

Fighting poverty, profitably

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

United States

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.

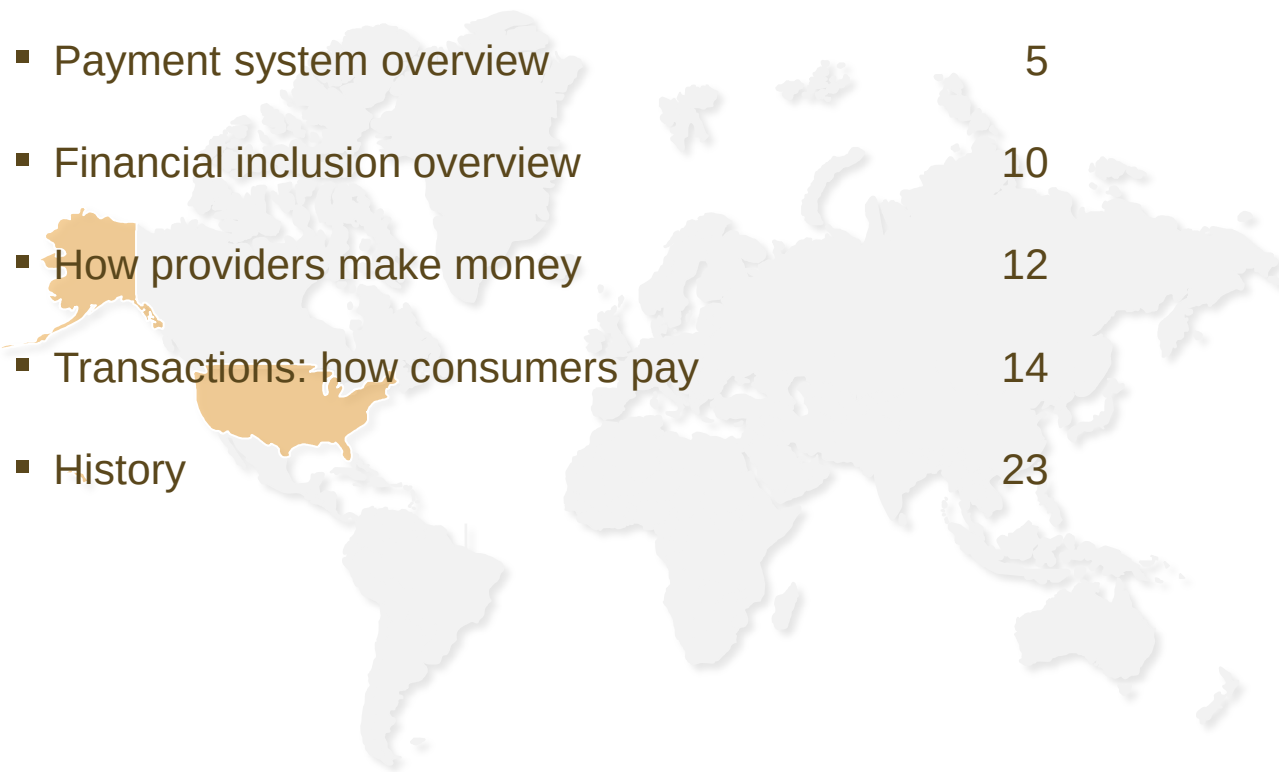
What we analyzed. As part of our work, we conducted a thorough assessment of the payment systems in six significant economies – Nigeria, Kenya, India, China, the U.S., and the Netherlands – to understand their elements, changes over time, and the economics for providers. McKinsey & Company's Global Payments 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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The payment system in the United States

Characteristics

- **A demand-driven system** is shaped by the requirements of a large and sophisticated financial sector
- **Strong competition among payments players** for profits stimulate high-levels of investment and innovation in new products
- **Bankcards** have become the predominant form of consumer payments at POS due to widespread issuance and broad acceptance infrastructure; consumer demand for card payments (e.g., loyalty and credit) was instrumental for historical success
- **Balanced development of a government-buttressed infrastructure** (e.g., ACH) and private sector systems (e.g., Visa/MasterCard) allowed for high scale, efficient central platforms at a broad set of institutions
- **Legacy chequing infrastructure** is well established and on a relatively slow decline path; exhibiting scale effects
- **The high-tech sector** has historically driven innovations in payment services (e.g., network computing, ATM systems); now it may provide the next wave of innovations (e.g., digital wallets, ecommerce)

Implications for financial inclusion

- **A market-driven, profit seeking** payments industry produces innovations that expand access (e.g., online banking, P2P payments), but also drives high prices to low-income consumers
- **Regulatory intervention focuses mostly on consumer protection** and overall system stability (e.g., Card ACT, CFPB) to correct market behavior; but it is not focused on systems solutions (e.g., mobile money strategy)
- **The U.S. has been a source of multiple innovations** with broad global impact on financial inclusion (e.g., bankcard networks, ATMs, e-commerce, mobile POS)
- **Consumer education and financial literacy** hold significant potential to improve outcomes for low-income consumers by strengthening cost-benefit decisions across instruments and providers



Payments in the United States by the numbers

Usage & Inclusion	Instrument usage	High usage of digital payments and cheques - Market has rapidly adapted digital payments, particularly bankcard-based, with high paper-cheque usage - Percentage digital payments: 64% of C2B, 7% of C2C, 64% of B2C
	Financial inclusion	High: Broad reach and deep infrastructure provide wide access to system, though price remains an issue - Formal access: 88% of population has access to bank account, 82% of bottom 40%; 72% have access to debit cards - Main issues with access involve fee levels and pricing for low-income consumer products and credit-driven models
Payment system	Network infrastructure	Centralized, scale platforms - Major clearing & settlement occurs through established, high-scale clearing centers that are dependable and efficient - Core platform technology capabilities are aging (e.g., less flexible than newer systems); reliability is extremely high
	Regulation	Highly capable Led by Federal Reserve, U.S. Treasury, and other bank regulatory agencies, the U.S. exhibits deep and capable regulatory and oversight structures; priorities tend to center on controlling illegal activity and consumer protection
Environment	Banking system reach	High-reach, distributed: market has leading rates of branch, ATM, and POS access - Branches -- 36 branches per 100K (~120,000 total) - ATMS – 174 ATMs per 100K (~418,000 total) - POS – 2,156 per 100K (~5.4 MM in 2011) - Online banking – 80% of banked customers
	Mobile & telecoms	Established - Strongly growing market for telecommunications services, high smartphone adoption, one of largest markets in the world - Mobile users: 83% of adult population has mobile phone; 80% have access to Internet
	Other market infrastructure	High Strong core infrastructure foundation across all elements, e.g., electricity, transport, delivery
	Economic environment	Upper income Nominal GDP: \$48,261 / capita – U.S. is the 14th most affluent country in the world. GINI coefficient of 45 in 2007
	Demographics & geography	Highly urban, middle-age population 84% of population lives in urban areas; 16% in rural areas - Moderate population growth for large, affluent market, driven mainly by immigration

SOURCE: Findex Global Database, FDIC report on low income consumers; CIA Fact Book; World Bank



The US payments system is largely digital, although cheques account for 30% of value, and cash is used in half of all transactions

■ Paper ■ Digital

% of Total	2011 Volume Billions of Transactions (Total = 224 Billion)		2011 Value US\$ Trillion (Total = \$90 Trillion)		% of Total
47	105	Cash	1.9		2
4	9	Check ¹	38.1		43
5	12	Direct Debit	16.6		18
10	22	Credit Transfer ²	28.9		32
24	53	Debit Card	1.9		2
10	23	Credit Card	2.2		2
0	0.4	Other ³	0.05		0

- Payments system is mostly digital with two-thirds of transactions digital of some sort
- Cheques still account for almost a third of payment value but intermediation has become more efficient as cheque imaging has allowed cheques to become digital
- Cash remains the most popular payment instrument by number of transactions but mostly accounts for small-value transactions at point-of-sale

1 Reflects cheques paid, not cheques written. Cheques converted to ACH are counted in ACH. This convention is used throughout.

