

Fighting poverty, profitably

Transforming the economics of payments to build sustainable, inclusive financial systems

India

BILL & MELINDA
GATES foundation



SPECIAL REPORT ANNEX:
Country-specific data on payments
systems and financial inclusion,
September, 2013

About the Gates Foundation's Financial Services for the Poor program

Poor people do not live in a static state of poverty. Every year, many millions transition out of poverty by successfully adopting new farming technologies, investing in new business opportunities, or finding new jobs. At the same time, large numbers of people fall back into poverty due to health problems, financial setbacks, and other shocks. However, it is costly to serve poor people with financial services, in part because most of their transactions are conducted in cash. Storing, transporting, and processing cash is expensive for banks, insurance companies, utility companies, and other institutions, and they pass on those costs to customers.

The Gates Foundation's Financial Services for the Poor program aims to play a catalytic role in broadening the reach of digital payment systems, particularly in poor and rural areas, and expanding the range of services available on these systems. Until the infrastructure and customer base are well established, this might involve a combination of mobile money services that are accessible via cell phones and brick-and-mortar stores, where subscribers can convert cash they earn into digital money (and vice-versa).

Our approach has three mutually reinforcing objectives:

- Reducing the amount of time and money that poor people must spend to conduct financial transactions
- Increasing poor people's capacity to weather financial shocks and capture income-generating opportunities
- Generating economy-wide efficiencies by digitally connecting large numbers of poor people to one another, to other consumers, to financial services providers, to government services, and to businesses.

We are not focused on a particular product or distribution channel, but rather on innovative ways to expand access and encourage markets. At the same time, we are aware that interventions in this and other areas too often involve technologies that are made available to the intended users, but are not adopted. To address this demand-side challenge, we are supporting research and product design experiments to identify design features, price incentives, and marketing messages that will encourage poor people to adopt and actively use digital financial services. We are also supporting policymakers as they work to develop policies and regulations that facilitate these developments.

We believe that the combined effect of interventions to expand and encourage markets will accelerate the rate at which poor people transition out of poverty and decrease the rate at which they fall back into poverty. Our strategy also recognizes that countries are at different stages in developing an inclusive digital financial system, and that we must tailor our interventions accordingly.

About this document

Our goal: create a holistic view of payment system economics. The Gates Foundation’s Financial Services for the Poor program conducted this research because we believe that there is a gap in the fact base and understanding of how payment systems can extend digital services to low income consumers in developing markets. This is a complex topic, with fragmented information and a high degree of country-by-country variability. A complete view across the entire global payment system has been missing, limiting how system providers, policy makers, and regulators (groups we refer to collectively as *financial inclusion stakeholders*) evaluate decisions and take actions. With a holistic view of the system, we believe that interventions can have higher impact, and stakeholders can better understand and address the ripple effects that changes to one part of the system can have. In this report, we focus on the economics of payment systems to understand how they can be transformed to serve poor people in a way that is profitable and sustainable in aggregate.

Factors to keep in mind as you consider this report. The data available to evaluate individual payment systems is limited. Even in highly advanced economies, complete and comparable information is difficult to obtain. In the developing world, much of this data simply does not exist. Given that there are limited examples showing how providers make money from providing financial services to the poor at scale, we looked at payment systems in both the developed and developing worlds, and tried to learn how to apply lessons from both to reach the poor. In this report, we present a complete set of analyses and estimates based on the strongest collection of data that we could assemble. Readers should understand this base of data as a “best efforts” attempt to provide a full picture of payment system costs and revenues, rather than a definitive source. We have focused on evaluating formal payment flows that have available data and benchmarks. We recognize that there are large payment flows over informal channels, such as unlicensed money transmitters, that are outside the scope of our analysis.

What we analyzed. As part of our work, we conducted a thorough assessment of the payment systems in six significant economies – Nigeria, Kenya, India, China, the U.S., and the Netherlands – to understand their elements, changes over time, and the economics for providers. McKinsey & Company’s Global Payments Map – a structured and consistent dataset on payment systems – provided a critical pillar. We also interviewed more than 100 industry experts across the countries profiled.

Structure of this pack. This pack summarizes our findings across the countries we analyzed. For each country, we provide an overview of the payment system and the level of financial inclusion, followed by specific country analyses pertaining to the four main elements of the payment system: accounts, cash in-cash out (CICO), transactions, and adjacencies.

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A light gray world map is positioned in the background of the table of contents. The country of India is highlighted in a solid orange color, indicating its focus in the document.

The payment system in India



Characteristics

- **The banking industry is fragmented**, across states and public and private institutions small and large
- **Networks of banking business correspondents** and non-bank providers of payments-related services are developing, but are dispersed and non-concentrated, with unproven economic models, particularly given uncertain and changing regulations
- **Banks largely target development of product offerings toward the growing urban middle class**
- **Government shapes development of financial tools and corresponding business models to serve the rural poor**, incrementally relaxing restrictions, but with varying degrees of consumer-centric judgment, and inconsistent concern for creating profitable models for providers
- **Government is spurring development** of a bank-owned centralized payments infrastructure, a universal ID scheme tied to payments systems, and digitalization of a large-scale government benefits program (more than \$50 billion per year)

Implications for financial inclusion

- **A combination of regulation, most retail banking under state control, and substantial G2P payments could be highly effective in spurring financial inclusion**, although it remains to be seen to what extent and in what timeframe
- **There is a strong tax rationale against small and medium-sized merchants accepting cards or e-payments**; this limits growth of C2B e-payments and outweighs common levers such as controls on the merchant discount rate (MDR)
- **To have a disruptive impact on low income rural segments, mobile will need to overcome challenges** including prevalence of local languages, basic phone illiteracy and limited mobile data coverage
- **Barriers to formal financial systems are ingrained**, even where people use informal financial instruments are regularly

