

# Fighting poverty, profitably

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

China

BILL & MELINDA  
GATES foundation



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

# 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 overlaid on the right side of the page. The country of China is highlighted in a solid orange color, corresponding to the 'China' section of the table of contents.

# The payment system in China



## Characteristics

- **An extensive foundation of banking and core infrastructure** allows for an effective legacy platform to reach most consumers in urban and rural areas, with fall-off in quality of access in township and village areas
- **Government and regulators guide development effectively** across the system through direct control of infrastructure (e.g., China UnionPay credit card company), major distribution players (e.g., Postal Savings Bank), and influence on other actors (e.g., Big Four banks)
- **Government policy objectives are visible in corporate strategy** and guide investment choices by major players; widespread acknowledgement of government goals and importance of CSR goals
- **A utility-based payments system** provides widespread access to high-quality services with controlled costs (e.g., regulators set interchange, interest rates, payment fees); profitability of payments is low to negative, while adjacent profits drive incentives
- **The under-banked have significant needs, and many do not access the system despite its reach and relatively low cost**; while access to services is high, major segments – rural poor, urban migrants – have challenges accessing the system; there is a common perception that available services lack relevance and require time to access
- **The non-bank payment sector is growing** rapidly from online commerce into more mainstream payment applications (e.g., bill payment, money transfer, POS payments); while the sector focuses on affluent consumers in urban markets, it recognizes the potential for rural consumers

## Implications for financial inclusion

- **Coordinated government programs can be highly effective.** China's government steers the system through multi-pronged efforts and exerts direct and indirect controls
- **Mobile not likely to have disruptive impact on low-income segments**; because traditional infrastructure is already serving many core needs. Mobile is likely to play an important complimentary role for specific payment transactions (e.g., bill payment, remittance)
- **Improved cash access and convenience** are seen as critical areas for improvement; leveraging ATMs, POS, and mini-branches for greater access and convenience
- **Network extension and collaboration** will expand reach; China's systems are working together to expand services (e.g., Postal Savings Bank is disbursing to rural areas, online players are linking to bank branches)

# Payments in China by the numbers



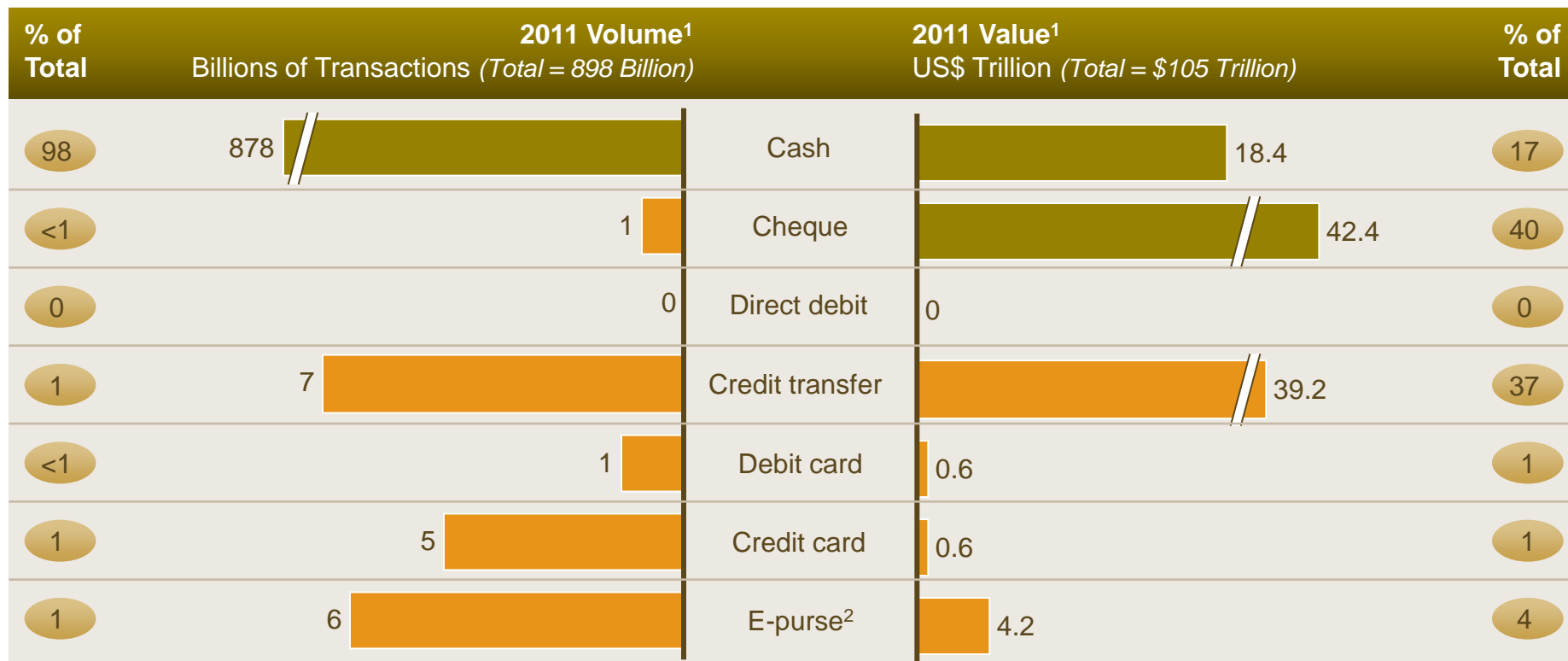
Usage & Inclusion	Instrument usage	<b>Highly cash dominated with growing card and credit transfer volumes.</b> Percentage of payments made via digital or mobile channels by value: 61% C2C, 39% C2B, 87% B2C
	Financial inclusion	<b>Medium-to-high with limited access for specific geographies</b> <ul style="list-style-type: none"> <li>Formal access: 64% of population (based on Findex data) acknowledged access to an account; formal barriers to accounts are low (virtually free, wide infrastructure) however relevance to daily uses can be low for low income consumers</li> </ul>
Payment system	Network infrastructure	<b>Centralized</b> <ul style="list-style-type: none"> <li>CNAPS (China National Advanced Payment System) has been replacing older EIS system since 2001 for ACH</li> <li>China UnionPay (CUP) is sole, state influenced, card network (formed in 2003) and also settles account-to-account txns</li> </ul>
	Regulation	<b>Highly Active</b> <ul style="list-style-type: none"> <li>Led by People's Bank of China (PBC), the Ministry of Finance (MoF) and the China Banking Regulatory Commission (CBRC); China deploys an effective regulatory regime capable of guiding the system; however, responsibilities overlap</li> </ul>
Environment	Banking system reach	<b>High reach per capita, but highly variable across geographies</b> <ul style="list-style-type: none"> <li>Branches: 15 branches per 100K (~210K total)</li> <li>ATMS – 25 ATMs per 100K (334K total)</li> <li>POS – 359 per 100K (4.8M total)</li> </ul>
	Mobile & telecoms	<b>Very high penetration in urban areas-less so in rural areas</b> <ul style="list-style-type: none"> <li>Rapidly growing market, with 3 major providers China Mobile (66%), China Unicom (20%), China Telecom (13%)</li> <li>Mobile users: 66% of population (90%+ penetration in urban areas)</li> </ul>
	Other market infrastructure	<b>Advanced – strong basic infrastructure, expanding into low income areas</b> <ul style="list-style-type: none"> <li>Well-developed core market infrastructure – electricity, transport, education – as state planning drives economy and investment in infrastructure has been a major policy goal for decades</li> </ul>
	Economic environment	<b>Middle and low income</b> <ul style="list-style-type: none"> <li>GDP per capital (PPP): \$8,500 (2011)</li> <li>GINI coefficient of 48 (2009)</li> </ul>
	Demographics & geography	<b>Mixed urban and rural, aging and urbanizing</b> <ul style="list-style-type: none"> <li>50% of population is urbanized – China is rapidly urbanizing, experiencing the largest, fastest migration of rural-to-urban population in history</li> </ul>

SOURCE: Findex Global Database; China Household Finance Survey p 70 (<http://chfs.swufe.edu.cn/>); China Union Pay; PBC; Expert Interviews, CGAP China Working Paper on Inclusiveness No. 7; CIA Fact Book

# Cash dominates payments in China by volume, while significant value is exchanged through cheques and credit transfers



■ Paper ■ Digital



- The vast majority of payments by number are in cash
- Cheques account for 40% of transactions by value - vast majority of these (>99%) are used in B2B, in corporate banking
- Credit transfers account for nearly 37% of payment value – most such payments are B2B but a significant fraction of salary payments by value are also done via transfers