2 Includes WIRE and ACH. Excludes the majority of wire transfer dollars in an effort to approximate customer payments activity rather than FI settlement.

3 Includes deferred payments services (e.g. BillMeLater), book entry transfers, and cell phone/other bill charges

SOURCE: McKinsey U.S. Payments Map, Release Q1-2012

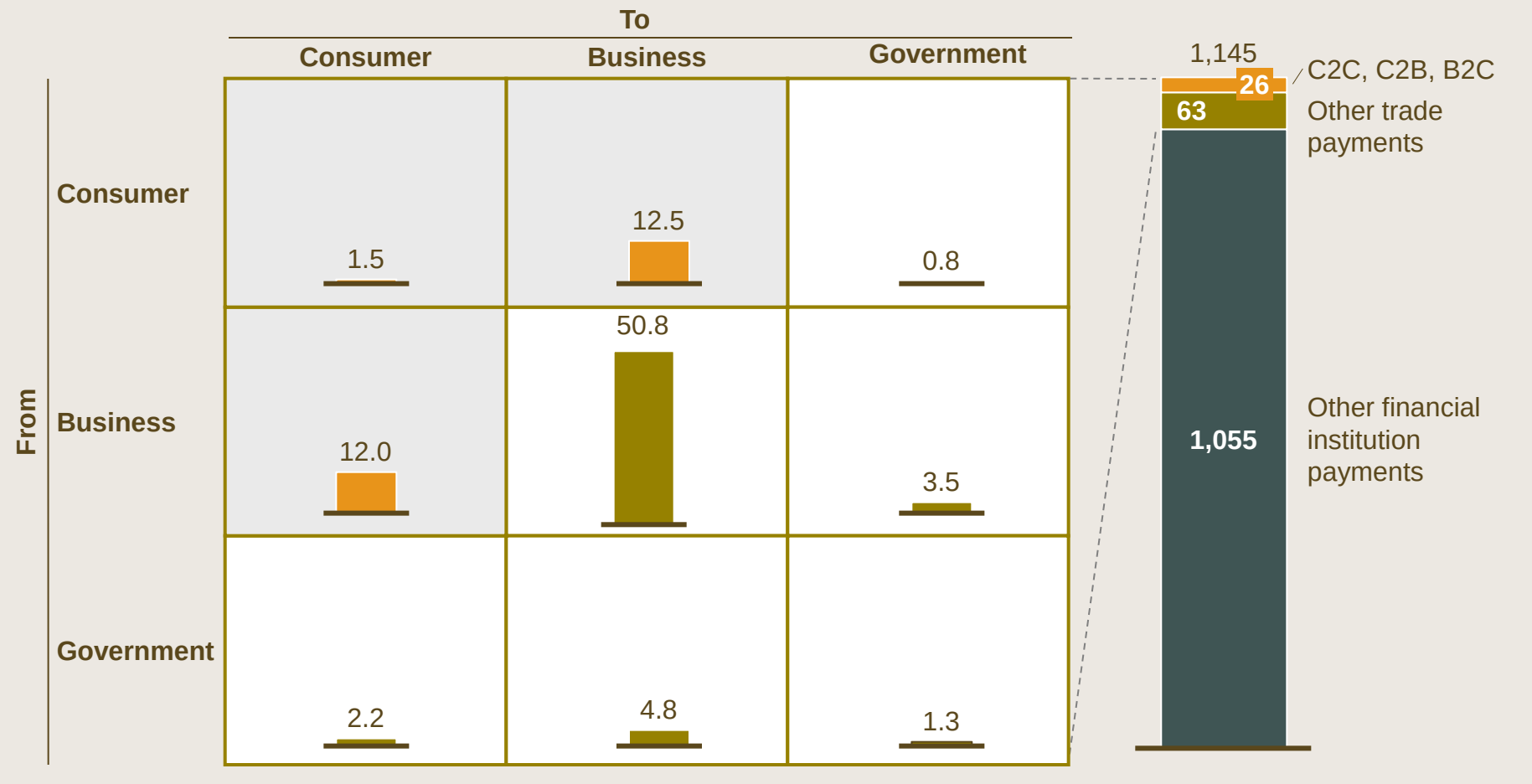


The transactions most strongly impacting U.S. consumers account for about \$26 trillion of payment flow

Area of focus

US trade payments by transaction parties, 2011
US\$ Trillion

Total trade payments by value, 2011
US\$ Trillion



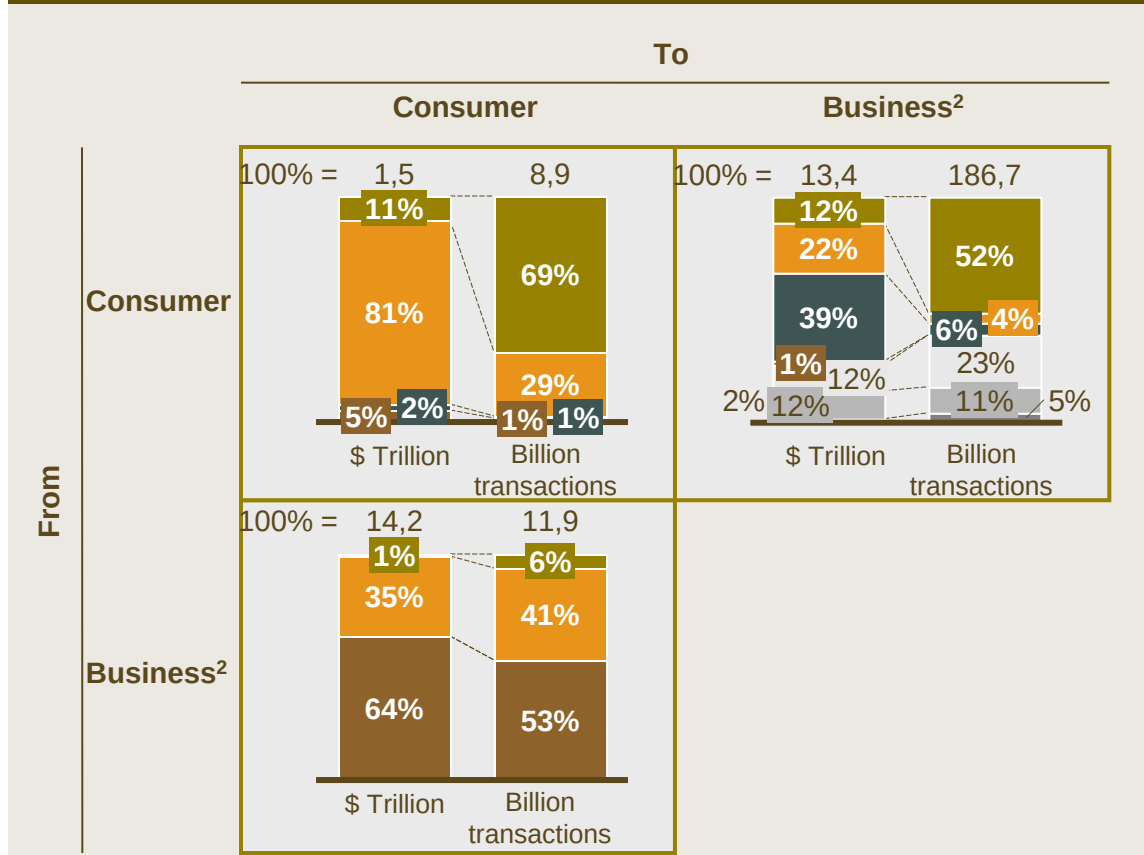
SOURCE: McKinsey U.S. Payments Map, Release Q1-2012, The Clearing House, Federal Reserve



