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MODERNIZING THE PAYMENT SYSTEM TO INCREASE FINANCIAL INCLUSION IN INDIA

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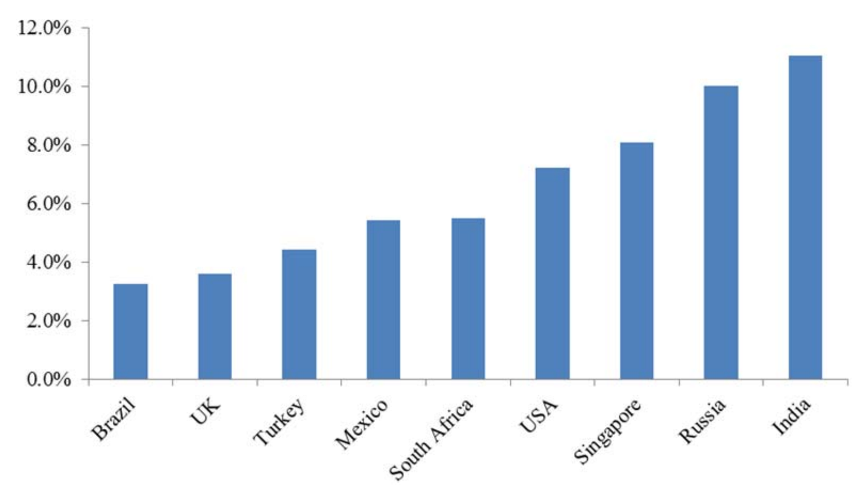
Payments in India remain heavily cash reliant. This dependence creates economic inefficiencies and limits efforts to include the unbanked in the formal financial system. In response, the government has introduced a number of policies to promote non-cash payments, bolster the payments infrastructure, provide hundreds of millions of new payment-capable accounts to the unbanked, and encourage new technology and innovation by non-traditional firms. This *Asia Focus* reviews the role non-cash payments can play in India's financial inclusion efforts, summarizes recent government policies to develop a national payment system that includes the unbanked, and assesses the challenges and implications of ongoing reforms.

Non-cash Payments can Improve Economic Welfare and Financial Inclusion

Payments in India rely heavily on cash, resulting in economic inefficiencies and encouraging people to operate outside the formal financial system. As of 2014, India's ratio of currency in circulation outside of banks to GDP was 11.1 percent, higher than other emerging economies like Russia (10.0 percent), Mexico (5.4 percent), and Brazil (3.2 percent) (see *Figure 1*).[1] Meanwhile, only an estimated 10-15 percent of Indians have ever used any kind of non-cash payment instrument, compared to 40 percent of people in countries like Brazil and China.[2] Cash reliance extends to larger transactions involving wages and remittances. According to one survey of Indian households, 90 percent of respondents receive wages in cash.[3] An equal number reported using cash to send and receive remittances, a remarkable figure given that remittances often involve transfers across long distances.[4] Heavy use of cash for transactions also encourages many Indians—some 64 percent, according to survey research—to store their savings at home in cash form.[5]

Figure 1: Cash and Coins in Circulation Outside Banks (% of GDP)



Source: BIS Committee on Payments and Market Structure, end-2014 data.

This cash reliance makes households vulnerable not only to theft but also inflation, which erodes the value of cash not earning interest in a formal account.[6] It means their savings are unavailable to fund broader economic activity, as cash held at home cannot be lent by banks. Moreover, Indians that operate exclusively in cash and without a bank account face tougher borrowing conditions. In 2014, 13 percent of Indians reported using informal lenders, which typically operate in cash and offer fewer protections than those provided by formal banks.[7] This is one of the highest rates of informal borrowing in the world according to World Bank surveys, and such loans usually involve exorbitantly high interest rates that can range from 40 to 200 percent according to one estimate.[8]

The first step towards reducing some of these cash-related economic inefficiencies is to create inclusive non-cash payment systems. These systems provide benefits to a country's poor citizens across a number of indicators, lowering the cost of transactions and increasing the return on savings.[9] The availability of convenient, reliable, secure, and affordable payments—delivered through a basic transaction account—can introduce the unbanked to formal financial products like loans and insurance, creating synergies with broader financial inclusion goals.[10]

At a basic level, payment accounts help the poor by lowering the cost and increasing the ease of payments for goods, services and remittances. A small business in rural India might use a digital payments platform to sell goods online, while a customer making a large purchase of a household appliance or vehicle could utilize safer, more convenient digital payments in lieu of bulk cash. For migrant workers and their families, electronic payments improve the speed and safety of remittances while lowering their cost.