Payments in India by the numbers



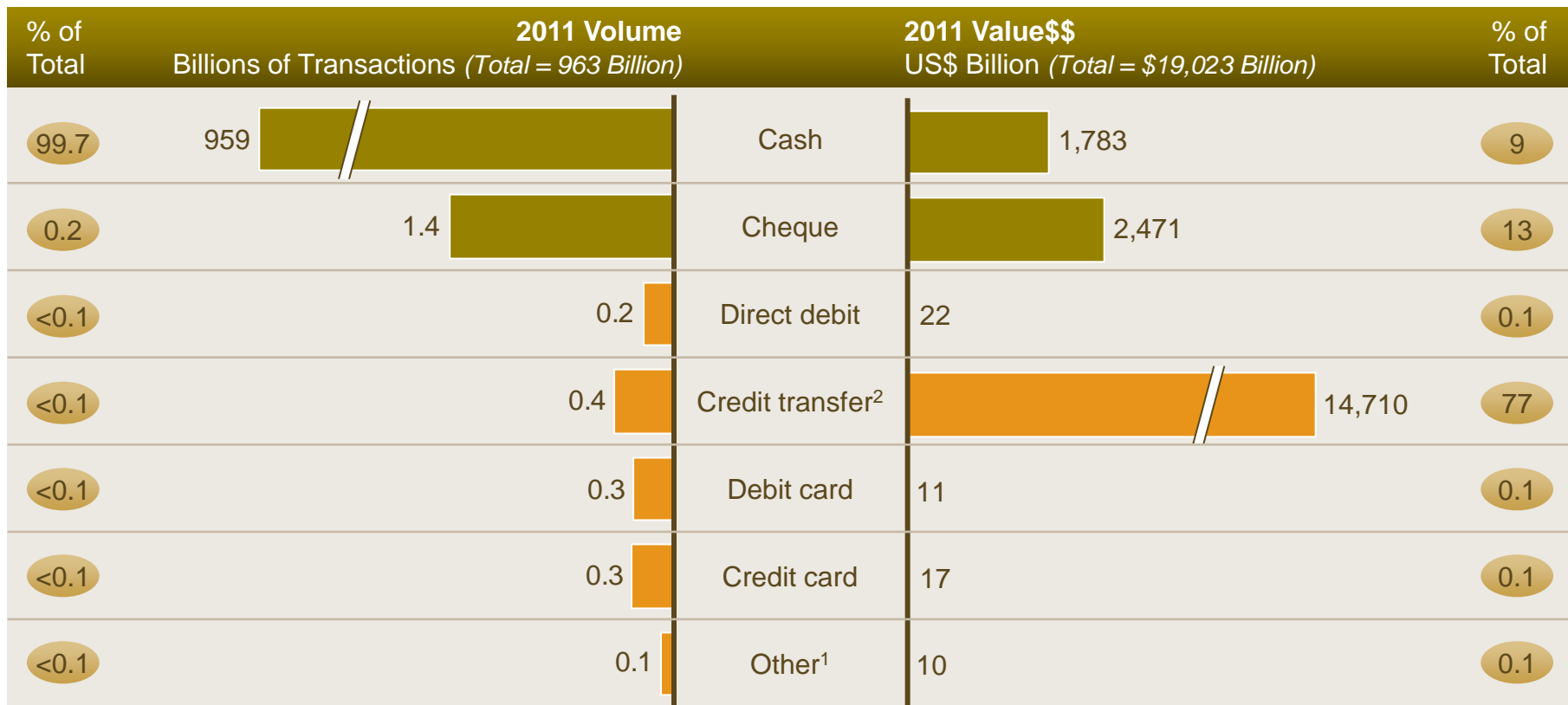
Usage & Inclusion	Instrument usage	<p>Highly cash dominated</p> <ul style="list-style-type: none"> Percentage of digital payments by value: 11% C2C, 13% C2B, 88% B2C Percentage of digital payments by volume: Less than 0.1% C2C, 0.3% C2B, 6% B2C
	Financial inclusion	<p>Low to medium, with limited access for specific geographies</p> <ul style="list-style-type: none"> Formal access: 35% of population (based on Findex data) acknowledged access to an account; formal barriers to accounts are low (free basic accounts are widespread) however relevance for daily uses can be low for low-income consumers
Payment system	Network infrastructure	<p>Centralized</p> <ul style="list-style-type: none"> Most new payments infrastructure is created and managed by NPCI (National Payments Corporation of India), a bank-owned non-profit conglomerate originally established by the RBI (Reserve Bank of India) RTGS and ECS (a soon-to-be phased out ACH) are still managed by the RBI
	Regulation	<p>Strong, widely respected regulator with a directive approach toward inclusion</p> <ul style="list-style-type: none"> RBI takes deliberate but cautious steps in expanding reach of financial service
Environment	Banking system reach	<p>Low reach per capita, concentrated in largest cities</p> <ul style="list-style-type: none"> Branches/BCs – 11 branches/BCs per 100K (96K total) ATMS – 8.8 ATMs per 100K (75K total) POS – 66 per 100K (577K total)
	Mobile & telecoms	<p>Very high penetration in urban areas, less so in rural areas</p> <ul style="list-style-type: none"> Fragmented market with 3 largest providers holding ~20% market share: Airtel, Vodafone, Reliance Mobile users: 72% of population
	Other market infrastructure	<p>Limited infrastructure</p> <ul style="list-style-type: none"> India has long-term challenges with adequate infrastructure for its quickly urbanizing population
	Economic environment	<p>Low income</p> <ul style="list-style-type: none"> GDP per capita (PPP): \$3,700 (2011) GINI coefficient of 37 (2004)
	Demographics & geography	<p>Still mainly rural, but urbanizing; population is young</p> <ul style="list-style-type: none"> 30% of population urbanized – changing quickly at 2.4% annually, straining India's limited infrastructure even further 95% of population is under 65 years old

SOURCE: Findex Global Database; McKinsey Payments Map Release Q1-2012;

India's payments system is dominated by cash in volume, and by credit transfers in value



■ Paper ■ Digital

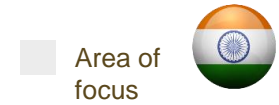


- An overwhelming majority of payments are made in cash, with relatively negligible use of other instruments
- Credit transfers account for nearly 80% of payment value; most such payments are B2B but a significant fraction of salary payments by value are also made via transfers
- Cheques account for 13% of transactions by value, followed by cash with 10%