1 Only includes interbank transactions

2 E-purse denotes Internet payments that run through non-bank payment providers (e.g., Alipay)

SOURCE: McKinsey Payments Map, 2011

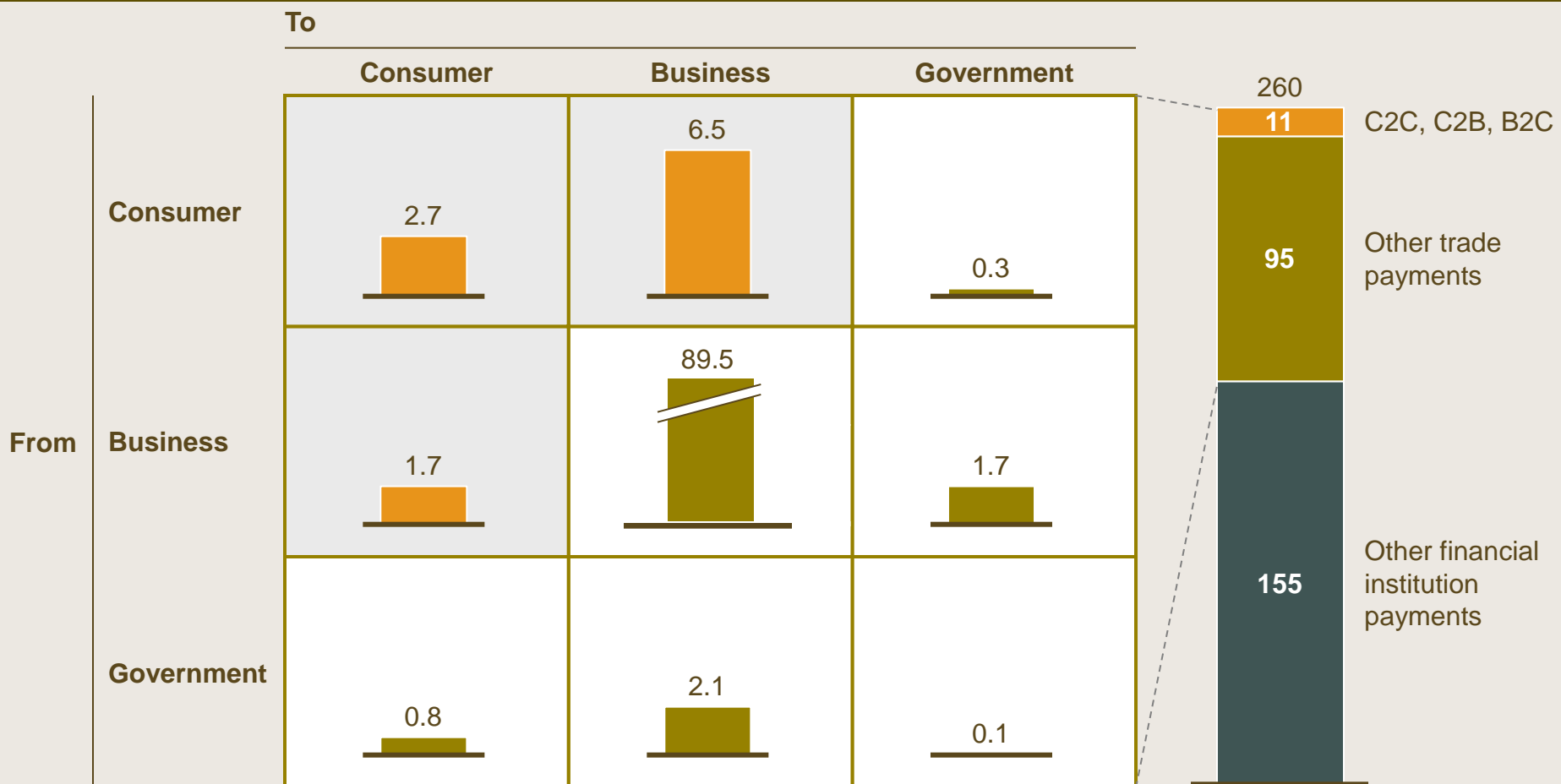
# The transactions most strongly impacting Chinese consumers account for about \$11 trillion of payment flow



Area of focus

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

Total trade payments by value, 2011  
US\$ Trillion



SOURCE: McKinsey Payments Map, 2011; IMF

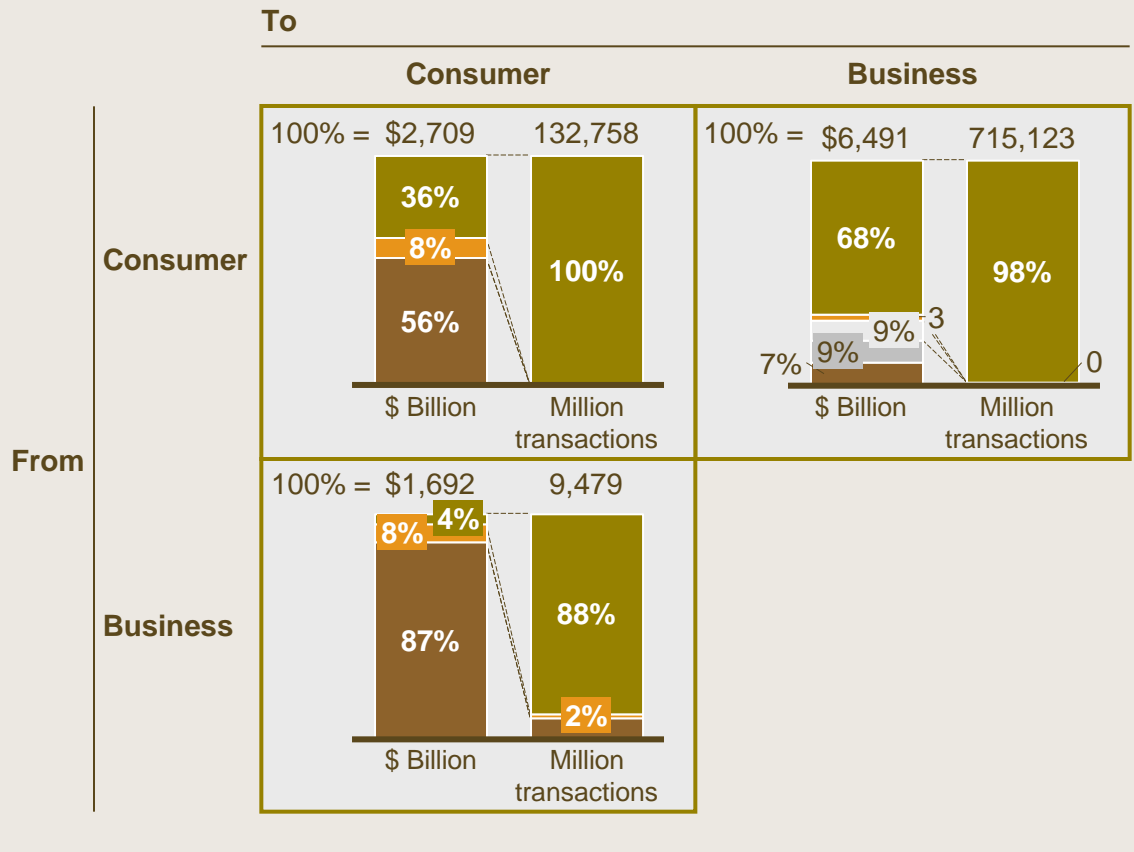


# Cash and credit transfers are the most commonly used retail payments instruments in China; there is also some card use



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

**Trade payments in China by transaction parties, 2011<sup>1</sup>**  
Value in US\$ Billions, Transactions in Millions



## Major instruments used by transaction type

	C2C	B2C	C2B
Cash	\$ #	#	\$#
Cheque			
Direct debit			
Credit transfer	\$	\$	
Debit card			
Credit card			
E-purse			

1 Only includes interbank transactions

SOURCE: McKinsey Payments Map, 2011

# Financial inclusion in China



## Overall financial inclusion performance: Medium

### Percent with an account at a formal financial institution

- Overall -- 64%
- Bottom 40% -- 47%
- Women -- 60% have formal financial accounts

### Payment services access

- Debit card access -- 41%
- Credit card access -- 8%
- Receive wages in a formal account: -- 19%

### Distribution access (per 100,000 people)

- Bank branches -- 15; varies by province
- ATMs -- 25
- POS terminals -- 359
- Mobile access -- 66% of population