Transaction accounts initially designed to enable payments may also have the features of formal bank accounts, allowing users previously unexposed to the banking system to save safely and efficiently and better manage household finances. Studies of Kenya's M-PESA mobile payment system, for example, indicate roughly three-quarters of customers use their accounts to save money due to ease of use and safety concerns over holding too much cash. Additionally, one-fifth of unbanked M-PESA customers use it as a substitute for informal savings methods (see "*M-PESA*" textbox below).[11]

After using non-cash payments for transactions and basic savings, new customers are more likely to open formal bank accounts to access products and services like loans, insurance, and asset management. An econometric analysis of M-PESA's impact finds that, between 2006 and 2009, expanded payments access had led to an 11 percentage point increase in the number of Kenyans using formal banking services. Assuming universal adoption of M-PESA, the study estimated the proportion of banked Kenyans would increase by 28 percentage points.[12]

M-PESA

Kenya's M-PESA (Swahili for "mobile money") payment system has been hugely successful in improving financial inclusion in the country. Launched in 2007 by Vodafone, the telecommunications firm, on behalf of Kenya's Safaricom mobile phone company, the system allows users to deposit, withdraw, transfer money, and make payments using their mobile phones. Operating under a branchless model, the system relies on a physical network of agents like mobile phone and other retail stores. As of 2014, M-PESA transactions represented roughly two-thirds of national payments volume and helped increase the rate of payments access to 67 percent of the population, up from 41 percent five years earlier.

Source: Consultative Group to Assist the Poor, "10 Myths About M-PESA: 2014 Update," October 1, 2014.

Broader participation in the payment system can deliver benefits to the broader financial system, creating positive network effects that facilitate development of more sophisticated services. For example, assuming an appropriate regulatory framework and consumer protections are in place, payment system operators may be able to gather valuable financial information about their customers, supporting credit scoring where it would not otherwise exist and allowing more informed lending to a larger population of borrowers.[13] More customers participating in the formal payment system, particularly via transaction accounts that permit basic deposits, will increase the share of national savings that can finance economic activity (as opposed to hidden under a mattress as cash). A growing base of customers can also reduce the cost of providing financial services per account holder in rural areas.

Improving the accessibility of a country's payment system helps alleviate poverty even when poor citizens lack the basic income, let alone savings, to pay for ordinary goods and services. The Indian government's new National Mission for Financial Inclusion (see "*Bringing the Unbanked into the Financial System through Payments*" below) bundles new transaction accounts offered to the poor with direct welfare benefits transfers via the payment system. This provides a secure way to distribute benefits and encourages participation in the formal financial system.[14]

Creating a National Payment System

Over the past several years, India has implemented a number of policies to establish a national electronic payments infrastructure to increase the ease of transactions both for payments operators and customers while lowering overall costs. While the Reserve Bank of India (RBI), the country's central bank, serves as the main regulator and policy making body for the payment system, the country has historically had a number of separate platforms run by a mix of national and local entities. These included a National Financial Switch for ATM operations managed by an RBI think tank, regional Electronic Clearing Service centers operated by various commercial banks, and the National Electronic Fund Transfer system operated by another RBI affiliate.

Table 1: Recent Developments in India's Payment System

Date Implemented	Payments Entity/Policy
September 2008	National Automated Clearing House (NACH)
December 2008	National Payments Corporation of India (NPCI)
November 2010	Immediate Payments Service (IMPS) for mobile payments
February 2012	Online verification of Aadhaar universal identification cards
March 2012	RuPay electronic payment card scheme
July 2012	Aadhaar Payments Bridge System (APBS)
October 2013	Aadhaar-enabled Payment System (AEPS)
August 2014	National Mission for Financial Inclusion (PMJDY)
August 2015	Provisional payments bank licenses

Experiment with Mobile Payments

Motivated by the success of mobile payment systems like M-PESA, in 2009 NPCI launched the Immediate Payment Service, an instant interbank transfer service available 24 hours per day via mobile phones. As in other developing countries, authorities identified the widespread adoption of mobile phones (78.9 percent as of September 2015 according to the Telecommunication Regulatory Authority of India) as a way to reach unbanked households.

