



US Retail Payment Instruments and Systems

Structure, Transformation & Public Policy



Payment System Policy & Oversight Course

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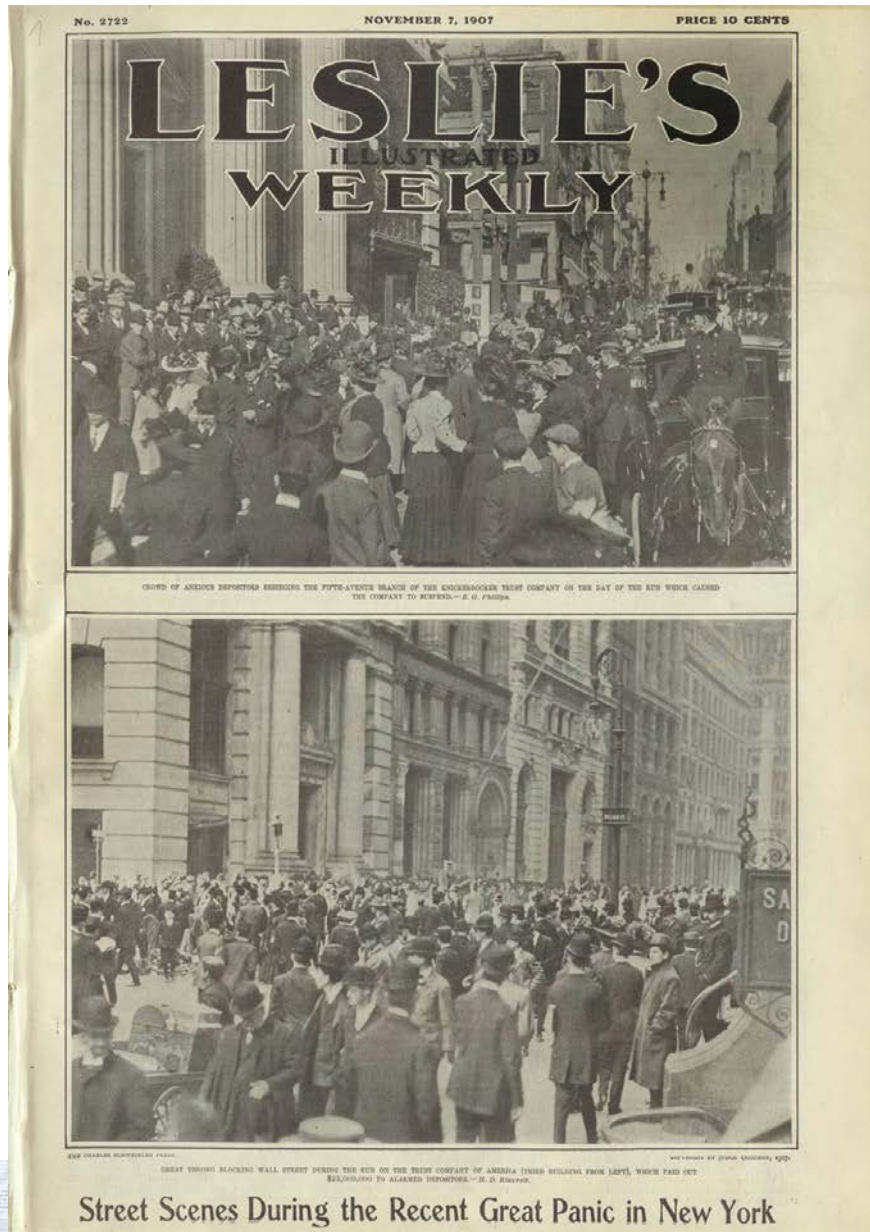
Agenda

- Retail payments & systemic risk
- Trends in US retail payments
- *US retail payment* instruments & the Fed's role
 - Currency & coin
 - Check - paper & electronic
 - Automated Clearinghouse (ACH)
 - Credit & Debit Cards
 - New instruments & form factors
- Critical issues in the Fed's strategic plan for US payments
- Discussion



Ancient payment instruments & systemic risk

Cash



Cash was enmeshed in systemic crises in the US prior to the introduction of deposit insurance in 1933

Cash has been involved in systemic crises elsewhere in the world since, particularly in cases of hyperinflation

Ancient payment instruments & systemic risk

Check



Check does not appear to have played a role in any US financial crises in the 19th or 20th centuries

In the week after the 9/11 attacks, the inability fly checks overnight around the US caused the Fed to extend \$47 billion in credit to the banking system

The major retail payment instruments in the US



cash



cheque



ACH



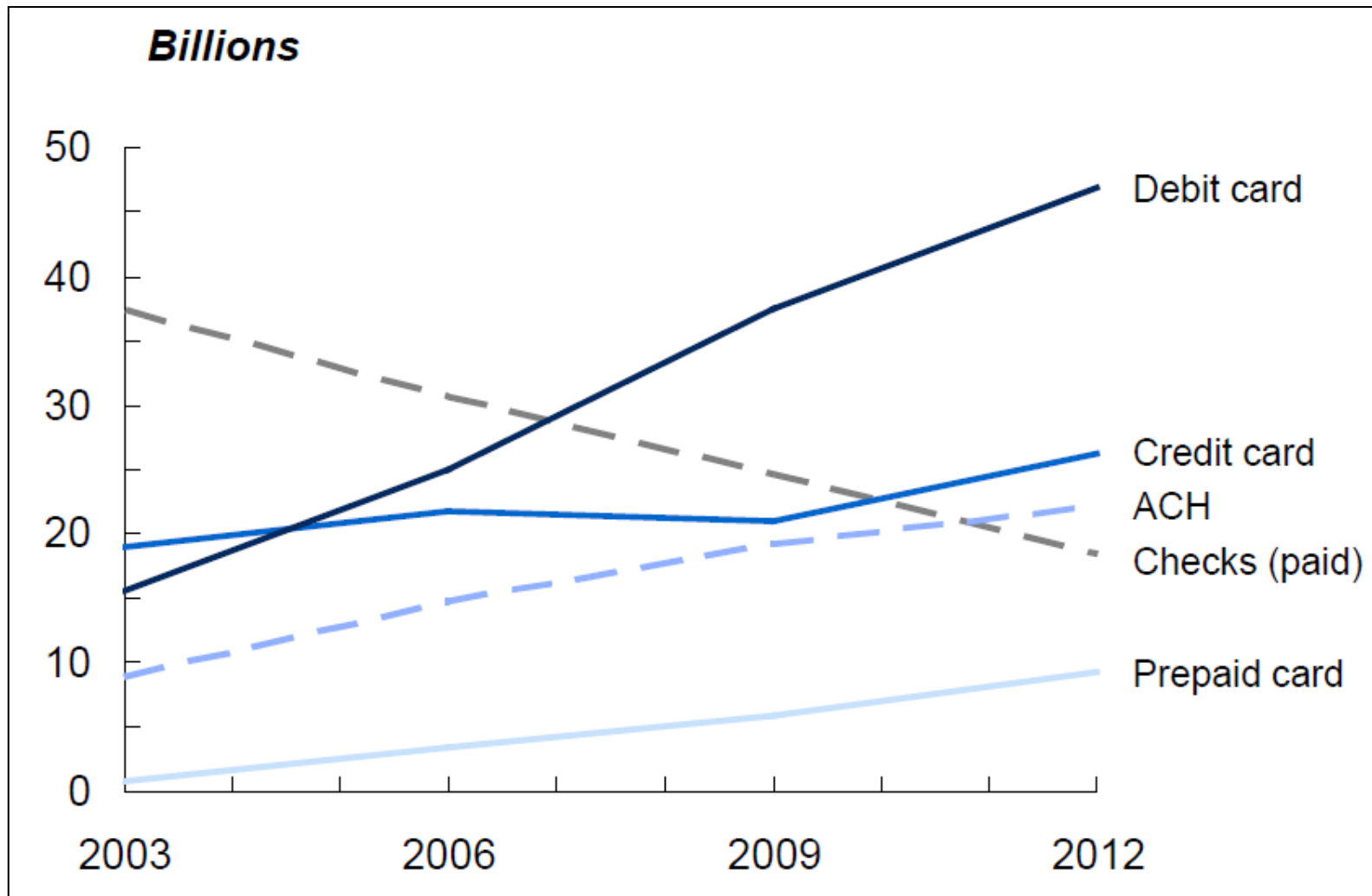
Credit, debit & prepaid cards



emerging

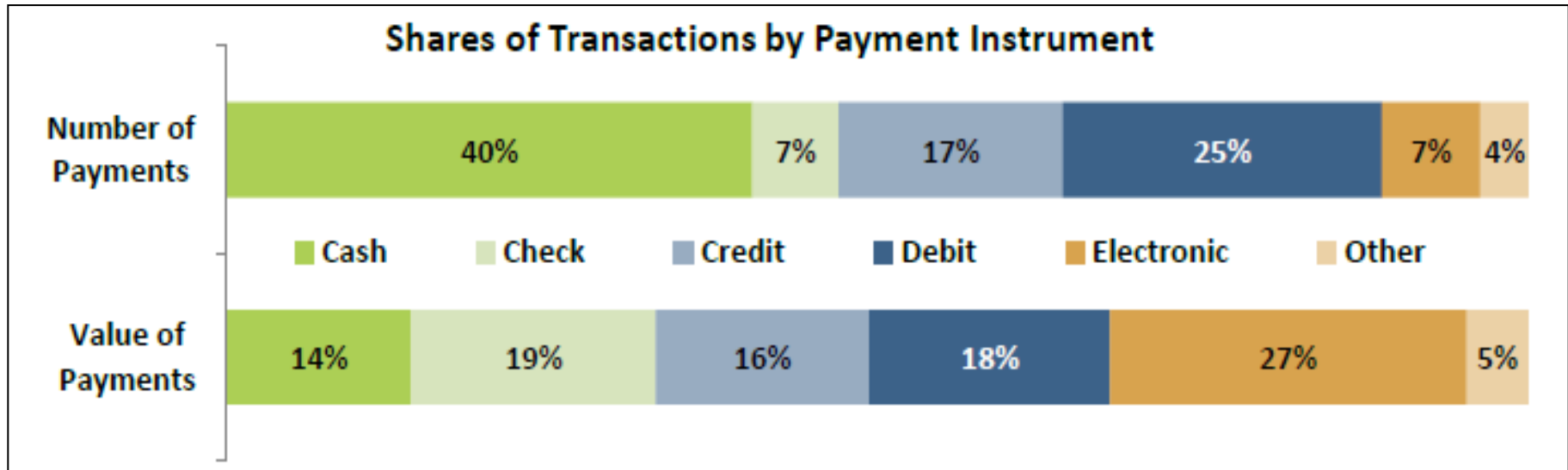
Noncash payment trends in the US

triennial surveys, 2003-2012 (business, consumers & government)



What about cash?

