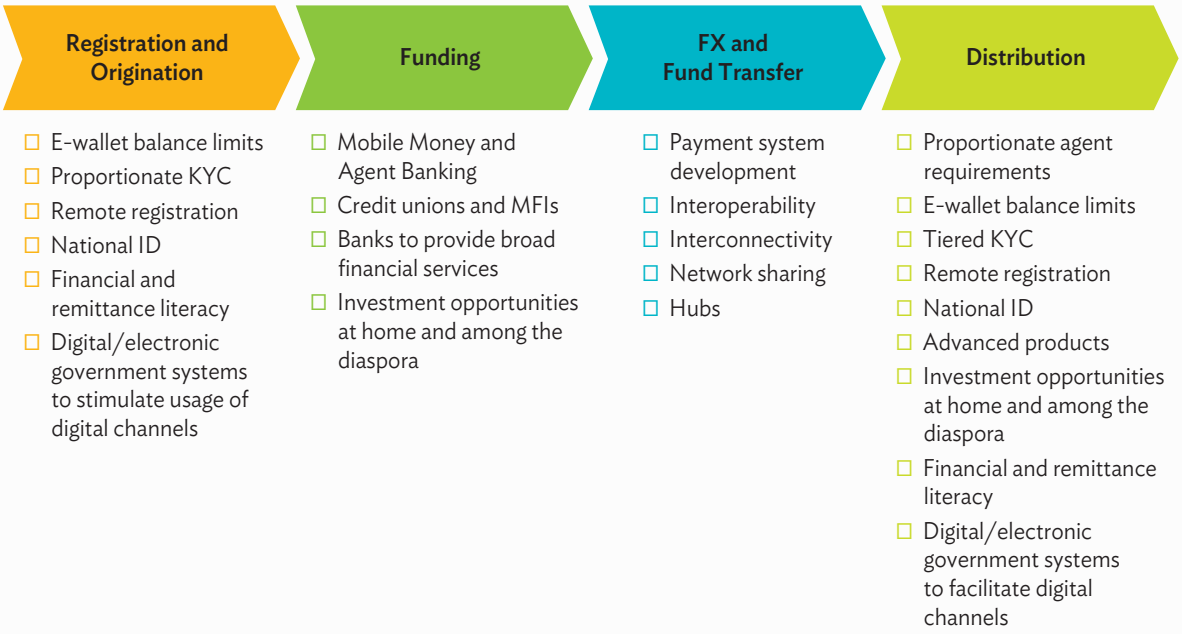
[8] Innovation in Electronic Payment Adoption: The Case of Small Retailers, World Economic Forum, June 2016.

Opportunities for Fintech in Remittances

Fintech players have been looking to consolidate and/or replace parts of the legacy remittance value chain, while others are seeking to reconfigure it in a more fundamental fashion. And while application programming interfaces (APIs), cryptocurrencies, and distributed ledgers will chip away at back-end monopolies over the long term, in the interim, IMTOs have mostly differentiated themselves with first mile cash-in channels and last mile distribution networks.

Technological advances in digital money, along with its increasing ubiquity, have unleashed a whole assortment of collaborations hoping to halve remittance prices. That, coupled with emerging digital identification programs, might render the regulatory burdens of remittances more bearable to nimbler but cash-strapped disruptors (Figure 2.8).

Figure 2.8: Illustrative Considerations to Facilitate More Efficient Remittances



FX = foreign exchange, ID = identification, KYC = know your customer, MFI = multinational finance institution.
Source: Mondato (2017).

While there are hundreds, if not thousands, of would-be remittance innovators eager to make their mark and capture market share across remittance corridors big and small, it is useful to consider how propositions might be grouped based on scale and scope of impact:

(i) **Status Quo Plus:** Well-established infrastructure of intermediary banks and bilateral agreements along with SWIFT; traditional IMTOs mostly play on top of these rails, with focus on optimizing cash-in, cash-out; digital services may bring efficiencies, but are reliant on existing core financial infrastructure.

(ii) **Improved Fundamentals:** Massive scale brings fixed cost efficiencies, such as with international IMTOs; aggregation is an alternative model with hubs managing the corridors; multinational "borderless accounts" with providers doing net transfers across their international accounts.

(iii) **New Paradigm:** The objective is to move toward far lower, even zero-fee services; new revenue sources, such as user insights and targeted advertising; potentially leverage cryptocurrencies for disintermediation and open APIs to make for more democratic access.

