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Post-Demonetization E-Payment Trends

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Post-Demonetization E-Payment Trends

ICT India Working Paper #1

Nirupam Bajpai, John Biberian, and Jeffrey Sachs

September 2018

Executive Summary

Developing a solid foundation for electronic payment systems is an integral part of ICT-driven development for any country. Compared to cash, e-payment transactions offer the advantages of portability, security, and convenience. For interpersonal transactions, e-payments enable instantaneous exchanges of funds without requiring large sums of physical currency to be carried around and exchanged. E-payments also allow money to be sent rapidly to any recipient regardless of location, eliminating the time cost of making transactions over distance. Integrated e-payment systems are vital to the functioning of any ICT platform whose services require payment, especially those based on mobile technology. Finally, e-payments are more visible than cash transactions, reducing the corrupting influence of black money, widening the tax base, improving data on spending and consumption, and aiding in the formalization of large sectors of the economy.

India has long been a cash-based economy, but in recent years, the country has been in the process of transitioning towards a cashless society. In November 2016, this transition was accelerated when 87% of the country's paper currency by value was demonetized. The macroeconomic merits of demonetization remain up for debate, but the policy shock did provide India a golden opportunity to replace legacy systems with ones that could interface with new IT platforms and the country's national ID database, Aadhaar. Although digital payment remains relatively infrequent for now, total digital payments are expected to reach USD 500 billion by 2020, ten times the level in 2016. Government has encouraged this transition by linking public transactions such as Direct Benefit Transfer (DBT) to e-payment services through Aadhaar.

Numerous modes of digital payment are now available to Indian consumers, but some have been more successful than others. Demonetization additionally played a heavy role in influencing which payment systems have been adopted for which purposes. For example, while mobile wallets were popular in the months and years preceding demonetization, Unified Payments Interface (UPI) based systems have since become more prevalent, largely thanks to the convenience of being able to skip the intermediate step of adding money to a specific account in favor of sending money directly to recipients via one's own bank account. UPI transactions increased threefold in the year following demonetization, representing the largest segment of the country's digital payment growth. As smartphones continue growing in popularity and data usage continues to increase, India's digital payment market is expected to reach over 1 trillion USD by 2023.

However, specific interventions and investments are required for the information economy to penetrate rural areas. Initiatives such as the ICICI Digital Villages Program provide training and support for rural Indians to enter the digital financial ecosystem, offering assistance in opening paperless accounts, introducing SMS services for fund transfers and balance inquiries, and developing native cashless payment systems for direct deposit. Infrastructure investments are also required to make digital payments feasible for those in remote and poorly connected areas. Such efforts are necessary if ICT-driven development is to sustain India's economic growth in a fashion inclusive for all of India's citizens.

Keywords: demonetization, UPI, Aadhar, formal economy, digitization, Digital Villages

A Cashless India

On November 8, 2016, in an unprecedented move, Prime Minister Narendra Modi announced the demonetization of all INR 500 and 1000 bills. At a total of INR 15.4 trillion, these bills constituted 86.9% of the value of total currency in circulation. The consequences of this decision have since been hotly debated both domestically and internationally. The importance and utility of transitioning to a world of e-payments is broadly recognized. Yet India must still prove it is capable of doing so rapidly and efficiently, and research and policy analysis must still identify the most advantageous ways to shift to a world of e-payments considering timing, costs, and growth consequences.

The shock of demonetization presented India with a golden opportunity to leapfrog into a new economy, dominated by digital financial transactions. This may appear overly ambitious, but given existing IT platforms and the now widespread adoption of the Aadhaar system, India's financial sector is now ripe for revolution. While a mere 6% of personal consumption expenditure in India happens digitally at present, by 2020, total digital payments in India are expected to reach USD 500 billion, almost ten times the level in 2016.¹ With enabling infrastructure already in place, the key remaining challenges are to rapidly increase widespread awareness and keep transaction charges as low as possible.

India's move toward cashless and digital payments enjoys significant official support. The Finance Ministry is aiming for 25 billion transactions to be completed in 2017-2018, compared to 8-9 billion in 2016-2017. With Aadhaar as a foundation, public transactions can increasingly be completed through these channels. The Direct Benefit Transfer (DBT) program already leverages this technology to credit money to more than 450 million Aadhaar-linked bank accounts owned by beneficiaries. Aadhaar also serves as the basis for a new class of services, including an e-payments network, a redesigned social security system and the e-KYC service.² If this process is carried out to the full extent of India's capacity, the country can swiftly evolve from a data-poor to a data-rich environment with a high degree of financial inclusion.

Through the Unified Payment Interface (UPI), transactions between private persons and merchants have increasingly become cashless as well. A system that works both on smart and feature phones through Unstructured Supplementary Service Data (USSD), UPI enables transactions for any one of the 600 million mobile phone users in India as soon as it is linked to a bank account. Merchants increasingly accept UPI transactions, and with the introduction of Aadhaar Pay, soon, not even a phone will be required.