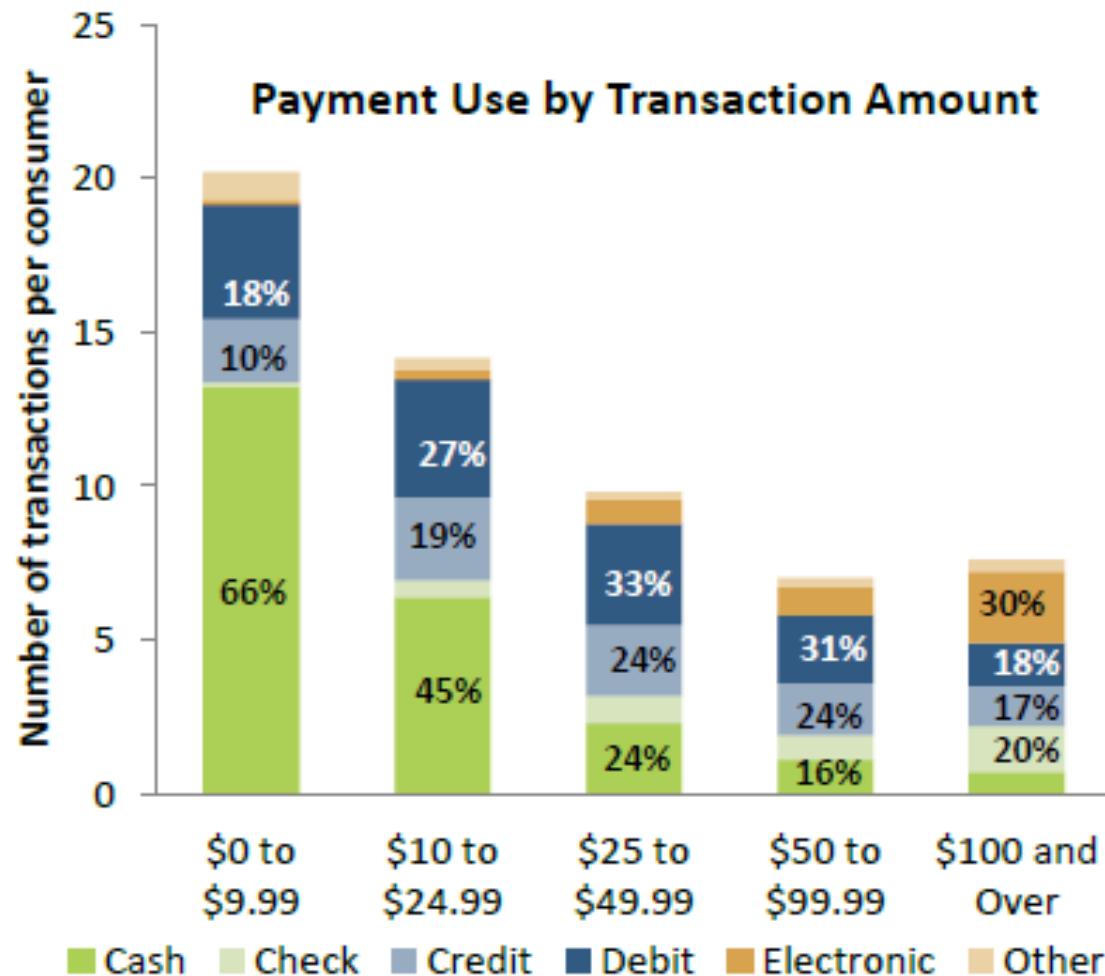
October 2012 Survey of Consumer Payment Choice (consumers-only)



Cash payments represent about 40% of consumer transactions & 14% of transaction value

What about cash?

October 2012 Survey of Consumer Payment Choice (consumers-only)

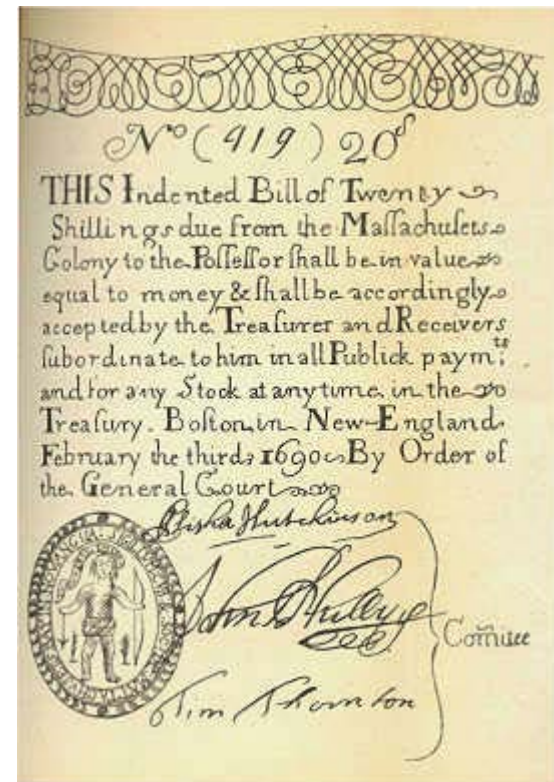


Cash dominates payments under \$10 in value

Banknotes & Coin



Banknote from Stockholms Banco, Sweden, 1661



Massachusetts banknote, 1690

Paper checks, paper currency & paper IOUs have common origins

The first banknotes issued by commercial banks appeared in Europe in the mid-to-late 17th century. They also appeared in the American colonies at that time.

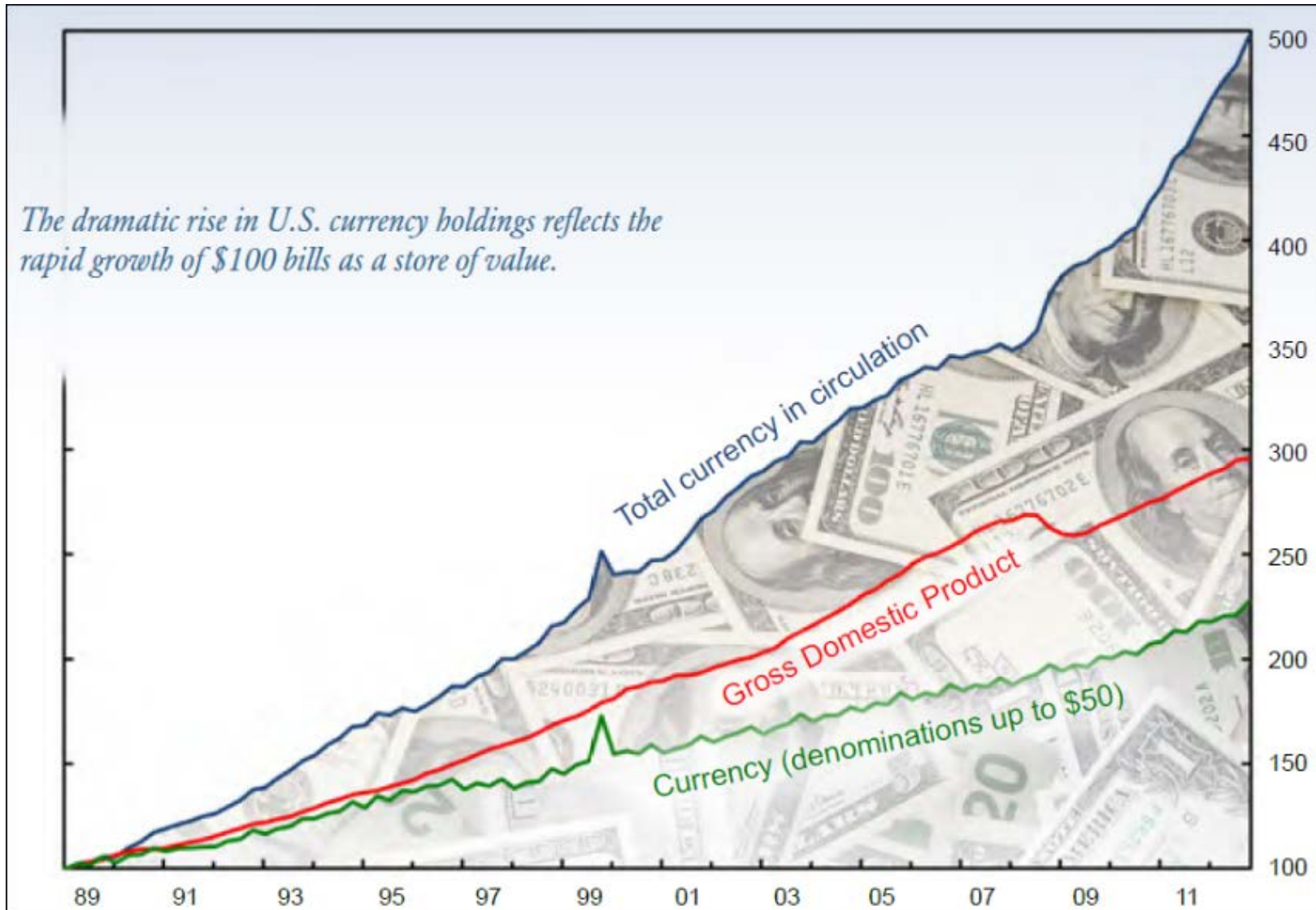
The value of US currency in circulation has been rising

Over the course, growth accelerated, a *flight to quality* in terms of banknotes

Value in \$
trillions



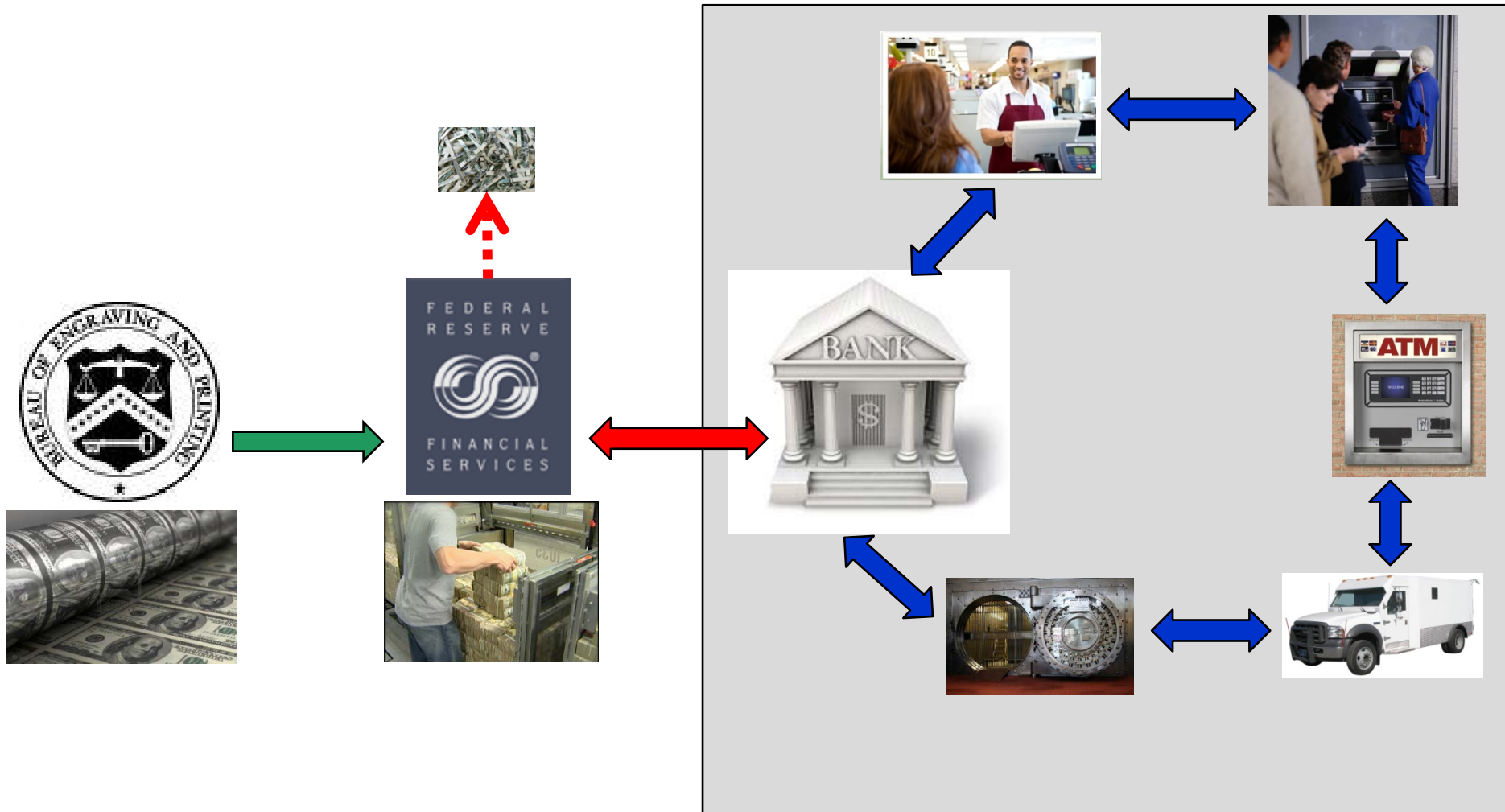
Banknotes & coins have been losing ground to other payment methods for a long time



Index 1989 IQ =
100

Currency distribution - how does it work?