This third cluster of innovative technologies and business models in particular could prove especially disruptive as subsidized or even free services to end users, something that may require a complete reworking of the existing competitive environment. Interim steps may include banks playing less direct roles in this financial service, perhaps shifting resources to other services they find more profitable.

Such back-end mechanics of cross-border flows, and its associated costs, may be less discernable to consumers, however. These can be significant, and on average foreign exchange fees can amount to 20% of a remittance's price (Niforous et al. 2017). To diminish the amount to be settled across borders, some IMTOs active in two-way remittance corridors practice netting. Transfer-wise, a London Fintech unicorn, will (when possible) avoid currency exchanges by rerouting money domestically. A euro (€) out-bound remittance will fund a euro (€) in-bound remittance. IMTOs of all sizes, however, strategize to at least minimize the flat interbank transfer fees through batching. By aggregating a succession of smaller remittances, the marginal cost of each foreign exchange and settlement expense drops.

Decentralized cryptocurrencies and distributed ledger applications are two potential avenues to not only address the opacity of the back end, but to introduce a healthy dose of competition. Cryptocurrencies could theoretically render intermediary banking infrastructure unnecessary. Digital assets might then be transferred between two parties without external permissions, which is then moved over a cryptocurrency's secure network to the receiver (Srinivasan 2017). A challenge, however, might be perceived illiquidity and volatility of cryptocurrencies, especially for poorer segments most likely to depend upon remittance services.

Aware of consumers' skepticism regarding cryptocurrencies, Abra is vying to harness the power of Bitcoin to cut down remittance prices discreetly. Even though Bitcoin is the back-end medium, many users are oblivious to its central role since Abra's mobile wallet is financed through fiat currency. The invisibility of Bitcoin, too, is compounded by Abra's reliance on roving agents who upon request will facilitate the whole transaction.

Cryptocurrencies spawned in the private sector are also providing increasing inspiration to central banks. Central bank digital currencies (CBDCs) could produce a peer-to-peer (P2P) transfer network whose value would be anchored by its 1:1 exchangeability with the other liabilities of a central bank, cash, and reserves. CBDCs, too, might help to universalize a technological standard for electronic payments if the space was choked by coordination failure. The continued disposal of monetary policy is also an important consideration of CBDCs' relevancy. The proliferation of cryptocurrencies could undermine the demand for central bank money, thereby leaving little room for central banks to affect inflation or interest rates (He 2017). The Monetary Authority of Singapore is one pioneer that is experimenting with a state-controlled cryptocurrency. Project Ubin has placed the tokenized form of the Singapore dollar on a distributed ledger, the first of its kind in Asia (Dalal et al. 2017).

Interbank distributed ledger technology applications, more widely, could bypass correspondent banking and promote direct settlement between financial institutions. One sophisticated operationalization of this approach is actually the product of a private company, Ripple. In fact, Ripple recently announced that over 100 financial institutions are now active on its enterprise blockchain network RippleNet, wherein in-network banks can initiate and settle wholesale payments through cryptotokens. Ripple is not alone in this endeavor. IBM, Mastercard, JPMorgan, SWIFT, the Gates Foundation, R3CEV, and more are all competing to establish the next distributed ledger that will revolutionize cross-border international payments (De Meijer 2017). It is important to note, though, that these initiatives only represent a tiny sliver of cross-border flows. Until a consensus by all stakeholders over the utility of either cryptocurrencies or distributed ledgers crystallizes, the large-scale structural impact of the technology will remain muted.

2.4 How Can Digitalization Help?

Examples of How Technology Alleviates Selected Pain Points

With little chance of regulation around money transfers loosening, technology might be one of the better hopes for curtailing the piling of accrued costs onto the consumer. Blockchain-based solutions are one proposed answer due to both the granularity of transaction history captured and the visibility of cross-institutional data by numerous parties in real time, along with cash-out opportunities through strategic partnerships. The distributed nature of access, and the multi-party system of data alteration or addition, complicates any attempts to falsify records to camouflage illegal behavior (Ramachandran and Rehermann 2017).

And while the potential of this technology pertains most obviously to cross-border settlements, its coupling with digital, biometric identification could significantly ease the long-term costs of KYC protocols for RSPs. If a consumer uploaded encrypted KYC documents and biometric data onto a blockchain, which was then used alongside a PIN to authenticate an individual's transactions, a financial institution could turn to that blockchain-generated record as one form of identity verification. AID:Tech is one vendor refining the use of blockchain to issue digital identities, and has partnered with both charities and government aid agencies alike to validate end users, often refugees, who receive remittances and welfare distributions.