In conjunction with IMPS, the RBI began licensing non-bank financial companies as "payment system operators" in 2009. These firms were licensed to provide mobile e-money wallets for use in electronic transactions. Though a number of firms entered the mobile payments space under the scheme, including several firms recently granted payments bank licenses, they have been limited by their inability to provide any basic banking service such as deposit accounts.

Any customer must link a mobile money account to a correspondent bank account held with a regular bank in order to withdraw or deposit funds, limiting operators' ability to serve unbanked rural areas. The expansion of mobile payments has thus far been minimal under the program, with only 2 percent of Indians having used a mobile phone for payments as of 2014 compared to 60 percent of Kenyans under the successful M-PESA program. Of those that do use mobile banking services, 90 percent come from urban or semi-urban areas—where customers already have greater access to finance—according to research by the RBI.

Sources: The Institute for Business in the Global Context, Tufts Fletcher School of Diplomacy, *The Cost of Cash in India*, 2014, p. 12; M. V. N. K. Prasad, "Reality Check: Usage of Mobile and Mobile Banking in District, Mandal Headquarters and Rural Areas," Institute for Development and Research in Banking Technology Staff Paper Series, Vol. 1, No. 1, 2015.

In 2008 the RBI established the National Payments Corporation of India (NPCI) to promote interoperability and standardization among India's complicated retail payment systems and consolidate them into a coherent national network.[15] Since then, the NCPI has implemented multiple ongoing reforms, including a national automated clearing house system for payments, the RuPay electronic payment card scheme, the Immediate Payment Service (IMPS) for mobile transactions, national check truncation, and a continuously operational system for remittances.[16]

Meanwhile, the government's rollout of universal identification cards—popularly known as Aadhaar cards and held by nearly one billion Indians[17]— lets any holder be authenticated by the Unique Identification Authority of India (UIDAI) and NPCI, easing financial institution compliance with Know Your Customer (KYC) regulations[18] and allowing the payment system to support financial inclusion efforts.[19]

Electronic KYC verification[20] expedites the process of opening transaction or bank accounts for any Aadhaar card holder (see "*Bringing the Unbanked into the Financial System through Payments*" below) and supports two new NPCI payments services that make accounts more attractive to the unbanked: 1) The Aadhaar Payments Bridge System allows the newly banked to receive electronic benefits transfers from the government; and 2) the Aadhaar-enabled Payment System lets them conduct balance inquiries, deposits, and withdrawals as well as make Aadhaar-to-Aadhaar funds transfers with bank correspondents (known as "Bank Mitras") at a number of micro-ATMs around India.[21]

The government has made several other proposals to encourage expansion of the electronic payment network, including tax breaks for customers and retailers using payment cards and lower transaction fees for e-payments. Additionally, it is proposing mandates on the use of e-payments for high-value transactions as well as taxes on cash payments above certain thresholds.

Bringing the Unbanked into the Financial System through Payments

Having established a more robust national payment infrastructure, the government and RBI have recently initiated two new policies to attract unbanked citizens to the financial system through payment-focused accounts. Shortly after taking power in mid-2014, the government of Prime Minister Narendra Modi instructed public sector banks to leverage the Aadhaar program to create bank accounts for India's unbanked and link them to direct welfare benefit payments, thereby using the convenience of the payment system to attract the unbanked and encourage them to use it. More recently, the RBI issued 11 licenses for new specialty payments banks in August 2015 to promote innovation in delivering payments services to India's unbanked.