### Additional comments

#### Four main groups have trouble accessing financial services:

- **Rural households** are often in very remote areas, and own little to no possible collateral (350-450 M1 people)
- **Low-wage migrant workers** may have difficulty opening accounts where they do not have resident status and have little collateral (150-250 M2 people)
- **Private MSMEs<sup>2</sup>** have no implicit state banking and often financed through the informal market
- **Unemployed individuals** have few options for credit to start a business

## Key takeaways

- **Rural areas are served by core banking** infrastructure fairly well until township level; village level access drops off sharply, with limited access and daily relevance. 2,300 towns and townships have no physical outlet<sup>1</sup>, out of 30,000-40,000 total
- **Rural branch coverage fell in the early 2000s** as the Agricultural Bank of China became a publicly-traded company
- **The government provides strong backing of financial inclusion initiatives** as part of policies to develop rural communities, and helps align private sector to these goals
- **Findex estimates account penetration at 39%** for the lowest quintile of earners<sup>1</sup> (other estimates set this figure higher)
- **Limited access to payments infrastructure at the town level is a barrier to financial inclusion** but has been improving
  - Rural institutions have their own automated clearing house (focused on remittances), which has driven use
  - Competition to serve users in rural areas, particularly through remittance services, has increased in the past 5 years

<sup>1</sup> 35% of HHs are rural and live on less than \$2.50/day; 71% of rural workers are in farming, forestry, animal husbandry, or fishery (Grameen, CGAP)

<sup>2</sup> Medium, small, and micro-enterprises

SOURCE: Findex Global Database; China Household Finance Survey p. 70 (<http://chfs.swufe.edu.cn/>); CGAP China Papers on Inclusiveness No. 7; "Payment Systems: From the Salt Mines to the Board Room" (2008); Grameen; China Union Pay; PBC; Expert Interviews



# The particular circumstances in China have enabled profitable interest-based models for banks

## 1 High personal savings rate

- China has the highest savings rates in the world, particularly among low income earners (~31% of household income for families with monthly income of 1,500 Rmb or \$895 annually)
- High savings rates ensure a significant deposit base, leading to interest income

## 2 Stable interest rate spread

- State mandated spread of ~300 bps allows for stable profit on savings accounts; newly instituted tiered capital requirements
- Estimated interest income from lowest income earners is ~\$27 (\$895 x 3%), enough to cover the cost of a bank account before accounting for any transaction income

## 3 Heavy intra-bank transfer volumes

- Many transfers to rural areas are done via the intra-bank system, reducing costs (e.g., in the US inter-bank cheque and credit transfer costs are 20-40% more expensive; in China, as a proxy, banks charge customers 10 bps less per transaction for intra-bank payments)
- Large volumes of intra-bank transfers may go along with some efficiencies - more accounts per person and higher rates of account dormancy (up to 40% for some banks vs. 8% in the US)

## 4 Limited customer acquisition costs

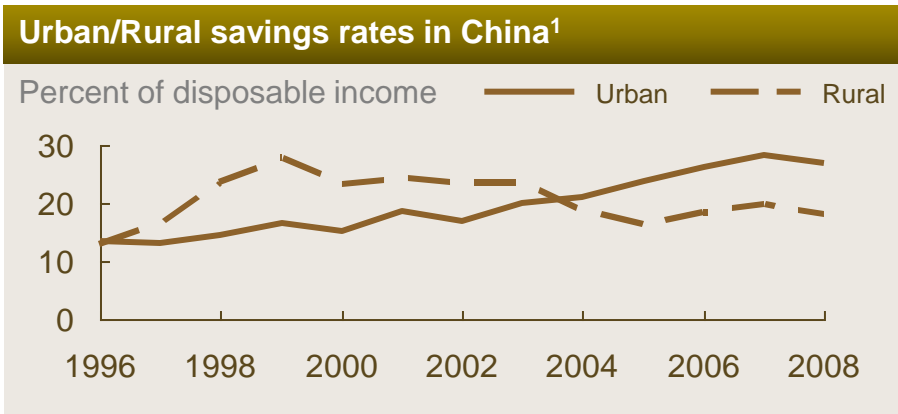
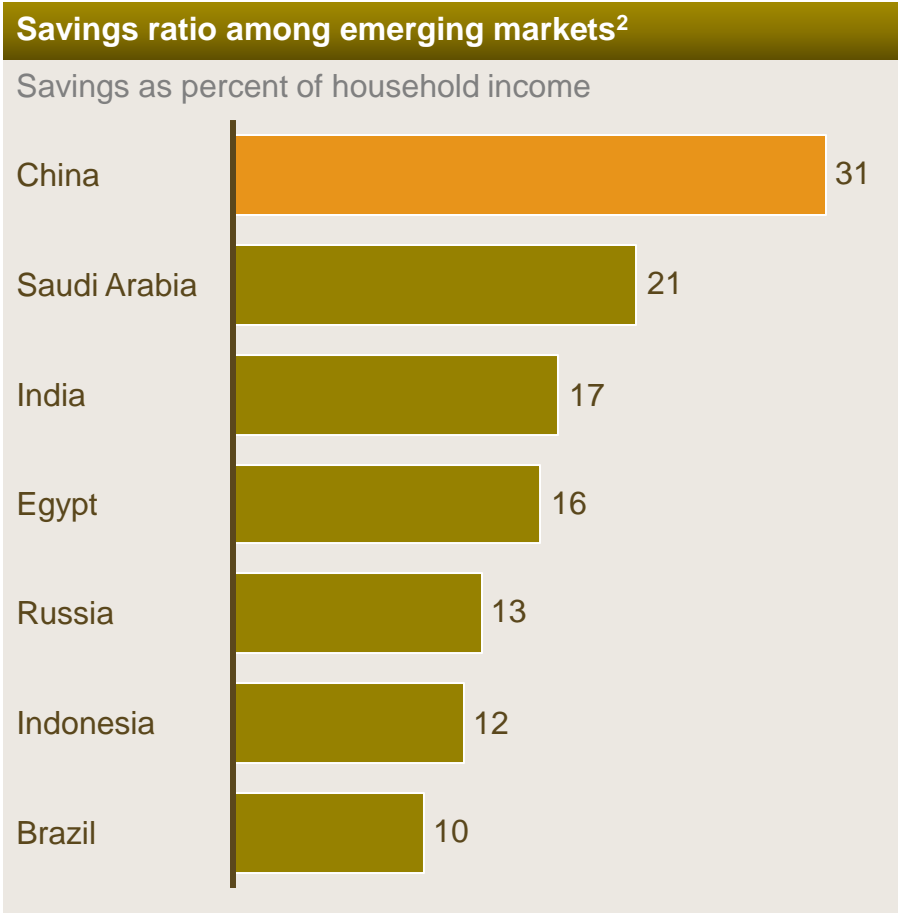
- Banks work to win employers as customers and then require that employees open a dedicated account for salary payments, saving on marketing costs to consumers themselves
- Similarly, banks work to convert those who send money to the rural poor (e.g., urban relatives, government) rather than the rural poor themselves
- Government has provided easy means of compliance with KYC by issuing IDs universally (an ID is the only requirement to open an account)

## 5 Government disbursements go to bank accounts

- People must have a bank account to register for a pension (~325 Million rural residents registered)
- Government pensions are paid into a bank account (~\$213 Billion in 2012, of which \$10 Billion went to rural recipients), increasing likelihood that savings are held with a bank

SOURCE: IMF; Credit Suisse China Survey, 2011; Expert Interviews; 2010 McKinsey ACH benchmark, 2011 Cheque benchmark; Bank websites; Ministry of Human Resources and Social Security PRC

# Savings rates are higher in China than in other developing markets and are largest in poor and rural households



1 Savings rates calculated based on per capita income and consumption. For the urban series, the measure of income used is disposable income per capita, while for the rural series the measure used is net income per capita (IMF; <http://www.imf.org/external/pubs/ft/wp/2011/wp11223.pdf>)