State entities are waking up to the multifaceted economic externalities of government-sponsored digital ID programs, remittances being but one variable in that equation. As of 2017, nearly 17.7% of the global adult population (more than 1 billion people) still lack the necessary documentation to fulfill basic KYC standards.[9] And although the Aadhaar ID in India is perhaps the most recognized case, there are 38 active government-issued national IDs across Latin America, South and Southeast Asia, and sub-Saharan Africa. Of those, 28 have an electronic component while 37 store some derivative of biometrics, whether an iris scan, fingerprint, facial recognition, or a combination. The sophistication of these IDs, however, as it relates to financial services, and thus, remittances, remains nascent. Only 22 of the 38 programs have incorporated KYC functionality. Other use cases have been introduced together with KYC integration for financial services, but at a lesser frequency; 5 programs are linked to digital banking, 4 to mobile money applications, and 13 to government assistant programs (Focus Group Digital Financial Services 2016).

[9] World Bank Group's Identification for Development (ID4D) Data Set.

Figure 2.9: Illustrative Send/Receive Propositions

Send: Blockchain Remittance Payments

Service: Ripple's xCurrent international real-time payments

Launched: Evolution from enterprise solution

Proposition: Real-time payments either settle or fail within milliseconds based on standardized Rulebook developed by RippleNet Advisory Board

Reduces transaction costs by estimated 60%, and allows lower value payments, recent customers now using this blockchain technology to allow retail customers to receive immediate international payments on select corridors

Receive: Cash-out for the Unbanked

Service: Singtel Dash app

Launched: 2017

Proposition: Indonesian diaspora in Singapore (estimated at around 200,000 workers) are now able to make instant transfers to the unbanked back home. After KYC at SingCash outlets, senders can then remit funds from bank accounts, 7-Eleven, or AXS self-service terminals.

Recipients then either receive funds into their Telkomsel mobile wallets TCash, or from almost 5,000 post office sites.

Sources: Mondato (2017), and drawing on company press releases.

Digital Services Reshaping Formal Channels

The ascent of the mobile phone has galvanized innovation that skirts the back-end banking rails of cross-border payments. One example is TransferTo, an airtime remittance company that interlinks mobile operators' prepaid systems to power top-up services between participating RSPs. Small value transfers of mobile minutes (usually under $20) can then bounce between international, interoperable prepaid accounts. In 2015, TransferTo launched a hub to equip mobile network operators (MNOs), mobile virtual network operators, IMTOs, and financial institutions with the means to move larger mobile-based remittances worth anywhere from $20 to $100 (Handford 2015).

The concept of an international remittance hub has steadily solidified in the industry, and refers to a switch that facilitates mobile payments between two or more RSPs. Irrespective of the legal and commercial agreements that inform the full suite of a hub's service provisioning, the baseline value-add is the clearing and settlement of balances between originating and paying RSPs, in addition to another round of sanction-screening. The hub's involvement might manifest as an intermediary in a bilateral agreement, as is the case with HomeSend in the MTN Côte d'Ivoire and Airtel Burkina Faso mutually interoperable partnership (Scharwatt and Williamson 2015).

In many instances, however, protective regulatory measures will only authorize the expansion of country in-bound remittance routes. And while it is more challenging to secure regulatory approval for mobile funds exiting African or Southeast Asian countries, two-way collaboration is mounting. In a recent deal

struck between TerraPay and Wari, not only can TerraPay's global partners now inject money into Wari's digital payments ecosystem, but users of Wari, too, can remit to TerraPay's network of mobile wallets in Africa and bank accounts in India.

Wholesale providers, too, are pitching themselves as viable alternatives to traditional correspondent banking for IMTOs. One such provider, Earthport, is unique in that it is building a cross-border payment utility by coordinating directly with the local clearing systems in countries of operation. IMTOs, banks, e-commerce platforms, or multinational corporations that plug in to Earthport sidestep bank-to-bank relationships, and instead are fast-tracked through its proprietary international infrastructure directly to the destination.[10] One contract with Earthport delivers cross-border capabilities in over 190 countries, with local automated clearing house options available in 65.