1 Primarily pre-paid cards; 2 Contains RTGS transfers

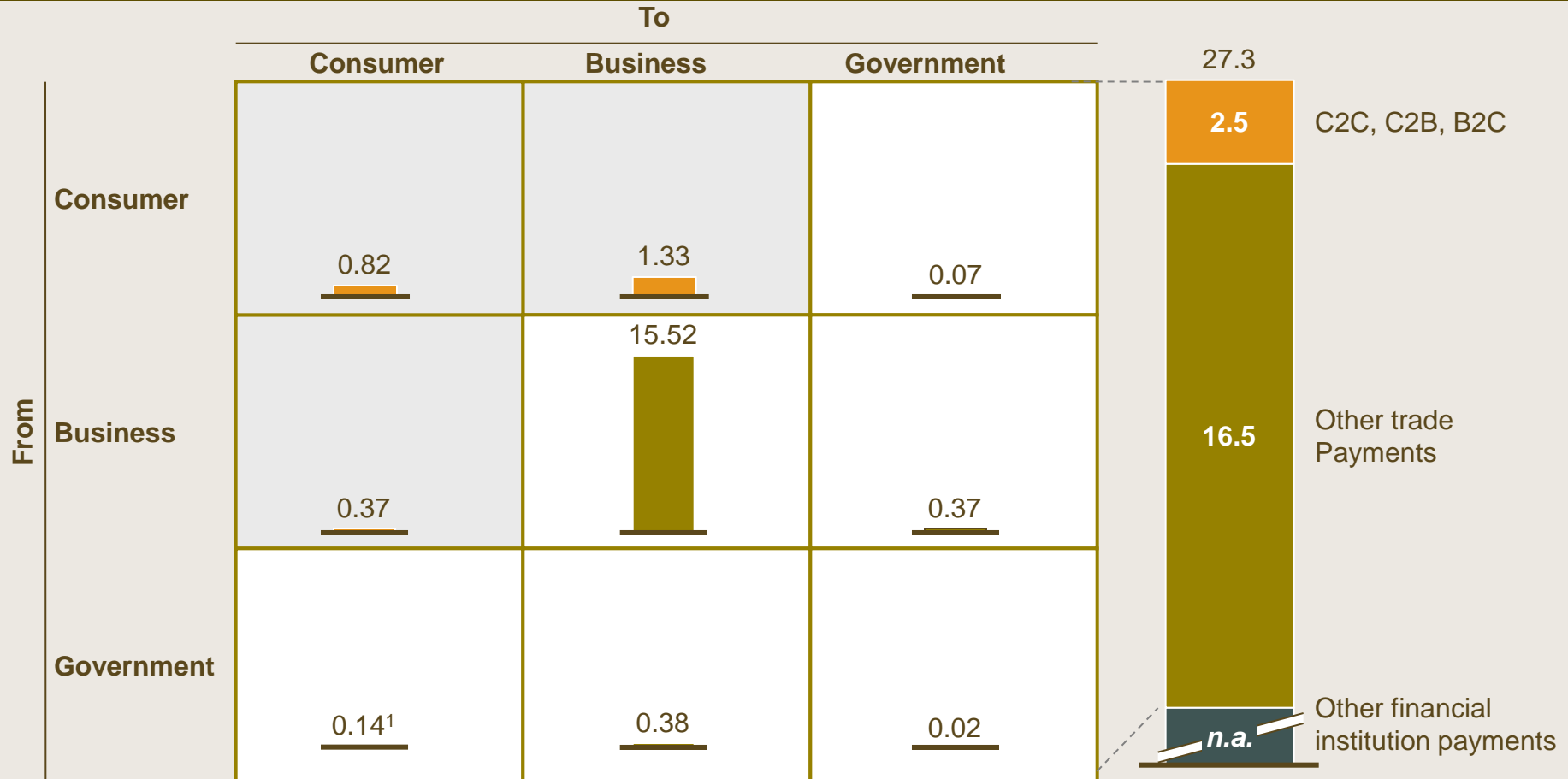
SOURCE: McKinsey Global Payments Map

The transactions most strongly impacting Indian consumers account for about \$2.5 trillion of payment flow



Trade payments in India by transaction parties, 2011
US\$ Trillion

Total trade payments by value, 2011
US\$ Trillion



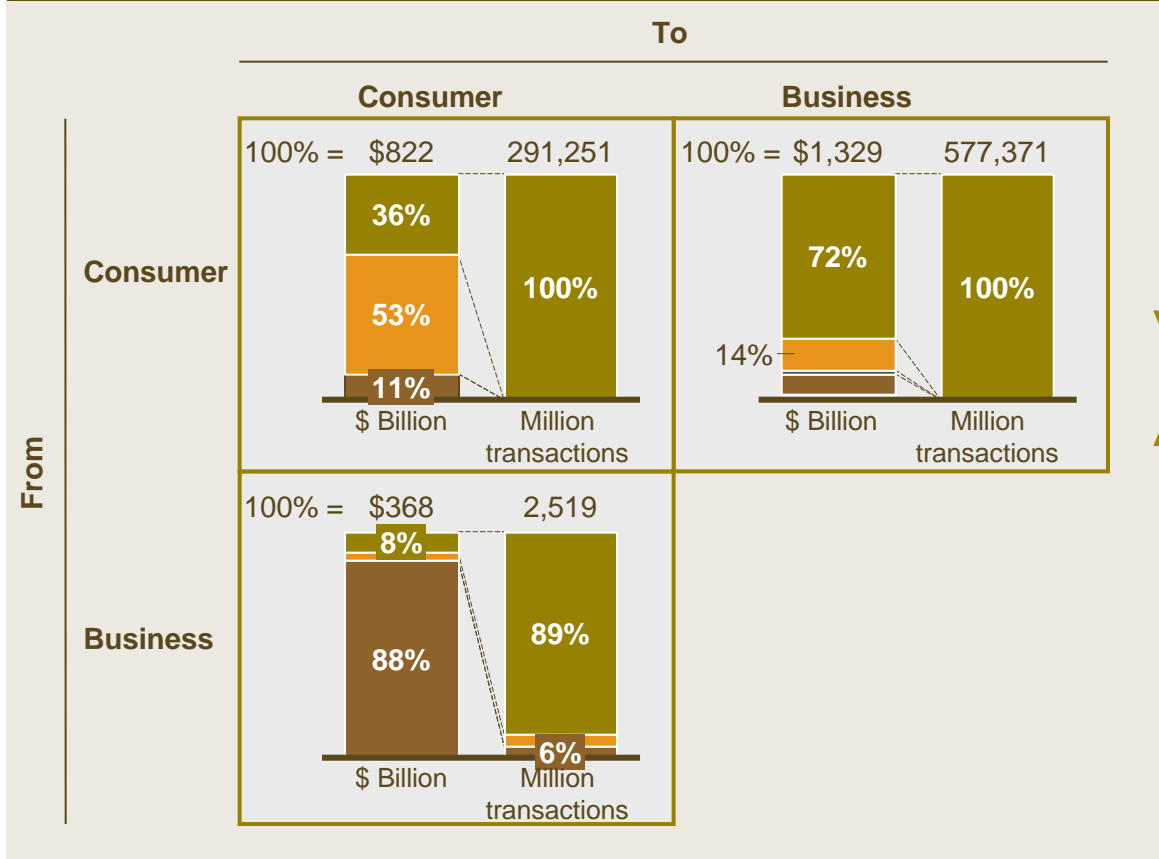
1 Secondary area of focus; particularly relevant for the poor in India

SOURCE: McKinsey Global Payments Map



The Indian retail payments profile is dominated by cash, by volume, and by cash, credit transfers and cheques, by value

Trade payments in India, by transaction parties, 2011
Value in US\$ Billions, Transactions in Millions



\$ = High value (>20% use)
= High volume (>20% use)

Major instruments used by transaction type	C2C	C2B	B2C
	Cash	\$ #	#
Cheque	\$		
Direct debit			
Credit transfer			\$
Debit card			
Credit card			
Prepaid card			

SOURCE: McKinsey Global Payments Map

Financial inclusion in India



Overall financial inclusion performance: low

Percent with an account at a formal financial institution

- Overall -- 35%
- Bottom 40% -- 27%
- Women -- 27% have formal financial accounts

Payment services access

- Debit card access -- 8.4%
- Credit card access -- 1.8%
- Receive wages in a formal account -- 8.3%

Distribution access (per 100,000 people)

- Bank branches -- 11
(5.2% of villages have a bank branch)
- ATMs -- 8.8
- POS terminals -- 66
- Online penetration -- 7.5% of population
- Mobile (voice) penetration -- 72% of population
- Mobile (data) penetration -- 51% of population