Cheques are important in all transactions from and to consumers; cash, cards, direct debit, and credit transfers also play important roles

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

US trade payments by transaction parties, 2011
Value in US\$ Trillions, Transactions in Billions



Major instruments used by transaction type

	C2C	C2B	B2C
Cash	#	#	\$#
Cheque	\$#	\$	\$#
Direct debit		\$	
Credit transfer			\$#
Debit card		#	
Credit card			
Prepaid card			
EMT¹			
Mobile			

1 Includes money transfer services such as Western Union, and Moneygram.

2 Includes both business and government payments.

SOURCE: McKinsey U.S. Payments Map, Release Q1-2012, The Clearing House, Federal Reserve



Financial inclusion in the United States

Overall financial inclusion performance: high

Percent with an account at a formal financial institution (Top 20%)

- Overall -- 88%
- Bottom 40% -- 82% have access to financial accounts
- Women -- 84% have formal financial accounts

Payment services access (Top 20%)

- Debit card access -- 72%
- Credit card access -- 62%
- Wages received in formal account -- 51%

Distribution access (per 100,000 people) (Top 10%)

- Bank branches – 36
- ATMs -- 174
- POS terminals -- 2,156
- Online access – 84% of population
- Mobile access – 88% of population

Additional comments:

- U.S. has high access to financial services, putting it in the top 20% of countries, but below average for high income OECD countries and Western Europe (i.e., 90% with a formal financial account)

Key takeaways

- **Wide reach and coverage** of financial system provides services to a broad set of consumers, largely riding on infrastructure and distribution built for more affluent consumers – poorer users can be priced out
- **Unbanked consumers largely choose to opt out** of the financial system, usually because of high, unpredictable fees from formal providers, low account balances, and irregular service needs
- **Non-prime credit is often linked to payments products for low-income users**, providing an adjacent revenue stream to ensure profitability
- **The market-driven system** often levies high fees on low-income consumers (maximizing willingness to pay); regulators often police fees and consumer protection
- **Financial literacy** is a major issue; low-cost products exist, yet customers have issues in (i) knowing about them and (ii) making informed long-term cost-benefit decisions

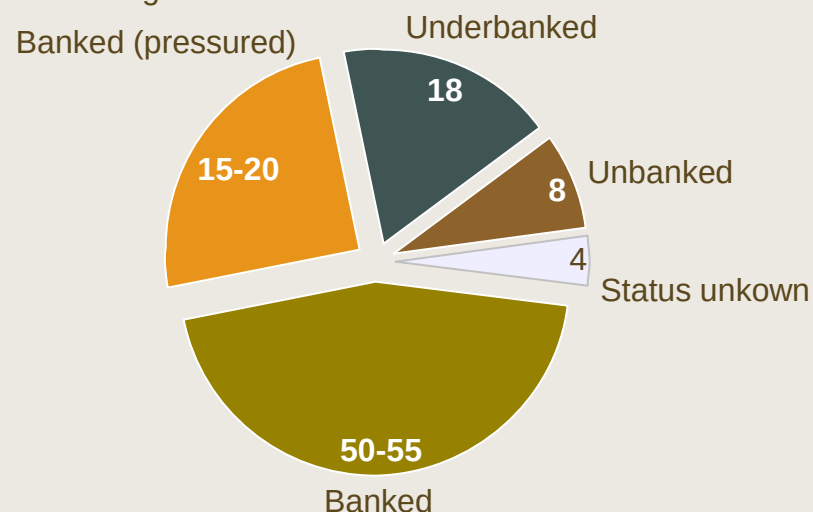
SOURCE: Findex Global Database, FDIC report on low income consumers

Roughly one-quarter of U.S. households are unbanked or under-banked



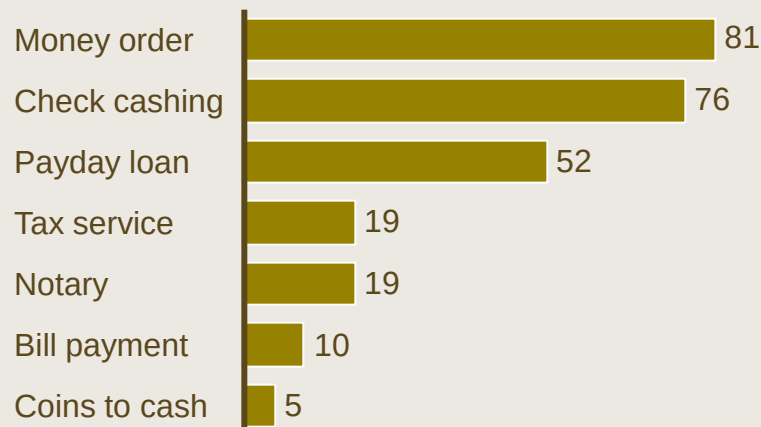
About 1/4 of households are underbanked or unbanked...

Banking Status of U.S. Households
Percentage



...although they can be active users of alternative financial services

Product usage frequency within 12 months
Percent of current sample customers who used product or service at least once¹



Comments

- Approximately half of the unbanked have previously had bank accounts but no longer have them – many have been pushed into financial stress and would re-establish accounts when stabilized
- Lack of money, no perceived need, and high fees are the top three reason that unbanked and underbanked cite for not having bank account
- Convenience and security are two drivers for unbanked to retain mainstream financial services
- Traditional branch operations (e.g., cost, atmosphere) have impeded penetration of these segments
- Quality and sustainability of financial services are the main needs for the U.S. market; innovation is critical

SOURCE: FDIC report on U.S. unbanked and underbanked, December 2009, customer focus groups

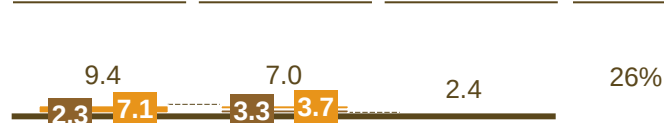
Providers make profits from transaction fees and linked revenue streams; adjacency income is small in today's low rate environment



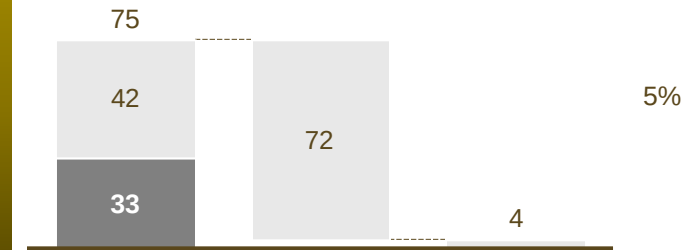
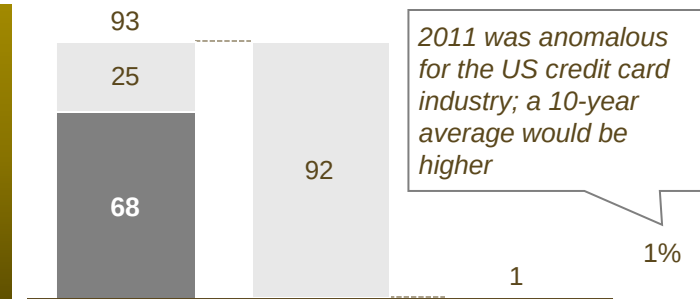
USD Billions, 2011

Transactions & directly tied services

	Revenue	Costs	Profits	Margin
Check	9.4	7.0	2.4	26%
Direct Debit	1.2	0.4	0.8	67%
Credit Transfer	3.6	0.8	2.8	78%
Debit Cards	24.1	12.3	11.8	49%
Credit Cards	49.8	30.5	19.3	39%
Prepaid Cards	2.1	5.9	-3.7	-176%