While the burden of demonetization initially fell heavily on the poor, digitization will ultimately formalize a large part of India's informal sector. The economically disadvantaged will be the greatest beneficiaries of this, as the minimum wage is increasingly enforced for daily wage labor and employee other benefits of the organized sector such as the Employees' Provident Fund reach new populations. The Indian Government's flagship Digital India

¹ BCG-Google Report 2016

² Nilekani and Shah, 2015

program, which seeks to use digital technologies to bridge the socio-economic and urban-rural divide, will expand these opportunities to the last mile so that all of India can participate in the new information and knowledge economy.³ The explosive growth in mobile phone users over the past decade clearly points to digital technology's potential for empowerment.⁴

Modes of Digital Payment

Numerous platforms are available for Indians who wish to take part in the digital payments revolution, listed below. An in-depth discussion of additional individual payment systems used by RBI and the banking sector continues in Appendix 1.⁵

1. Banking Cards

Banking cards offer consumers more security, convenience, and control than any other payment method. The wide variety of cards available – including credit, debit, and prepaid – offers enormous flexibility as well. These cards provide 2-factor authentication for secure payments. RuPay, Visa, and MasterCard are some of the most prevalent examples of card payment systems. Payment cards give people the power to purchase items in stores, on the Internet, through mail-order catalogues and over the telephone. They save both customers and merchants' time and money, simplifying and streamlining transactions.

2. Aadhaar Enabled Payment System (AEPS)

This bank-led model allows online interoperable financial transactions at Points of Sale⁶ and Micro ATMs through the Business Correspondent (BC) or Bank Mitra of any bank using Aadhaar authentication.

3. Unified Payments Interface (UPI)

This system, built on top of the RBI's Immediate Payment Service (IMPS), allows participating banks to combine basic banking features, seamless fund routing and merchant payments into a single mobile application. In this way customers can conduct financial transactions remotely using their mobile device. UPI also supports "Peer to Peer" collection requests, which can be scheduled and paid at the user's convenience.

4. Unstructured Supplementary Service Data (USSD)

This innovative payment service expands the UPI system to support mobile banking transactions using basic feature mobile phones. USSD-based mobile banking does not require mobile data and will provide deeper financial inclusion for the under-banked using mainstream banking services.

³ Ambani, 2017.

⁴ Mittal, 2017.

⁵ <http://cashlessindia.gov.in/index.html>

⁶ A Point of Sale (PoS) is the place where sales are made. On a macro level, a PoS may be a mall, a market or a city. On a micro level, retailers consider a PoS to be the area where a customer completes a transaction, such as a checkout counter. It is also known as a point of purchase.

5. Mobile Wallets

Mobile wallets allow users to carry cash digitally by either linking their cards to a mobile wallet application or preemptively transferring money online to their mobile wallet. In this way, users can pay with smartphones, tablets or smart watches instead of a physical card. In addition to most banks, some private companies provide e-wallet services, for instance Paytm, Freecharge, Mobikwik, Oxigen, mRuppee, Airtel Money, Jio Money, SBI Buddy, itz Cash, Citrus Pay, Vodafone M-Pesa, Axis Bank Lime, ICICI Pockets, and SpeedPay.

6. Bank Pre-paid Cards

Most banks offer pre-paid cards, in addition to their normal credit and debit card services.

7. Internet Banking

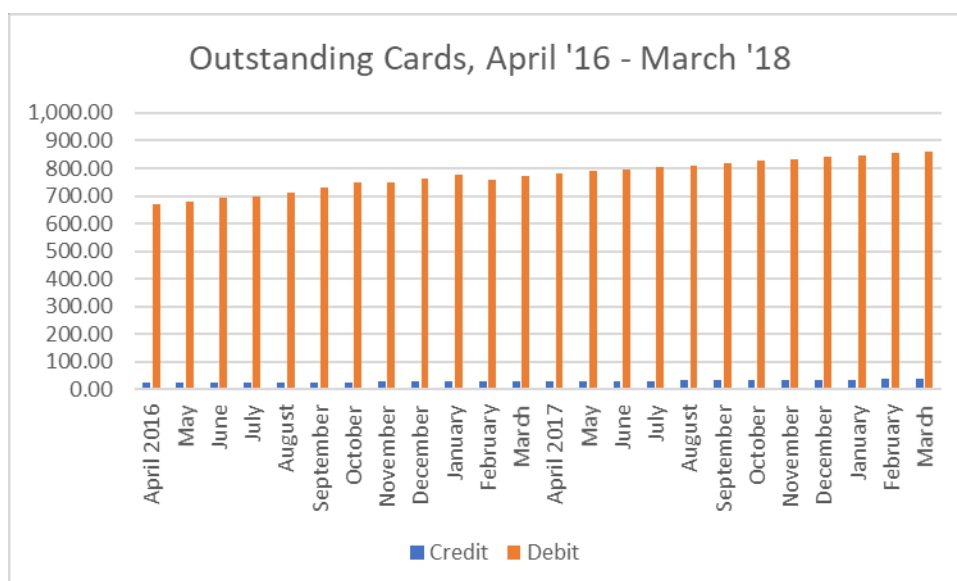
Also known as online banking, e-banking or virtual banking, this e-payment system allows users to conduct a range of financial transactions through a financial institution's website.