2 Based on household-level estimates (Credit Suisse China Survey 2011)

SOURCE: IMF, Credit Suisse China Survey, 2011

# Four main players provide financial services in rural areas, where the majority of poor people live



	Description	Role in payments	Reach		
			Total branches Thousands	Total rural HH Billions RMB	Total rural borrowers Thousands
<b>Rural Credit Co-operatives</b>	<ul style="list-style-type: none"> <li>Long history of serving rural communities</li> <li>Provide savings, credit and remittances services</li> <li>There are 2 to 3 thousand total, with large variance in size and number of outlets<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>30 of the largest RCCs set up clearing house to process remittances</li> </ul>	77	314	73,000
<b>Agricultural Bank of China</b>	<ul style="list-style-type: none"> <li>One of “big 5” banks and highly influenced by government</li> <li>Withdrew from serving traditional rural base in the lead into its 2010 IPO but has been encouraged to return recently</li> </ul>	<ul style="list-style-type: none"> <li>Offers tiered pricing for transactions, particularly remittances, depending on recipients bank and location (i.e., non-ABC / non-local)</li> </ul>	24	99	5,800
<b>Postal Savings Bank of China</b>	<ul style="list-style-type: none"> <li>The postal service has provided savings/remittances 1986-</li> <li>In 2007 government separated the financial services from post with goal of providing commercially viable loan products for rural enterprises, migrant workers, and farmers—may have plans to IPO</li> </ul>	<ul style="list-style-type: none"> <li>200M P2P transactions (\$71B)<sup>2</sup> in 2009—90% are “intra-bank” transactions</li> <li>Offers low cost P2P service with an expansive network</li> <li>Charge 5 RMB for credit card</li> </ul>	36	62	1,310
<b>New rural Financial Institutions</b>	<ul style="list-style-type: none"> <li>Have brought competition to rural areas oftentimes competing with RCCs by offering innovative loans and better service</li> <li>Collectively have only been marginally profitable (ROA ~ 0.5%) due to lack of deposit base<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>As of mid-2011 had no access to CUP for bank cards</li> <li>Use correspondent banking for access to clearing and settling—often result in poor service (e.g. no name of sender of remittance)</li> </ul>	1	21	237

1 CGAP China working paper no. 7; 2 PSBC presentation, 3 CGAP working paper no 3 (VTBs)

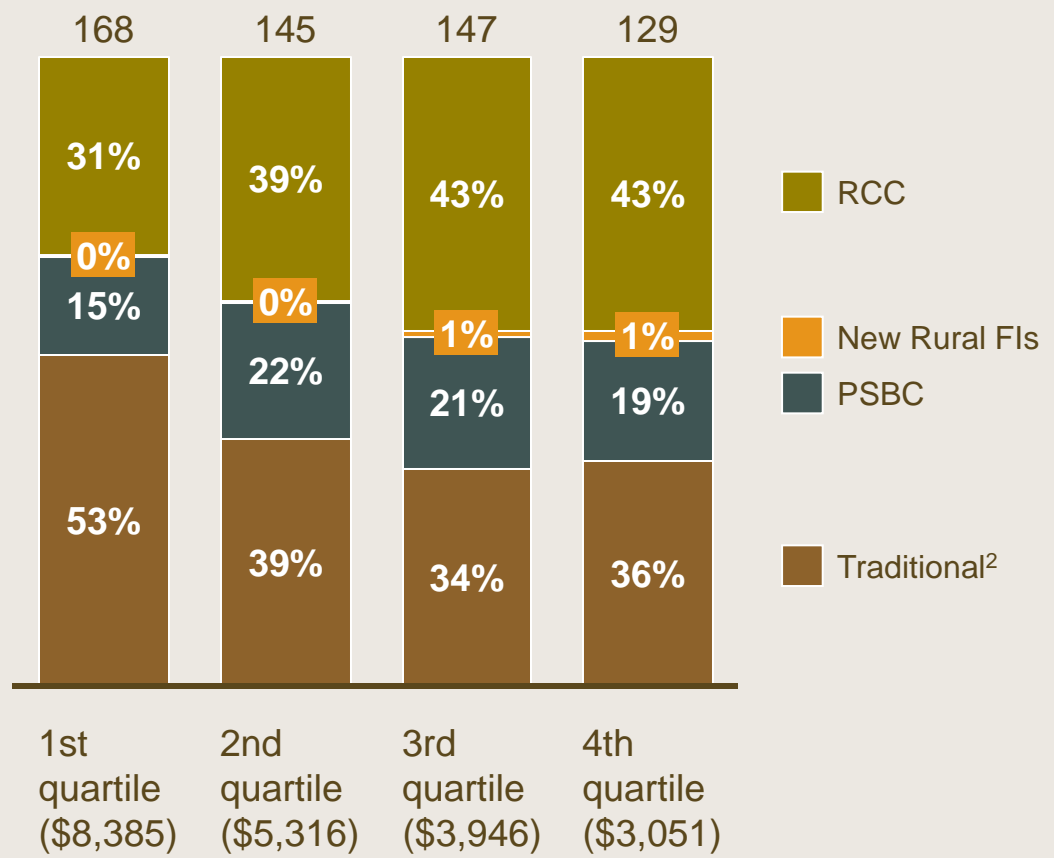
SOURCE: CGAP China working papers no. 3 and no. 7; PSCB presentations

# Rural Credit Cooperatives and the Postal Savings Bank are particularly present in poorer and more rural areas



## Outlet type distribution provinces by GDP quartile

Percent of total, # of outlets per million (avg quintile GDP-USD)



## Coverage by type of locality<sup>1</sup>

	1 <sup>st</sup> tier city	2 <sup>nd</sup> tier city	County	Town	Village
Urban	✓	✓	✓	✓	✓
Rural	✓	✓	✓	✓	✓

1 Expert Interviews; 2 Traditional includes Agricultural Bank of China which has the most expansive rural network of the listed and joint stock banks

SOURCE: National Bureau of Statistics, [http://en.wikipedia.org/wiki/Provinces\\_of\\_the\\_People's\\_Republic\\_of\\_China](http://en.wikipedia.org/wiki/Provinces_of_the_People's_Republic_of_China), PBOC; Expert Interviews



# Traditional branch infrastructure is extensive throughout China, even in the poorest provinces

## GDP per capita by province

GDP (USD)/capita

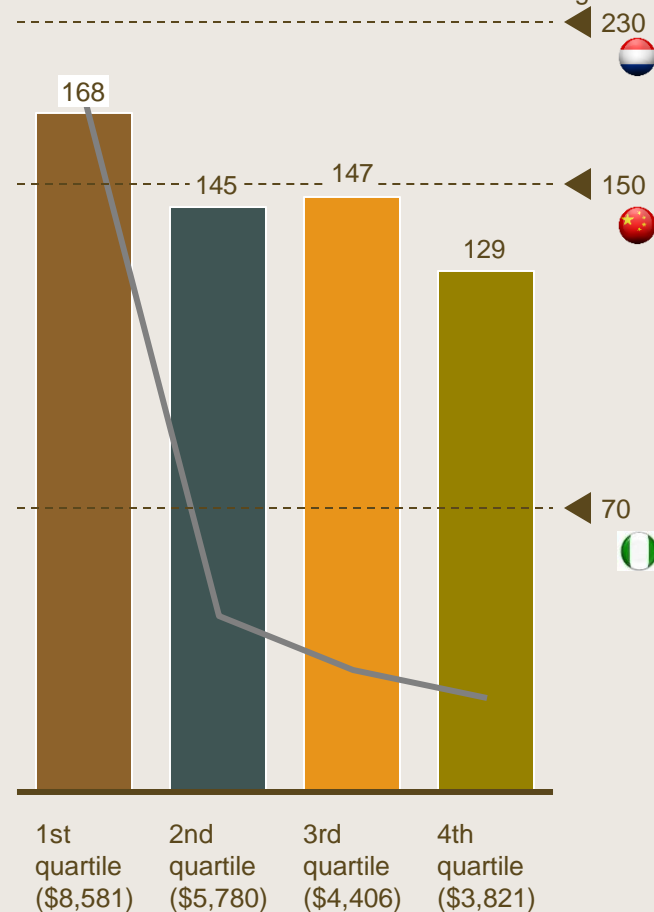


## Outlets per inhabitants by GDP quartile

Outlets per million inhabitants (avg. GDP-USD/capita)