The result is a service with real-time, end-to-end tracking of flows and set pricing that affords IMTOs a high degree of confidence when packaging their own products. Industry heavyweights such as TransferWise, WorldRemit, Azimo, and Xoom have tapped into Earthport to further diversify corridor access. While Earthport boasts the biggest footprint in terms of reach, there are some other regional wholesale providers. Connection to the BBVA Transfer Services platform enables processing, monitoring, settlement, and regulatory compliance across 16 corridors in Latin America and Eastern Europe.

2.5 Policy Implications and Conclusion

While front-end regulation is upending agent networks and encouraging digital, traceable on-boarding, the revised Payment Services Directive, Basel III, and Dodd-Frank are accentuating some of the inherent inadequacies of correspondent banking. In a post-global financial crisis climate, the outcry for both strengthened consumer protections and a transparent financial system at large has catalyzed regulators. In the context of remittances, it will become progressively more difficult for correspondent banking structures to meet hardening expectations around liquidity positions, clarity concerning settlement times, and predictability of foreign exchange fees.

In corridors where flows travel from middle- or low-income to low-income countries, which often mirror intra-African, Asian, Central and South American migration patterns, the origination layer is seldom primed for complete digitization. Local conditions, from digital adoption rates, mobile phone penetration, regulation, prevalence of identity verification documents, and more, all impact a market's "readiness" for a solely digital cash-in.

In lieu of an agent-free value chain, other business models are surfacing. When incentivized to on-board customers to the digital ecosystem, either the provider or agent partners may subsidize either cash-in costs or transaction fees. BillMo, an RSP specialized in the US-to-Mexico corridor, provides discounted remittance services by plugging in the fund receiver to a variety of alternatives other than cash-out, from bill pay to e-commerce.

[10] Zafar (2017), interview with CEO of Earthport, Edgar, Dunn & Company, 4 April.

While the cash-in is still digital, MNOs have replicated this model to drive domestic mobile money adoption and induce critical mass through free agent cash-in or P2P transfer promotions (Tseng et al. 2017). With some imagination and creative collaboration, the relevance of these schemes could apply cross-border.

Ingenuity, too, could extend to agent networks as both mobile gaming and gambling gain momentum across Africa and Asia. Tencent, a PRC internet value-added services firm, netted CNY18.17 billion of its CNY40.39 billion in revenue from online and mobile games alone in quarter 3 of last year (Perez 2017). That kind of profit could justify nullifying cash-in or transfer fees to entice users on the platforms, especially as mobile wallet providers agitate to expand their portfolio of financial services offerings.

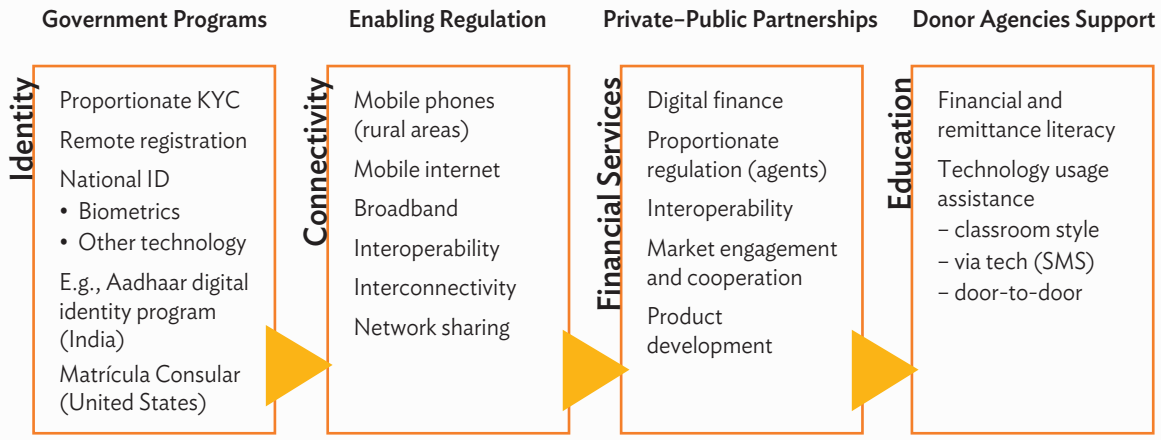
More broadly, fintech innovation is generally taking two tracks currently, focusing on either developing the platforms upon which other players can then build and offer innovative propositions, or, alternatively, targeting select inefficiencies where money is being left on the table. The former may at some point lead to a distributed ledger approach to financial identities, fraud, and disintermediation for inexpensive small-value transfers (the original objective of Bitcoin).