8. Micro ATMs

The Micro ATM platform is a low cost device connected to banks throughout the country and used by over a million Business Correspondents (BCs) to deliver basic banking services. This platform allows customers to instantly deposit or withdraw funds at convenient locations, such as local shops.

Trends in digital payments

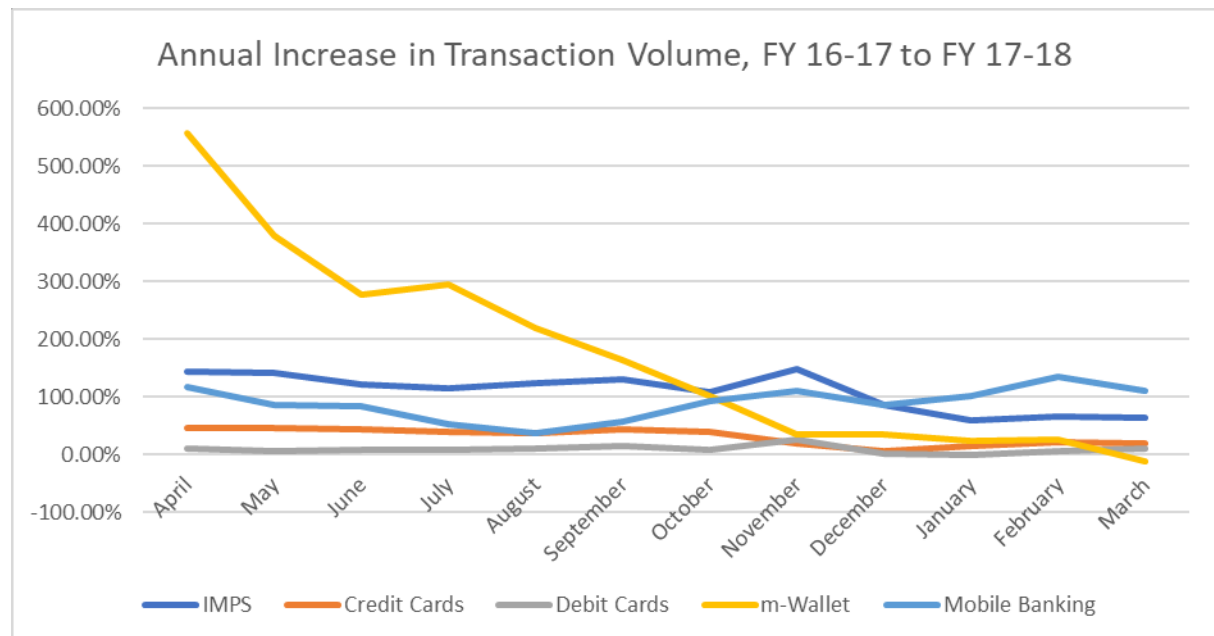
Since the announcement of demonetization, there has been a surge in digital transactions via credit/debit cards, e-wallets and mobile phone applications. Demonetization acted as a catalyst towards a digital payments ecosystem. To further accelerate this process, the central government has announced a package of incentives and measures for the promotion of digital and cashless transactions.