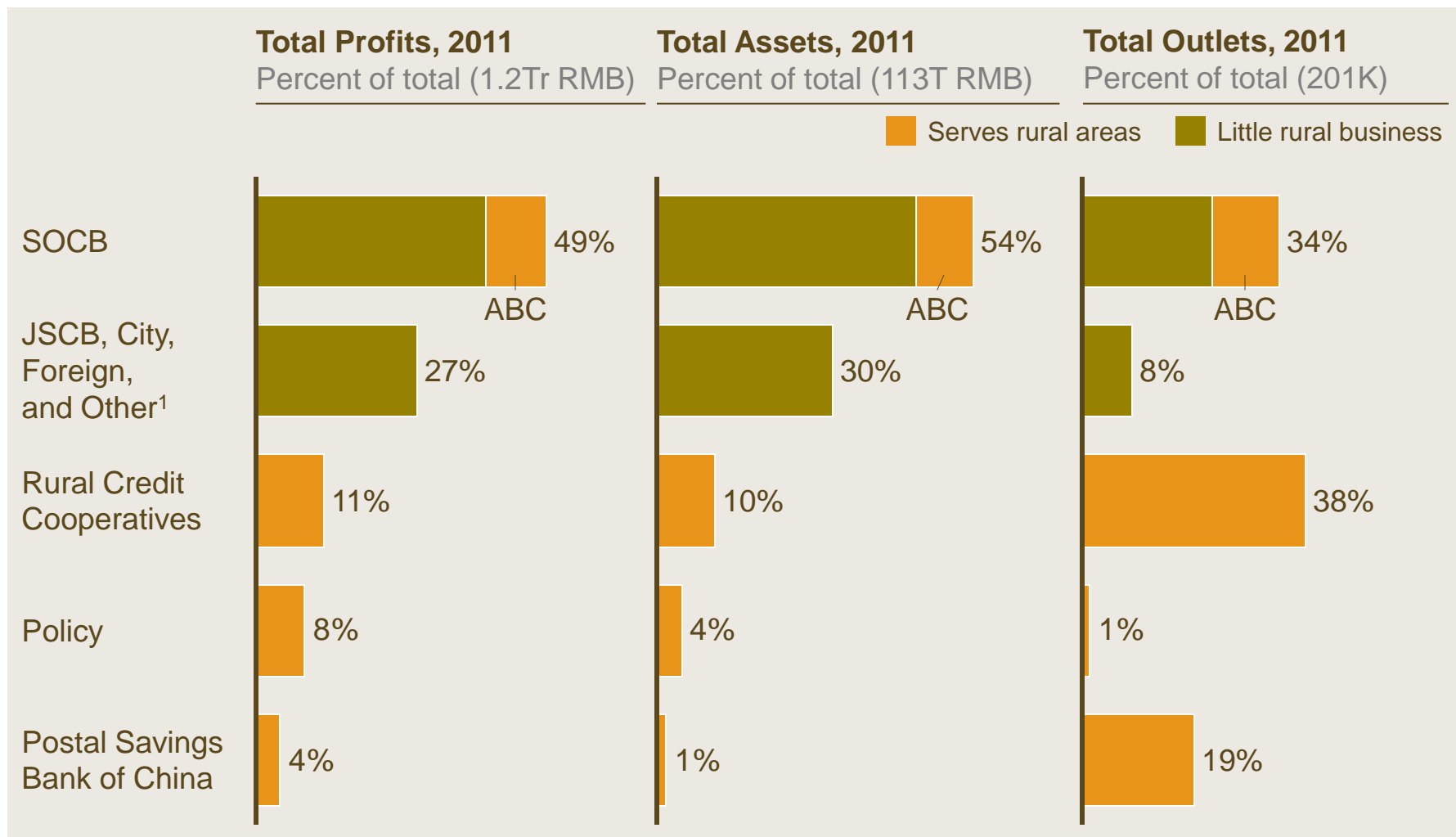
— Outlets per 1,000 KM<sup>2</sup>

National average:



SOURCE: "National Bureau of Statistics; PBOC

# Smaller, less profitable, and potentially less efficient banks maintain the largest number of outlets



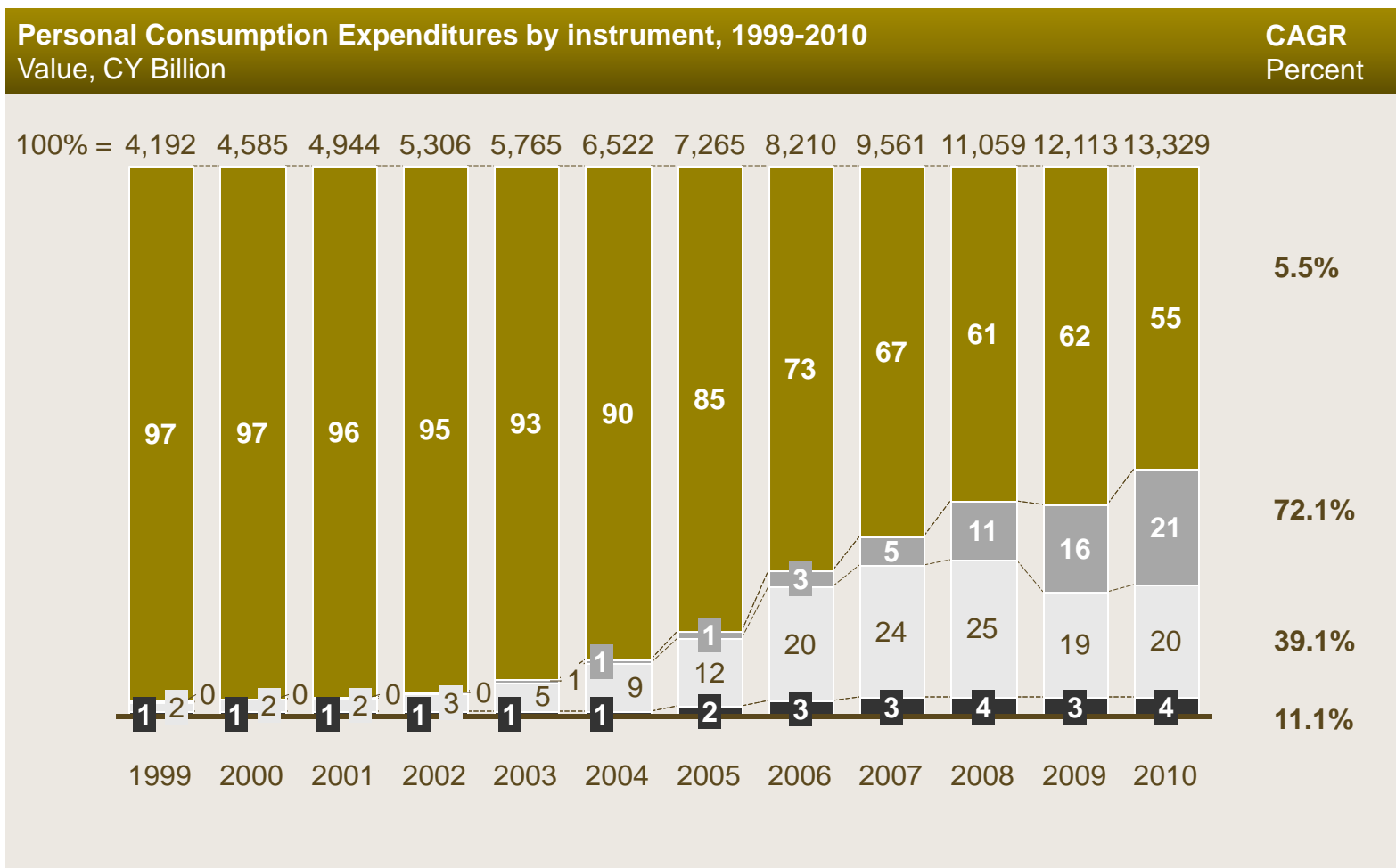
<sup>1</sup> Includes New rural financial entities, Finance Company, Urban Cooperatives, Trust and other non-bank financial