Accounts & payments adjacencies¹

	Revenue	Costs	Profits	Margin
Transaction account ²	75	72	3	5%
Credit Card account	93	92	1	1%
Float from Prepaid	4.5	0	4.5	100%

Trans-a
ction
account²Credit
Card
account

2011 was anomalous for the US credit card industry; a 10-year average would be higher

Float from
Prepaid

¹ Includes penalties, maintenance fees and net interest income. Note that additional revenue, not included, comes from cross-selling. Both revenues and costs related to cash are also excluded; ² Known as a Direct Deposit Account DDA in the US

SOURCE: McKinsey U.S. Payments Map, Release Q1-2012, Federal Reserve, Public Reports, McKinsey ACH, Check, WIRE benchmarks

Banks, who bear risk and own retail relationships, earn highest profits; card networks profit more modestly from a coordination role



Profit from payments and immediately adjacent businesses, 2011 USD billions

	Transaction account	Creditor bank	Creditor-side processors	Infrastructure & Network				Debtor-side processors	Debtor bank	
				LVTS	ACH	CCS	Card network			
Transaction account	Check	0.26	0.09			0.03		0.01	2.03	X
	Direct debit	0.87	<0.01		<0.01			<0.01	-0.04	
	Credit transfer	1.22	0.01	<0.01	<0.01			0.02	1.59	
	Debit card	-0.84	0.72				2.72	0.98	8.20	X
	Adjacencies								3.61	R
Credit card	Trans- actions	-0.53	0.36				2.98	0.51	22.63	R X
	Adjacencies								-12.74	
Prepaid card	Trans- actions	-0.12	0.08				0.30	0.00	-1.97	
	Adjacencies								2.55	X
Total profit ¹		\$0.86	\$1.27	\$<\$0.01	\$<\$0.01	\$0.03	\$6.00	\$1.53	\$25.86	

What drives profitability?

- R Bearing risk
- C Coordination role
- X Retail relationship

< 0

0 – 2

2 – 10

10 – 20

> 20

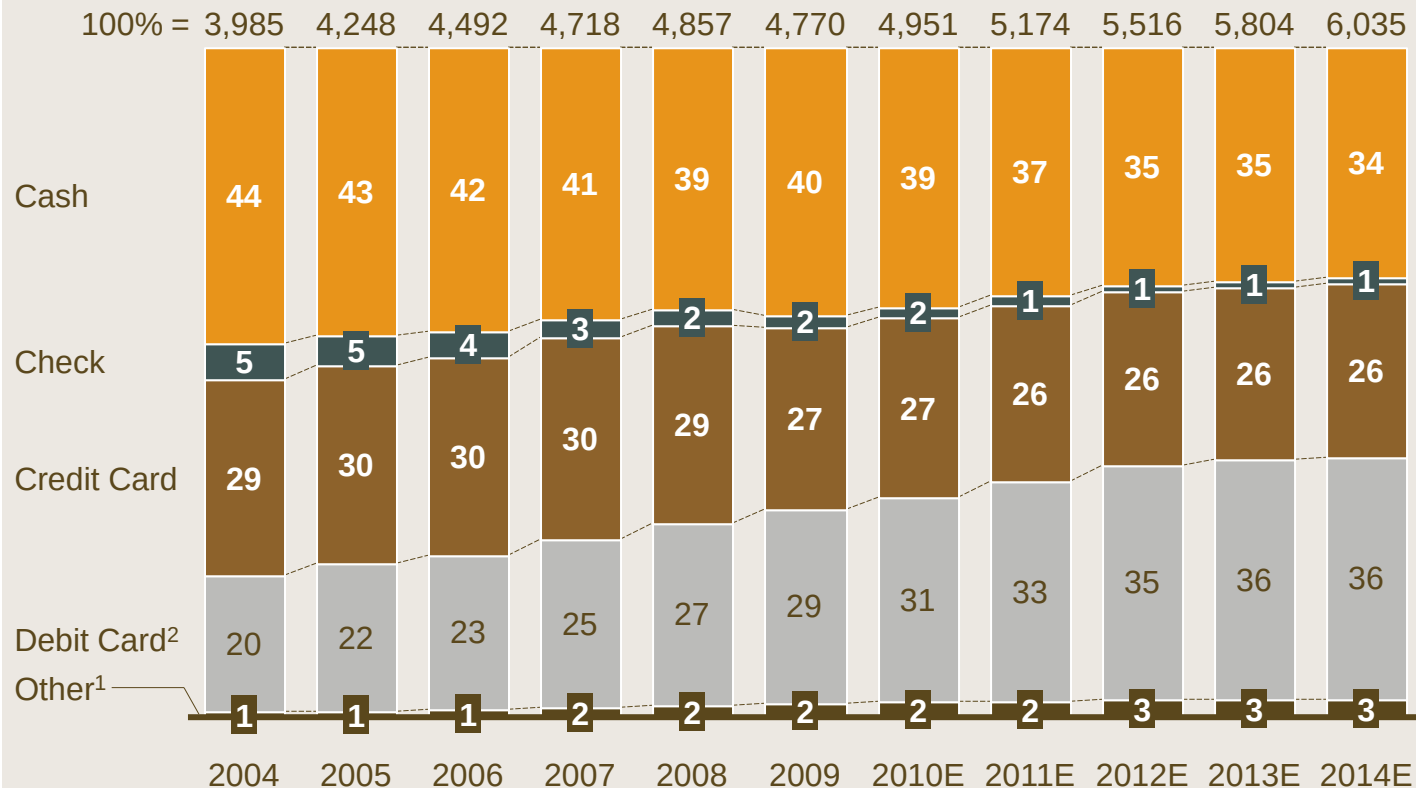
1 Costs and revenues associated with cash not included

SOURCE: McKinsey U.S. Payments Map Release Q1-2012; Expert Interviews

Credit and debit card use for POS purchases has been increasing at the expense of cash, and growth is expected to continue



Share of C2B POS Purchase Volume³
Percent, Billions USD purchases

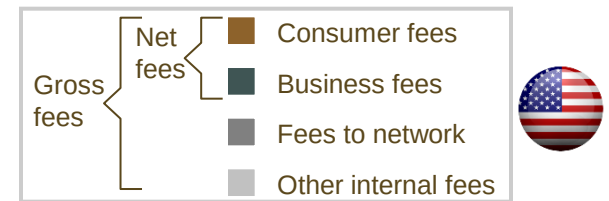


- Cash volumes will hold steady or increase as total POS spending increases
- POS check volume will further decline in coming years, while check will remain a major instrument for other C2B payments (e.g., rent, utilities)
- Credit will grow strongly, while losing share to debit payments
- Debit will see rapid overall growth and share gains