Key takeaways

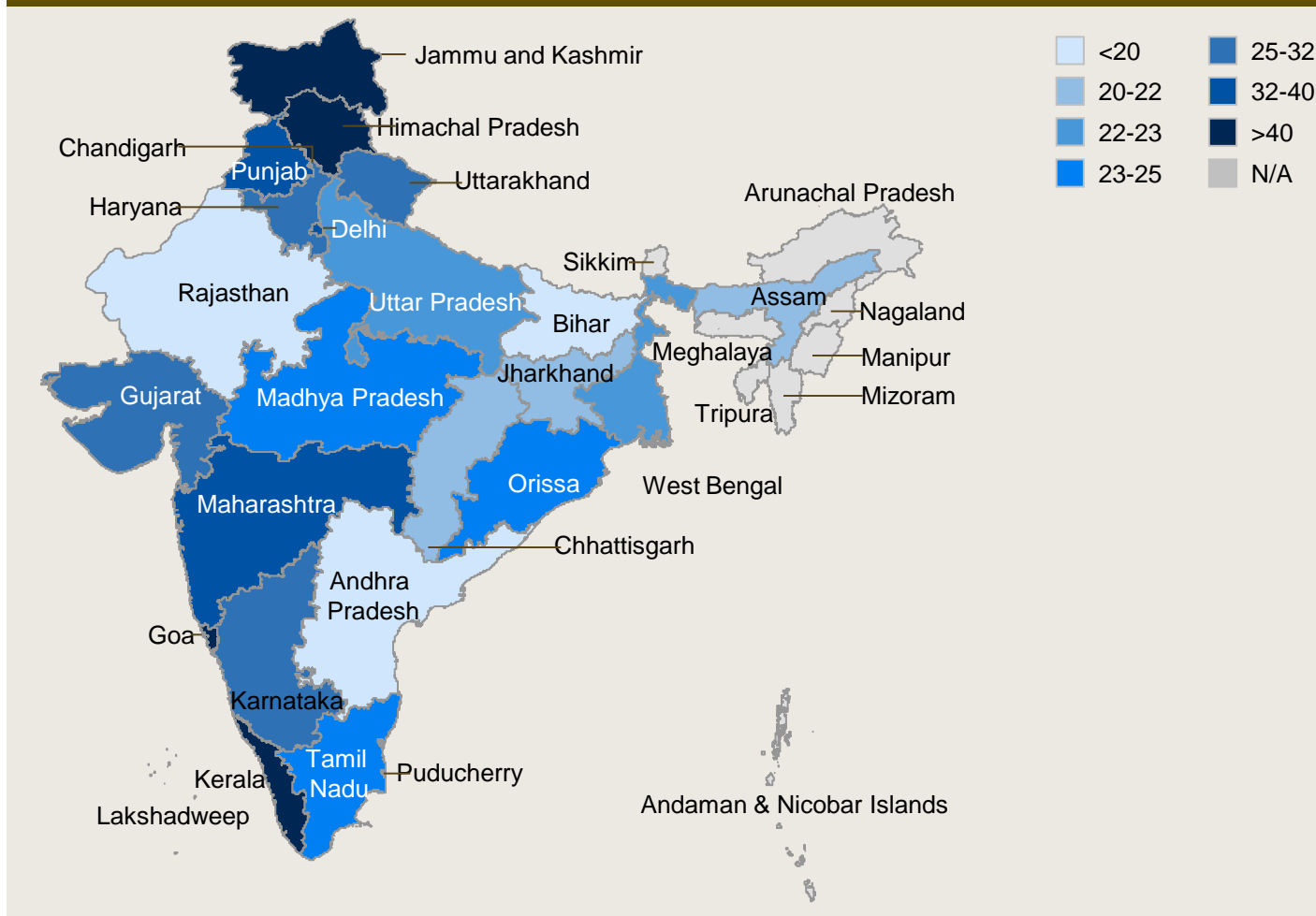
- **Traditional bank branch networks are concentrated in urban areas**, and reach only a portion of the population
- **Business correspondent (BC) networks have grown quickly, giving rural areas access to banking services**, but account usage remains limited and the model has yet to be proven sustainable
- **Government initiatives to extend “basic savings accounts” to the poor (formerly “no-frills” accounts) have increased the banked population**, but actual account usage remains limited among the poor
- **Mobile (voice) penetration is high**, but mobile data penetration still covers only half of the country; moreover, mobile-based services face localization challenges given the hundreds of active dialects
- **Card usage remains extremely low, even in urban areas:** Ministry of Finance is seeking to expand card reach (e.g., via mandatory bank POS rollout) but use will be limited in the short term

SOURCE: Findex Global Database, Web search; EIU viewswire; Financial Services 360; Alternate Channel Benchmarking Survey 2008; AtoS Worldline Indian Payment Card Industry Survey 2011, Gartner



Nearly everywhere in India, fewer than 40 percent of people have bank accounts, but there is significant variation by state

Fraction of population with a bank account, by state Percent¹



¹ Percent of total population, including people of all ages

SOURCE: RBI



Conventional outlets do not reach the poor; new initiatives linked to traditional banking & payments infrastructure are attempting to do so

1 Conventional outlets

- Per capita coverage of rural areas by traditional outlets where people can **open accounts and withdraw and deposit cash** (ATMs and branches) is extremely limited, while metro to semi-urban areas are relatively well covered compared to other benchmark countries
- The actual number of rural branches is high (2x number of metro branches and 1.5x number of semi-urban branches) but does not cover the over 740 million people living in rural areas

2 Business Correspondents

- The Business Correspondent (BC) model enables banks to enlist agents to perform certain services on their behalf, including **facilitating account opening, CICO and some transaction services** (e.g., paying utility bill)
- Beginning in 2006, the RBI allowed the BC model; today there are ~90,000 BC agents in India, providing coverage for 120,000 villages previously without access to formal banking services; though BCs are rapidly spreading, 78 percent of villages remain uncovered
- With growth of BC, basic savings accounts have grown to ~100,000; this number remains small compared both to number of the unbanked and to the total number of BC agents
- RBIs regulatory approach with BCs illustrates a general trend in its approach: regulate more heavily at new initiative inception and relax rules as the project continues

3 Aadhaar universal ID scheme

- The Aadhaar national ID scheme, which intends to provide every Indian citizen with a unique ID number authenticated biometrically, offers potential significant benefits for **access, customer onboarding, and costs of accounts**
- Payments infrastructure built around Aadhaar and integrated with core central payments infrastructure will allow for benefits of scale in **providing transactions and allow people to authenticate payments** using only a finger-print
- Aadhaar enrolment has been growing rapidly since inception in 2010 (at ~300 million currently) but level use for financial-linked purposes remains unknown in these early stages

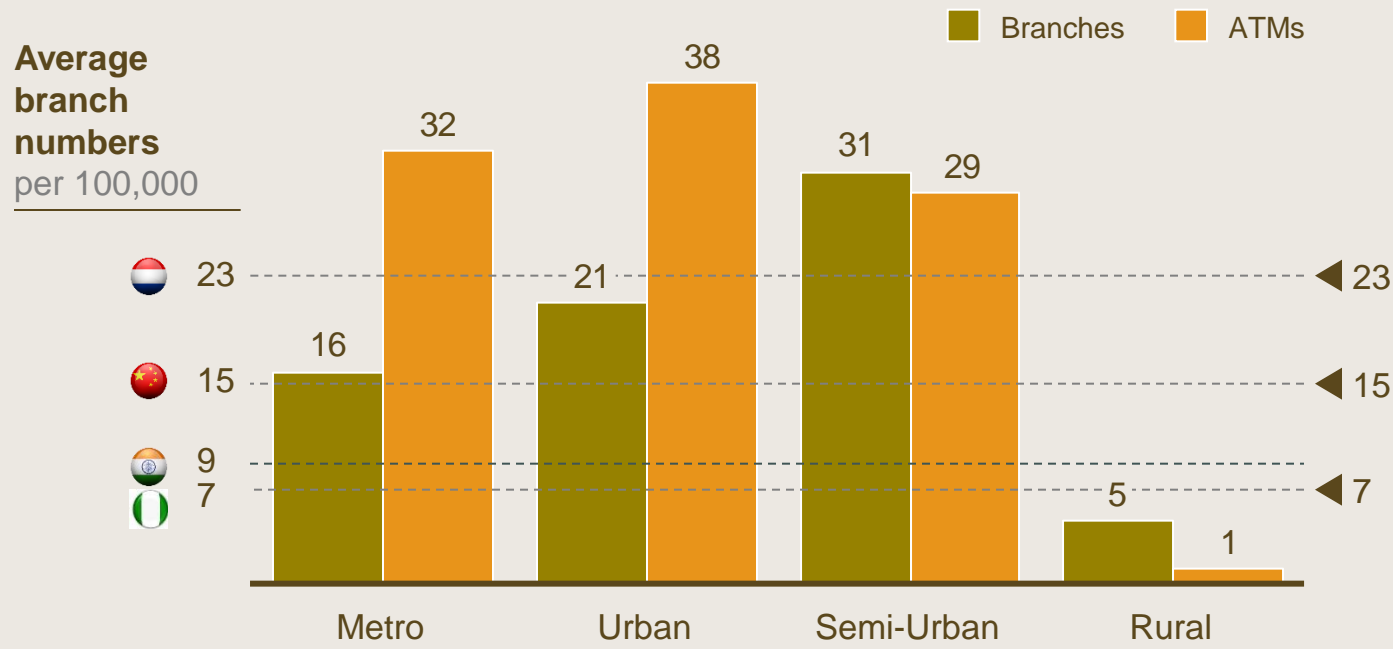
4 Traditional payments infrastructure

- Most forms of traditional **payments infrastructure** have been or are being shifted from the RBI to the auspices of the NPCI, a state-bank led (and regulator sponsored) payments governance structure and administrator of technology across multiple payments platforms