SOURCE: Annual reports, CBRC



# Consumer card usage is increasing rapidly

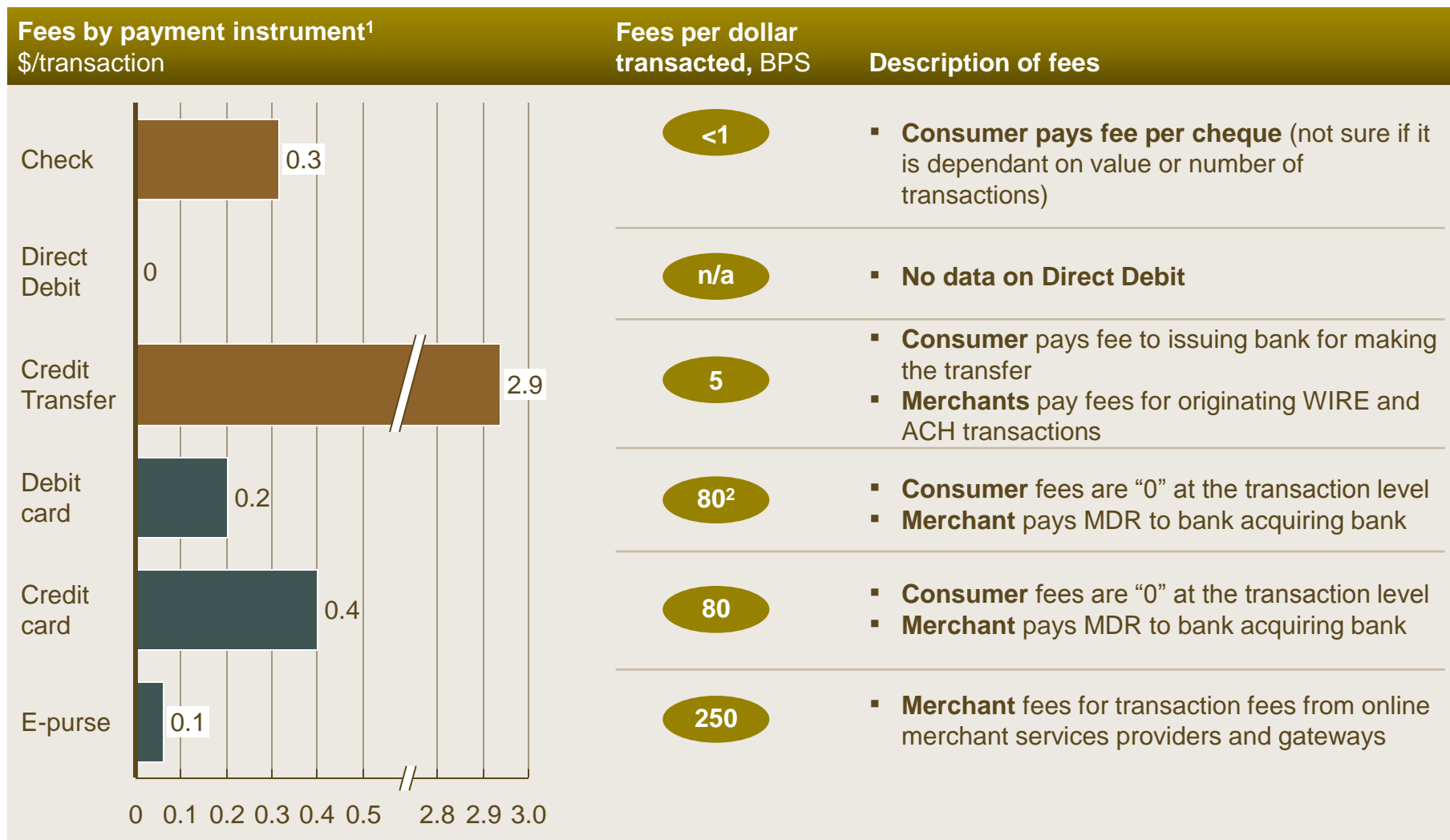
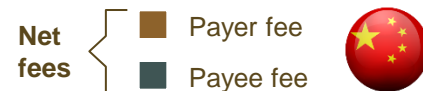
- Cash
- Debit card
- Credit Card
- Other



Note: PCE is an indicator used in measuring retail consumption—only includes cash and cards here (credit transfer payments are not measured). The volume is smaller than C2B payments because specific transactions are removed (e.g. wholesale consumption for individual businesses, real estate and automobile purchasing)

SOURCE: McKinsey Payments Map, 2011

# Merchants pay for POS transactions, while payers pay for credit transfers and cheques



1 Based on bank revenues; 2 Average MDR by volume of transactions is ~80 bps

SOURCE: McKinsey Payments Map, 2011; Expert Interviews

# While cash still dominates C2B payments, debit cards are also used, buoyed by relatively low merchant fees and free terminals



C2B TRANSACTIONS

	Consumer					Actual Use <sup>1</sup> (Val, %)	Merchant					Sample use cases
	Re-quires Bank Acct	Direct Fees (bps/RMB)	Indirect Fees	Benefits	Mer-chant Accept. (%)		Con-sumer Access (%)	Re-quires Bank Acct	Direct Cost bps	Indirect Cost	Benefits	
<b>Cash</b>	-		ATM on-us) Theft/Loss	▪ Accessible ▪ Ubiquitous	100	68	100	-		▪ Cash handling	▪ Ubiquitous ▪ Immediate ▪ Unclear if avoid taxes or not	▪ Used almost exclusively for day to day spend
<b>Cheque</b>	✓	▪ N/A	▪ One off costs of cheque	▪ Convenient for large txs ▪ Float benefit	<1	3	<1	✓	-	▪ Transport		▪ Large expenses for wealthy
<b>Credit Transfer</b>	✓	40-50 bps (1-2 RMB min)	▪ N/A	▪ Convenient for large txs	N/A	10	64	✓	N/A	▪ ...	▪ N/A	▪ Large value purchases, remittances
<b>Direct Debit</b>	✓	-	▪ N/A	▪ Convenient for recurrent pmts	N/A	0	N/A	✓	N/A	▪ ...	▪ Convenient for cash mgmt	▪ Hardly used
<b>Debit Card</b>	✓	Annual: 0-10 RMB Issuing 5 RMB		▪ Convenient to carry	20	9	41	✓	Vary by industry and location 80 bps avg	▪ Free terminal	▪ Minimizes cash handling	▪ TBD
<b>Credit Card</b>	✓	Annual 10-50 RMB Issuing 10 RMB	▪ Penalties, interest, other charges	▪ Float and liquidity benefit	20	9	8	✓	Vary by industry and location 80 bps avg	▪ Free terminal	▪ Minimizes cash handling	▪ TBD
<b>Prepaid</b>		Initial cost from 10-20 RMB	▪ Money transfer charge	▪ Cashless	<5	<1	<3	✓	Vary by industry and location 150 bps avg	▪ Free terminal	▪ Minimizes cash handling	▪ Smart Pass
<b>Mobile</b>	✓	-	▪ Handset/terminal	▪ Accessible ▪ Low cost	<1	<1	<1		Vary by carriers 30 bps avg	▪ Handset/terminal	▪ Minimizes cash handling	▪ China mobile
<b>E-Purse</b>	✓	-	▪ Handset/terminal	▪ Cashless ▪ Low cost, eg transfer	<1	<1	<1		Vary by industry 30-50 bps avg	▪ N/A	▪ Minimizes cash handling	▪ Bank of China

SOURCE: Expert Interviews, Bank websites, McKinsey Payments Map, 2011; Findex

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



	<b>Payer gateway</b>	<b>Payer intermediary</b>	<b>Clearing &amp; Settlement</b>	<b>Payee intermediary</b>
<b>Cheque</b>	<ul style="list-style-type: none"> <li>Written by payer on paper provided by payer bank</li> <li>Rarely used by individuals –more commonly used in B2B and interbank transactions</li> </ul>	<ul style="list-style-type: none"> <li>Cheque clearing houses receive cheques</li> <li>Majority of cheques are “on us” cheques – and routed to bank</li> <li>PBC and local clearing houses offer CIS (cheque Imaging services)</li> </ul>	<ul style="list-style-type: none"> <li>“On us” cheques are settled internally</li> <li>Intrabank cheques are cleared in cheque clearing house and settled on the HVPS</li> </ul>	<ul style="list-style-type: none"> <li>Payee receives cheque from payer and presents to bank</li> <li>Payee bank processes account credit. Sorts cheques and sends to cheque clearing house</li> </ul>
<b>Credit Transfer</b>	<ul style="list-style-type: none"> <li>Payer enters bank information online/at bank</li> <li>Employer deposits salary into employee’s account</li> </ul>	<ul style="list-style-type: none"> <li>Intra-bank transfers dominate credit transfers—handled by internal bank processors</li> <li>Interbank transactions below CY 50,000 are processed through the BEPS</li> <li>Interbank transactions above CY 50,000 go through the ACH</li> </ul>	<ul style="list-style-type: none"> <li>Intrabank transfers are settled according to internal bank system (sometimes instant, sometimes next day)</li> <li>BEPS sends batches sets of payments through HVPS for settlement</li> <li>ACH net settles daily through HVPS</li> </ul>	<ul style="list-style-type: none"> <li>Payee bank</li> </ul>
<b>Direct Debit</b>	<ul style="list-style-type: none"> <li>Very rare/almost not seen but similar to credit transfers</li> </ul>	<ul style="list-style-type: none"> <li>Intra-bank transfers dominate and are handled by internal bank processors</li> <li>Interbank transactions below CY 50,000 are processed through the BEPS</li> <li>Interbank above CY 50,000 go through ACH</li> </ul>	<ul style="list-style-type: none"> <li>Intrabank transfers are settled according to internal bank system (sometimes instant, sometimes next day)</li> <li>BEPS sends batches sets of payments through HVPS for settlement</li> <li>ACH net settles daily through HVPS</li> </ul>	<ul style="list-style-type: none"> <li>Payee (more likely the payee’s bank) determines when to process instructions to draw money from payer</li> </ul>