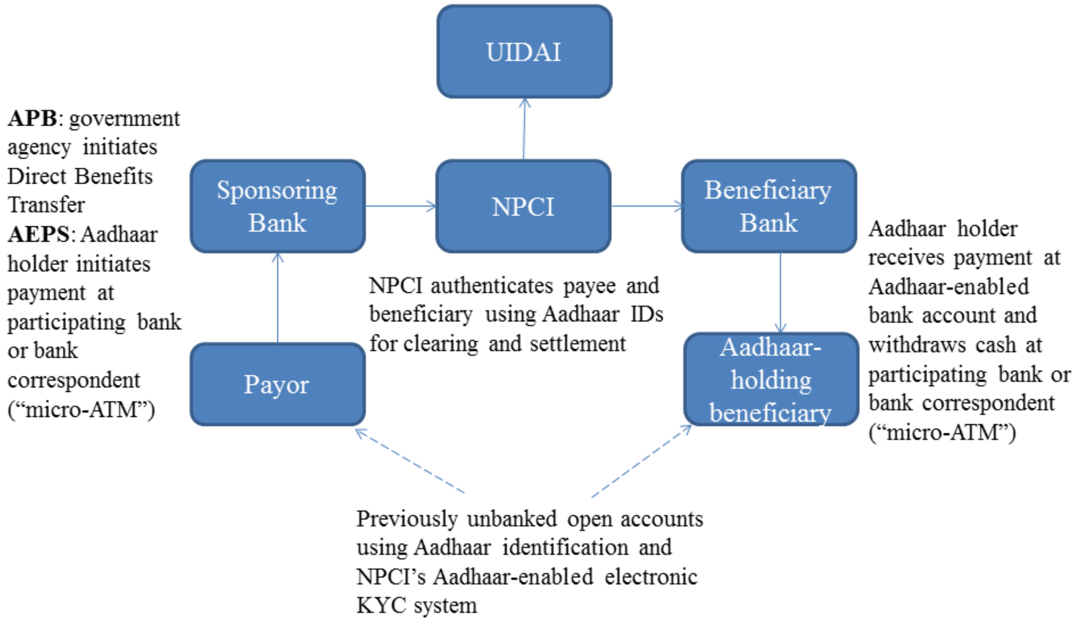
Delivering Payment-capable Accounts through the National Mission for Financial Inclusion

The Modi government announced the National Mission for Financial Inclusion (*Pradhan Mantri Jan-Dhan Yojana*, or PMJDY) program in 2014, mandating public sector banks provide hundreds of millions of unbanked Indians with new accounts.[22] The program's goal is to expand financial inclusion and give accounts to the unbanked population, but its initial strategy is to focus on the provision of convenient payment products as a means to attract India's unbanked and, more importantly, get them to use their new accounts.[23]

This strategy is most evident in the government's efforts to bundle the PMJDY accounts with the Direct Benefits Transfer (DBT) program. The DBT program, established in 2013, sends benefit payments (e.g. scholarships or pensions) directly to the poor to reduce the role of local officials and other intermediaries that have historically diverted payments for corrupt purposes. PMJDY accounts can now receive direct transfers from various government subsidy programs via the aforementioned Aadhaar Payments Bridge System.

The PMJDY-DBT bundling highlights the potential synergies of coordinated efforts to improve a country's payment system and increase financial inclusion. DBT-enabled accounts offer benefits to the unbanked that attract them into the formal system. At the same time, a growing customer base of the newly banked creates positive network effects that make the payment system more useful for all participants, particularly in combination with the Aadhaar-enabled Payment System, which will allow users to conduct broader transactions (see *Figure 2*).[24] To further encourage PMJDY adoption and active use, account holders will earn interest on savings and receive basic life insurance and overdraft protection (a limited form of credit). The government also hopes PMJDY accounts will expose new customers to the broader benefits of the formal financial system. With continued growth of the customer base and parallel improvements to the payments infrastructure and bundled financial products and services, accelerating network effects should create a self-reinforcing process.[25]

Figure 2: Stylized Aadhaar-based payments use cases: Aadhaar Payments Bridge or Aadhaar-enabled Payments System



As of March 2016, the program had already opened 213 million new accounts, a remarkable achievement in under two years, but it remains a work-in-progress.[26] Roughly 29 percent of accounts held a zero balance, in part because the government has not yet fully utilized the DBT program for all welfare payments. The infrastructure to support the new accounts is still limited, making it less attractive for new PMJDY customers to make daily payments. At present, operating the accounts is a loss-making activity for the public sector banks (PSBs). The PSBs receive a limited commission of 1 percent on DBT transactions, while industry associations claim a break-even commission rate would be above 2 percent.[27] As such, they still have limited economic incentives to market the accounts or provide additional services that might encourage customer activity.[28]

Other developing countries that have attempted to leverage government transfers to drive increased use of the electronic payment system have also encountered problems generating active use of new accounts. Among the additional factors that may contribute to dormant accounts are high transaction fees or distrust of non-cash payments driven by a lack of financial literacy.[29] In response, the Indian government and PSBs are conducting public awareness campaigns focused on general financial literacy and emphasizing beneficial features of the accounts.[30]