1 Includes wire transfer and book entry transfers; 2 Includes signature debit, PIN debit, prepaid

SOURCE: McKinsey U.S. Payments Map 2009-2014, Release Q2-10, Baseline scenario

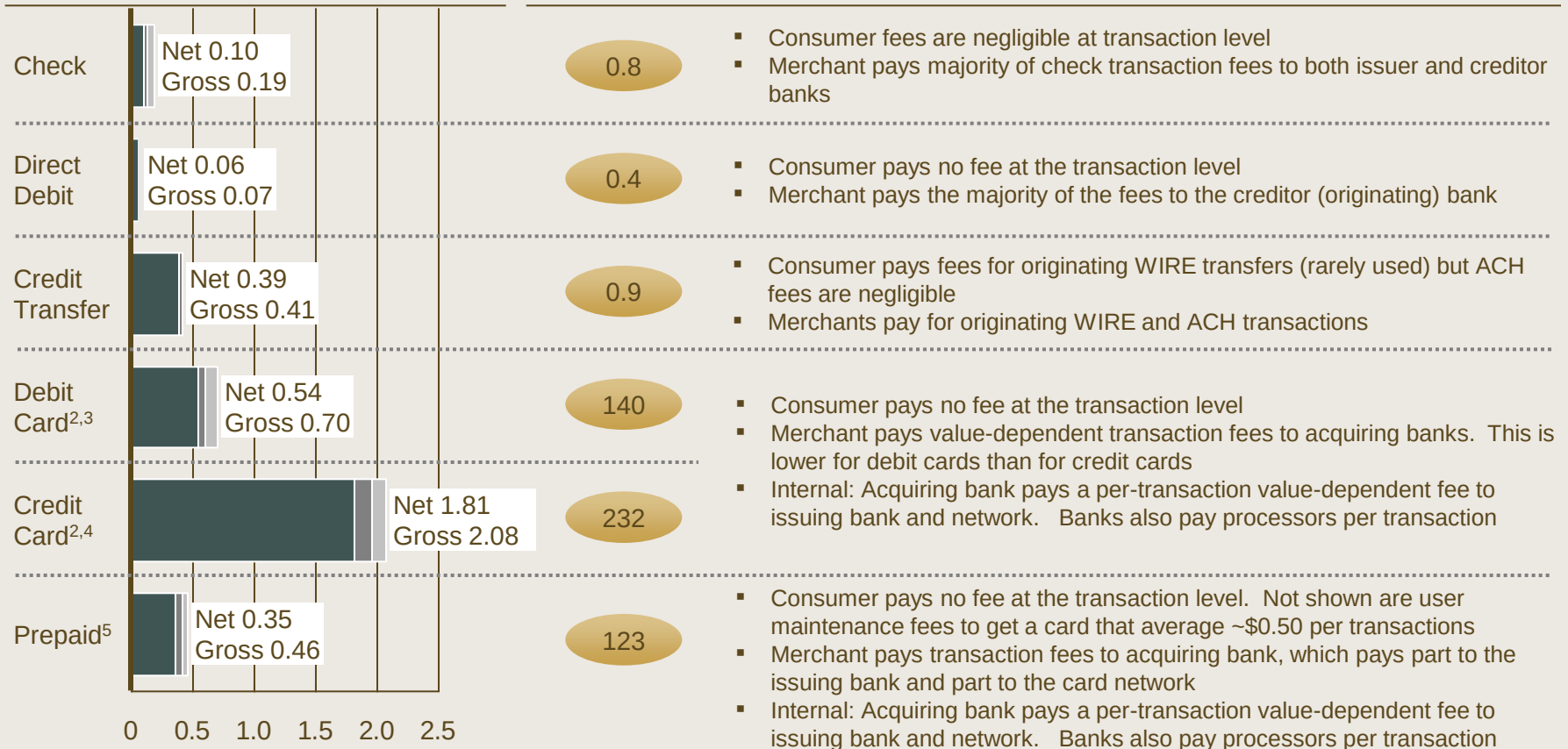
Businesses pay the bulk of fees for all payment instruments, while consumers pay nothing



Transaction fees by instrument^{1,2}
\$/transaction

Merchant trans-
action fees per
dollar tran-
sacted, BPS

Description of fees



1 System and other internal fees are paid by banks or others to networks or other payments service providers, redistributing fees directly paid by users; 2 For cards, banks also pay an annual licensing fee to the card network. This averages to \$0.02 for debit cards, \$0.06 for general purpose consumer cards and \$0.2 for general purpose prepaid cards; 3 Weighted average of PIN and signature debit; 4 General purpose consumer credit card; 5 General purpose prepaid cards

SOURCE: McKinsey U.S. Payments Map, Release Q1-2012, Federal Reserve, Public Reports, McKinsey ACH, Check, WIRE benchmarks

Acceptance of, and access to, most instruments is widespread, facilitating consumer choice



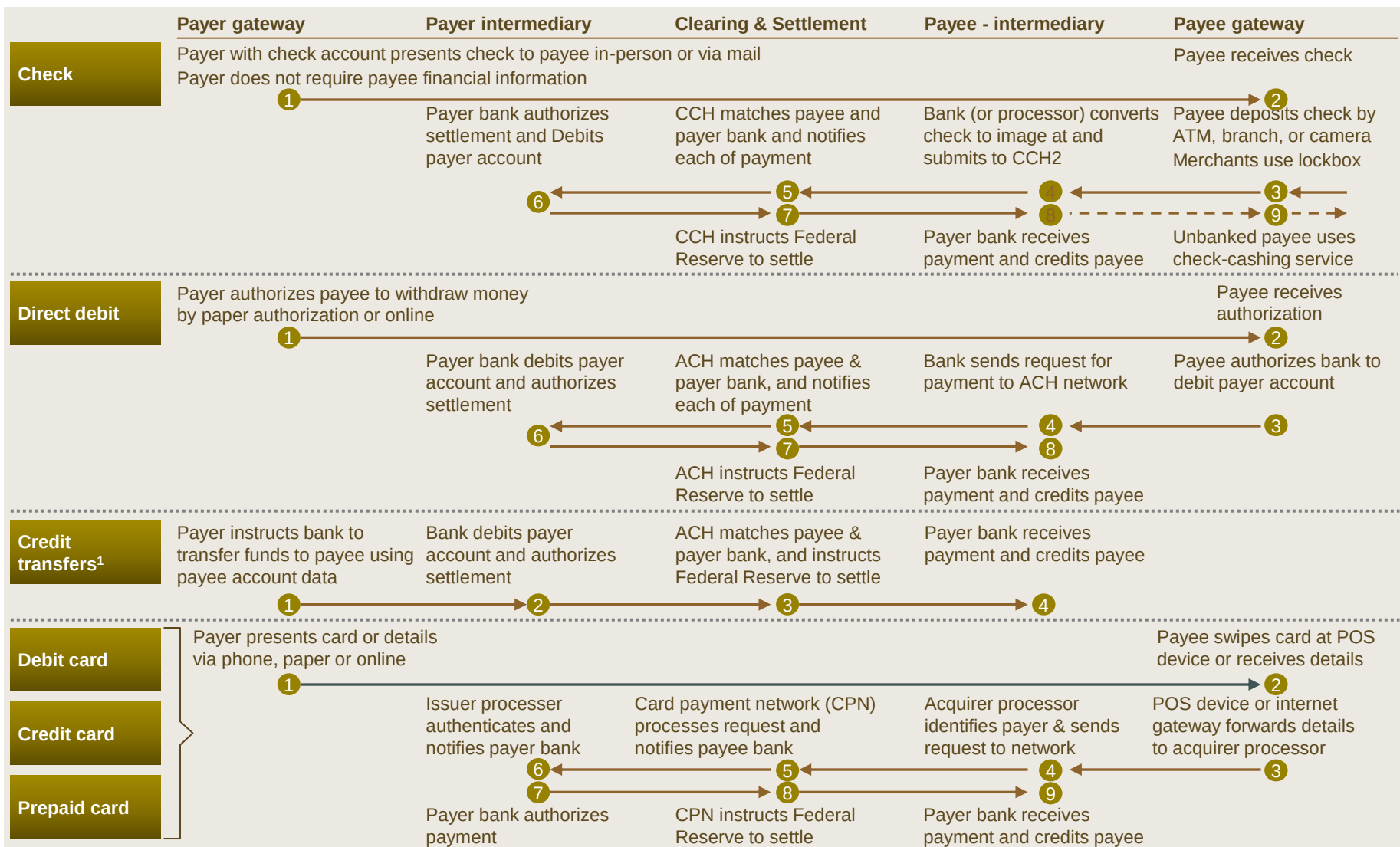
	Consumer					Actual Use (Vol, %)	Merchant					Sample use cases
	Re-quires Bank Acct	Direct Fees (USD)	Indirect Fees (USD)	Benefits	Mer-chant Accept. (%)		Con-sumer Access (%)	Re-quires Bank Acct	Direct Fees (USD)	Indirect Fees (USD)	Benefits	
Cash		-	▪ 6.00 (off-bank withdrawal)	▪ Accessible ▪ Ubiquitous	100	52	100		0.02	▪ 0.12 (labor)	▪ Ubiquitous ▪ Immediate	▪ In-store ▪ COD
Check	✓	-	▪ 0.45 (stamp)	▪ Convenient for large txs ▪ Float benefit	90	4	99	✓	0.10	▪ 0.32 (cashing, float)	▪ Convenient for large txs ▪ Widely used	▪ Bills ▪ In-store ▪ Remittance
Direct Debit	✓	-	▪ -	▪ Convenient for large txs	N/A	6	99	✓	0.06	▪ 0.05	▪ Convenient for large txs	▪ Bills ▪ Online purch.
Credit Transfer	✓	-	▪ -	▪ Convenient for large txs	N/A	-	99	✓	0.39	▪ 0.01	▪ Convenient for large txs	▪ Large purchases ▪ Remittance
Debit Card	✓	-	▪ -	▪ Convenient to carry	90	23	72	✓	0.54	▪ -	▪ Direct credit ▪ Minimizes cash handling	▪ In-store ▪ Online purch. ▪ Bills
Credit Card	✓	-	▪ -	▪ Float and liquidity benefit	90	10	62	✓	1.81	▪ 3.71 (losses, collections, customer serv)	▪ Direct credit ▪ Minimizes cash handling	▪ In-store ▪ Online purch. ▪ Bills
Prepaid		~5-10 / month	▪ Card purchase (~4.95)	▪ Accessible	90	5	100	✓	0.35	▪ -	▪ Direct credit ▪ Minimizes cash handling	▪ In-store ▪ Online purch. ▪ Bills
Mobile		N/A	▪ N/A	▪ N/A	N/A	N/A	N/A		N/A	▪ N/A	▪ N/A	▪ In-store ▪ Remittance