Entrenched incumbents are mindful of the benefits as well, and realize they can benefit also by avoiding some of their greatest cost centers. But these often coincide with their fundamental roles of compliance and financial stability of savings, loans, and reserve management. Completely wishing away the third-party middle person may not be desirable either for dispute settlement or quality of service issues. Irreversible transactions can be quite problematic if they end up in the wrong place in a shadow-banking world.

It is therefore worthwhile considering the key pillars to enhance digital transformation (Figure 2.10):

- **Identity:** Government programs play an important role, and tiered KYC is a starting point for ease of onboarding and registrations, especially if to be remote, with national IDs an important requirement (potentially including biometrics or other technologies), with examples including the Aadhaar digital identity program in India or the Mexican Matrícula Consular in the US.
- **Connectivity:** Enabling regulation provides the foundation for more widespread access, including universal coverage programs for rural mobile broadband, and allowing for interconnectivity and network sharing.
- **Distribution Channels:** Agents should be regulated on a risk-proportionate basis, with heavy licensing and compliance requirements tending to greatly limit their footprints and exclude the local merchants that have been typical of mobile money, while interoperability can help establish critical mass (the point at which that occurs not being universally agreed upon).
- **Education:** Potentially an area for donor agency support, or public–private partnerships, with the focus being on national awareness campaigns, financial and remittance literacy, and technology usage assistance (e.g., classroom-style sessions, via SMS, or even door-to-door).

Figure 2.10: Measures to Promote Remittance Technologies



ID = identification, SMS = short messaging service.

Source: Mondato (2017).

While the landscape is clearly changing, such initiatives can help accelerate evolution beyond the traditional model of intermediary banks and IMTOs. The opportunity is clearly significant with 85% of all remittances, including domestic, estimated to still be conducted in cash, while the cost of cross-border transfers remains a serious issue for many in developing markets, including Asia. Governments and international organizations can therefore play a central role in creating an enabling environment in digital finance to improve the remittance process and also have positive externalities such as financial inclusion. In Asia, for example, while the potential for digital finance to promote financial inclusion is high, the need to address issues affecting payment systems and agent banking remains a priority (Box 2.1). Allowing for increased use of technology and enabling proportionate requirements would stimulate the use of digital finance and productive use of remittances.

Box 2.1: Promoting Financial Inclusion in Asia through Digital Finance

Digital payments and broader digital financial services are an evolving and complex domain that do not always have clearly delineated boundaries or universal terminology. In a study conducted by the Asian Development Bank and Mondato (2017), the potential of digital finance to enhance payment systems and e-money services was examined in Bangladesh, Nepal, and Sri Lanka. Despite the bank account penetration differences across these countries, regulations across all three markets are converging on a more conducive environment for money market agents. Regulators are looking to digitalized economic activity as a driver of growth. Nonetheless, given the complex nature of digitalization, more measures are still needed. These include, among others, the need to implement a National Real-Time Payment System, develop more instruments and infrastructure for e-payments and agent banking, and create a transparent legal framework and regulations for digital finance.

	Bangladesh	Nepal	Sri Lanka
Payment Systems	• Facilitate the implementation of a National Real-Time Payments platform • Develop universal transaction interoperability • Expand internet and cloud services to support next-generation platforms/services • Support enabling policy and investment into the newly emerging fintech ecosystem	• Develop initiatives to modernize payment systems • Facilitate the implementation of a National Real-Time payments platform • Expand internet and cloud services to support next-generation platforms/services • Support enabling policy and investment into local fintech ecosystem	• Expand internet and cloud infrastructure comprehensively to improve access and QoS across the entire country • Support more enabling policy and investment into developing a domestic fintech ecosystem
Mobile Money and Agent Banking Ecosystem	• Develop a shared platform and/or agent aggregation to help smaller players in markets with dominant providers • Decrease reliance on OTC, potentially through consumer education initiatives around end-user touchpoints • Increase adoption beyond basic services, perhaps by funding accounts with disbursements or benefits • Consider collaborative product road maps (e.g., PSPs and banks) for a customer journey to more advanced services	• Monitor new player market entry and any discriminatory actions, especially by telcos limiting network access • Assist players with business case and model development, e.g., targeted VAS rather than just more national P2P • Provide incentives and support to players to reach remote locations, potentially shared-cost rural agents • Continue to support a strong role for banks, potentially by facilitating customer progression from MM to FI accounts	• Encourage traditional instruments such as payment cards as a first step in leveraging high account penetration • Target greater PSP profitability through new services, partially by decreasing OTC, which increases fees incurred • Expand distribution networks in rural areas, perhaps through coordination of the two eZCash MNOs • Support ecosystem development and industry collaboration, potentially through partners

FI = financial institution, MM = mobile money, MNO = mobile network operator, OTC = over the counter, P2P = peer-to-peer, PSP = payment service provider, QoS = quality of service, VAS = value-added service.