Encouraging Innovation through New Payments Banks

After the limited success of non-bank mobile payments operators (see textbox "*Experiment with Mobile Payments*" above), the RBI decided to allow the entry of non-traditional, retail-focused firms into the banking system through the creation of new payment-specific banks. In August 2015, the RBI approved in-principle licenses for 11 new payments banks. The new banks' owners include five telecommunications ventures, a mobile payments specialist, three major conglomerates, the National Securities Depository, and India Post. They have physical and virtual networks in the rural areas where many of India's unbanked live, while at least two have international experience promoting electronic payments.[31] The entrance of non-traditional firms into the payment system is part of the broader effort to innovate new techniques to promote financial inclusion through payments.

The RBI expects the payments banks will leverage new technology given the nature of their parent companies. As RBI Governor Raghuram Rajan has emphasized in public statements, the RBI is not trying to promote one particular business model but rather is open to the adoption of new technology and innovative strategies: “The [board] took the view that it was hard to forecast what would happen in the payment space….Given the fact that we did not know what could succeed, the board chose to license a variety of players—some tech companies, finance companies, some bank-mobile combines. Now, let's see how the game develops.” [32]

The payments banks will have 18 months to comply with a list of requirements and receive a full license (see *Table 2* below). They will accept deposits of up to 100,000 rupees (US$ 1,500[33]) fully covered by India’s Deposit Insurance and Credit Guarantee Corporation. Deposits can be placed in current (checking) or savings accounts and will earn interest. This solves the primary problem faced by non-bank mobile payment operators: an inability to let customers participate in these new payments networks without linking to a separate correspondent bank account.

Table 2: Payments bank Overview

Account Types	Checking, savings
Deposit Cap	RS 100,000 per customer
Deposit Insurance	RS 100,000 per customer
Brokered Products	Insurance, mutual funds
Permitted Assets	Indian government securities
Capital Requirements	Minimum leverage ratio of 3%

To mitigate the risks involved in allowing inexperienced non-banks to enter the banking system, the RBI has limited the range of permitted services to focus on retail payments rather than credit extension. Payments banks cannot make loans, but instead can only invest in eligible Indian government securities or treasury bills with maturity up to one year and cash holdings at other commercial banks.[34] They can also broker other financial products like insurance and mutual funds to generate fee income, encouraging account holders new to the banking system to use other services.

The prohibition on lending allows the RBI to encourage experimentation among start-up payments banks without creating additional leverage in the financial system or excessive competition for traditional banks. As they are only allowed to invest in government securities, the new payments banks do not require prior expertise in the credit risk analysis fundamental to traditional banks’ earnings and risk management. Instead, they have a competitive advantage in marketing to populations currently outside of the banking system (e.g. rural mobile phone subscribers) and the profit motive to bundle new payment banking with their existing products and services.[35]

Challenges and Implications

The addition of these new players to India’s payments space poses a number of potential challenges. One open question is how payments banks will compete with the new PMJDY accounts. After all, with more than 200 million new accounts opened, many of the previously unbanked will now have access to formal payments and won’t necessarily need a payments bank account. The new payments banks will likely rely on their background in telecommunications and technology to design payment products better suited to rural areas that lack basic infrastructure. Even with this expected innovation and new channels for reaching unbanked customers, the swarm of new players could undermine network effects and economies of scale. Given RBI Governor Rajan's prior public statements, it seems the RBI is agnostic as to which payments model succeeds as long as the formal payment system expands, and with it, financial inclusion.[36]

New payments operators will also confront a lack of financial literacy and limited awareness of new products among India's unbanked, a common barrier to financial inclusion efforts around the world. The bundling of additional benefits to payments accounts (e.g. through the Direct Benefits Transfer program) should help increase awareness among the unbanked. India should also benefit from a leapfrog advantage: payment providers will not necessarily need to invest in capital-intensive branches in rural areas to deliver the new payment services.