Coverage in rural areas is extremely limited, while coverage elsewhere is relatively high

Bank branch and ATM deployment in India
Number of end points per 100,000 inhabitants, 2012



- Even compared to semi-urban areas, banking infrastructure coverage is extremely sparse in rural India
- Branch density is greater in semi-urban versus metro areas, but lower population density in these areas implies each branch serves fewer customers
- There are as many branches in rural areas as in metro and urban combined, but ~4 times the population

Totals
(Thousands)

Branches	17	19	25	36
ATMs	35	33	24	9
Population (million)	108	88	82	742

1 The RBI defines population groups based on village population. Rural- population <10,000; Semi-Urban: 10k-100k; Urban- 100k – 1M; Metropolitan- 1M+

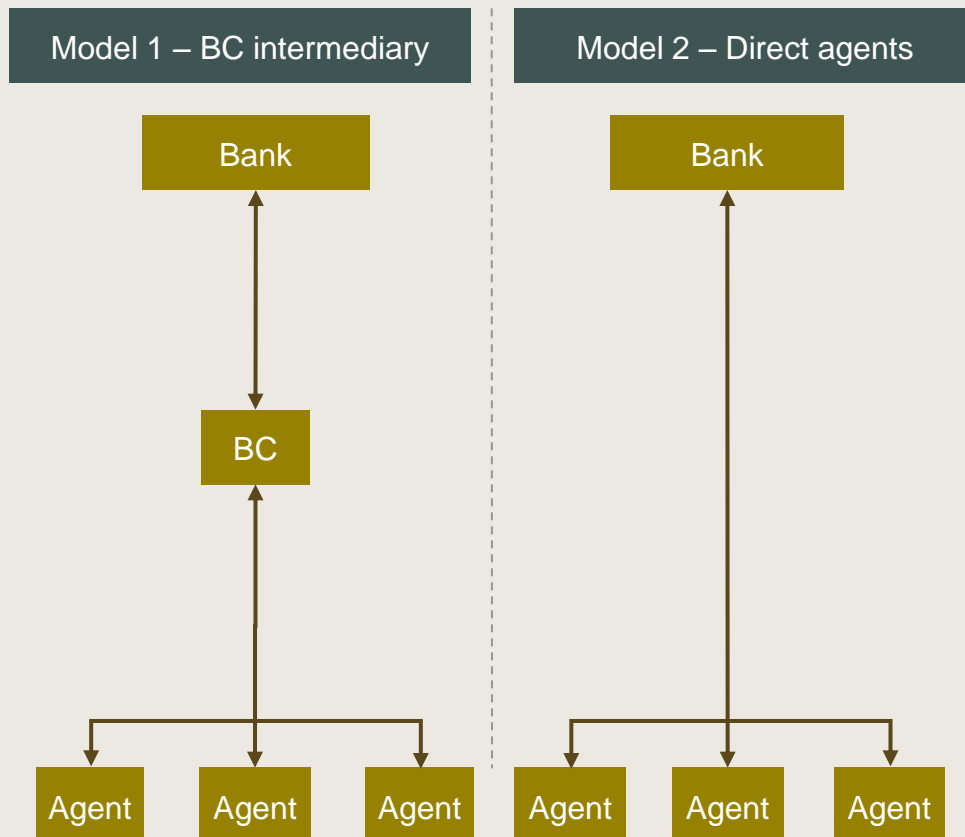
SOURCE: RBI



Beginning in 2006, the RBI allowed business correspondent (BC) agents to act on behalf of banks to extend their reach in remote areas

The Business Correspondent (BC) model enables banks to enlist agents to perform certain services on their behalf

- Banks can either contract a BC to source and manage the independent agent network on their behalf (Model 1) or can do so independently (Model 2); Model 1 is significantly more common
- BCs manage recruiting, training and ongoing maintenance of agent networks on behalf of banks
 - Banks often have relationships with more than 1 BC for different geographical areas
 - Examples: FINO, Eko, A Little World, Airtel
- Agents are individuals acting on behalf of a bank and may conduct the following services: loan pre-screening and collection, facilitate account opening (excluding KYC), CICO activities
 - Also called CSPs (customer service points)
 - Sample agent types: shop-keepers, insurance agents, direct employees of a particular BC (e.g. FINO)



SOURCE: RBI, In-country interviews, Company websites

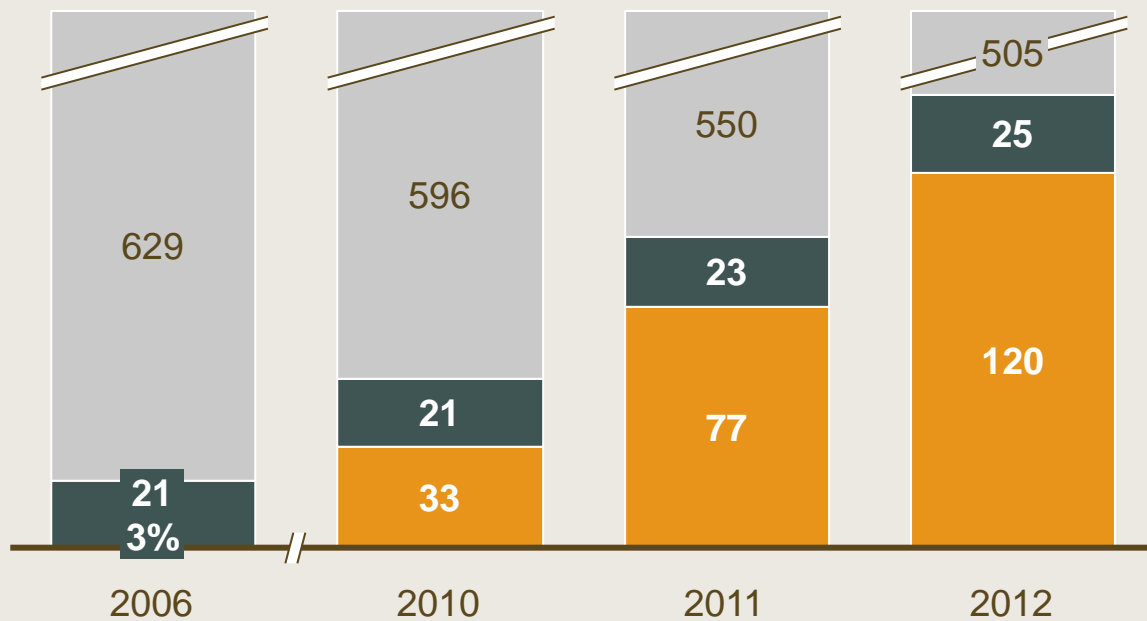


BC network expansion has significantly increased formal banking coverage of rural villages, though large gaps remain

Uncovered villages
 Covered via bank branches
 Covered via BCs (static & mobile)

