Payment System Update

Past, Present, and Future of Payment Processing

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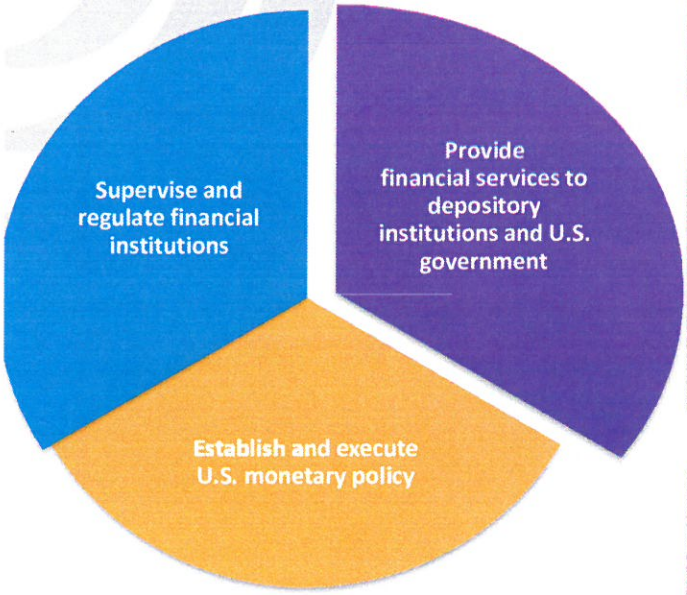
Agenda

- US Retail Payments Landscape
  - How are we paying today?
  - What are influencing factors?
- Emerging Payments
  - How might we pay in the future?
    - Personal Payments
    - Mobile Payments
- Payments Landscape Going Forward…

Federal Reserve Banks Overview



...to maintain a stable financial system and contain systemic risk

Mission

- To foster integrity, efficiency and accessibility of the U.S. payment system

Vision

- Payments are safe and efficient
- End users can select payment options with attributes (e.g., speed, convenience, cost, security) that meet their needs
- Incentives promote efficient selection and use of these options

Role

- Act as a major service provider to the interbank market
- Collaborate with industry and emphasize innovations in electronic payment systems

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The US Retail Payments Landscape

Payment Method Shares (billions)

						CAGR*			
	2000	2003	2006	2009	2012	2000-03	2003-06	2006-09	2009-12
Total	**72.5**	**81.4**	**95.2**	**108.9**	**122.8**	**3.9%**	**5.4%**	**4.6%**	**4.1%**
Checks (paid)	41.9	37.3	30.5	24.4	18.3	-3.8%	-6.5%	-7.2%	-9.14%
Debit Card	8.3	15.6	25.0	37.9	47.0	23.4%	17.0%	14.9%	7.44%
Signature	*5.3*	*10.3*	*15.7*	*23.4*	--	*24.8%*	*15.1%*	*14.2%*	--
PIN	*3.0*	*5.3*	*9.4*	*14.5*	--	*20.9%*	*21.0%*	*15.5%*	--
Credit Card	15.6	19.0	21.7	21.6	26.2	6.8%	4.5%	-0.2%	6.65%
ACH	6.2	8.8	14.6	19.1	22.1	12.4%	18.4%	9.4%	4.98%
Prepaid	--	--	2.2	4.0	9.2	--	--	22.1%	32%
EBT**	0.5	0.8	1.1	2.0	--	17.0%	11.2%	22.1%	--