SOURCE: IMF Country Report, “Payment Systems: From the Salt Mines to the Board Room” by Dominique Rambure and Alec Nacamuli

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



	Payer gateway	Payer intermediary	Clearing & Settlement	Payee intermediary
<b>Debit Cards</b>  <b>Credit Cards</b>  <b>Prepaid</b>	<ul style="list-style-type: none"> <li>Payer presents card or details at POS or via phone, paper or online</li> </ul>	<ul style="list-style-type: none"> <li>Payment processors (of which CUP is one) process the payment</li> <li>China Union Pay (has relationships with banks)</li> </ul>	<ul style="list-style-type: none"> <li>China Union Pay handles the clearance of card transactions whose balances are settled on a net basis through the HVPS (High-Value Payment System)</li> <li>Estimated fee structure: 70% to issuer, 20% to acquirer, 10% to China Union Pay (average fee 55 bps)</li> </ul>	<ul style="list-style-type: none"> <li>Payee swipes card at POS device or receives details</li> <li>POS device or internet gateway forwards details to card network for processing (CUP)</li> <li>Payment processors (e.g., First Data) may link merchant to CUP</li> </ul>
	<ul style="list-style-type: none"> <li>SMS based – payer texts instructions</li> </ul>	<ul style="list-style-type: none"> <li>Bank, CUP, or provider passes information along to network</li> </ul>	<ul style="list-style-type: none"> <li>Clear and settle through credit transfer system (i.e. intra-bank, BEPS, or ACH)</li> </ul>	<ul style="list-style-type: none"> <li>Payee needs to be a member of the system to receive funds</li> </ul>
	<ul style="list-style-type: none"> <li>RFID / NFC used on-site</li> </ul>	<ul style="list-style-type: none"> <li>Bank, CUP, or provider pass information along to bank</li> </ul>	<ul style="list-style-type: none"> <li>Same settlement system for electronic (credit and debit)</li> </ul>	<ul style="list-style-type: none"> <li>Specialized terminal required</li> </ul>

SOURCE: IMF Country Report, Expert interviews



# Government entities and China Union Pay, which is jointly owned by banks, undertake most clearing; settlement occurs through the public network HVPS

Public infrastructure **C** Clearing **S** Settlement

	Network	Large Value Transfer System (Net settlement system)		Automated Clearing House		Card Payment Network		Cheque Clearing House		Volume
		Public <sup>1</sup>	Private	Public <sup>1</sup>	Private	Public	Private	Public	Private	
Network Design	Network	HVPS	N/A	ACH <sup>2</sup> BEPS (for values less than CY 50,000)	Intra-city RCBFCC CCCCB <sup>3</sup>	N/A	CUP Visa (int'l only)	PBC	N/A	
	Time to settle	30-60 sec		Variable	Variable		1 day	1-3 days		
	Net/Gross	Gross		Net	Net		Net	Net		
Clearing & Settlement by instrument	Cheque	<b>S</b>						<b>C</b>		Cheque clearing houses process payments worth 7.4 times GDP
	Credit Transfer	<b>S</b>		<b>C</b>					<b>C</b>	
	Direct debit	<b>S</b>		<b>C</b>					<b>C</b>	
	Debit card	<b>S</b>							<b>C</b>	CUP card payment system processes payments worth 22% of GDP
	Credit card	<b>S</b>							<b>C</b>	
	Prepaid	<b>S</b>							<b>C</b>	

1 All public payment systems are under the broad umbrella of the Peoples Bank of China (PBC); 2 The Automated Clearing Houses are organized nationally and locally are delegated to local banks where no PBC branch exists; 3 Rural Credit Bank Funds Clearing Center and Clearing Center for City Commercial Banks

SOURCE: People's Bank of China, IMF Country Report

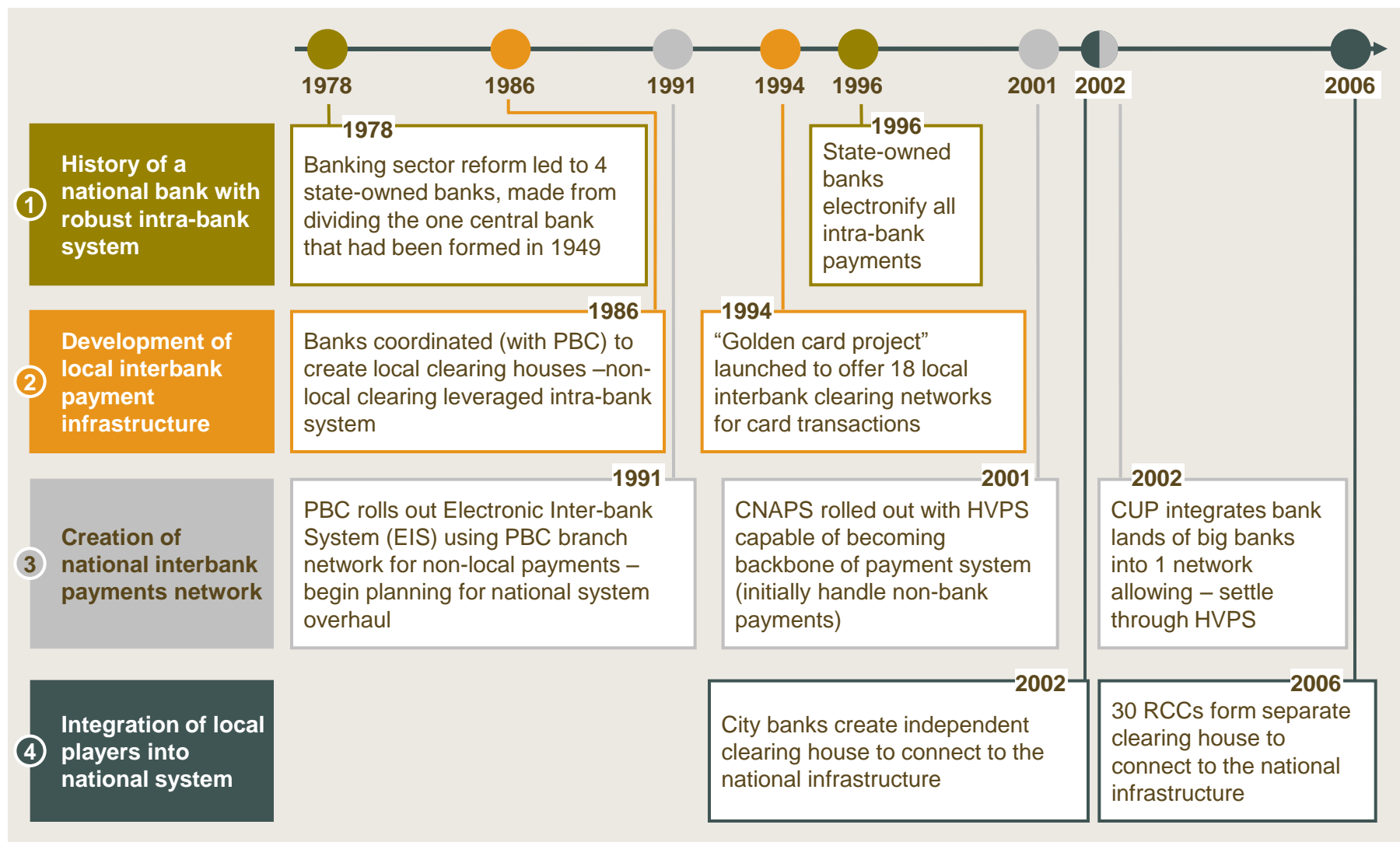
# China's banking and payments system has developed over the past 35 years from a single government-run bank