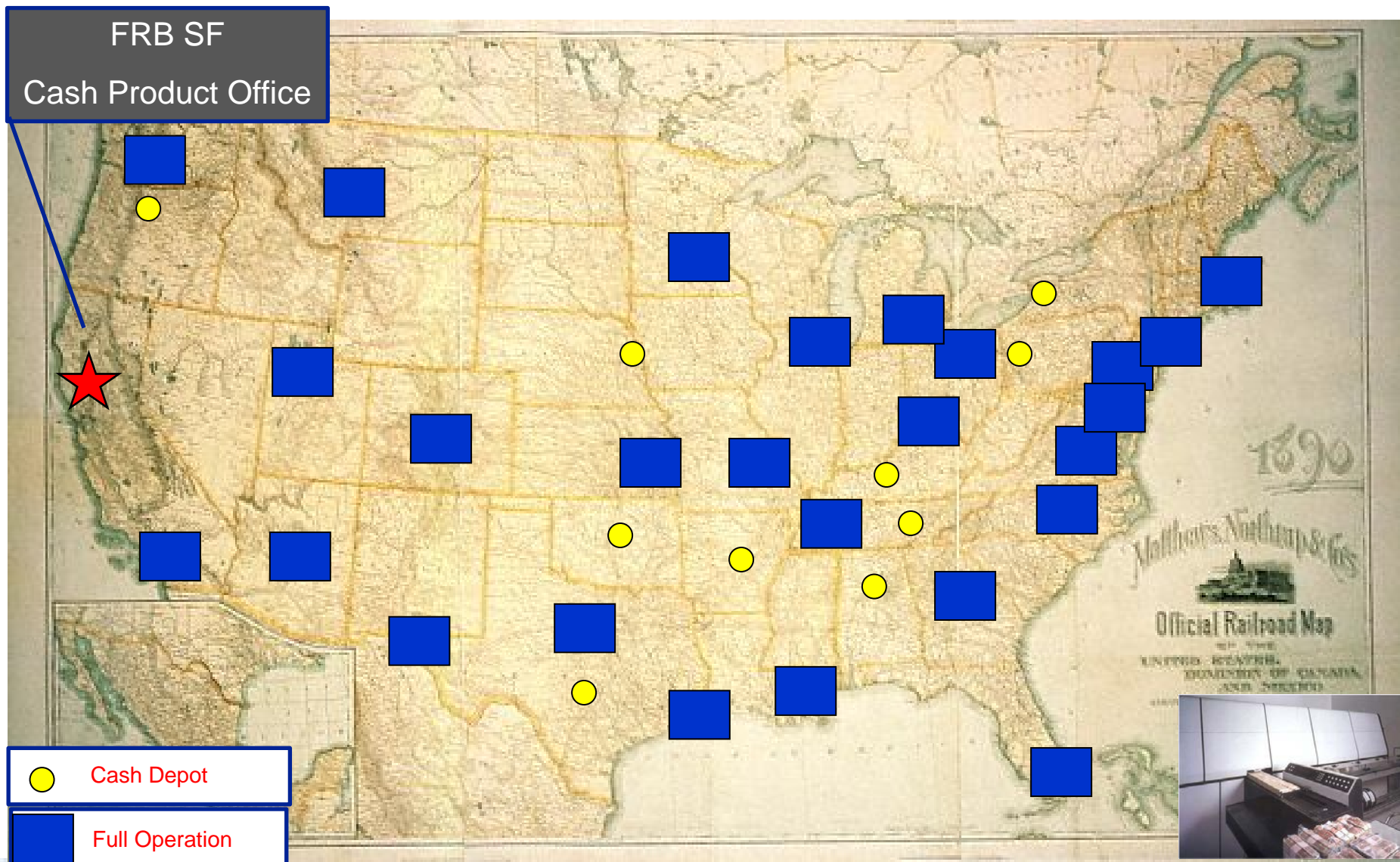
US Treasury prints, Federal Reserve distributes & processes used currency



The BEP is the sole producer of Federal Reserve notes, and the Fed is the sole distributor. Once notes are issued by a Fed office, they may circulate for many months before making a trip back to a Fed office for processing

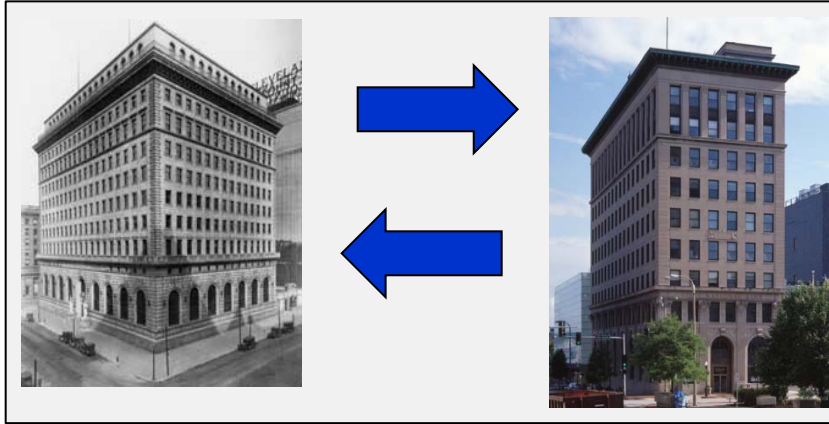
The Fed's presence in cash

28 full-service operations & 10 contractor-run depots nationwide



Recent developments in US cash

Cash processing at the Federal Reserve



Recirculation policy



Custodial inventories



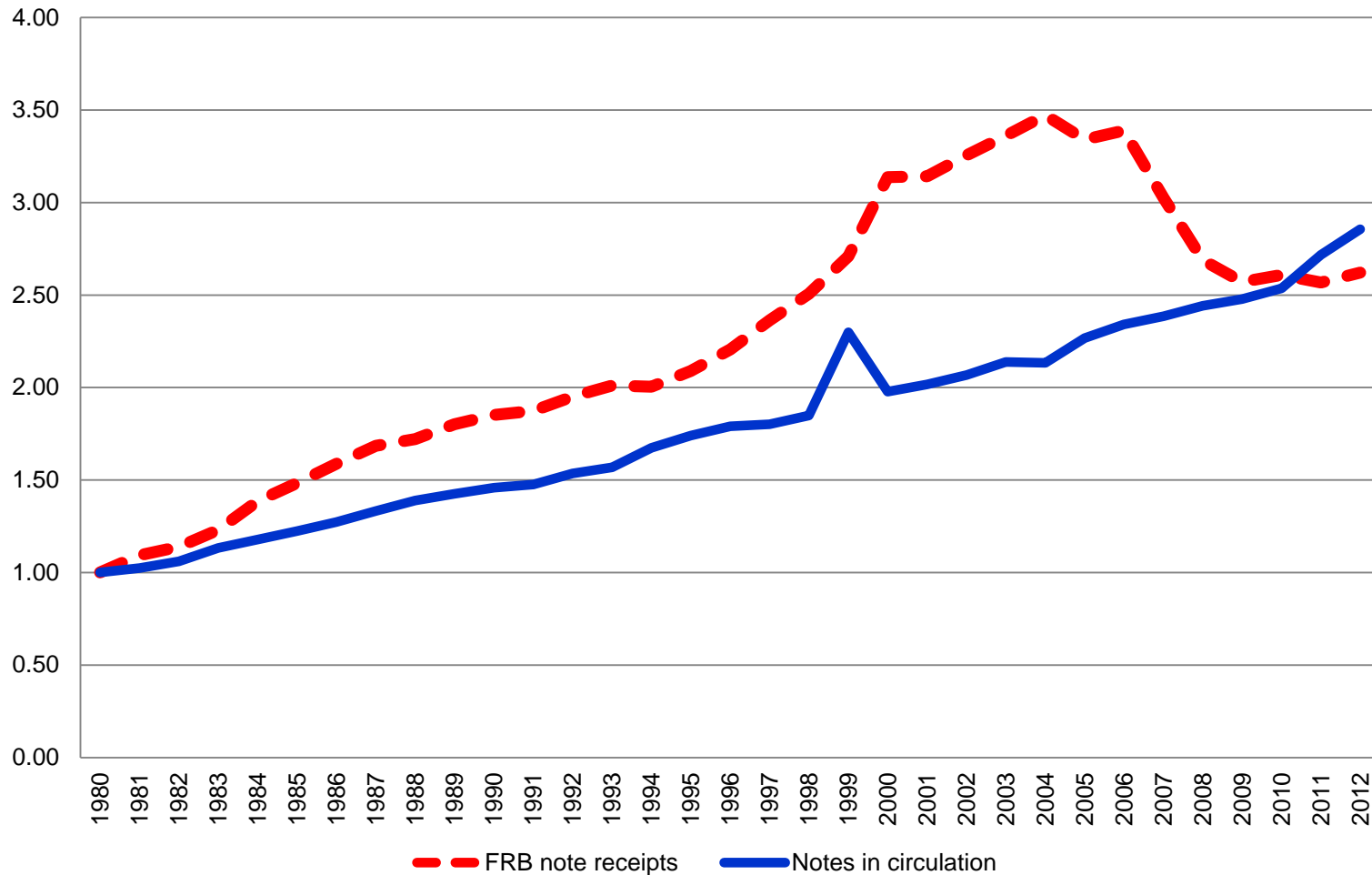
Coin Terminals



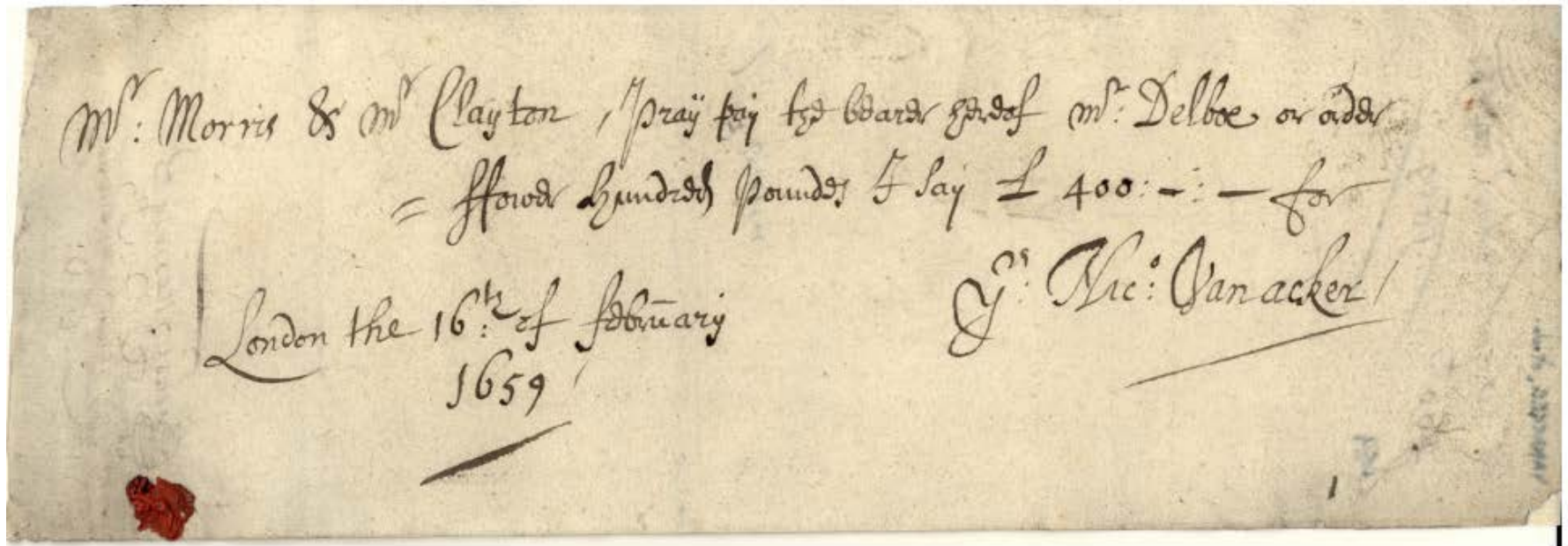
Currency depots

Fed's recirculation & custodial inventory policies had a dramatic impact on used notes flowing back through our offices