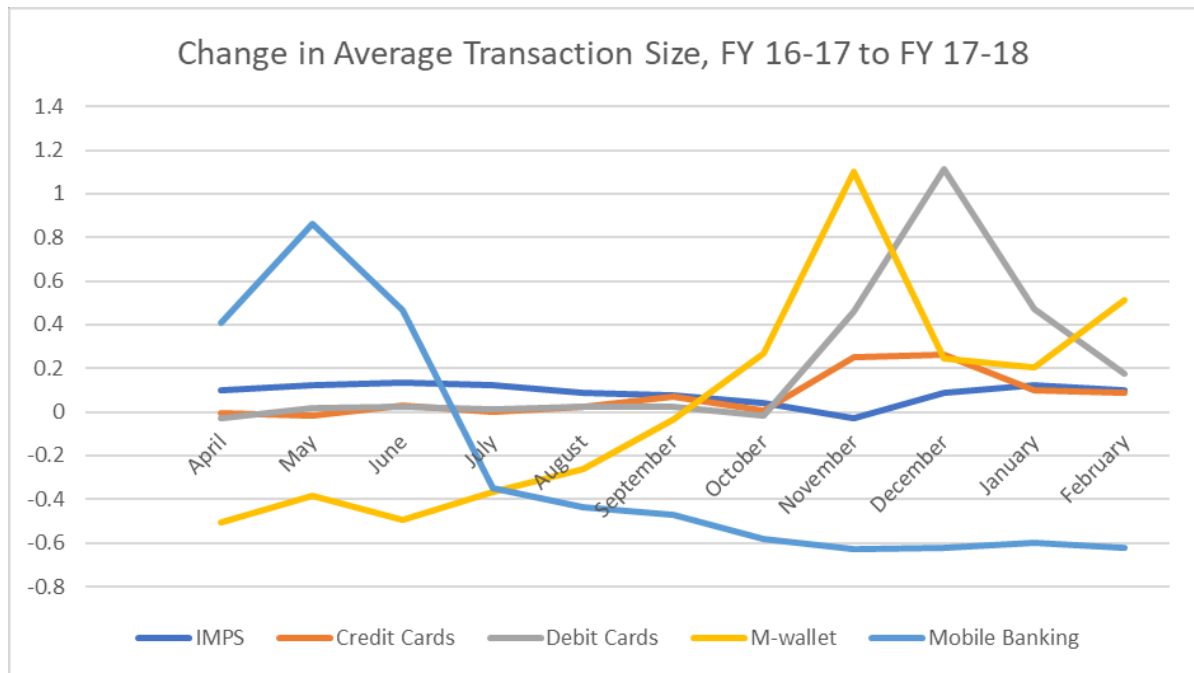
While debit cards vastly outnumber credit cards, both types of cards have steadily and significantly become more prevalent over the past two fiscal years.

Prior to demonetization, non-cash payments in India were facilitated by a wide array of different platforms and technologies supported by the banking industry and the Reserve Bank of India (for an in-depth examination of these systems, refer to Appendix 1). The need for an easier, simpler way to make payment has recently caused e-wallets to become dominant at the expense of the banking system. E-wallets represented an improvement over prior systems, which are access-restricted (not everyone has credit/debit cards), complicated (requiring entering net banking/card details for every transaction), and experience high failure rates due to complicated processes. E-wallet apps like Paytm and Mobikwik, which emerged from start-ups that began by simplifying the mobile phone recharge process, have now expanded to support a wide range of online/offline payments, with the aim of supplanting cash as much as possible. Between March and October 2017, Paytm wallet registered users increased by 29% to 282 million, and Paytm continues to add 10 million users a month. Over the same period, Mobikwik users increased to 65 million, a 103% increase. Paytm now supports one billion e-wallet, UPI, IMPS and card transactions a quarter, 50% in small town and villages, conducted by seven million offline merchants.

In response, a coalition of banks created the Unified Payments Interface (UPI) to enable remote digital payments directly from customers’ bank accounts, skipping the intermediate step of adding money to a mobile wallet. Between January 2017 and January 2018, UPI transaction volume grew from 4.5 million to 151.8 million. It is estimated that by December 2018, UPI transactions will cross the one billion mark, making this the most popular domestic payment system in the country.



M-Wallets grew rapidly to replace obsolete payment systems, but plateaued following demonetization as the IMPS-based UPI platform and Mobile Banking took hold.

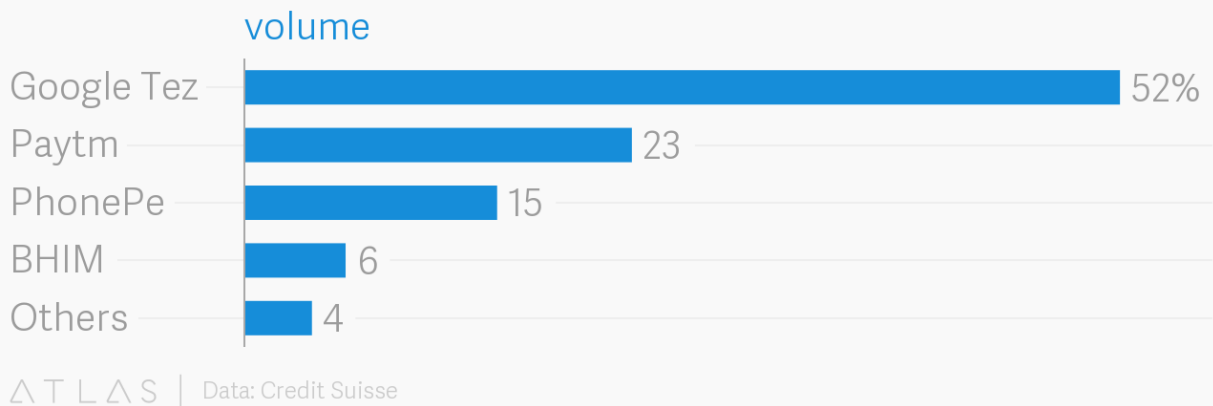


IMPS-driven UBI transactions became smaller on average leading up to and following demonetization, representing the increased popularization of the service. Demonetization led to a short-term drop in transaction size for m-wallets and debit cards, which substituted for small cash transactions.