For existing commercial banks already facing asset quality problems and significant capital raising requirements, the new competition poses risks to earnings. The targeted demographic of the new payments banks is India's huge unbanked rural population, which by definition is not holding deposits in the traditional banking system. However, payments banks will also operate in urban areas, where they will compete with existing commercial banks for small deposits. If payments banks function as the RBI hopes, however, they should bring new depositors into the banking system, not poach existing bank customers. Given the higher deposit rates traditional commercial banks should be able to offer along with their wider range of products, customers will likely move from payments bank accounts to savings accounts with traditional banks as their financial needs become more sophisticated.[37] In other words, payments banks' long-term success should benefit commercial banks and other established financial institutions.[38]

The rapid rollout of new payment models raises a number of operational risks. Both the PMJDY program and new payments banks face an evolving legal environment in the treatment of customer privacy, with the Indian Supreme Court continuing to debate the extent to which non-government entities can leverage new Aadhaar ID numbers to improve the speed and efficiency of payments transactions.[39] Innovative business models have the potential to lead new payments banks into unregulated areas, necessitating enhanced supervision.

Conclusion

Payments in India remain dependent on cash—still used in roughly 86 percent of transactions[40] —but ongoing policy reform and experimentation will encourage rapid evolution in the coming years. With a national infrastructure in place and undergoing improvement, hundreds of millions of Indians with new payment-capable accounts, and a variety of new firms entering the sector, the promise of a modern non-cash payment system has arrived—and with it, potential advances in financial inclusion. Changes to the payment system raise a number of uncertainties for the financial industry, including the potential effects of competition among the new players and the implications for traditional commercial banks. Whichever models prove most successful, the end goal for policymakers is to bring hundreds of millions of unbanked Indian citizens into the financial system by providing them with access to non-cash payments services.

Endnotes

[1] Data for China is unavailable. Bank for International Settlements, Committee on Payments and Market Infrastructures, "Red Book statistical update," December 2015.

[2] World Bank Global Findex database. Data as of 2014.

[3] InterMedia, "India: Financial Services Use and Emerging Digital Pathways," May 2014.

[4] Cash-based remittances are typically delivered in person by traveling friends or family members. See Gabi G. Afram, "The Remittance Market in India: Opportunities, Challenges, and Policy Options," World Bank, 2012.

[5] The relationship between cash savings and cash transactions is arguably two-way causal: a culture of saving in cash may also lead to heavy reliance on cash in transactions. Survey data from Intermedia, *op. cit.*

[6] Inflation can have a particularly destructive impact on household wealth in India, where inflation exceeded 10 percent as recently as 2013.

[7] World Bank Financial Inclusion Global Findex database. Survey data inclusive of responses in Nepal.

[8] Abhijit Banerjee and Esther Duflo, "The (not so simple) economics of lending to the poor," Massachusetts Institute of Technology, Cambridge, Massachusetts, Spring 2011, Lecture, http://ocw.mit.edu/courses/economics/14-73-the-challenge-of-world-poverty-spring-2011/lecture-notes/MIT14_73S11_Lec17_slides.pdf (Accessed December 16, 2015).

[9] Bank for International Settlements, Committee on Payments and Market Infrastructures, "Payments aspects of financial inclusion," September 2015.

[10] Like many developing countries, India has prioritized financial inclusion, with 47 percent of adult Indians lacking a formal bank account according to World Bank Financial Inclusion data as of end-2014. The provision of new bank accounts under the National Mission for Financial Inclusion means this number, when updated, will have fallen substantially, although many new accounts remain dormant.

[11] Olga Morawczynski and Mark Pickens, "Poor People Using Mobile Financial Services: Observations on Customer Usage and Impact from M-PESA," CGAP Brief Online, 2009.

[12] Isaac Mbiti and David N. Weil, "Mobile Banking: The Impact of M-PESA in Kenya," National Bureau of Economic Research Working Paper No. 17129, June 2014.

[13] Alibaba, the Chinese e-commerce giant, has several businesses that use its merchant data to make small business and consumer loans. See, for example, *Quartz*, "Alibaba's customers can now get a loan based on their online shopping history," June 25, 2015.

[14] Another common reason payers and payees may use informal payment systems is a desire to avoid tracking by the authorities to evade taxes or to conduct other illicit activities.

[15] For more details on the history and structure of the Indian payment system, see Bank for International Settlements, "Payment, clearing, and settlement systems in India," *Payment, clearing and settlement systems in the CPSS countries - Volume 1*, September 2011.

[16] National Payments Corporation of India, "About Us" (Accessed December 22, 2015).