Trends in US\$10s & \$20s, Fed receipts vs notes in circulation



The Paper Check



Paper IOUs ancestors of the paper check (akin to letters-of-credit) were first used extensively by Italian city/states in the 15th & 16th centuries to facilitate spice & other trade between the middle east & Europe

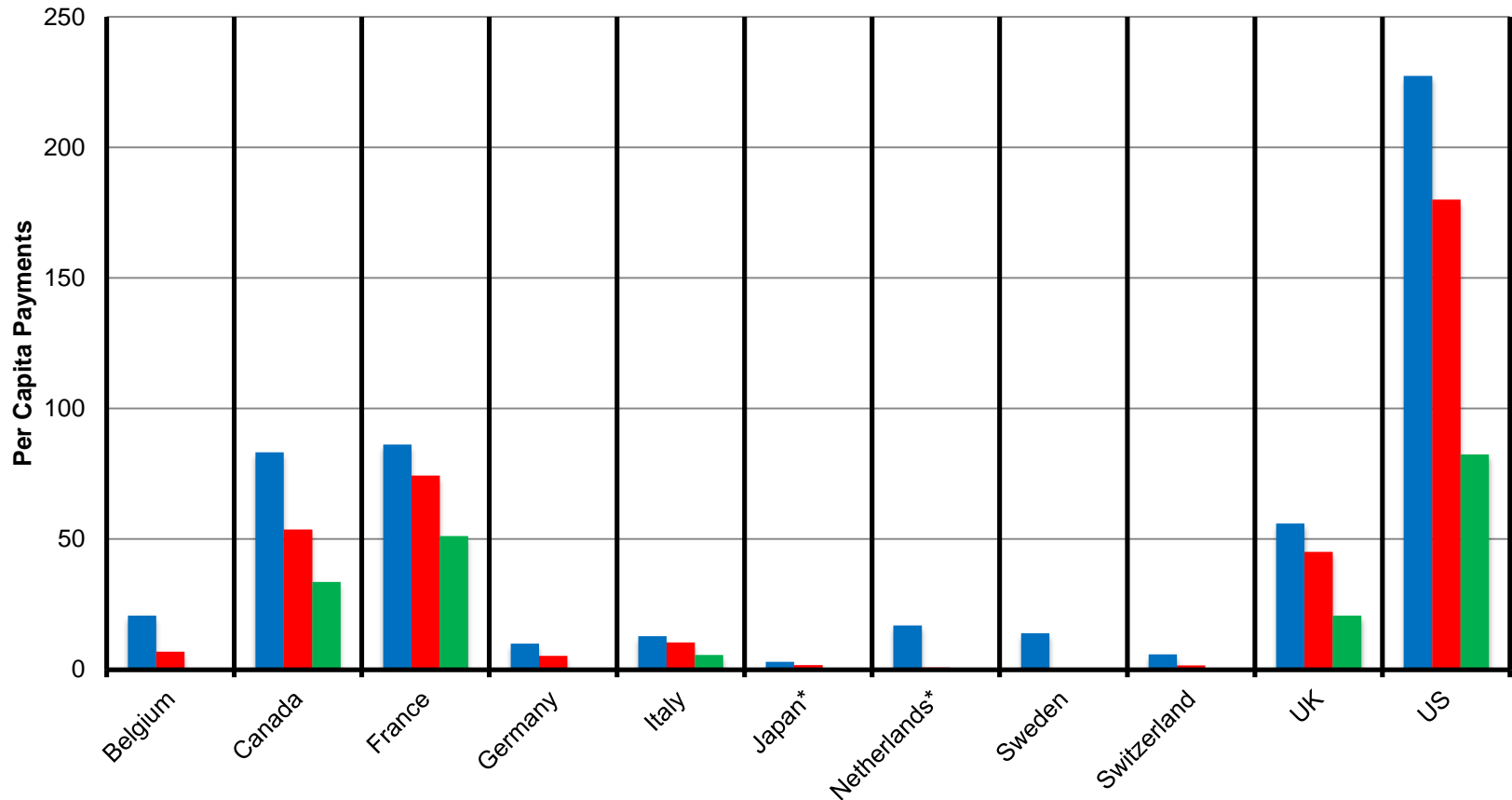
Paper checks drawn on actual commercial banks became common in business-to-business transactions in Sweden, the Netherlands & England in the 18th century

US consumers & businesses have historically relied more heavily on check than in other countries

US check usage per-capita has declined rapidly in the last 15 years

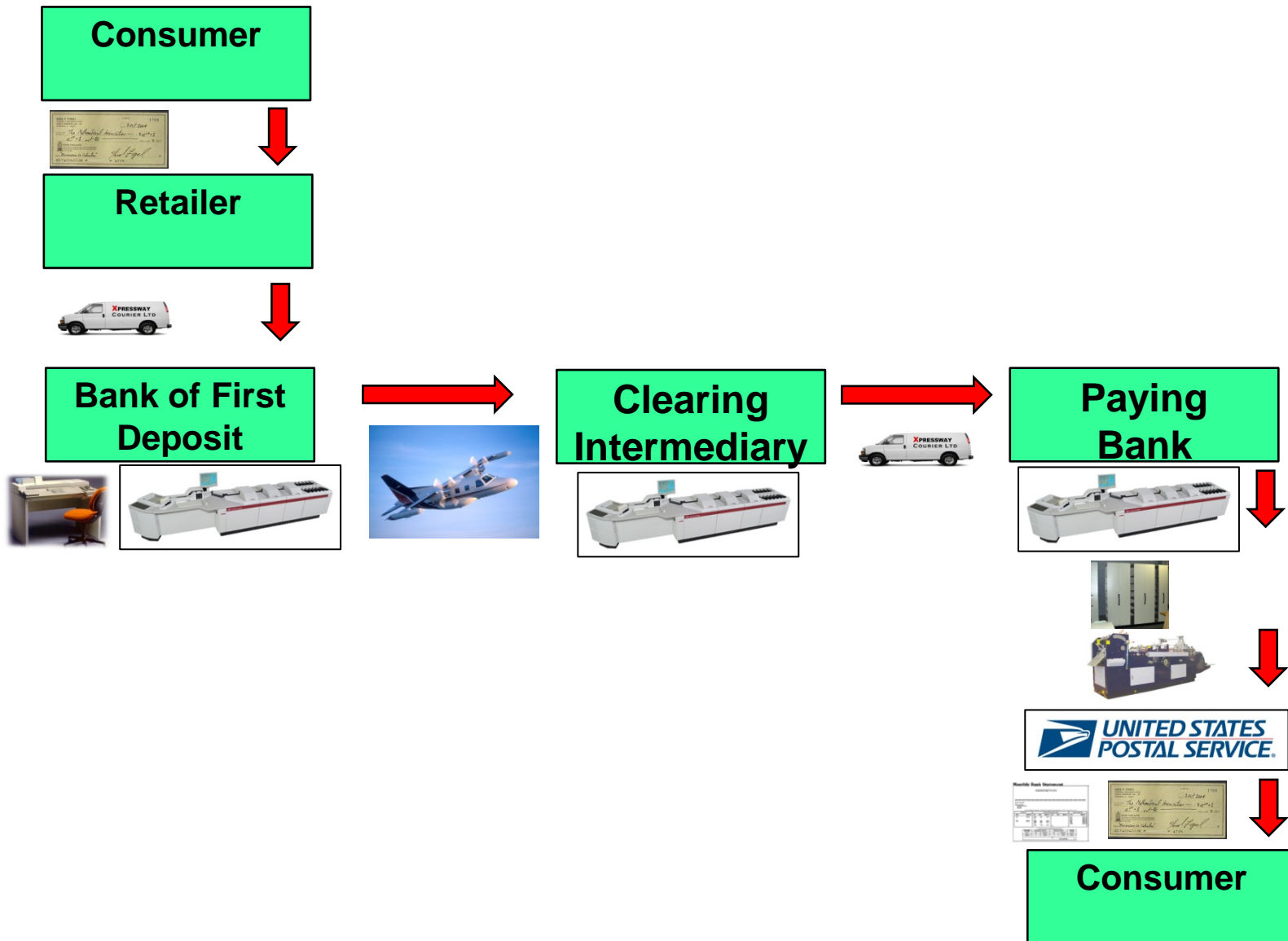
Check Volume

1990, 2000, and 2009



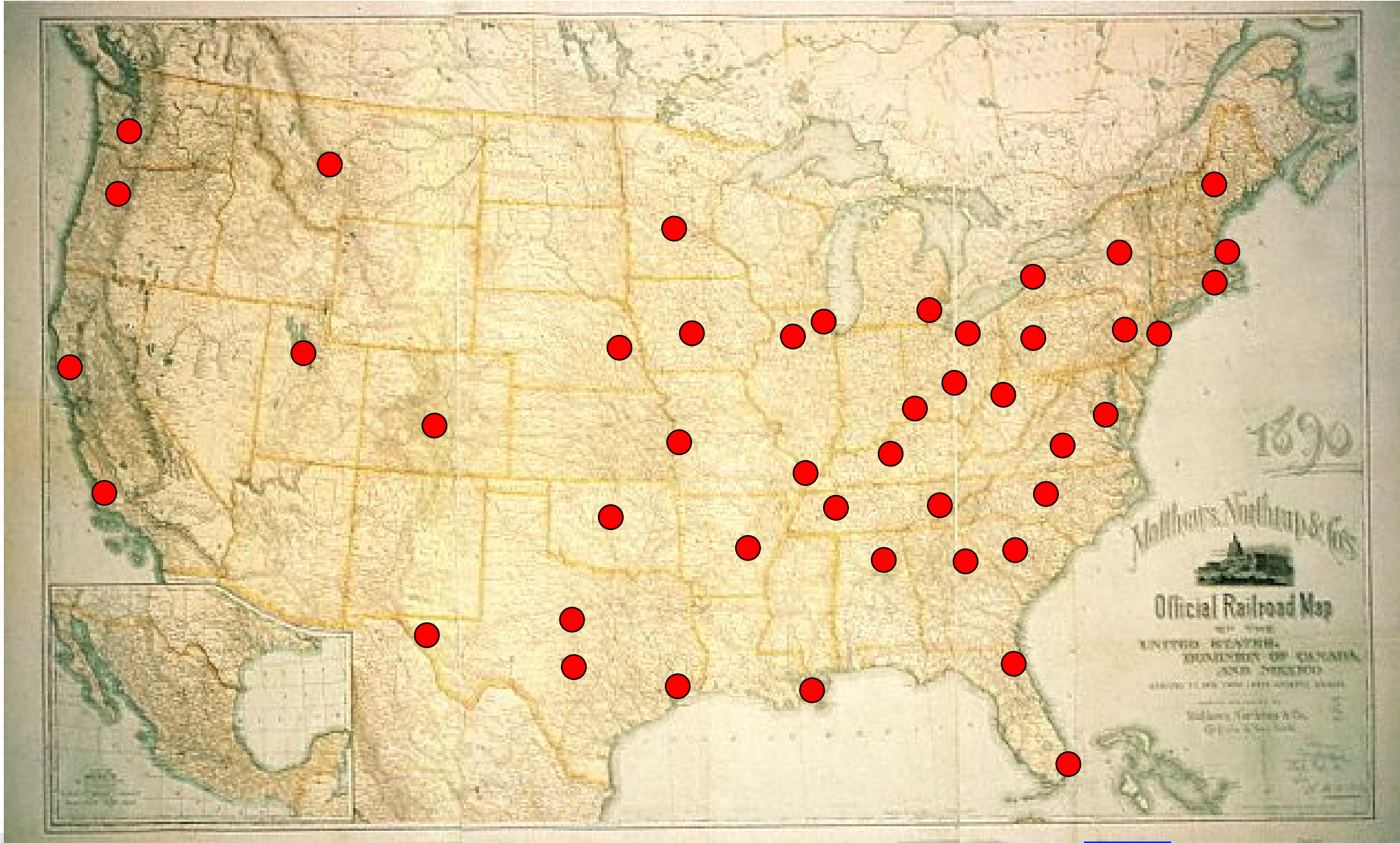
Blue, red, and green represent the years 1990, 2000, and 2009.