UPI and USSD received official support post-demonetization, with the government's December 2016 launch of the Bharat Interface for Money (BHIM) service. Offering functionality through both a mobile app and *99# service, over 2 million transactions were completed on BHIM within the first ten days of its launch, with the app downloaded ten million times on the Google Play store alone. BHIM allows merchants to accept payments directly into their bank accounts via a ready to use virtual payment address (VPA) and a printable QR code, improving payment speed, functionality and liquidity.

Global rivals such as WhatsApp, Google's Tez (Google Pay), and Amazon Pay have also entered the hotly contested e-payments space. India is WhatsApp's largest market, with over 200 million users in India (18% of the company's global customer base), and the service is piloting a payment function in India that allows direct transfers between users. Google's Tez, operating via UPI like its older competitor BHIM, has over 14 million active users in India and has processed over 250 million transactions in India since its launch in September 2017. Within just four months of its launch, Tez processed as many monthly digital transactions (75 million) as Axis Bank, the fourth largest bank in the country. Samsung Pay, launched in March 2017, reached over 2.5 million customers by October, making India Samsung's third largest market behind South Korea and Russia. And Amazon Pay grew by 126% in 2017 while planning to integrate UPI payments in the near future. Google currently appears set to dominate the UPI space in the near future, with Tez already responsible for 52% of all UPI transactions in India compared to 23% for Paytm and 6% for BHIM.

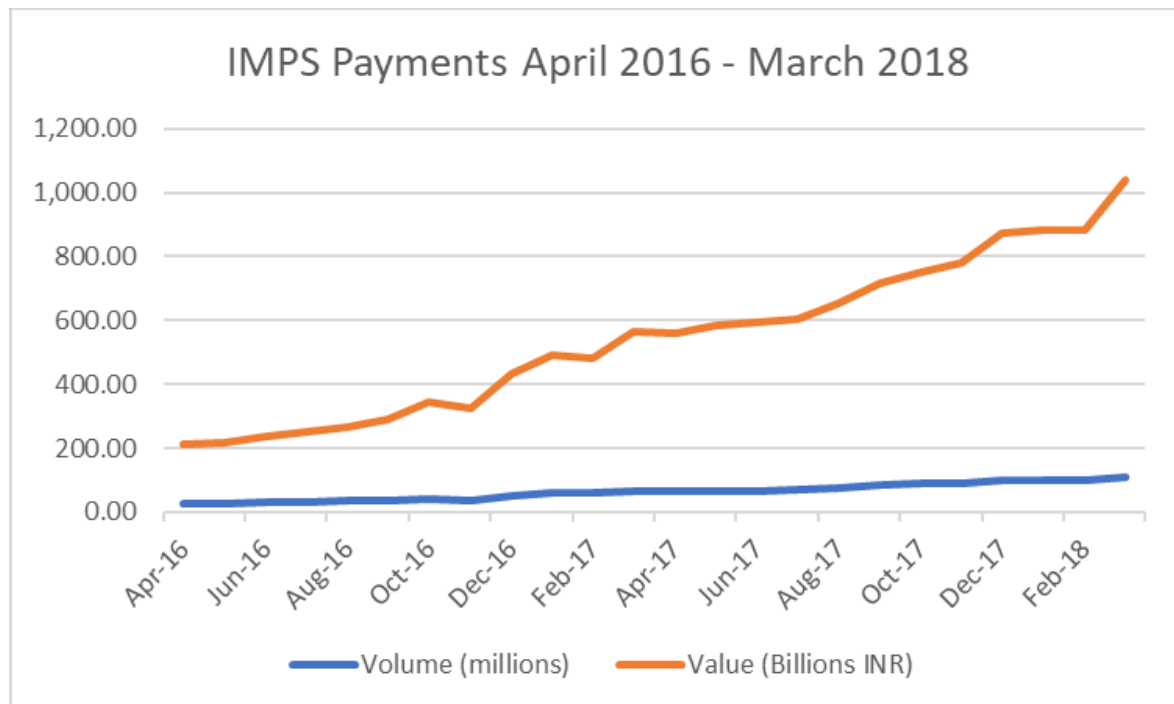
Google accounts for more than half the UPI transactions in India



7

The explosive growth in digital payments is set to continue over the foreseeable future. According to Credit Suisse, the size of India's digital payments market will increase five-fold to over \$1 trillion by 2023. Among the drivers of this growth is not only the great ease and convenience of digital payments, but the rapid increase of data usage among the 300 million Indian smartphone users. From 2017 to 2018 alone, average data usage jumped from 1 GB/month to 5-10 GB/month.