Village banking services coverage

Number of villages covered by a bank branch or BC¹



Uncovered villages Percent	2006	2010	2011	2012
	97%	92%	85%	78%

Additional statistics

- In 2012, 99.7% of settlements over 2000 population covered by banking services
- At least 20% of covered villages are served only by 'mobile' BCs who cover more than one village¹

¹ Includes 'Mobile' BCs, who visit a particular village on a pre-determined schedule, often once per week

SOURCE: RBI,



BC's focus is on delivering payments and savings instruments geared to poor people

Product	Description	Availability	Key consideration
<ul style="list-style-type: none"> ▪ Basic savings bank account ('no frills') e.g. HDFC 	<ul style="list-style-type: none"> ▪ Full bank account that can be opened with zero balance; new regulation forces this to be held on core banking platform and therefore must have bank account services 	<ul style="list-style-type: none"> ▪ BCs of relevant bank must be within 30 km of a bank branch 	<ul style="list-style-type: none"> ▪ Although substantial rollout has occurred high dormancy is reported; the challenge will be promoting usage from a new and little understood customer group
<ul style="list-style-type: none"> ▪ Wallet with a bank partnership (e.g. Airtel Money Super Account with Axis Bank, also Vodafone, Eko) 	<ul style="list-style-type: none"> ▪ Cash-out; much like a bank account but operated from a separate technical platform and therefore different range of services 	<ul style="list-style-type: none"> ▪ Subset of service provider's agents within 30 km of partner bank branch and designated as BCs 	<ul style="list-style-type: none"> ▪ Airtel has more much more agent reach than any bank but can only provide this enhanced service with cash-out within 30 km of a partner bank branch
<ul style="list-style-type: none"> ▪ Non-bank wallet e.g. Airtel Money 	<ul style="list-style-type: none"> ▪ No cash-out but add money to pay for services (e.g. theatre tickets, travel tickets); or pass money to other wallets or a bank account (e.g. remittance but not to cash) 	<ul style="list-style-type: none"> ▪ Subset of Airtel agents 	<ul style="list-style-type: none"> ▪ Without cash-out, are there sufficient use cases for this to be an exciting consumer product?
<ul style="list-style-type: none"> ▪ Government benefit disbursement (e.g. NREGA) 	<ul style="list-style-type: none"> ▪ Government agencies distribute funds from government programs through BCs (FINO being the largest in this area) 	<ul style="list-style-type: none"> ▪ Subset of ~100K BCs, depending on specific program and relationship with bank or BC 	<ul style="list-style-type: none"> ▪ Disbursal of government benefits has seen some success, but reportedly full withdrawal of cash upon payment is common; still unclear if current structure/ incentives enable other financial services

SOURCE: RBI, In-country interviews, BC websites



The Aadhaar national ID scheme offers potential significant benefits for access, customer onboarding, and costs of accounts

Aadhaar: a national scheme that intends to provide every Indian citizen with a unique ID number

	Potential Benefits	Key considerations
Access	<ul style="list-style-type: none"> Provide a large segment of the population (estimated at over 33%) their first and only official form of identification, and therefore access to a bank account 	<ul style="list-style-type: none"> Will account access lead to account use?
Marketing / Onboarding	<ul style="list-style-type: none"> Aadhaar can provide an entry point for bank account marketing; in some cases citizens are encouraged to open a bank account during Aadhaar onboarding Onboarding cost for providing a bank account is therefore also offloaded to the Aadhaar scheme 	<ul style="list-style-type: none"> Does offloading onboarding to Aadhaar make overall account profitable?
Cost	<ul style="list-style-type: none"> Aadhaar is unlikely to reduce KYC costs independently for individuals that already have IDs, as the labor and process requirements won't drastically change versus current authentication procedures Transactional costs will not be lowered (and may be increased) if Aadhaar-enabled transaction procedures require specialized biometric authentication infrastructure 	<ul style="list-style-type: none"> Can Aadhaar-enabled authentication and authorization processes be designed to reduce system cost?

SOURCE: UIDAI, In-country interviews



Aadhaar, and infrastructure built around it, can facilitate payments and account access for those currently without ID

	Description	Implications
Aadhaar (a.k.a. UID)	<ul style="list-style-type: none"> A unique identification number linked to a resident's demographic (name address, DOB, gender), biometric information (iris, fingerprint) and a one-time PIN 	<ul style="list-style-type: none"> First form of identification for roughly a third of Indian residents¹ Provides previously-unidentifiable Indian residents access to formal financial system
Aadhar Enabled Bank Account (AEBA)	<ul style="list-style-type: none"> Bank account (full service or 'basic savings') that is mapped to an individual's Aadhaar number via a database maintained by the NPCI Individuals without a bank account are able to open one during their Aadhaar enrollment 	<ul style="list-style-type: none"> Automatically provides any resident access to a basic bank account First step in realizing financial inclusion benefits of Aadhaar
Aadhaar Payments Bridge (APB)	<ul style="list-style-type: none"> Payments mechanism allowing government agencies to distribute subsidies and benefits via an individuals' Aadhaar number NPCI manages the central core infrastructure that maps an individuals Aadhaar number to an AEBA 	<ul style="list-style-type: none"> Disbursing benefits and subsidies directly into individuals' bank accounts may help jumpstart use of bank accounts
Aadhar Enabled Payments System (AEPS)	<ul style="list-style-type: none"> Authentication layer for any payments systems that allows individuals to utilize Aadhaar for authentication and operation of their AEBA 	<ul style="list-style-type: none"> Could reduce infrastructure costs, depending on final implementation (i.e., requiring biometric information for any transaction would likely increase cost)