Source: ADB and Mondato. 2017. Financial Disruption and Inclusion: Digital Payments Systems, Mobile Money Services, and Agent Banking,

Glossary

Agent and Branchless Banking

Providing limited scale banking and financial services through engaged agents under a valid agency agreement. Agent banking is a type of branchless banking. Branchless banking includes the delivery of financial services outside conventional channels, often using agents and relying on information and communication technologies to transmit transaction details—typically card-reading point-of-sale (POS) terminals or mobile phones.

Automated Clearing House (ACH)

A payment clearing network that provides clearing and settlement services for DDA transactions. Many countries today have at least one ACH in operation to service their domestic payments industry. An ACH handles either (or both) Credit Push or Debit Pull (also called Direct Debit) payments. Most banks in the country will typically belong to the ACH, either directly or through intermediary banks. The ACH Switch moves transactions from one bank to another, and either provides, or interfaces with, a Net Settlement system.

Counter Terrorist Financing (CTF)

The rules and business processes required of financial institutions (typically via their country's banking regulator), which aim to disrupt the financing of terrorist activities. Typically referred to together with AML (as in AML/CTF), as the business processes needed to carry them are the same or similar.

Electronic Money (E-Money)

Often referred to as "E-Money". Stored value held in the accounts of users, agents, and the provider of the mobile money service. Typically, the total value of E-Money is mirrored in (i) bank account(s), such that even if the provider of the Mobile Money service were to fail, users could recover 100% of the value stored in their accounts. That said, bank deposits can earn interest, while E-Money traditionally cannot.

Interoperability

The ability of an end user dealing with one bank or PSP to exchange a transaction with an end user who is dealing with a different bank or PSP. Interoperability may be achieved either through participants all using the same system, or through inter-system networking agreements.

Know-Your-Customer (KYC)

The process of identifying and authenticating a customer, for purposes of risk management and regulatory compliance.

Mobile Money

Monetary value that is:

- available to a user to conduct transactions through a mobile device;
- accepted as a means of payment by parties other than the issue;
- issued on receipt of funds in an amount equal to the available monetary value;
- electronically recorded;
- mirrored by the value stored in an account(s) usually open in one (or more) bank(s); and
- redeemable for cash.[a]

Over-the-Counter (OTC)

Mobile Money agent performs the transactions on behalf of the customer, who does not need to have a Mobile Money account to use the service.

Real-Time Payments

A payment system in which the processing and clearing of transactions occurs in real time. This system may be an ACH, or may be independent of the ACH. Real-time transactions are usually push transactions. Participant or inter-bank settlement may occur at the same time (as in an RTGS system) or later, on a net basis. Real-time payment systems are typically used to clear lower value retail transactions. (Real-time gross settlement being for larger amounts).

Switch

A processing entity in a payments system that routes a transaction from one participant to another. A system may operate its own Switch, or this function may be done by one or more third parties.

Electronic Wallet (eWallet)

A software application that functions as a secure repository for (i) storing and managing a payer's payment credentials, and (ii) initiating payment transactions. Additional features and functions may be included, such as coupons, loyalty account management, and management of non-payment forms of ID such as digital drivers' licenses and passports. A Wallet application may reside in hardware or software on a PC or PC peripheral, a mobile device, or in the cloud. There are multiple ways to initiate payment from a Wallet, depending on the payment system in use, and the available payee interface. Common methods include: (i) the payer physically holding a Smart mobile device to a reader (as with NFC and barcode payments), (ii) the payer opening the Wallet application directly and setting up a payment transaction (as with PayPal), and (iii) invoking the Wallet from another application via API. Wallets are one of three common UIs for mobile payment initiation, the other two being Wallets and Carts.

[a] Simone di Castri. 2013. *GSMA Mobile Money for the Unbanked: Enabling Regulatory Solutions*. p. 6.

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