However, increased knowledge and digital infrastructure is required in rural areas of India, which have not experienced as many of the benefits of the information economy, in order to both continue fueling this growth and to encourage greater equality, development, and economic integration with the rest of the country. Government and private businesses have recently collaborated to empower rural Indians to take full advantage of digitization, most prominently through the ICICI Digital Villages Program.



⁷ Graphic source: <https://www.theatlans.com/charts/rkM4gPMdf>

IMPS transactions have experienced explosive growth over the past two fiscal years, particularly since demonetization in November 2016.

The ICICI Digital Villages program seeks to expand the digital financial ecosystem across rural India and assist the population's adaptation to the cashless economy. The first Digital Village, Akodara in the Sabarkantha district of Gujarat, was dedicated by the Prime Minister in January 2015. Following its success, ICICI bank announced an ambitious plan to establish "100 ICICI Digital Villages" in November 2016, the month of demonetization. In the wake of demonetization, the ICICI Digital Villages Program promotes enhanced access to seamless and digital banking, livelihood training for villagers, and credit linkages to enhance livelihood opportunities. The existing villages are located in 17 states spread across the length and breadth of India. ICICI's next step is to add an additional 500 villages to the program and train an additional 50,000 people in locally relevant skills⁸.

Digitization of Financial Transactions and Commercial Activities

- ICICI Bank is using Aadhaar-based e-KYC to help villagers open accounts in a paperless manner, without submitting physical documents. The saving accounts are linked to Aadhaar to enable direct transfer of government benefits into these accounts. There is a dedicated ICICI Bank branch in each village to service these accounts.
- The bank has provided an SMS based mobile service, which facilitates the villagers to transfer funds, receive SMS alerts & mini-statements and know their account balance. It is available in 10 regional languages, including Kannada, and functions on basic feature phones as well. The bank has also set up POS machines, which enables the retailers at the village including merchants; ration shops and village dairy cooperatives to accept digital payments. The Bank has also equipped Business Correspondents (BC) at these villages with micro-ATMs with GPRS facility. This allows villagers to deposit and withdraw cash by authenticating themselves with their Rupay debit card or through Aadhaar based biometric authentication.
- Additionally, the bank has created a cashless payment solution for the village milk cooperative societies and its members for sale of milk. Available across many villages, it has enabled the members to receive money directly into their accounts.

Vocational Training Based on Local Needs

- ICICI Foundation has imparted free-of-cost training under its 'ICICI Academy for Skills – Rural Initiative' program at these villages. Any resident of the village is eligible to get the training free of cost. The skill training is offered in a range of disciplines, which are identified based on the local economy around a particular village.
- The list of the disciplines includes comprehensive agriculture, dairy & vermicomposting, agriculture equipment service & repair, goat rearing, dress designing and sandstone cutting, mobile phone servicing and electrical home appliances. These trainings last 15 to 30 days.

⁸ Note from ICICI Bank

Credit Facility to Help Villagers Earn a Sustainable Livelihood

- ICICI Bank facilitates the villagers to form Self Help Groups (SHGs) and Joint Liability Groups (JLGs) and then offers loans to the members. ICICI Bank is also extending loan facilities to the eligible villagers in the form of Kisan credit cards, gold loans and farm equipment loans among others. The bank sanctions these loans using tablet devices at the doorstep of the villagers and SHGs, thus helping them to save time and effort to travel to a nodal branch.
- The Bank and ICICI Foundation assist the villagers in selling products through their market linkages in the local and nearby catchment areas.

The Macroeconomics of a Digital India

The macroeconomic impact of demonetization is still unfolding, and analysis over the next 2-3 years of growth, inflation, financial markets, the external sector and modes of digital payments will be required to make a well-informed and grounded assessment. On September 29, 2017 the Finance Minister stated that direct tax collection had risen 15.7% and undisclosed income of INR 54 billion (USD 844 million) had been detected post-demonetization.⁹ It is important to note here that a mere 2.89% of Indians filed any income taxes in 2013.¹⁰ Of course, a majority of Indians' incomes are below the tax threshold, but even then, less than three percent filing their tax returns is a testament to pervasive tax evasion nationwide.

Demonetization certainly led to a short-term currency shortage and a slowdown in growth. GDP growth fell for six consecutive quarters beginning early 2016, bottoming out at 5.7% in the second quarter of 2017, so other factors such as declining capital investments and exports were at play besides demonetization. Still, we need to understand demonetization's direct effects in order to overcome the adverse effects as quickly as possible.