Check clearing in the US, before 2004



The Fed had 45 check processing offices

As recently as 2004



The Fed's operating presence in check - 2014

Check business management, network core, central image archive



Check Clearing for the 21st Century Act, or Check-21

0530-69187 01032002
NORTHPOLE BANK, N.A. CXC
CHARLOTTE, NC 1125-403

1800539446

JAN - 2 02

DO NOT SIGN/WRITE/STAMP BELOW THIS LINE
FOR FINANCIAL INSTITUTION USAGE ONLY

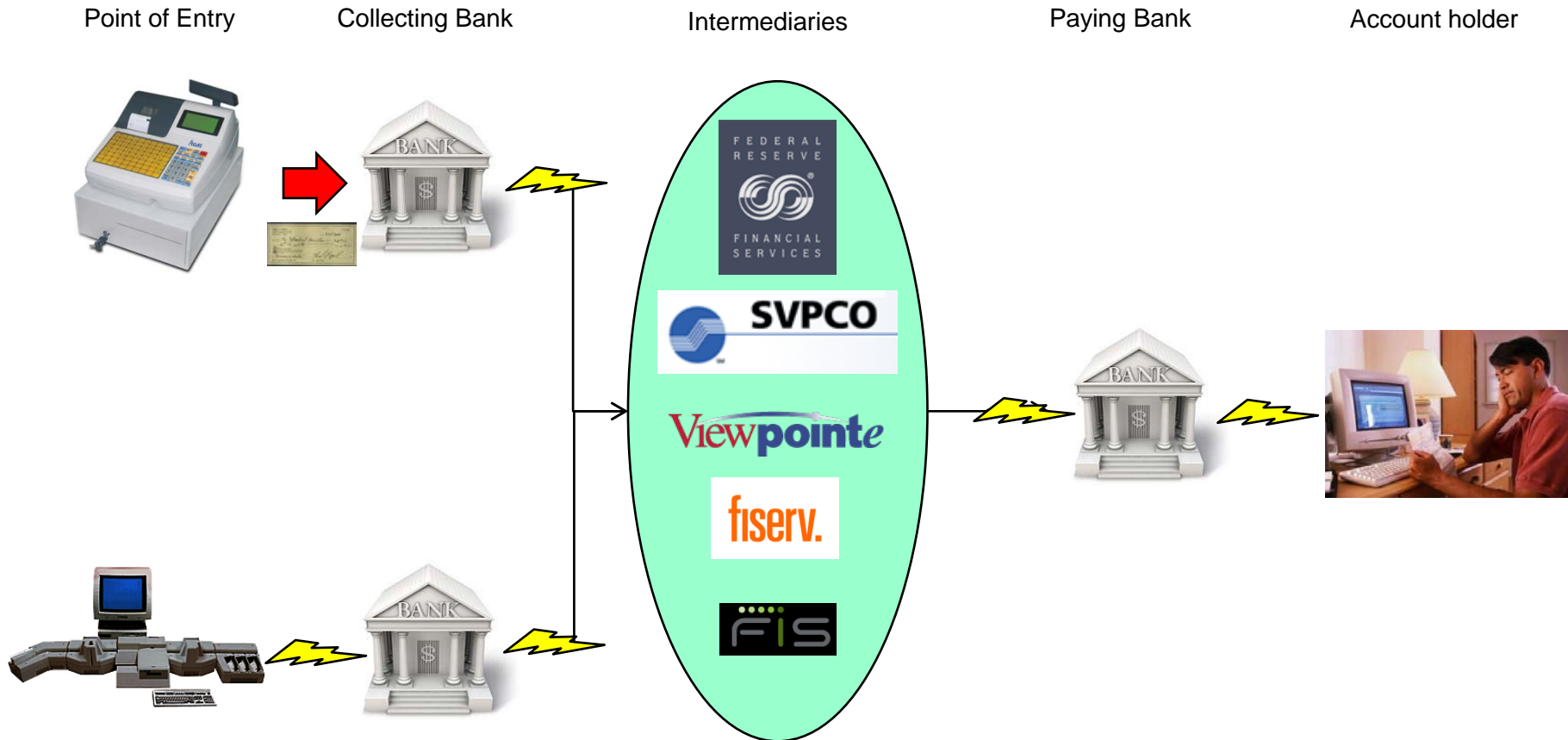
FOR DEPOSIT ONLY
FIRST UNION NATIONAL BANK
ACCOUNT 1234567890123
NORTH POLE, INC.

011500120 01/04/2002
8587408979

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Which changed how checks were cleared

several large image-clearing intermediaries

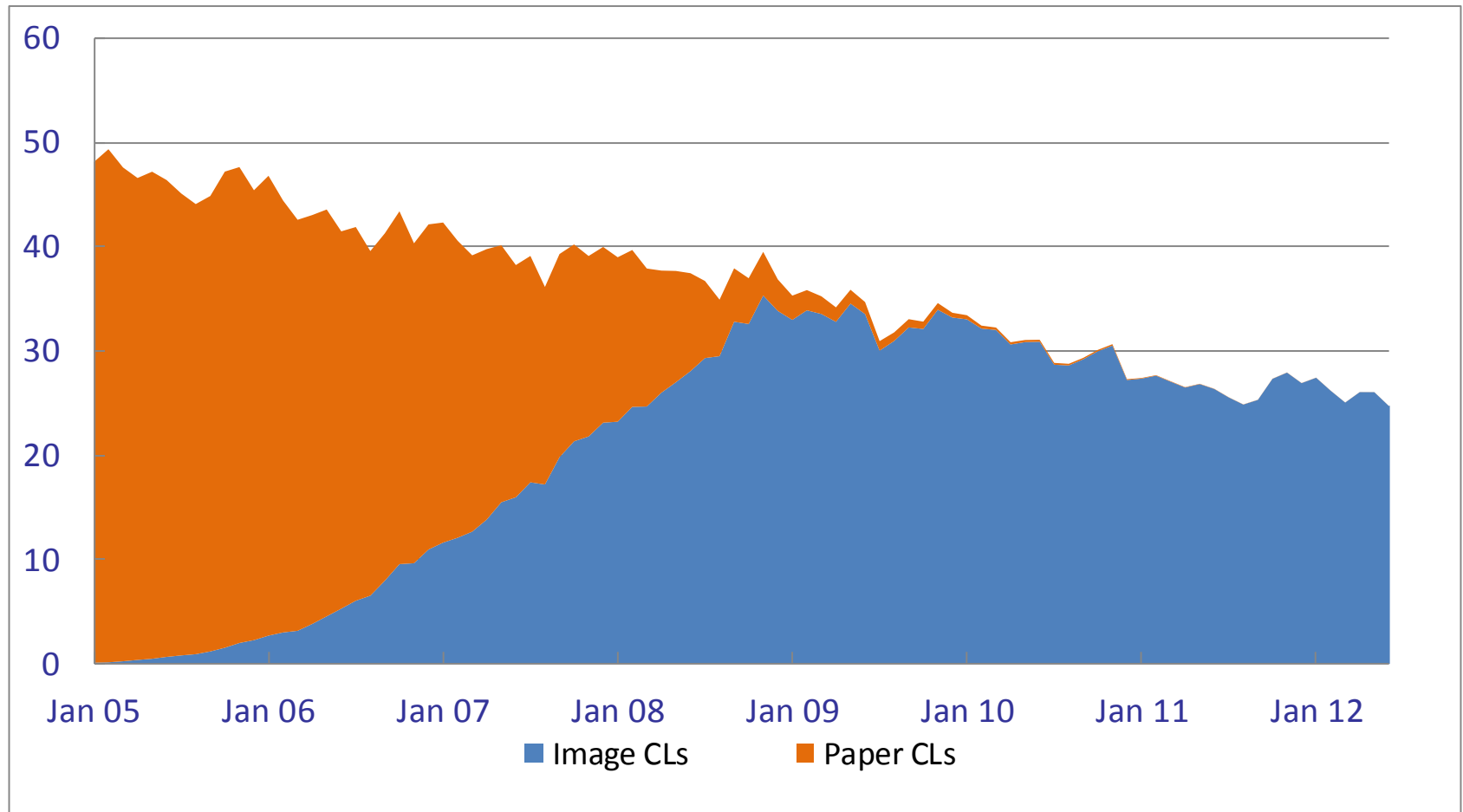


US check clearing - what has changed?



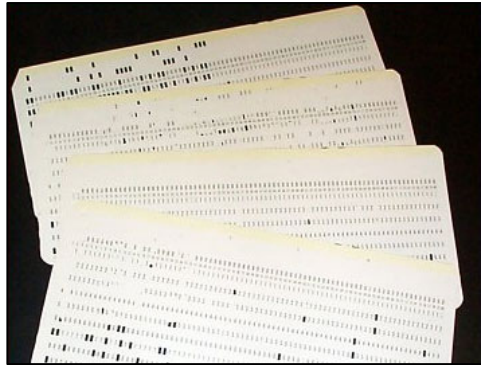
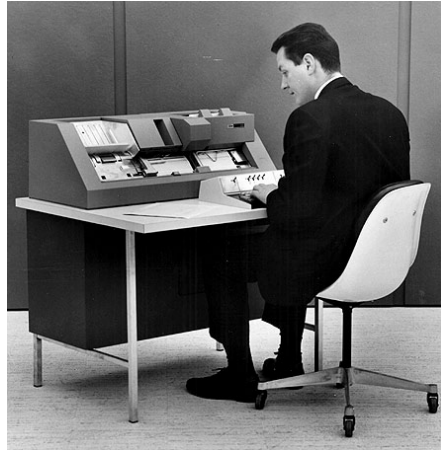
Check processing transformation in the US

Number of checks being written in the US is falling, & electronic clearing is near 100%



Check-21 volume trends in the Fed, daily average in millions

Automated Clearinghouse (ACH)



ACH was the first fully-formed electronic payments system in the US, with operations beginning in 1974

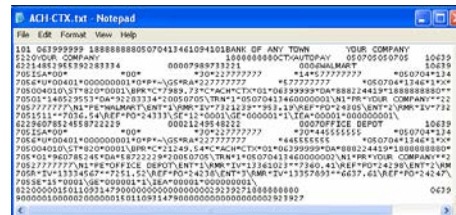
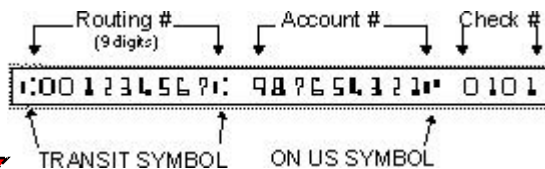
Early implementations made extensive use of computer punch cards and tape storage

Until the late-1980s, the US had a number of regional ACH operations, including 11 in the Fed & one at the NY Clearing House

ACH processing - how does it work?