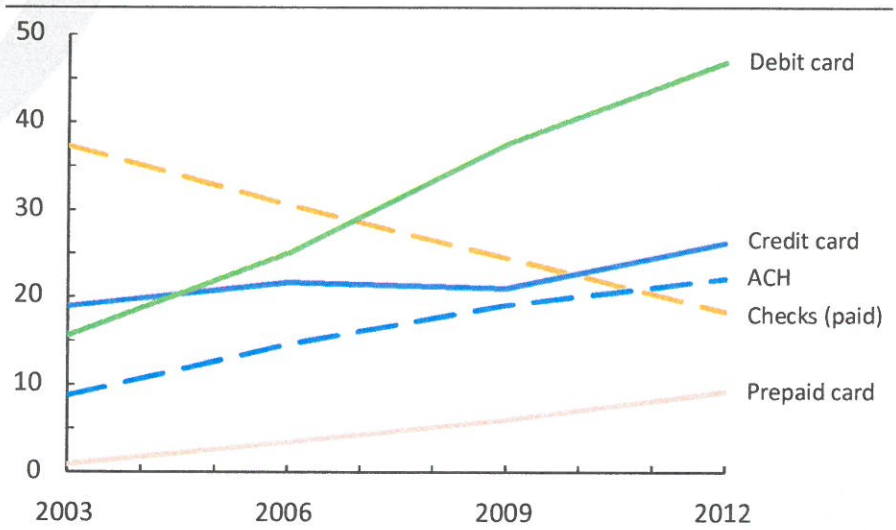
*Compound annual growth rate

**Beginning in 2006 EBT cards are captured in prepaid.

Source: Federal Reserve Payments Study www.frbservices.org/communications/payment_system_research.html

ACH and card types grew while checks declined...

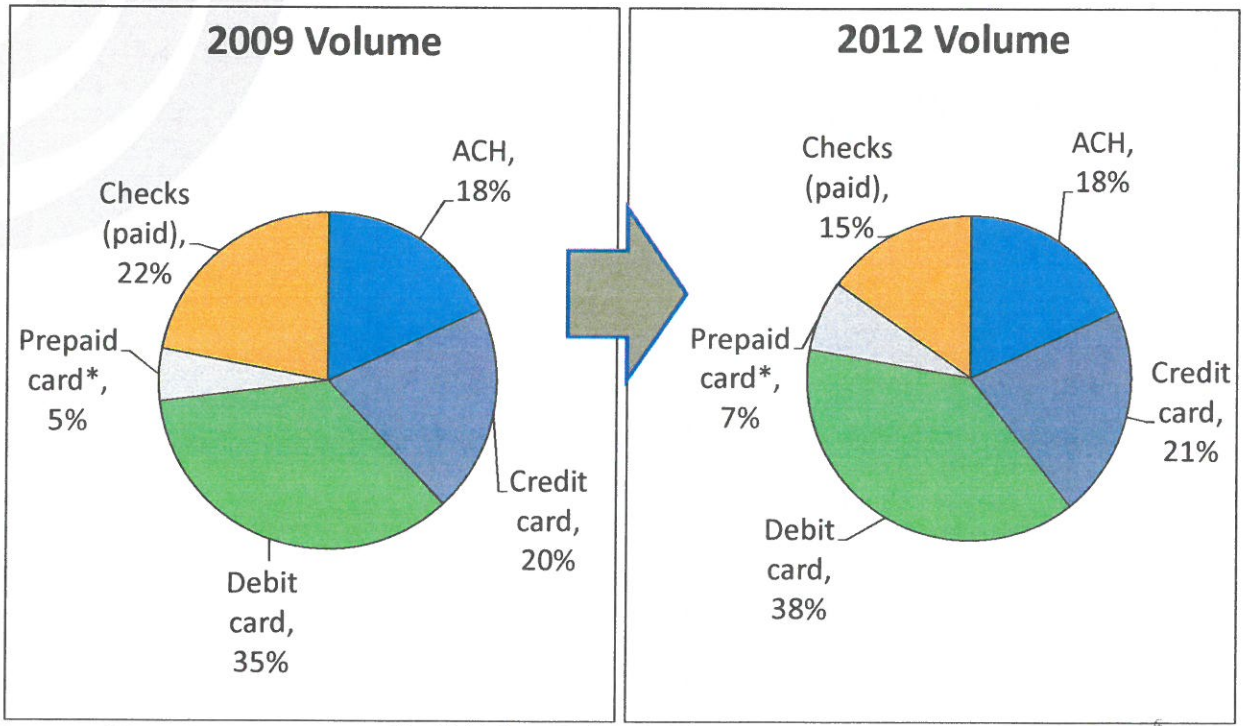
Trends in noncash payments by number and type of transaction



Credit, debit, and prepaid card trends include general-purpose and private-label payments.