India's greater challenge is to sustain high rates of growth over the next few decades. The rise in India's growth rate to 8.5% per annum during the 2003-08 period was partly due to the allocative efficiency gains arising from the reforms undertaken during the late 1990s and the early 2000s and much higher capital investments in roads, ports, telecom, and education among other sectors. Indeed, relative to the current growth slowdown, there is potential for reaching a higher growth trajectory of 7-8%. Among other things, this would require the following:

- (i) A major effort at raising the rate of domestic savings beyond 31% of GDP, especially by reducing government dissaving at the central and state levels through cuts in, and refocusing of, explicit and implicit subsidies, stricter control of non-developmental expenditure, improvement in the tax ratio through stronger tax enforcement, and strengthening incentives for savings;

⁹ <http://www.thehindu.com/news/national/demonetisation-helped-increase-revenue-collections-jaitley/article19775703.ece?homepage=true>

¹⁰ The number of taxpayers increased from 47.2 million in 2012-2013 to 62.6 million in 2016-2017.

- (ii) Larger investment in, and better performance of, infrastructural services, both in the public and private sectors. Capital investment is vital for sustaining high rates of economic growth. India's investment-to-GDP ratio has fallen from 35% over the past eight years to less than 30% today.¹¹
- (iii) Implement central economic reforms to push manufacturing and improve export orientation and reform of the public-sector enterprises which handle most of the country's infrastructural services and, more generally, of public administration, and
- (iv) Greater attention to, and larger resources for, agriculture, social sectors and rural development programs – using ICT as a tool – to increase employment, reduce poverty and create a mass base in support of India's unfinished reforms agenda.

It is worth reiterating the crucial importance of higher savings and investment. All fast-growing countries of the Asia-Pacific and the Southeast Asian region have had very high domestic savings. If India does grow at 8-plus%, this itself is likely to push up its domestic savings in the next few years. Besides, stronger growth should attract more foreign savings, especially foreign direct investment, and thus raise the investment rate.

¹¹ https://www.quandl.com/data/ODA/IND_NID_NGDP-India-Total-Investment-of-GDP

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Appendix 1: Payment Systems

1 RTGS	<p>Real Time Gross Settlement System: An instantaneous electronic transfer system operated directly by RBI and reserved for high-value transactions of minimum Rs 2 lakh (~3000 USD). Bank branches at the sending and receiving end must be RTGS enabled to allow RBI to simultaneously adjust account balances for both parties, but customers with internet banking accounts can initiate RTGS transactions themselves. Receiving funds via RTGS is free, but sending funds incurs a small charge of 30 INR for amounts under 5 lakh (~7500 USD) and 50 INR for larger amounts. The RTGS window is open from 9-4:30 PM on weekdays and 9-1:30 PM on Saturdays.</p> <p>For the purposes of RBI data, RTGS settlements are divided between customer transactions, interbank transactions, and interbank settlement clearing.</p>
2 CCIL Operated Systems	<p>The Clearing Corporation of India provides institutional transaction clearing and settlement services in the Money (CBLO), Government Securities, Foreign Exchange and Derivative markets. In this capacity, CCIL systems now manage all OTC Forex, Interest Rate and Credit Derivative transactions in India. CCIL transfers are not included in e-payments.</p>
3 Paper Clearing	<p>Paper Clearing represents cheque transactions for both consumers and businesses. As demand has risen for electronic payment systems, paper clearing systems have evolved to consolidate their competitive position.</p>
3.1 Check Truncation System (CTS)	<p>With the introduction of the Cheque Truncation System (CTR) in 2013, sending electronic images of cheques became the national standard, reducing costs associated with physical delivery and processing time. Paper-clearing transactions have fallen overall with the rise of other electronic systems. However, they remain popular in the MSME sector even though almost all shopkeepers and customers have internet access.</p>
3.2 MICR Clearing	<p>MICR, or Magnetic Ink Character Recognition, is a now-obsolete form of paper clearance that bridged analog and digital systems by printing characters on cheques that could easily be processed by computers. MICR based transactions have been entirely phased out in India since October 2014.</p>
3.3 Non-MICR Clearing	<p>Certain banks that do not have the capacity to execute CTS transactions have been granted special dispensation to continue issuing non-CTS compliant cheques. These now represent roughly 1% of all paper clearing transactions in India.</p>