[17] As of March 2016, the Unique Identification Authority of India reported over 983 million Aadhaars issued.

[18] Know Your Customer regulations outline requirements for financial institutions to verify the identity of their clients to ensure financial services are not used for the purposes of bribery, money laundering, fraud, theft, terrorist financing, or other illegal activity.

[19] The Indian Supreme Court has considered a number of privacy concerns related to the use of Aadhaar account information, including a proposal to bar financial institutions from using the information. As of an October 2015 ruling, the Court allowed use of Aadhaar numbers for financial inclusion efforts, though it did not specify whether this applied to banks' use of Aadhaar for compliance with KYC regulations. *LiveMint*, "Supreme Court provides partial relief for Aadhaar," October 16, 2015.

[20] Unique Identification Authority of India, "Aadhaar E-KYC Service," November 2012.

[21] Micro-ATMs are handheld devices used by banking correspondents and capable of authenticating customers using Aadhaar IDs. They provide financial access in areas that otherwise lack a physical bank presence.

[22] Some private banks are also involved in the program, though they have provided fewer than 4 percent of accounts as of March 2016.

[23] Inactive use of accounts by the newly banked is a common challenge in global financial inclusion efforts.

[24] The Aadhaar-enabled Payment System is more broadly intended to link the previously unbanked to the payment system using their new national ID cards and is distinct from the Aadhaar Payments Bridge System, which is specifically designed for payments from the Direct Benefits Transfer program.

[25] These direct cash transfer programs are modeled after similar successes in countries like Mexico and Brazil. See, for example, Pravakar Sahoo, "Direct cash transfers: a panacea for poverty and inequality in India?" East Asia Forum, February 21, 2013.

[26] Pradhan Mantri Jan Dhan Yojana, Department of Financial Services, Ministry of Finance, http://www.pmjdy.gov.in/account (Accessed March 8, 2016).

[27] Aishwarya Singh, Lokesh Kr. Singh, and Mukesh Sadana, "PMJDY: Improved Financial Inclusion, But Roadblocks Remain," Consultative Group to Assist the Poor, March 26, 2015.

[28] A government-sponsored audit of the program in November 2014 found that some 20 percent of advertised fixed-point agents simply did not exist, while 52 percent of those that were operational were not "transaction ready."

[29] Bank for International Settlements, "Payments aspects of financial inclusion," *op. cit*.

[30] For example, publicity campaigns emphasize the need for customers to conduct basic account transactions in order to qualify for the associated overdraft coverage.

[31] Vodafone M-PESA, one of the winning licensees, has global experience (e.g. in Kenya) operating mobile payments networks, while Vijay Shekar Sharma, founder of One97, another licensee, is also the founder of Paytm, a successful Indian mobile payments operator. One97 has enlisted the major Chinese e-commerce and payments firm Alibaba as a co-investor.

[32] Pratik Bhakta and Arka Bhattacharya, *Economic Times*. "Payment banks: Why enterprise and valuations will leave small players nursing their wounds," September 23, 2015.

[33] Exchange rate reflects interbank midpoint rate as of March 1, 2016 (INR 68.41/USD 1.00).

[34] All bonds must be eligible under the RBI's statutory liquidity ratio. The expansion of payments banks is expected to lower the government's short-term borrowing costs.

[35] Telecommunications firms are particularly interested in providing new payments bank services given the highly competitive Indian market for mobile phone subscribers. The new services are expected to increase the "stickiness" of customers and reduce turnover.

[36] Pratik Bhakta and Arka Bhattacharya, *Economic Times*, *op. cit*.

[37] India's commercial banks likely already suspect this, as evidenced by the 30 percent investment by State Bank of India—the country's largest bank—in one of the newly approved payments banks as part of a joint venture with Reliance Industries.

[38] Daniel Radcliffe, "Payments Banks: A game-changing contribution to India's financial inclusion efforts," *Impatient Optimists*, Bill & Melinda Gates Foundation.

[39] Proponents of the widespread use of Aadhaar cards for customer authentication and identification note the use of similar national ID numbers in countries like the United States, where Social Security numbers identify customers in a range of commercial transactions.

[40] The Institute for Business in the Global Context, Tufts Fletcher School of Diplomacy, *The Cost of Cash in India*, 2014, p. 12.

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