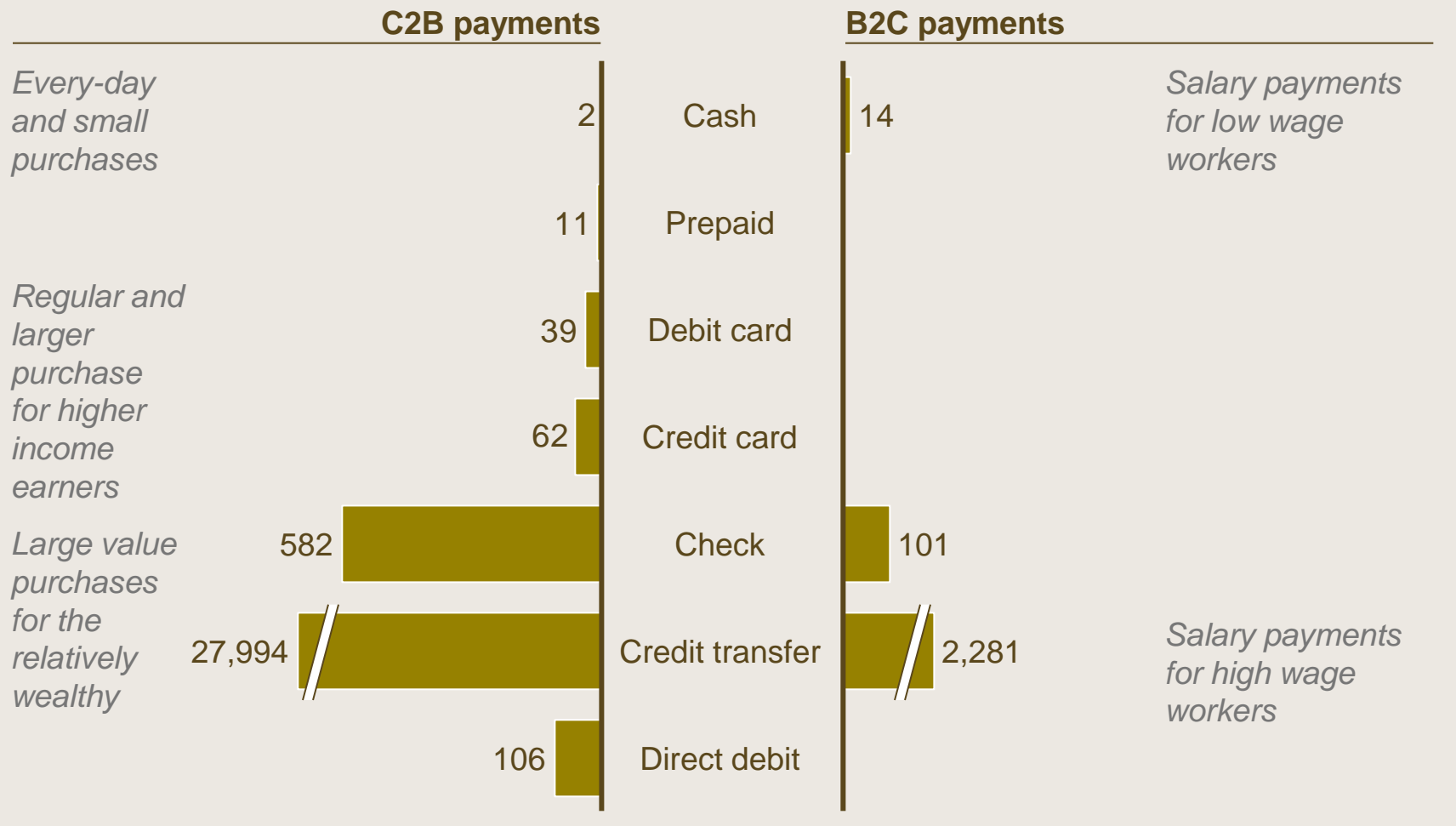
1 High-level estimate

SOURCE: UIDAI, In-country interviews



Cash is used for small transactions, cheque and credit transfers for large ones, and debit and cards for those in the middle

Average size of payment by instrument, 2011 USD

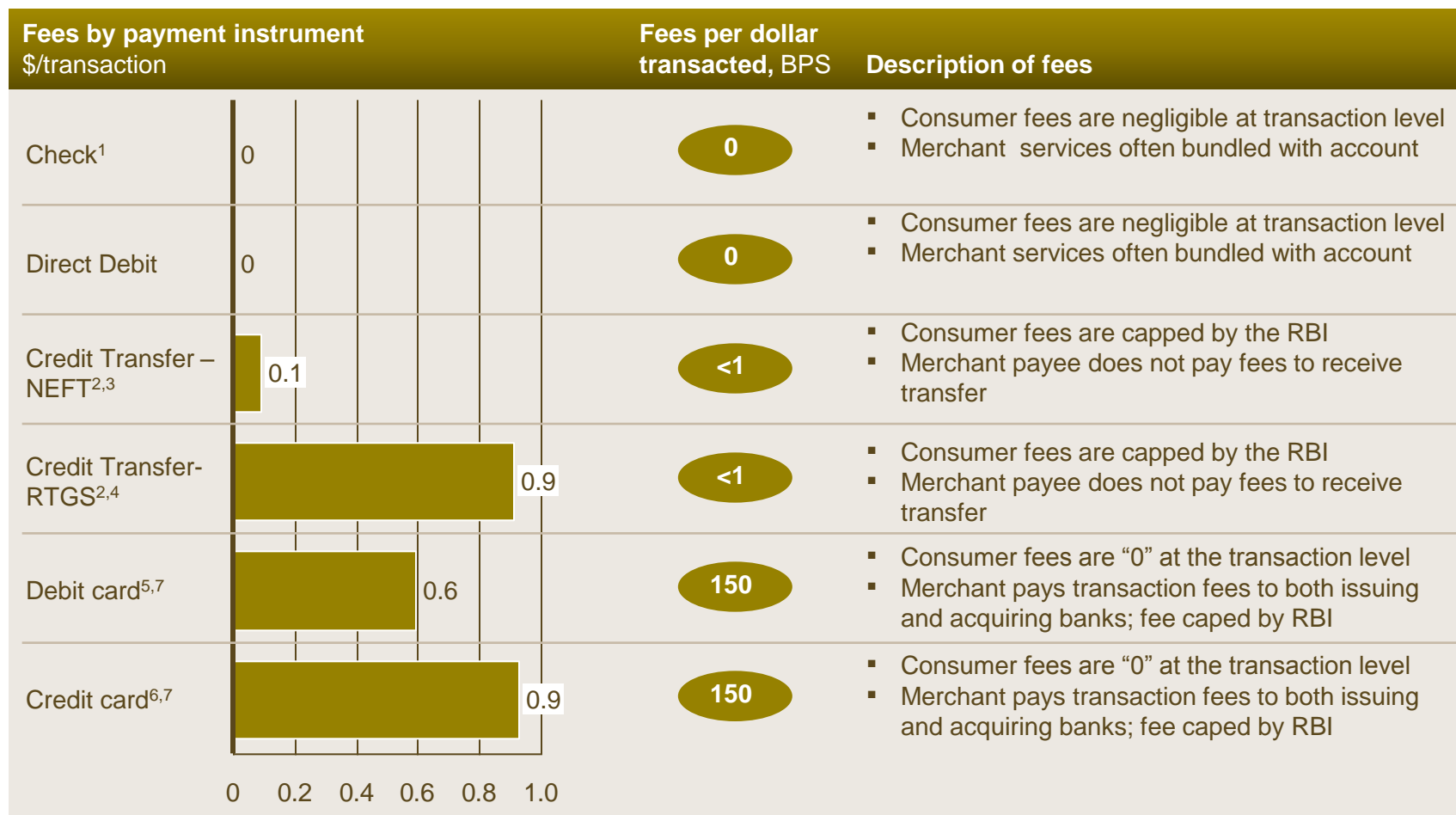


SOURCE: McKinsey Payments Map Release Q1-2012



Many transaction products are bundled and direct fees are zero; RBI caps other fees

Net fees {
■ Consumer fees
■ Business fees



1 Fees are sometimes charged for 'outstation cheques' (i.e., checks that must be sent to a non-local clearinghouse), capped at \$0.46 (25 INR) for cheques under ~\$180 (10K INR), \$0.90 (50 INR) for cheques under ~\$1,800 (100k INR) and ~\$1.80 (100 INR) for any other value; 2 NEFT is used for transfer under ~\$3,640 (200K INR); RTGS for transfers over this amount; 3 NEFT charges range from \$0.05 – \$1.82 (2.5-100 INR); 4 RTGS charges range from \$0.45 - \$0.90 (25-50 INR); 5 Average debit card transaction: \$39 USD; 6 Avg. credit card transaction: \$62 USD; 7 Through June 2012, debit and credit card MDRs were ~1.50% (number used here). Starting July 2012, debit card MDRs were lowered to 0.75%-1%

NOTE: Assumes 55 INR = 1 USD

SOURCE: RBI, McKinsey Global Payments Map



‘Cash is king’ in C2B transactions, and is the preferred method of payment for most merchants