1 Depends on merchant size

SOURCE: Expert interviews, World Databank, Bankable Frontier Associates, CBK, EFINA

Distinct processes and combination of players underpin each transaction type

SIMPLIFIED



1 WIRE payments not shown due to small WIRE volumes for consumer payments. 2 At this stage some checks are converted into an ACH payments.

SOURCE: BIS CPSS Red Book, "Payment Systems" – Rambure & Nacamuli

Both public and private networks play a central role in clearing across all instruments except card, where networks are private



		Public infrastructure		C Clearing		S Settlement							
		Large Value Transfer System		Automated Clearing House		Check Clearing House		Card Payment Network		Net Settlement System (NSS)		Volume (%) ³	Rationale for choice
		Public	Private	Public	Private	Public	Private	Public	Private	Public	Private		
Network Design	Network	FEDwire	CHIPS	FedACH	EPN	Fed CCH	SVPCo Viewpoint Endpoint	N/A	VISA Mastercard AMEX	NSS	N/A		
	Time to settle	Instant	Instant	2-3 days	2-3 days	1-2 days	1-2 days		1-2 days	1 day			
	Net/Gross	Gross	Net	Net	Net	Net	Net		Net	Net			
	Open/closed	Open	Open	Open	Open	Open	Open		Differs	Open			
		Interoperable	Yes	Yes	Yes	Yes	Yes		Yes	Yes			
Clearing & Settlement by instrument	Check ¹					C S						49%	Ubiquitous but expensive
							C			S		51%	Less costly but only large banks
	Direct debit			C S			C			S		50%	Different value-added services with each option
					C							50%	
	Credit transfers			C S			C			S		59%	Different value-added services with each option Consumer WIRE payments are non-material in volume or value
		C S	C S									41%	
		S ²	C S									~0%	
												~0%	
	Debit card				S				C			~90%	
	Credit card		S						C			~10%	
	Prepaid card												

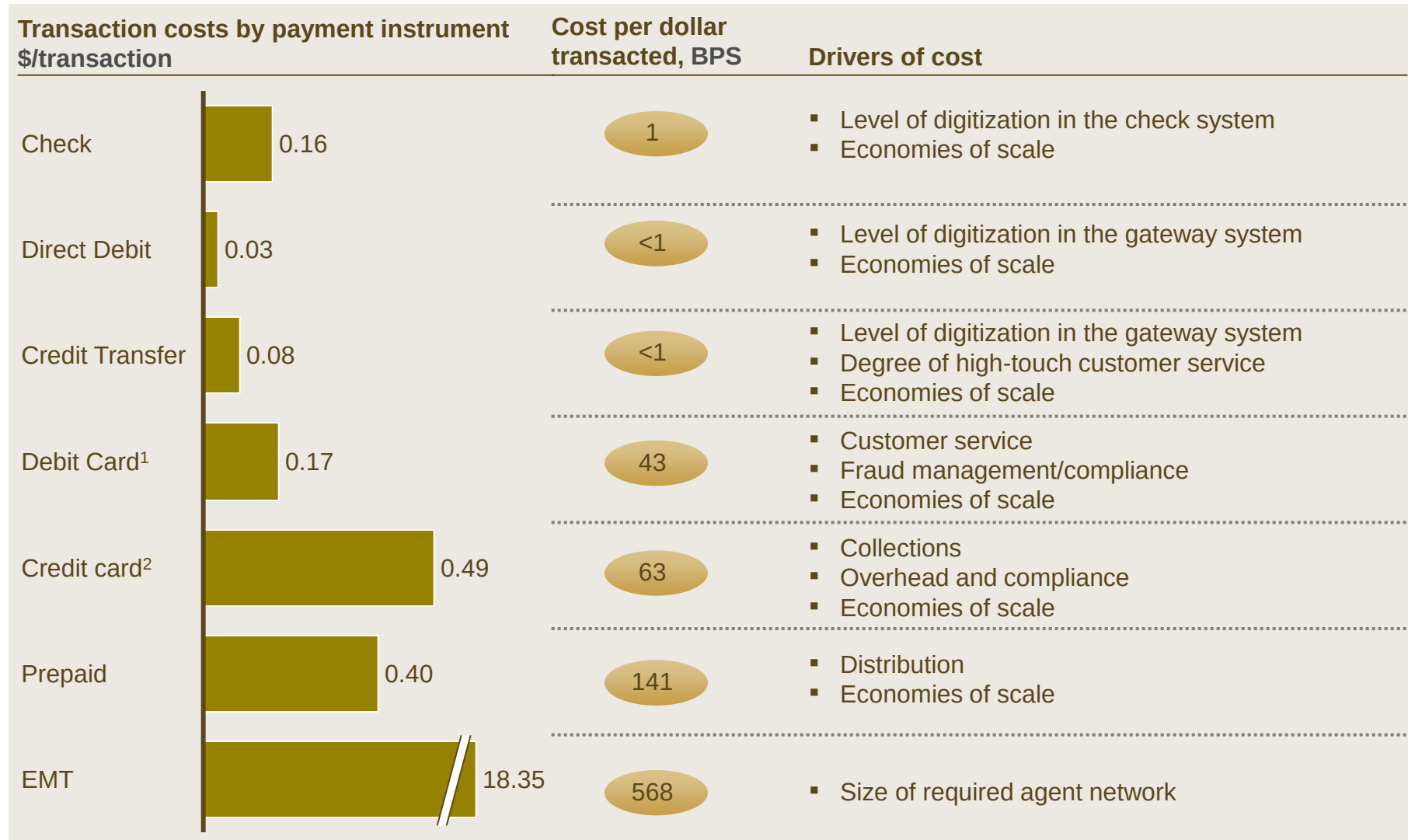
¹ Excludes a small percentage of checks that are cleared bilaterally or through correspondent banks; excludes ARC transactions.