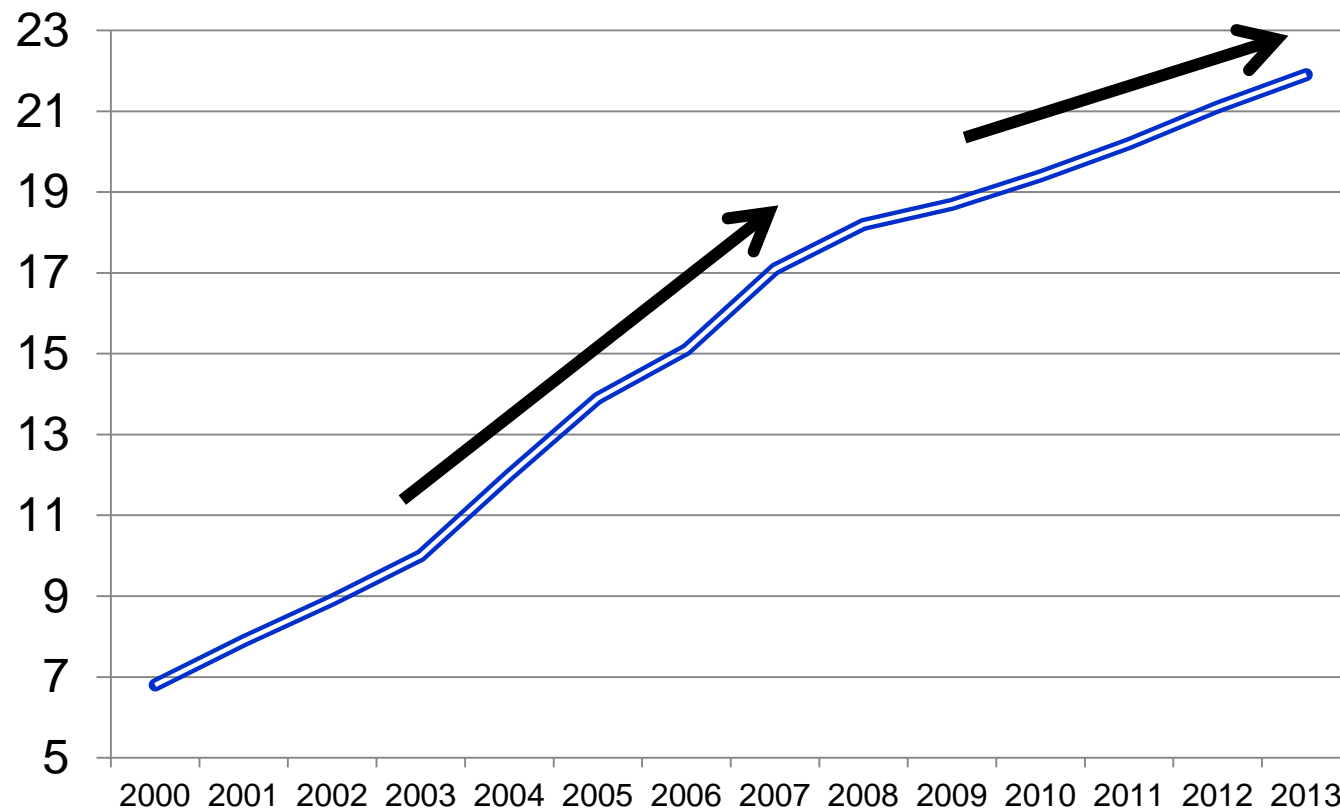
Checks could be converted into ACH debits since the year 2000

[illegible]

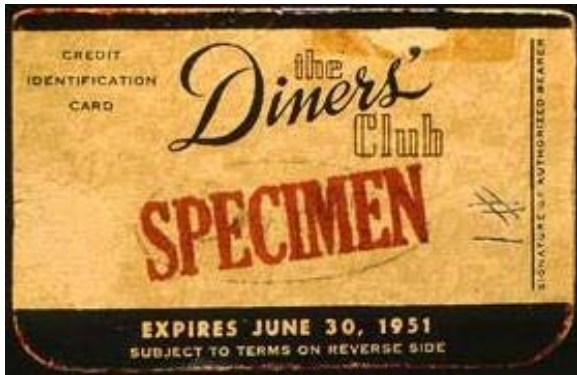
ACH Network Volumes

ACH grew rapidly from 2002-2007 then decelerated

Billions of transactions, annual



Credit & Debit Cards



Frank X McNamara, 1950

An inventor of first general purpose credit card

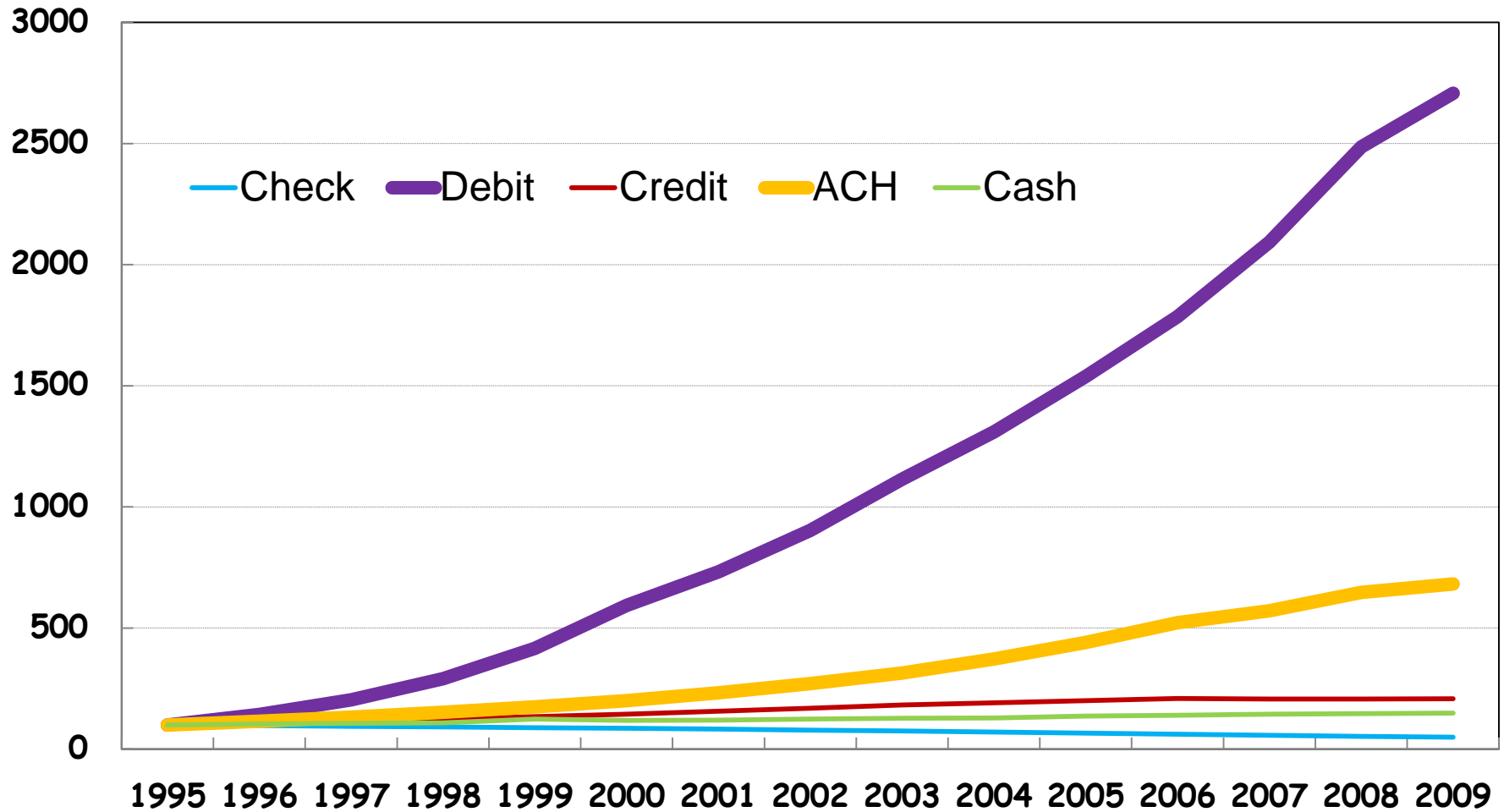


John Shepherd-Barron, 1967

An inventor of the first ATM/cash dispenser & ATM card

Payment transaction volumes by instrument type

payment transactions by instrument. indexed - 1995 = 100



Fed is not involved in processing debit & credit card transactions

We share supervisory authority with other federal regulators & our ACH, Fedwire & Net Settlement services facilitate interbank settlement



networks



processors

Bank of America

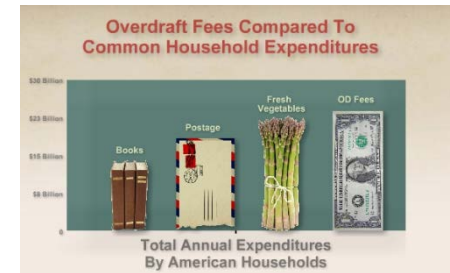


issuing banks

Major issues in the US card business

Earnings compression for key participants, especially card-issuing banks

Regulatory reform – Dodd-Frank, Durbin, CARD Act, overdraft fee limitations



Adversarial relationship with the retail community



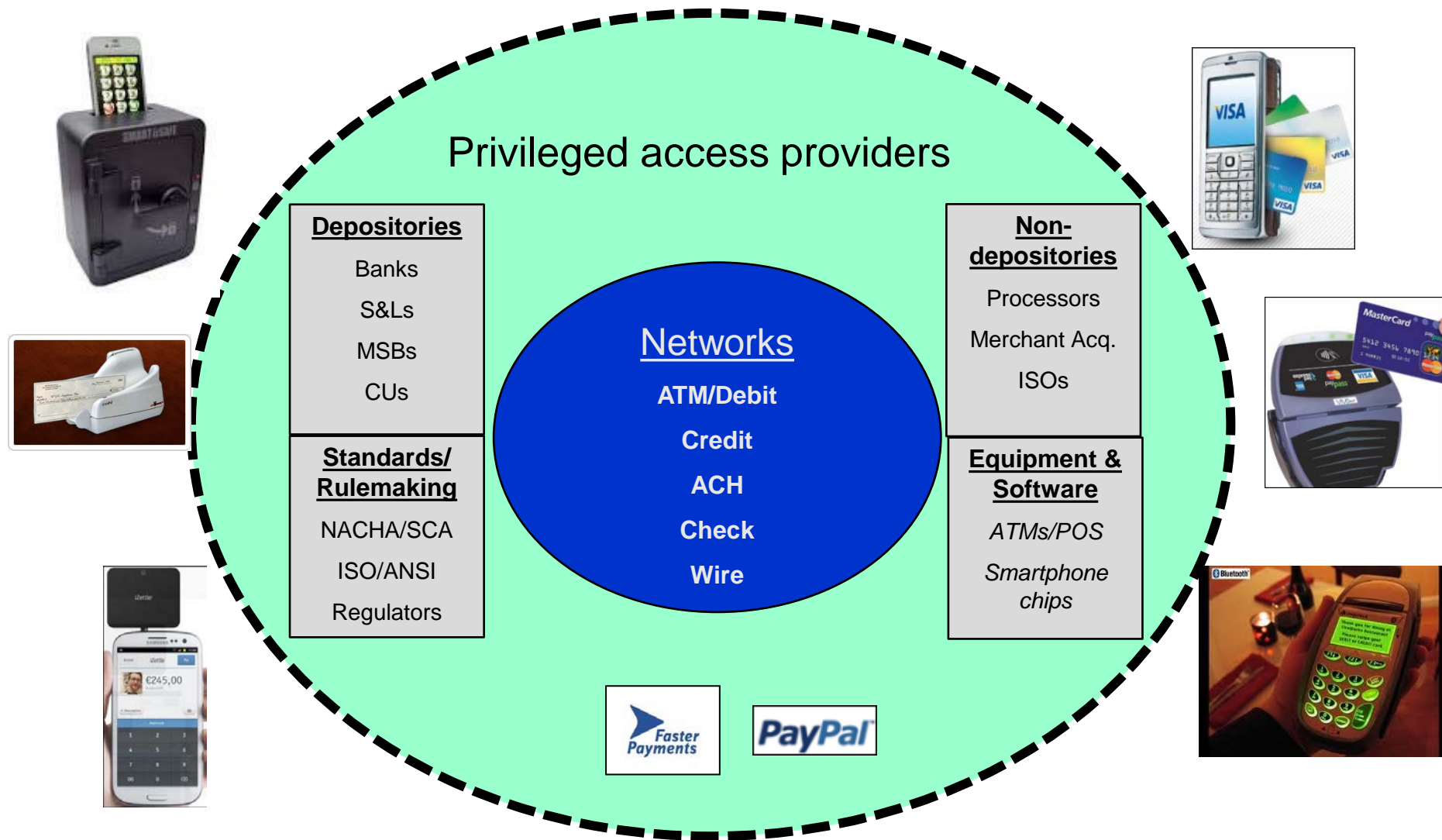
Much innovative activity in the US payments system