	Consumer						Merchant					
	Re-quires Bank Acct	Direct Fees (USD)	Indirect Fees (USD)	Benefits	Mer-chant Accept. (%)	Actual Use (Vol, %)	Con-sumer Access (%)	Re-quires Bank Acct	Direct Fess (USD)	Indirect Fees (USD)	Benefits	Use cases
Cash	-	-	-	<ul style="list-style-type: none"> ▪ Ubiquitous ▪ Universal 	100	99.7	100	-	-	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Ubiquitous ▪ Immediate 	<ul style="list-style-type: none"> ▪ All ▪ Especially small value
Check	✓	-	-	<ul style="list-style-type: none"> ▪ Included with account ▪ Safer for large txs 	<1	<0.1	35	✓	-	<ul style="list-style-type: none"> ▪ N/A 	-	-
Credit transfer /Direct debit	✓	-	-	<ul style="list-style-type: none"> ▪ Convenient for large txs ▪ Esp. online 	<1	<0.1	35	✓	-	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Convenient for large txs, 	<ul style="list-style-type: none"> ▪ P2P ▪ Bill payments ▪ Larger values
Debit Card	✓	-	-	<ul style="list-style-type: none"> ▪ Convenient to carry 	4	<0.1	8	✓	0.52 (MDR)	0 (No terminal fee)	<ul style="list-style-type: none"> ▪ Direct credit ▪ Minimizes cash handling 	<ul style="list-style-type: none"> ▪ General online and offline merchant
Credit Card	✓	-	<ul style="list-style-type: none"> ▪ Annual fees 	<ul style="list-style-type: none"> ▪ Float and liquidity benefit 	4	<0.1	2	✓	0.97 (MDR)	0 (No terminal fee)	<ul style="list-style-type: none"> ▪ Direct credit ▪ Minimizes cash handling 	<ul style="list-style-type: none"> ▪ Higher value merchant payments
Prepaid	-	-	<ul style="list-style-type: none"> ▪ Card purchase 	<ul style="list-style-type: none"> ▪ Convenient to carry 	4	0.1	<2	✓	N/A	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Direct credit ▪ Minimizes cash handling 	<ul style="list-style-type: none"> ▪ Transport, small value
Mobile	N/A	-	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	N/A	N/A	2	-	N/A	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A

SOURCE: World bank Findex (2011), The Little Data Book on Financial Inclusion 2012, McKinsey Global Payments Map



How the system works by payment instrument (1/2)

	Payer gateway	Payer intermediary	Clearing & Settlement	Payee intermediary
Cheque	<ul style="list-style-type: none"> Written by payer on paper provided by payer bank Most popular form of non-cash payment (by volume) 	<ul style="list-style-type: none"> Cheque clearing houses receive cheques Clearing houses are either managed by the RBI or public sector banks 	<ul style="list-style-type: none"> Transactions in RBI-managed clearing houses settle via banks' accounts held with the RBI Transactions in bank-managed clearing houses are settled by the managing bank 	<ul style="list-style-type: none"> Payee receives cheque from payer and presents to bank Payee bank processes account credit, sorts cheques and sends to cheque clearing house; funds are held until clearing
Credit Transfer	<ul style="list-style-type: none"> Payer enters bank information online/at bank Employer deposits salary into employee's account Most popular form of payment (by value); typically used for large value transfers 	<ul style="list-style-type: none"> One-to-many transactions handled by the ECS; each entry triggers multiple credit entries from one withdrawal One-to-one transactions under 200,000 INR are handled by NEFT Transactions over 200,000 INR are handled by the RTGS 	<ul style="list-style-type: none"> ECS transactions settled locally in accounts held with bank managing the clearing house or with the RBI through the central clearing house in Mumbai NEFT settles on a deferred net settlement basis, at multiple points through the day, via RTGS 	<ul style="list-style-type: none"> Payee bank
Direct Debit	<ul style="list-style-type: none"> Payer pre-approves debits via a signed form, often including withdrawal limit Payer can stop payment between notification of amount and funds withdrawal 	<ul style="list-style-type: none"> All direct debit transactions are handled by the ECS, specifically the ECS debit system Multiple debits result in one deposit to the payee's accounts 	<ul style="list-style-type: none"> ECS transactions settled locally in accounts held with bank managing the clearing house or with the RBI through the central clearing house in Mumbai 	<ul style="list-style-type: none"> Payee (more likely the payee's bank) determines when to process instructions to draw money from payer

SOURCE: CPSS – Red Book

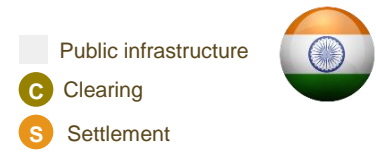


How the system works by payment instrument (2/2)

	Payer gateway	Payer intermediary	Clearing & Settlement	Payee intermediary
Debit Cards	<ul style="list-style-type: none"> Payer presents card or details at POS or via phone, paper or online 	<ul style="list-style-type: none"> Acquiring banks capture the transaction and route to payment networks (Visa, MasterCard, American Express, Diner's club) to process the payment RuPay , a national network, is in the process of being launched by NPCI 	<ul style="list-style-type: none"> Transactions are cleared by the respective network (Visa, MasterCard, American Express) Settlement occurs at the network's settlement bank: Bank of America for Visa, Bank of India for MasterCard. American Express clears and settles on its own. 	<ul style="list-style-type: none"> Payee swipes card at POS device or receives details POS device or internet gateway forwards details to card network for processing Acquiring bank processors may link merchant to network
Credit Cards				
Prepaid				
Mobile	<ul style="list-style-type: none"> Mobile application or SMS Payer must have activated mobile banking service with his/her bank and linked a mobile number to his/her bank account 	<ul style="list-style-type: none"> NPCI's Immediate Payment Service (IMPS)¹ Also can be a mobile network operator through a mobile money scheme 	<ul style="list-style-type: none"> IMPS transactions are routed through NPCI's National Financial Switch (NFS); and cleared & settled via the Clearing Corporation of India (CCIL) 	<ul style="list-style-type: none"> Payee needs to have linked mobile number to bank account and have a Mobile Money Identifier (MMID)

¹ IMPS provides a service that links a mobile number to bank account routing information and initiates a real-time credit transfer via the NPCI's National Financial Switch (NFS) used for ATM switching

Public networks play a central role in settlement for all instruments and in clearing many non-card transactions



	Large Value Transfer System		Automated Clearing House		1139 Cheque Clearing Houses ¹		Card Payment Network		Deferred Net Settlement (DNS) System		Volume (%) ⁵ , 2011	Rationale for choice
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private		
Network Design	Network	RTGS	N/A	ECS credit ECS debit NECS	N/A	Operated by RBI	Operated by state-owned banks	Rupay ²	VISA MasterCard AMEX	NEFT	N/A	
	Time to settle	Instant		2-3 days		2-3 days	2-3 days		1-2 days	1 day		
	Net/Gross	Gross		Varies		Net	Net		Net	Net		
	Open/closed	Open		Open		Open	Open		Differs	Open		
	Interoperable	Yes		Yes		Yes	Yes		Yes	Yes		
Clearing & Settlement by instrument	Cheque											41% Ubiquitous but expensive 59% Less costly but only large banks
	Direct debit			C S								
	Credit transfers³			C S								
	Debit card											
	Credit card								C S ⁴			
	Prepaid card											
												30% } Transaction size limits and availability 56% } 14% }

1 March 2010; 2 RuPay is yet to be launched broadly; open questions on final structure remain; 3 Can be initiated via mobile through NPCI's IMPS, which is settled through the ATM switching network NFS; 4 Settlement occurs at each networks' settlement bank: Visa – Bank of America, MasterCard – Bank of India, American Express – American Express; 5 2011

SOURCE: BIS CPSS Red Book, In-country interviews, RBI