² Transactions cleared through CHIPS are settled instantly through correspondent accounts at the New York Federal Reserve, end-of-day balances are settled via FEDWire.

³ Estimated based on 2010 figures; WIRE represents all WIRE transactions including non-trade payments; Card payments are rough estimate.

SOURCE: BIS CPSS Red Book, "Payment Systems" – Rambure & Nacamuli

Per-transaction costs to provide payments are smaller for remote instruments



¹ Weighted average of PIN and signature debit

² Credit card loan losses are not included, but amount to ~40% of total operating costs

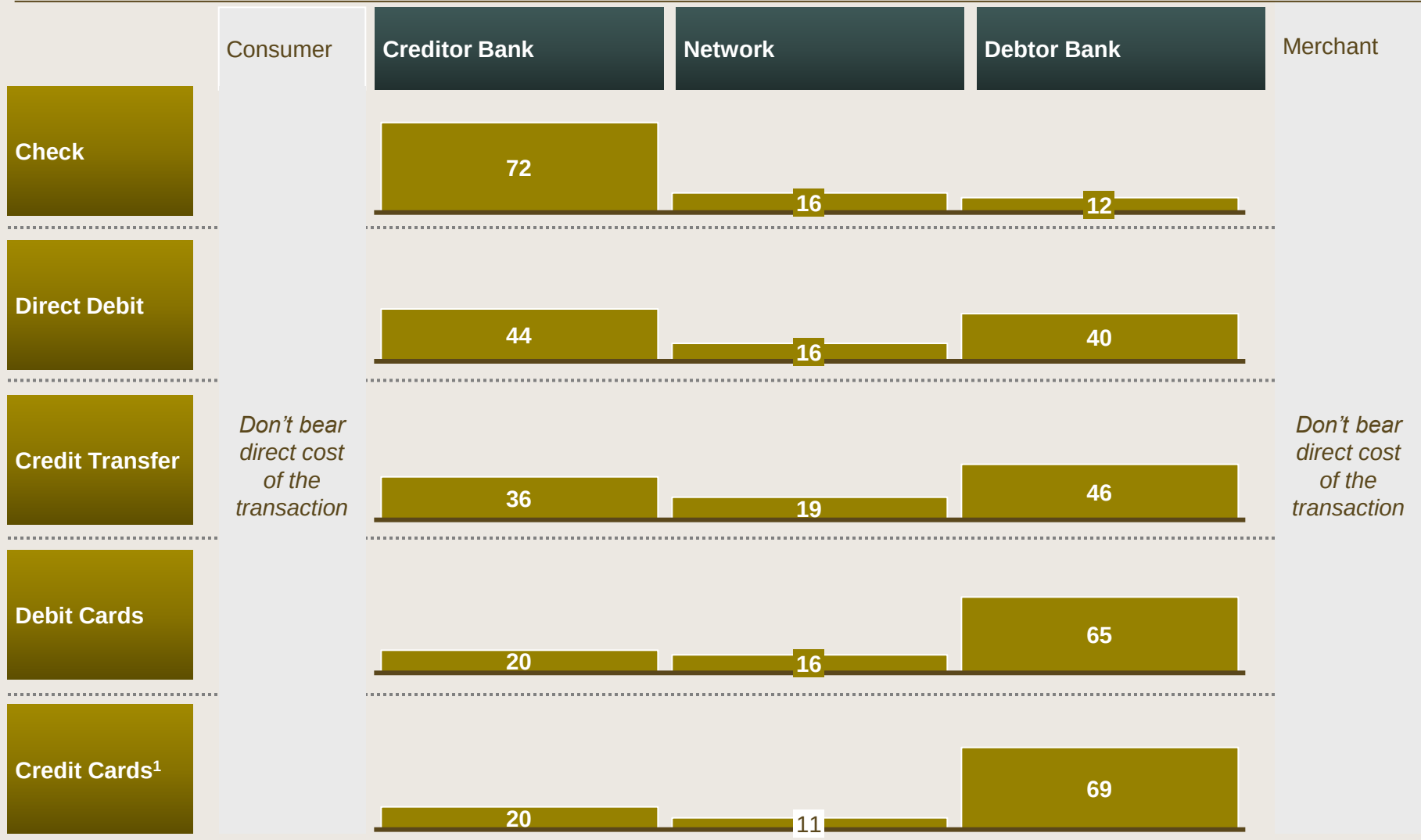
SOURCE: McKinsey U.S. Payments Map, Release Q1-2012, Federal Reserve, Public Reports, McKinsey ACH, Check, WIRE benchmarks



Networks bear only a small fraction of transaction cost across instruments

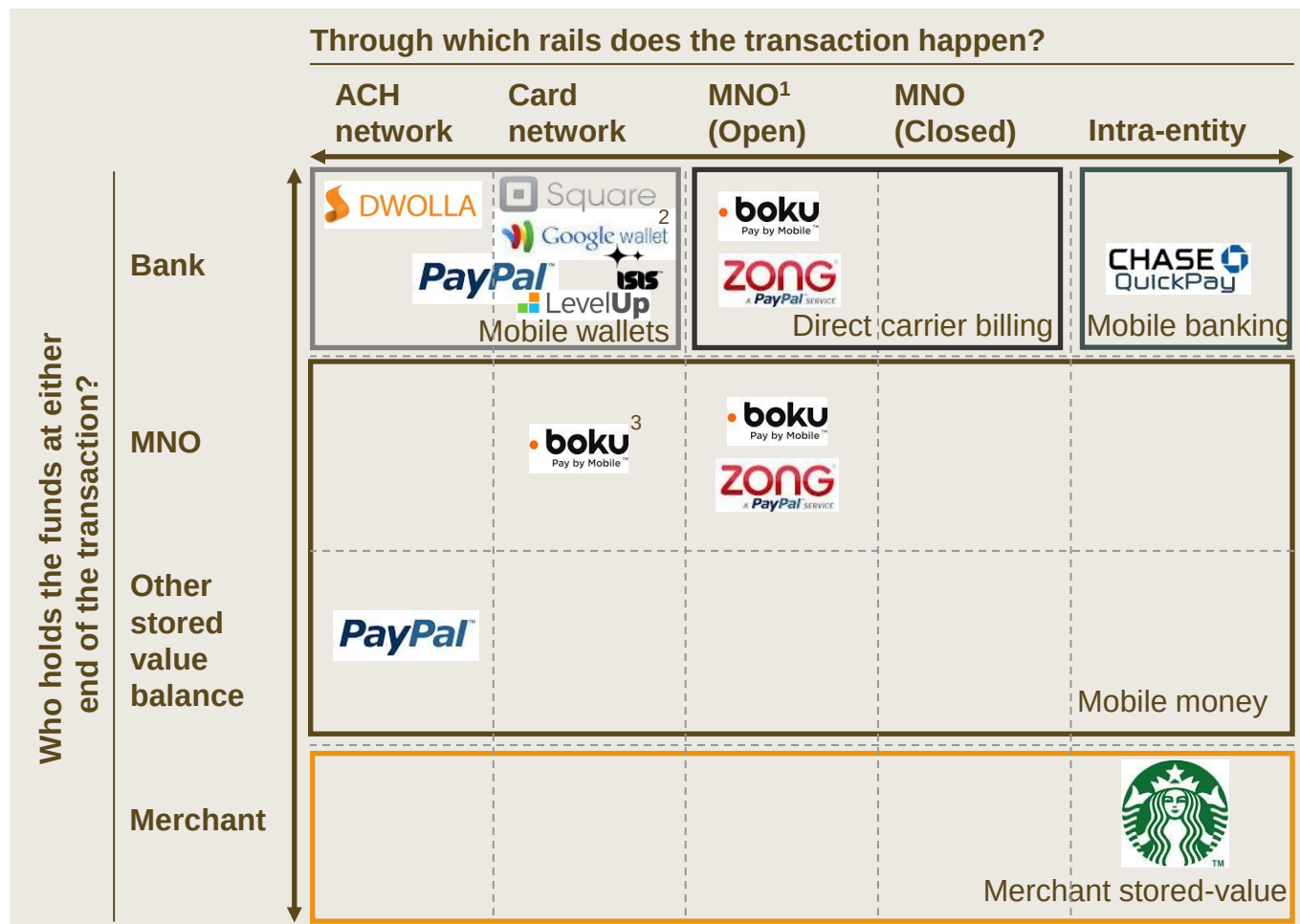
Distribution of transaction costs across players