SOURCE: 2013 Federal Reserve Payments Study

Check lost market share in volume to cards...

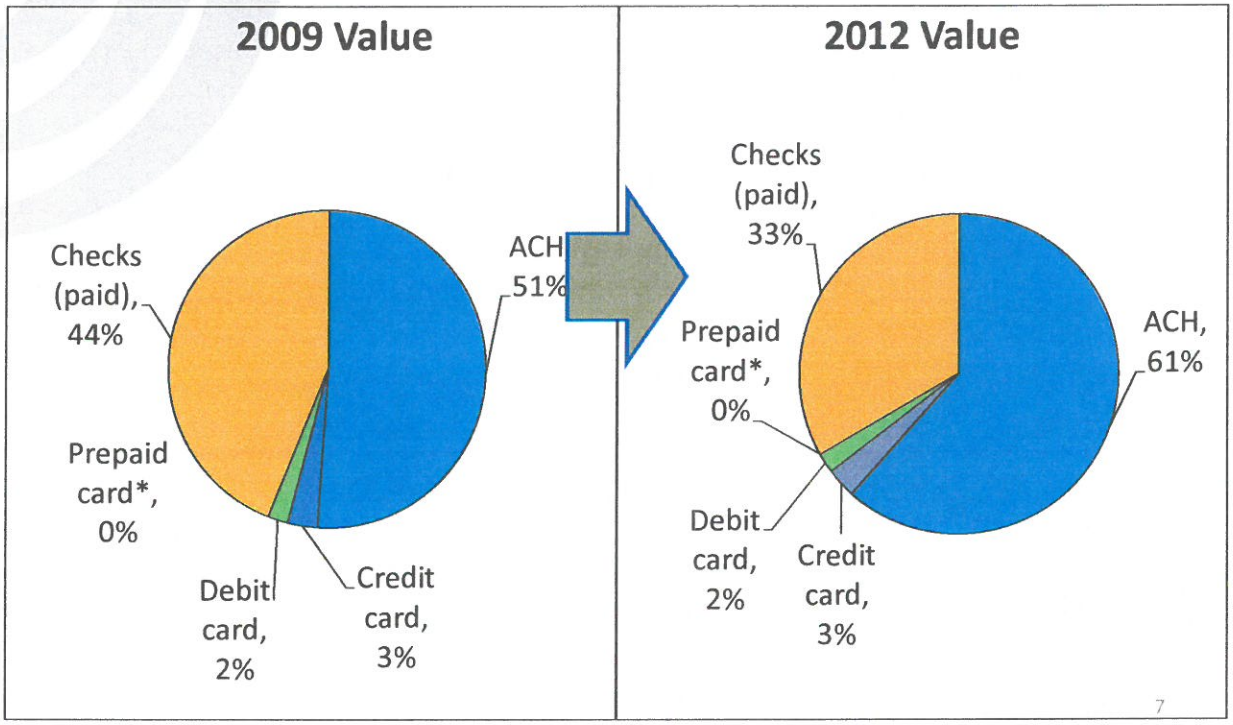


Figures may not add due to rounding.

*Prepaid includes Electronic Benefits Transfer (EBT).

SOURCE: 2010 & 2013 Federal Reserve Payments Study

Check lost market share in value to ACH...