But how are we to understand it, evaluate it, guide it (if that is possible)



Characteristics of [most] retail payments innovation - 1

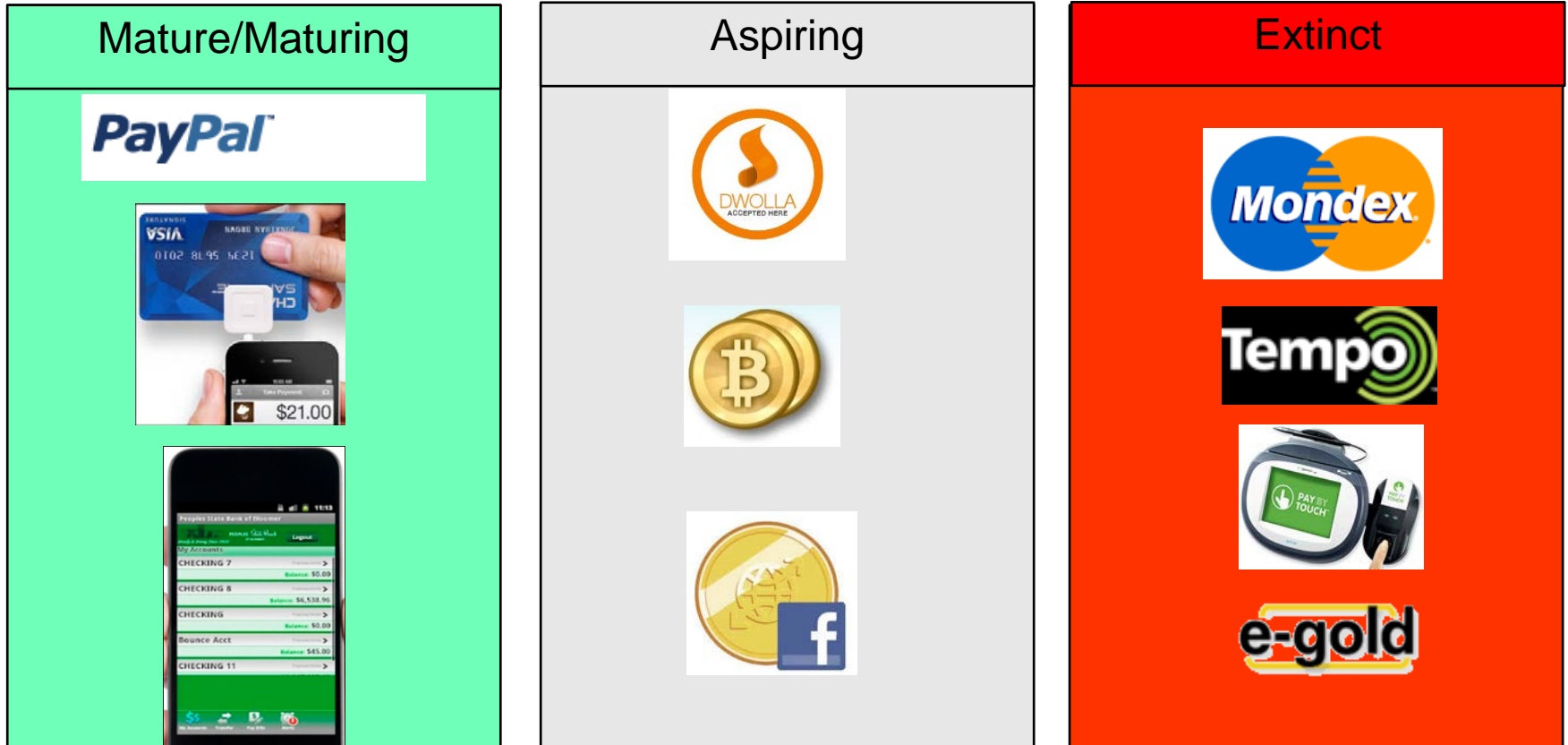
The core & the periphery



Most innovation, in mature systems in the developed world, is in the periphery

Characteristics of [most] retail payments innovation - 2

Innovation is a bloody business, with successes, failures & missteps



Most innovations will not make it to maturity, and those that do are at “risk” of being co-opted by traditional providers

We do not want to stifle innovation in payments

And as a payments system operator, we want to engage in innovation, in pursuit of both business & public policy goals



"Og discovered fire, and Thorak invented the wheel. There's nothing left for us."

Which brings me to the Fed's plan for US payments

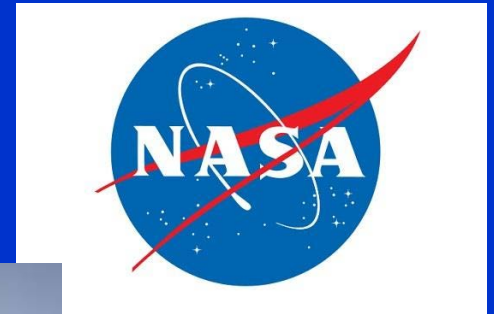
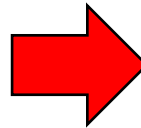


Faster, Better, Cheaper

Its peculiar etymology



1950s



1990s

The key elements of the Fed's strategy

- Evaluate the payments system from end-to-end, rather than just focusing on the intermediary space where we are an operator
- Evaluate payments system gaps & possible solutions jointly with industry stakeholders (& without a hidden agenda of being an operator)
- Focus on four gaps, initially
 - Faster Payments*
 - Payments Security*
 - Payments Efficiency
 - Cross-Border Payments



* *Faster Payments Council & Payments Security Council*

Faster - the US experience

- Two payment types, check & ACH, are characterized by next-business-day clearing & settlement in the US
 - They represent about 40% of all non-cash payments in the US
- Card transactions appear instantaneous to consumers but clearing & settlement often takes 1-2 business days
 - This time lag is experienced by the merchant
- Pockets of demand for faster payments
 - Expedited bill-pay, late-payroll files, hourly worker payrolls, remittances, person-to-person transactions
- Strong *latent* demand for faster payments does not reveal itself because the option is not available (or only for a high price)



Faster - we have been studying the experience elsewhere in the world

To us help determine how & whether to undertake a similar initiative here

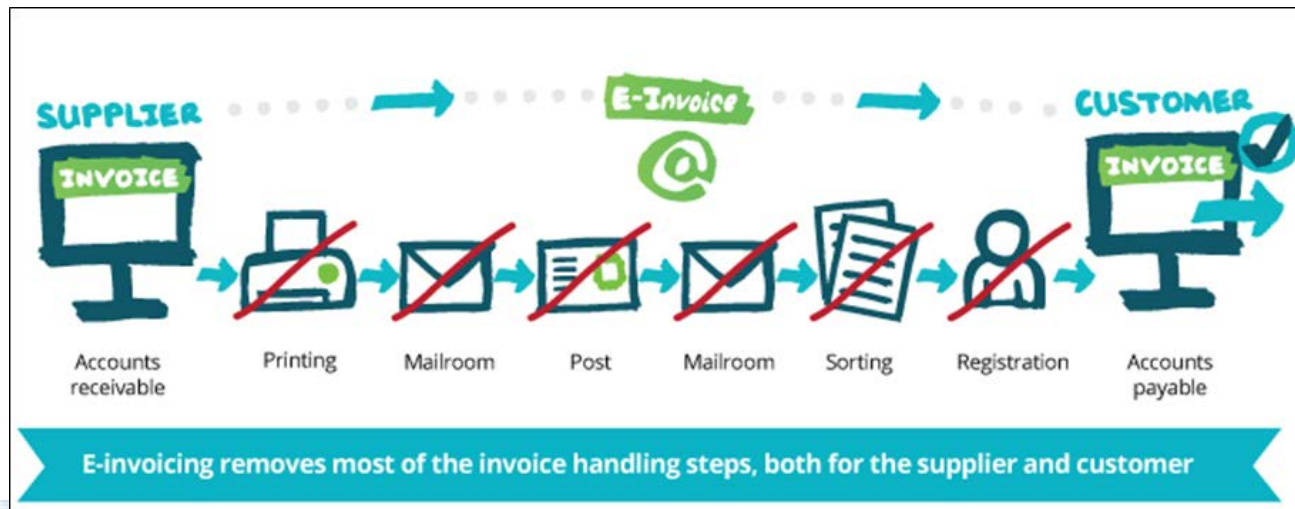


Faster Payments - countries at various stages of thinking, development, implementation

Exploratory	Design	Build	Live
Canada 	Netherlands 	Australia 	UK 
European Union 	Norway 		Brazil 
Finland 	Turkey 		Poland 
Kazakhstan 	Colombia 		Singapore 
Indonesia 	Spain 		South Africa 
Thailand 	Portugal 		Mexico 
	Bahrain 		Chile 
	USA 		China 
			India 
			Korea 
			Japan 
			Switzerland 
			Denmark 
			Sweden 
			Czech Republic 
			Taiwan 
			Nigeria 

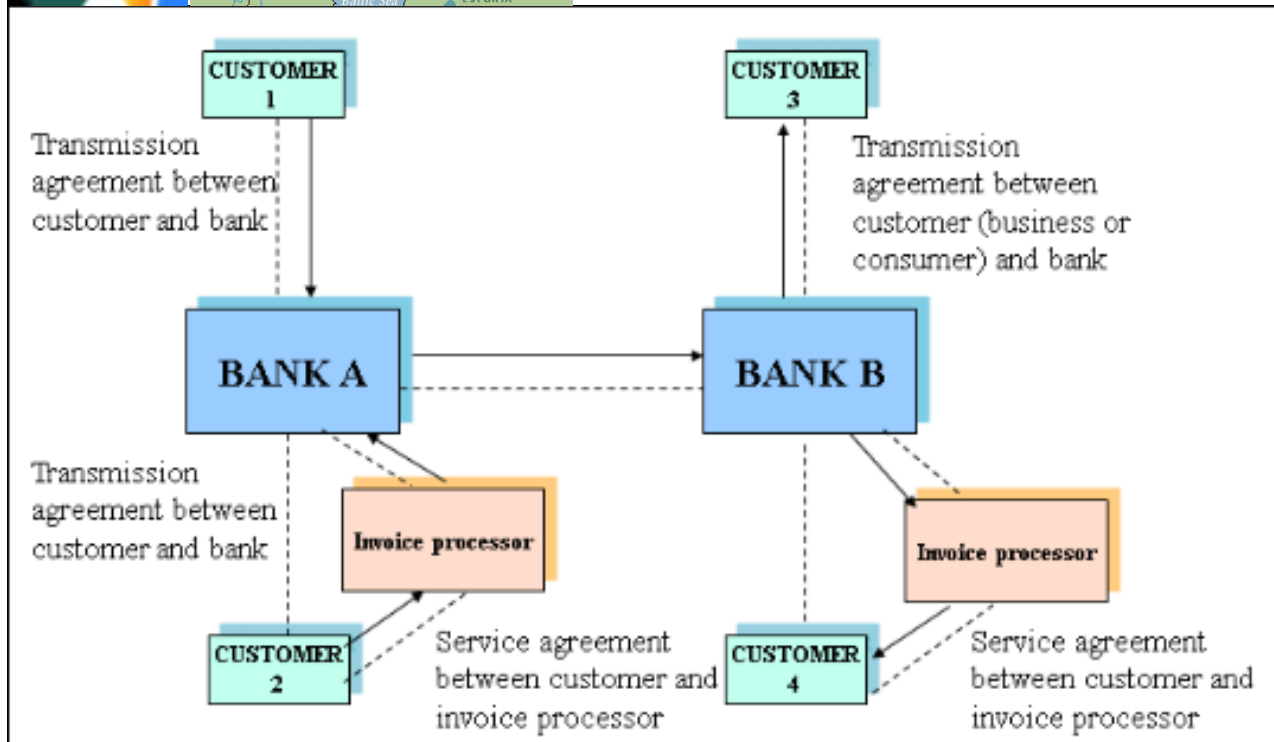
Cheaper - the US experience

- In the 1990s, economists estimated the cost of the US payments system from end-to-end at 0.5%-1.0% of GDP
 - About \$150 billion in 2013
- US payments have become more electronic, checks declined & were image-enabled, the number is smaller but still ghastly
 - If person-to-person payments could be shifted from cash to electronics, the economic burden could fall
 - A much greater improvement might be achieved if business-to-business transactions, payments + information, could be electrified - e-invoicing