4 Retail Electronic Clearing	This category of RBI-operated electronic payments includes the highly popular consumer and business NEFT and IMPS channels, as well as the legacy Electronic Clearing Service (ECS). ECS, often used for small regular recurring payments and divided into separate credit and debit systems, has declined in popularity as other services offer a reduced setup fee and faster turnaround times.
4.1 ECS DR	<p>ECS, or Electronic Clearing Service, is a mode of electronic funds transfer from one bank account to another bank account using the services of a Clearing House. This is normally for bulk transfers from one account to many accounts or vice-versa. This can be used both for making payments like distribution of dividend, interest, salary, pension, etc. by institutions or for collection of amounts for purposes such as recurring payments to utility companies like telephone, electricity, or charges such as house tax, water tax, etc. or for loan installments of financial institutions/banks or regular investments of persons. Although convenient for small regular recurring payments, ECS has declined in popularity as other services offer a reduced setup fee and faster turnaround times.</p> <p>ECS (Debit) is used for raising debits to a number of accounts of consumers/ account holders for crediting a particular institution.</p>
4.2 ECS CR (includes NECS)	ECS (Credit) is used for affording credit to a large number of beneficiaries by raising a single debit to an account, such as dividend, interest or salary payment.
4.3 EFT/NEFT	National Electronic Fund Transfer, a centralized version of the prior RBI-EFT system, is a batch processing system operating every half hour from 8 AM to 7 PM Monday-Friday and on the first, third and fifth Saturdays of the month. NEFT is exclusively a credit push scheme, and does not accommodate transactions originating with the recipient. Outbound transactions up to Rs 5 lakh for individuals with bank accounts and up to Rs 50,000 (~750 USD) for unbanked individuals are enabled, provided the originating and destination bank branches are both part of the NEFT network. NEFT fees, not including GST, are minimal, at 2.5 INR for transactions under 10,000 INR, 5 INR for transactions up to 1 lakh, 15 INR for transactions up to 2 lakh, and 25 INR for larger transactions.
4.4 Immediate Payment Service (IMPS)	IMPS is a direct and instantaneous bank account-to-bank account payment system launched in November 2010. Originally designed as a payment system, it has historically been used primarily for purposes of remittance. Today, IMPS is the foundation of the UBI payment system. IMPS transactions are limited to 2 lakh INR per day, with a fee of 5 INR for transactions up to 1 lakh and 15 INR for larger transactions.
4.5 National Automated	The National Automated Clearing House is a web platform used primarily for businesses to collect from customers on the basis of mandates given by the customer. NACH consolidates multiple ECS systems in the country, removing

Clearing House (NACH)	local barriers to bulk payments. Recently, NACH has been linked to Aadhaar via the Aadhaar Payment Bridge, allowing government subsidies and benefits to be channeled en masse on the basis of Aadhaar number.
5 Cards	Card transactions consist of non-prepaid card payments, namely credit cards and debit cards.
6 Prepaid Payment Instruments (PPIs)	PPIs consist of all transactions that use an intermediate instrument to store cash for a predefined use. This includes m-wallets, gift cards, vouchers, and prepaid debit cards.
6.1 m-Wallet	Mobile Wallets allow customers to load cash either from a point of sale or directly from their bank account to a separate digital account. This account can then be used to make direct payment to vendors accepting the m-wallet. M-wallets gained great popularity in early waves of digitization as customers sought out simplified transaction mechanisms to replace other, more complicated ones. Lately, m-wallets have fallen out of fashion in exchange for UBI-powered payment mechanisms, which offer direct payment from a user's bank account without the trouble of loading cash to an intermediate platform.
6.2 PPI Cards	PPI cards consist of prepaid debit cards and gift cards.
6.3 Paper Vouchers	These vouchers, such as meal vouchers, can be used instead of cash to pay for certain goods. Prepaid paper meal vouchers have been discontinued by the government as of the end of 2017.
7 Mobile Banking	Mobile Banking, as distinguished from m-wallets and other electronic financial instruments operating on mobile devices, refers to transactions conducted directly between customers and their own banks via banks' mobile apps. This includes deposits, withdrawals, transfers between accounts, and bill pay.
8 Cards Outstanding	Cards outstanding refers to the number of functional credit and debit cards issued by banks that can currently be used at a point of sale.
9 ATMs	Automated Teller Machines are the most common way to retrieve cash in person from a bank branch using a card. While the number of ATMs rose steadily prior to demonetization, the increase has flatlined since November 2016 as physical cash has become less important.
Point of Sale	Points of Sale refer broadly to any site where a transaction can be conducted, and narrowly to any specific tool or device that can be used to complete a transaction. Debit cards continue to be used significantly more at ATMs than at Points of Sale, meaning customers and vendors often still find payment using cash from an ATM more convenient than direct payment by card.

UPI	The Unified Payment Interface is a new consumer payment system based on IMPS that introduced in August 2016. Primarily mobile first, it allows bank customers to make immediate payments and remittances to vendors and other customers directly from their accounts. Several UPI platforms now exist, including the government's own platform, BHIM, and Google Tez.
USSD	The Unstructured Supplementary Service Data channel allows UPI transactions to be initiated on a feature phone on the basis of a mobile pin number. This expands immediate digital payments to customers without access to a smartphone.