1949 - 1978	<b>Single government-run bank</b> <ul style="list-style-type: none"> <li>The People's Bank of China (PBC) was formed as functionally the only bank in China</li> </ul>
1978	<b>Formation of state owned banks</b> <ul style="list-style-type: none"> <li>Agricultural Bank of China (ABC): Rural and agricultural sectors</li> <li>Bank of China (BOC): Foreign trade and investment</li> <li>China Construction Bank (CCB): Construction and fixed-asset investment</li> <li>Industrial and Commercial Bank of China (ICBC): Business activities of the State Owned Enterprises (SOEs)</li> </ul>
1984	<b>Increased competition among state owned banks</b> <ul style="list-style-type: none"> <li>Loosened restrictions of state-owned banks, which begin to compete in some areas</li> <li>The PBC is made responsible for managing the funding of SOEs.</li> </ul>
1993	<b>State-owned banks become commercial banks (state owned commercial banks – SOCB)</b> <ul style="list-style-type: none"> <li>“Resolution on Financial System Reform”, issued by State Council, removes mandated specialization for state owned banks, though they are still required to grant loans to SOEs</li> <li>Policy banks are created in 1994</li> </ul>
1998	<b>Measures to ensure SOE profitability and reduce the burden of non-performing loans on the SOCBs</b> <ul style="list-style-type: none"> <li>Creation of Asset Management Companies (AMCs) to take non-performing loans (NPLs) off SOCBs</li> <li>Swapped SOEs debt for equity and restructured SOEs to drive profitability</li> </ul>
2001	<b>Accession to the WTO, contingent on several conditions</b> <ul style="list-style-type: none"> <li>The banking system was to be fully opened to foreign FIs before end of 2006 and SOBC accounted for 65% of assets of deposit-taking institutions</li> </ul>
2003-2010	<b>Big 4 banks restructure and IPO</b> <ul style="list-style-type: none"> <li>2003: SOCBs convert to joint stock commercial banks, receive capital injection and transfer more NPLs to AMCs</li> <li>1998-2005: Increased operational efficiency – 50% reduction in number of branches and 20% in employees</li> <li>2005-2010: ABC (2010) and CCB (2005) list in Hong Kong and BOC (2006) and ICBC (2006) list in both Hong Kong and Shanghai</li> </ul>

SOURCE: “Banking System Reform in China”

# The interbank payment infrastructure was developed on top of robust internal payments systems in the 4 big national banks



SOURCE: “Payment Systems: From the Salk Mines to the Board Room”, “Press China to Keep Card Promises”, “Taobao vs. Ebay China”, “Banking System Reform in China”; IMF Country Report



# Payment instruments in China have developed in parallel with the interbank infrastructure



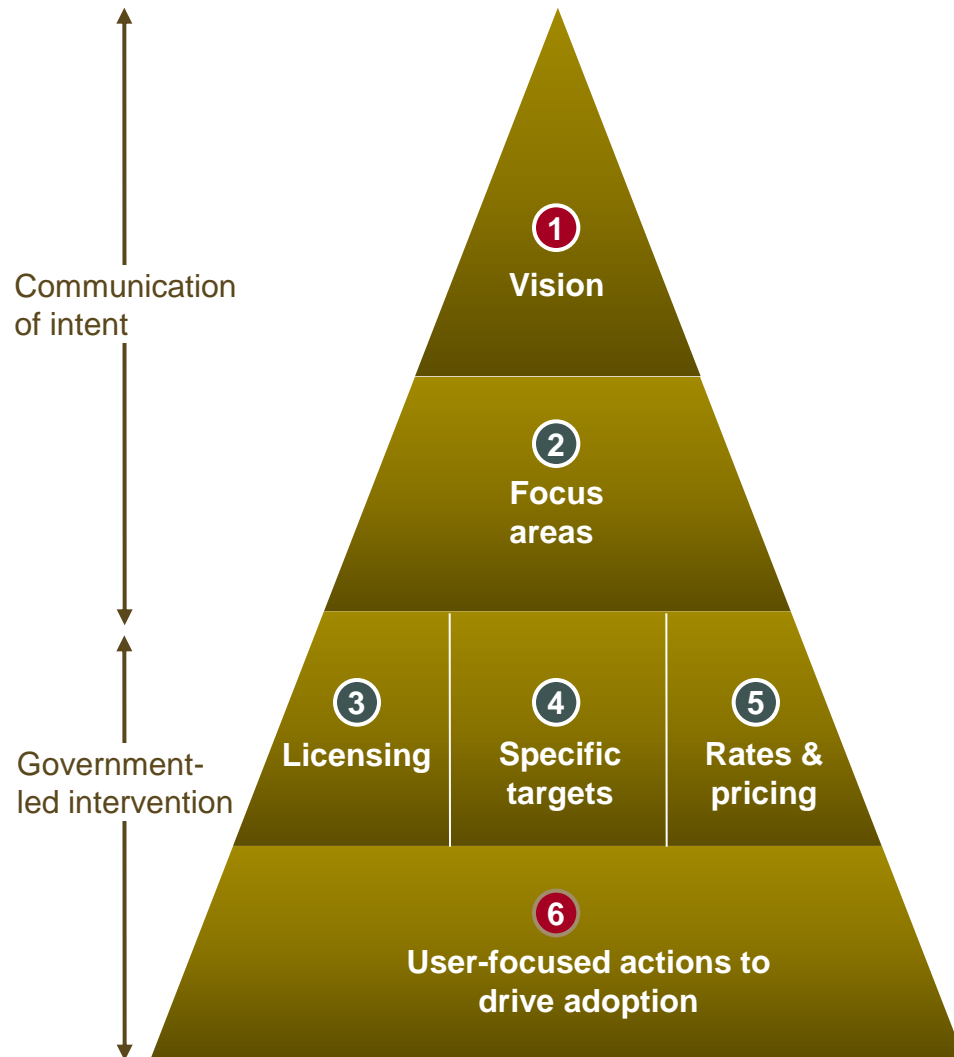
	1990-1999	2000-2004	2005-2010
Cash	<ul style="list-style-type: none"> <li>Cash is fundamental method of payment</li> <li>First ATM installed in 1987</li> </ul>	<ul style="list-style-type: none"> <li>ATM usage becomes increasingly popular</li> </ul>	<ul style="list-style-type: none"> <li>Cash is still used for the majority of POS transactions</li> </ul>
Cheque	<ul style="list-style-type: none"> <li>Used for B2B transactions but seldom seen as a non-cash option for consumers—used for high value payments</li> </ul>	<ul style="list-style-type: none"> <li>Cheque Imaging System improved efficiency and reduced cost of cheque payments</li> </ul>	<ul style="list-style-type: none"> <li>Absolute cheque volume declined</li> </ul>
ACH	<ul style="list-style-type: none"> <li>By 1986 large cities have interbank networks and a few economic hubs are linked together</li> <li>In 1991, government rolls out Electronic Interbank System (EIS) to enable non-local payments via PBC branch network</li> <li>By 1996, the big 4 banks replaced their intra-bank payment systems with electronic system</li> <li>Credit transfers are most common non-cash payment method (TBC)</li> <li>8th 5 year plan (1991-1995): The PBC was to focus on promoting the computerization of payment systems</li> </ul>	<ul style="list-style-type: none"> <li>CNAPS (China National Advanced Payment System) is announced to link the PBOC's national clearing center with all FIs</li> <li>CNAPS gradually replaces EIS</li> </ul>	<ul style="list-style-type: none"> <li>Value and volume of payments processed through both the HVPS and the BEPS (both within the CNAPS) grows exponentially</li> <li>Credit transfers become commonplace for salaries, C2C and other non-retail transactions</li> </ul>
Cards	<ul style="list-style-type: none"> <li>Each city had own clearing and settling system for their cards until 2002 (could not pay between cities with card)</li> <li>Debit cards begin to grow in popularity in urban areas but credit cards remain relatively unused</li> </ul>	<ul style="list-style-type: none"> <li>BOC and CCB started accepting CC applications in 2001</li> <li>Feb 2002 PBC announces plan to enable Big Four banks to process cards across cities and banks</li> <li>End of 2002-most banks are integrated with CUP and debit card use steadily increases</li> </ul>	<ul style="list-style-type: none"> <li>Debit cards are associated with nearly all accounts</li> <li>Credit card usage grows significantly as awareness and education become more common</li> </ul>

SOURCE: "Payment Systems: From the Salk Mines to the Board Room", "Press China to Keep Card Promises", "Taobao vs. Ebay China", "Banking System Reform in China"

# In policy and regulation, market solutions guided by a government vision often work in tandem with explicit interventions



# Payments/banking regulator-led # Involves non-banking/payments policy



- 1 **Vision:** Government makes broad goals known (e.g. promote equality between rural and urban)
- 2 **Focus areas:** Government identifies and announces particular areas of focus/levers in support of the vision; multiple stakeholders are brought into conversations to understand these areas of focus and government intent (e.g., MSME loans; rural financial inclusion)
- 3 **Licensing:** Providers are licensed based on activities they undertake and are subjected to prudential or other supervision depending on their class of license (e.g., licenses for 3<sup>rd</sup> party payments providers; tiered capital requirements)
- 4 **Specific targets:** Set specific targets for areas that will support the identified focus areas (e.g., numbers of POS terminals)
- 5 **Rates & pricing:** Fees will be capped or set, with the intent of furthering progress toward the vision, focus areas and specific targets (e.g., interchange)
- 6 **User-focused actions to drive adoption:** Use behavior and specific consumer facing policies to drive consumer behavior (e.g., National ID system)

SOURCE: Expert Interviews