Indexed to 100% for each instrument



SOURCE: McKinsey U.S. Payments Map, Release Q1-2012; Expert Interviews

The high-tech sector is driving innovation in payments involving mobile phones, most of which ultimately rely on traditional networks (ACH and card) and banks



Services not relying on AHC/card networks

- Closed-loop 'mobile payments' methods such as Chase QuickPay and Starbucks keep transfers in-house since they do not need to transfer funds between entities
- Only the MNO-supported 'mobile payments' methods rely on alternate funds transfer methods, and only where regulation permits

1 Mobile Network Operator; 2 Has begun to shift away from relying on MNOs and towards 'the cloud'; 3 Developing card-based MNO funds transfer

SOURCE: Expert interviews

Payments using mobile wallets differ most in how payment credentials are transmitted in order to initiate the money transfer



C2B TRANSACTIONS



Transaction information and login credentials are securely transmitted over a regular data network (e.g., 3G). Payment credentials are extracted from account and payment is initiated through ACH/CPN



Smartphone dongle gathers and encrypts payment credentials to transmit over a regular data network, payment is initiated through CPN



NFC transmits payment credentials to payment terminal or user ID information is routed over data network to 'cloud', where transaction is processed through CPN



NFC transmits payment credentials to payment terminal, where transaction is processed through CPN



Transaction information and login credentials are securely transmitted over a regular data network (e.g., 3G). Payment credentials are extracted from account and payment is initiated through ACH



Transaction information and user ID (through a QR code) are securely transmitted over a regular data network (e.g., 3G). Payment credentials are extracted from account and payment is initiated through ACH

SOURCE: Expert interviews

Five major milestones of the U.S. payment system



	Description	Impact on Financial Inclusion
1 Creation of Federal Reserve	Establishment of Federal Reserve System (1913) created foundation for monetary policy, centralized inter-bank payments and check clearing infrastructure, as well as anchoring payment system regulation and oversight structures alongside the U.S. Treasury	National clearing infrastructure allows banks to expand payment services and increases reliability of payment among consumers and businesses
2 Formation Of Visa / MA	Formation of BankAmericard program (1958) set in motion Visa network as non-profit association marked new access to common infrastructure that allowed economies of scale, as well as changed the focus of competition among banks	Provided core infrastructure and allowed banks to drive product innovation on top of this system (e.g., debit card, credit card, prepaid card, ATM switching)
3 ATM & Bankcard Infrastructure	First ATM machine deployed (1959) in Ohio, sparking a surge of usage across the U.S. and in international markets by providing 24/7 cash access outside of traditional bank branches	ATM channel has been primary cash-access channel for consumers with increasing functionality
4 Check 21 Act	Check 21 Act (2003) marked pivotal shift in digitization of paper check clearing by allowing institutions to image paper checks. It did not require conversion, but banks adopted due to cost savings and operating efficiency gains	- Enabled ATM channels to accept check deposit, expanding functionality in primary channel - Accelerated clearing times and allowed cost savings for banks
5 Financial Crisis Regulation	Collection of banking regulation (2010) substantially impacts requirements and pricing on multiple consumer payment products – debit cards, DDA, credit card – reducing fee income but effectively ending ‘free checking’ in the U.S.	Multiple impacts, including creation of Consumer Financial Protection Bureau and increased transparency, but spurred fee hikes as banks sought to adjust

SOURCE: Federal Reserve of Atlanta, NACHA, “Payment Systems” – Rambure & Nacamuli

Despite significant innovation in U.S. payments, check and cash retain their historic dominance (1/2)



	Pre-1950	1950-70	1970-1990	1990-present
Cash	Federally issued bank-notes and coins are widely used at POS spurred by creation of Federal Reserve and Civil War era banking laws		- Following its invention in 1969, ATM's are rolled out by large banks - Shared ATM networks develop as local banks cooperate regionally	ATM's continue to grow, as smaller banks and non-bank roll out ATM infrastructure incentivized by ATM fees
Check	- Dominant form of non-cash payment in the US - Initial growth promoted by restrictions on interstate banking and suppression of bank notes during Civil War - Branch banking restrictions and spread of railroads and telegrams, enable establishment of correspondent banks and, later, central clearing houses (e.g., NY Clearing House (1853)) resulting in significantly lower costs - Formation of Federal Reserve national clearing house (1913) ends practice of discounting by refusing to clear checks from nonpar banks	- Volumes grow substantially as post-war prosperity enhances access to check accounts for households - Establishment of standards such as Magnetic Ink Character Recognition in 1956 (led by BofA) led to drop in processing costs & time	- High interest rates in 1980's spur growth through benefit of float for payers - Monetary Control Act, lowers system clearing costs but forces Federal Reserve to charge banks for their clearing services - EFAA in 1987 clears legal obstacles to returns and sets standards for funds availability	- Prompted by 9/11 and ongoing cost reduction efforts by large banks, Check 21 legislation is passed allowing check image to replace physical check in processing, spurring innovations such as camera deposit - Clearing houses merge to lower costs with declining volumes - Other innovations such as ARC processing allow checks to be converted in direct debit transactions leading to lower cost - With check imaging several low-cost image clearing houses emerge e.g., SVPCo from TCH

SOURCE: Federal Reserve of Atlanta, NACHA, "Payment Systems" – Rambure & Nacamuli

Despite significant innovation in U.S. payments, check and cash retain their historic dominance (2/2)



	Pre-1950	1950-70	1970-1990	1990-present
ACH		- In 1968 large banks form ACH's run by local Federal Reserve banks in an effort to replace checks and reduce interbank clearing costs - NACHA formed in 1974 to standardize ACH rules, standards and procedures	- The Clearing House forms the first electronic ACH, NYACH, in 1975 to lower costs of regional ACH's - Regional public-run ACH's consolidate into single national ACH - Government begins use of ACH for payrolls and social security	- Consumer solutions such as online bill-pay develop in the early 1990's and begins rapid growth with the support of large banks and merchants - EPN expands nationally and drives down cost of ACH
Cards	Small use of private-label charge cards are used for applications	- Diners Club issues first general purpose charge card in 1950 - BofA releases first credit card in 1958 in Fresno, Ca - First card payments networks emerge in late-1960's to enable inter-operability across states	Despite restrictions on card mailings, penetration rises nationally encouraged by inter-state banking restrictions	Online bill-pay develops in the early 1990's and begins rapid growth with the support of large banks
WIRE & NSS	FEDWire created in 1918 to allow settlement of check balances in gold between Federal Reserve banks; also allowed Federal Reserve to settle accounts rather than require banks to ship cash to settle payments	9 large banks form CHIPS to compete with FEDWire and replace high value checks for securities settlement with lower liquidity and credit restrictions	- Foreign banks join CHIPS offering clearing and settlement to international institutions through CHIPS accounts - CHIPS membership grows to 140 banks	Large banks begin to offer smaller institutions access to CHIPS through correspondent banking services

SOURCE: Federal Reserve of Atlanta, NACHA, "Payment Systems" – Rambure & Nacamuli