Figures may not add due to rounding. *Prepaid includes Electronic Benefits Transfer (EBT). SOURCE: 2010 & 2013 Federal Reserve Payments Study

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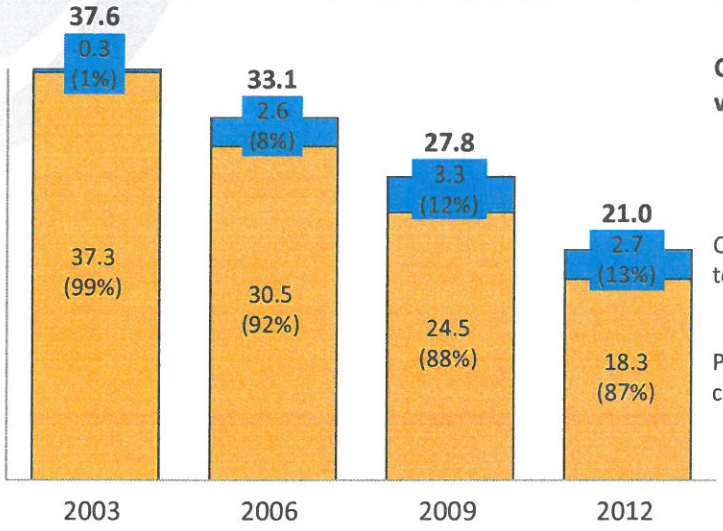
Trends in the *average values* of non-cash payments ($)

					CAGR	
	2003	2006	2009	2012	2003-2012	2009-2012
Credit Card	89	98	89	94	.7%	2.1%
Debit Card	40	39	37	39	-.5%	1.2%
Prepaid Card	26	23	23	23	-.7%	1.3%
ACH	2,754	2,121	1,946	2,186	-2.5%	4.0%
Checks (paid)	1,103	1,363	1,291	1,420	2.8%	3.2%

The number of checks written declined 8.8% per year from 2009 and 2012…

Number of checks written, paid, or converted to ACH

Billions



	CAGR* 2003-12	CAGR* 2009-12
Checks written	***-6.3%***	***-8.8%***
Converted to ACH	*26.3%*	*-6.3%*
Paid as checks	*-7.6%*	*-9.2%*

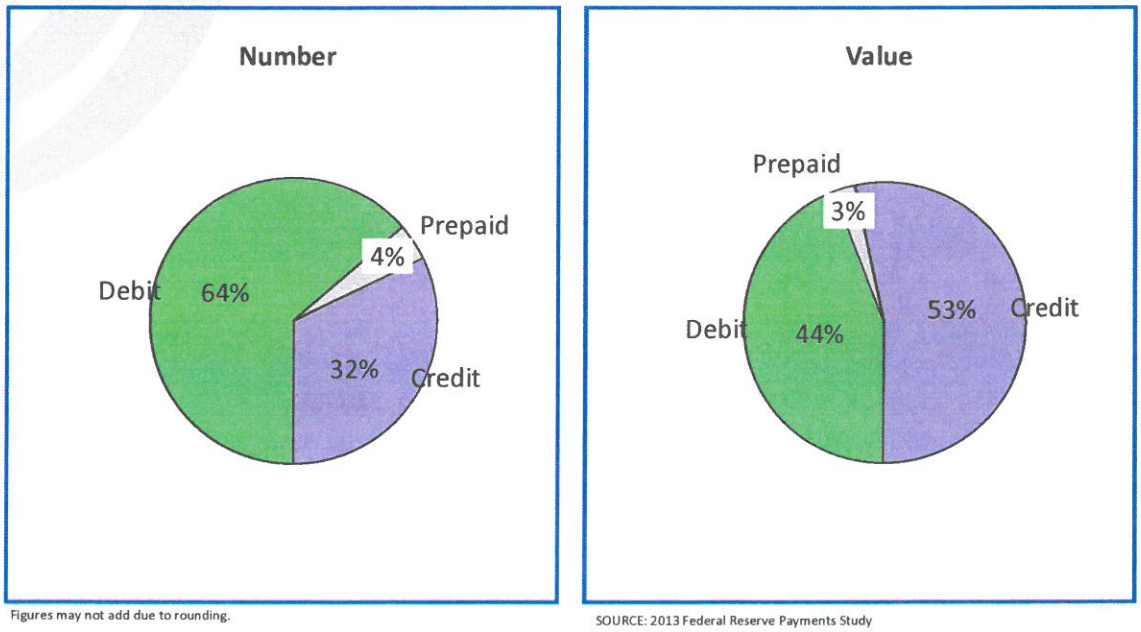
Figures may not add due to rounding.

*CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study

General-Purpose Cards: Debit card payments were largest by number, while credit card payments were largest by value…

Distribution of general-purpose card payments in 2012



Figures may not add due to rounding.

SOURCE: 2013 Federal Reserve Payments Study

More than 1 out of every 6 checks were deposited as images in 2012...

Checks deposited by format*

Billions

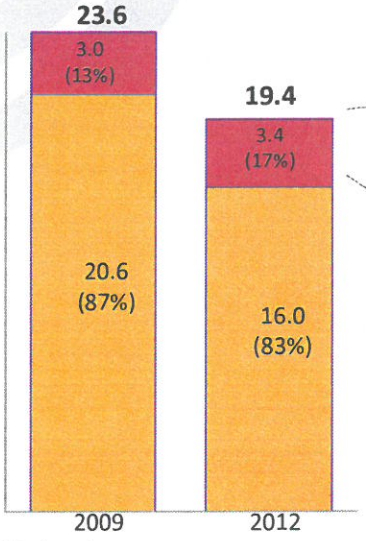
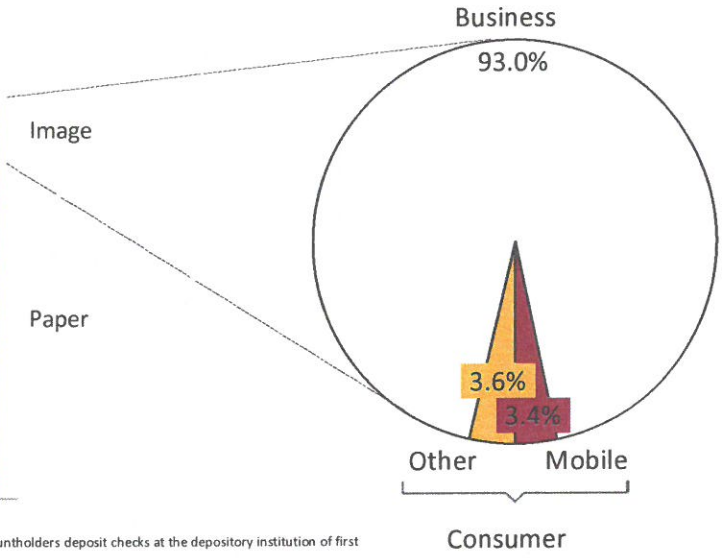