Cheaper - we have been studying the experience elsewhere in the world, & our own in the US

To us help determine how & whether to undertake a similar initiative here

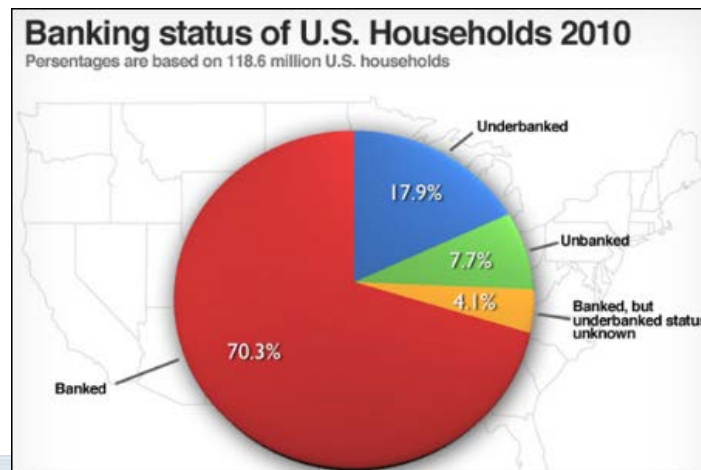


E-invoicing:

- Finland
- Brazil
- Australia
- Europe
- Canada
- US-EDI
- US-closed communities
- others

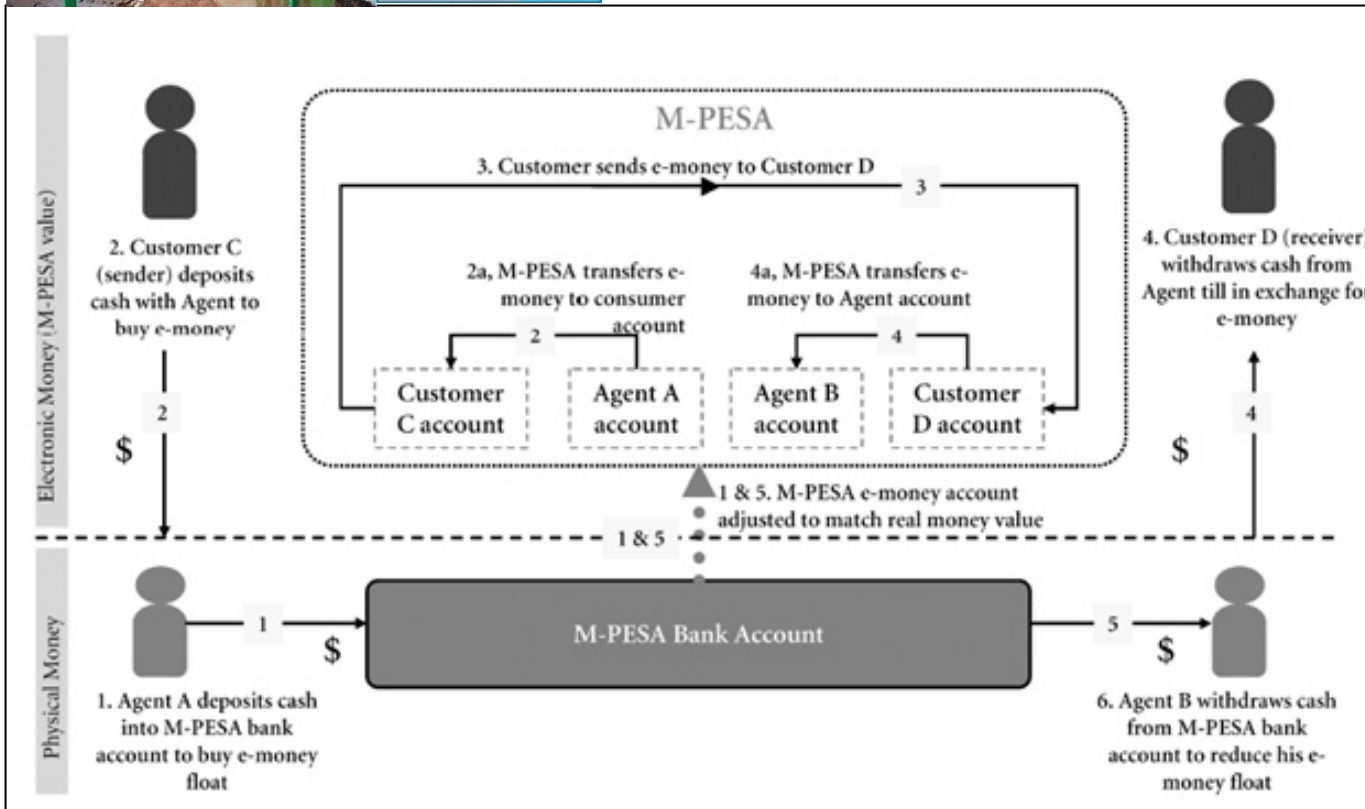
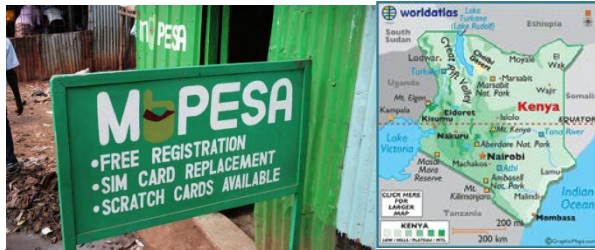
Better – financial inclusion

- FDIC estimates that 17 billion US adults do not have a bank account (*unbanked*) & 51 billion have an account but make use of non-mainstream financial services (*underbanked*)
- Study by US Postal Service shows that its branches are much more likely to be in low-to-moderate income Census tracts than bank branches & ATMs
 - USPS Board has proposed studying financial services from US Post Office
- Un- & underbanked pay much more for their financial services & get less legal protection than citizens using banks
- Unbanked much less likely to save than adults in the same circumstances, but with a bank account



Better - we have been studying the experience elsewhere in the world, & our own in the US

To us help determine how & whether to undertake a similar initiative here

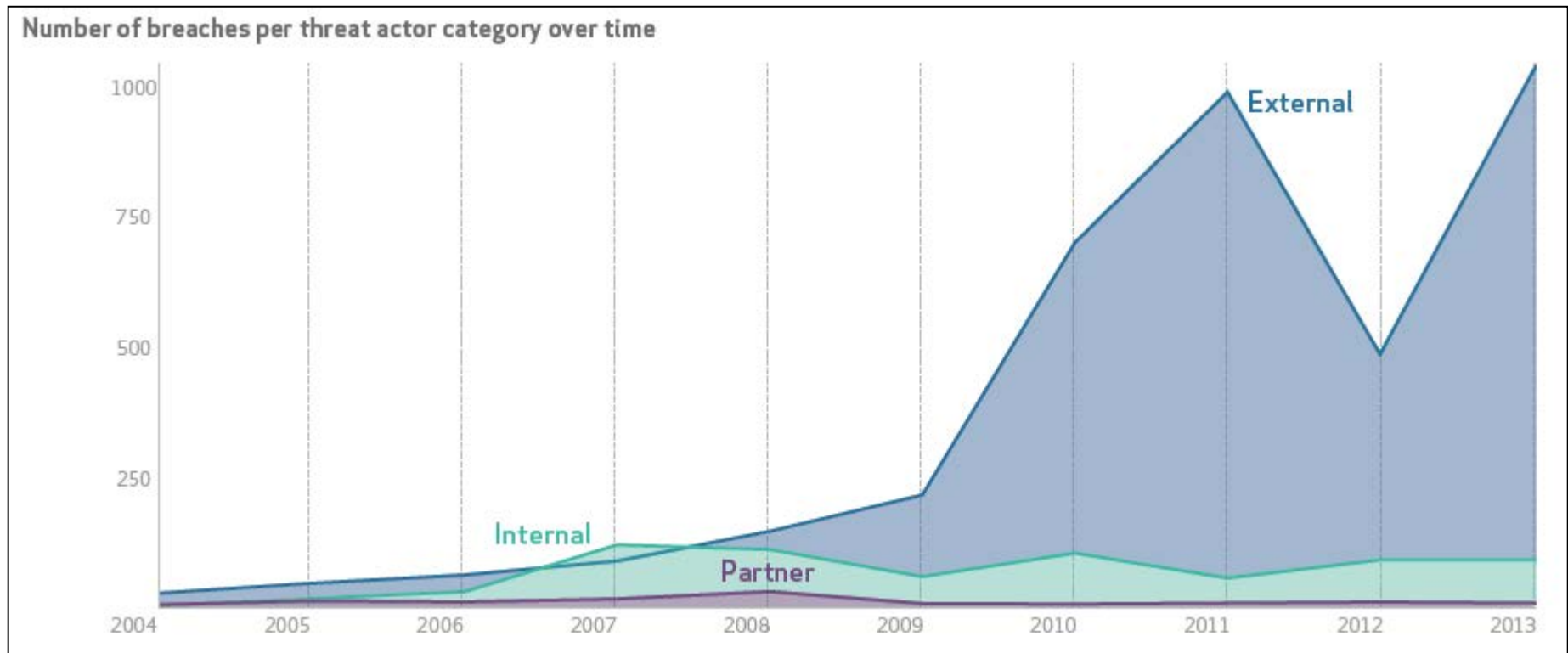


Financial Inclusion:

- Kenya
- Tanzania
- Nigeria
- Ghana
- South Africa
- India
- Others

Better - payments security

- Traditional payments security vulnerabilities in the US seem to be under decent control
 - Cash & check counterfeiting, check kiting, old-style account takeovers
- In the US as in the rest of the world, cybersecurity is the big worry



Payments security - possible initiatives

- More research, more data, more data sharing
- Security issues associated with Faster Payments
- More coordinated financial sector involvement in cybersecurity
- Encouraging information & technique sharing across banks, processors, retailer sector
- Financial/security literacy
- *Payments Security Task Force will be developing a set of gaps & initiatives later in 2015*





Some references

- *How Americans Pay*, FRB Atlanta
 - http://www.frbatlanta.org/documents/pubs/econsouth/14q1_payment_study.pdf
- *Cash Continues to Play a Key Role in Consumer Spending: Evidence from the Diary of Consumer Payment Choice*, FRB SF
 - <http://www.frbsf.org/cash/publications/fed-notes/2014/april/cash-consumer-spending-payment-diary>
- *Consumers & Mobile Financial Services*, Federal Reserve Board
 - <http://www.federalreserve.gov/econresdata/consumers-and-mobile-financial-services-report-201403.pdf>
- *2013 Federal Reserve Payments Study*, FRB Atlanta
 - http://www.frb services.org/files/communications/pdf/research/2013_payments_study_summary.pdf
- *Assessing the economic inclusion potential of mobile financial services*, FDIC
 - <http://www.fdic.gov/consumers/community/mobile/Mobile-Financial-Services-and-Economic-Inclusion-04-23-2014revised.pdf>
- Materials about the Federal Reserve's strategy for financial services
 - <http://fedpaymentsimprovement.org/>

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<http://www.clevelandfed.org/>

<http://countingoncurrency.com/cash-per-diem/>