Image checks deposited by type of accountholder



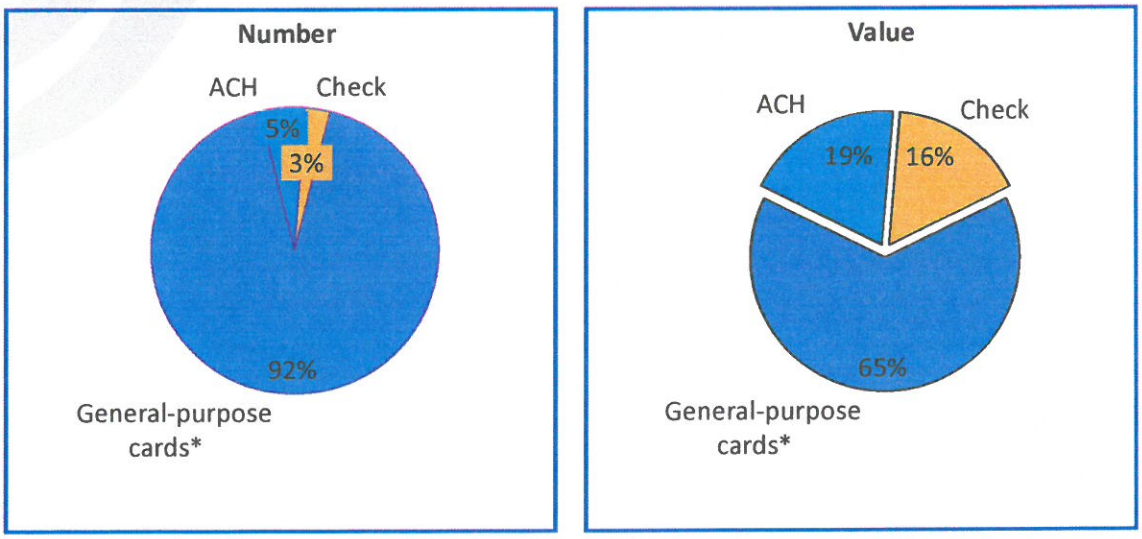
Figures may not add due to rounding.

SOURCE: 2013 Federal Reserve Payments Study

*Format by which accountholders deposit checks at the depository institution of first deposit.

The distribution of fraud is very different from the distribution of total payments...

Distribution of unauthorized transactions (third-party fraud) in 2012



*General-purpose cards includes credit, debit, and prepaid purchases as well as ATM withdrawals.

Figures may not add due to rounding.

SOURCE: 2013 Federal Reserve Payments Study

Highlights

Payments are increasingly card-based

Credit cards returned to growth

Cards increased more than checks declined

Paper check writing persists as a significant portion of non-cash payments

Drivers of Change

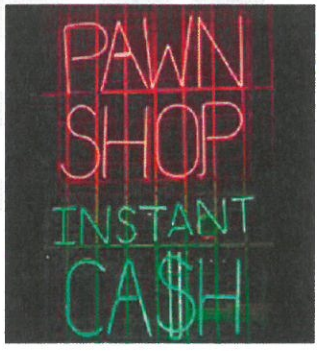
- Economic climate
  - Debit and prepaid cards are being used more
    - Money management
    - Perceived convenience
- Regulatory developments
  - Credit Card Accountability, Responsibility, and Disclosure Act
  - Dodd-Frank Act
- Changing demographics
  - Using less paper, more interested in electronics
  - Interested in using mobile devices
- Technology is aiding innovation
  - Open source software, NFC, and social networks
- Innovation is also beginning to influence consumer and business payment choice

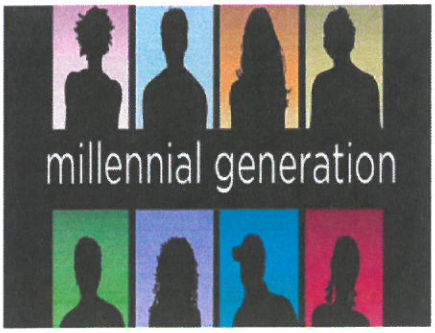
Fedwire Funds Service--Annual

Year	Transfers originated (number)	Annual volume growth (percent)	Value of transfers originated[1] ($ millions)	Annual value growth (percent)	Average value per transfer ($ millions)	Average daily volume of transfers[2] (number)	Average daily value of transfers[2] ($ millions)
2013	134,244,177	2.0	713,310,354	19.0	5.31	534,837	2,841,874
2012	131,637,349	3.6	599,200,625	(9.7)	4.55	524,452	2,387,253
2011	127,022,420	1.5	663,837,575	9.1	5.23	506,065	2,644,771
2010	125,130,561	0.3	608,325,851	(3.6)	4.86	496,550	2,413,991
2009	124,731,244	(5.0)	631,127,108	(16.4)	5.06	494,965	2,504,473
2008	131,362,107	(2.5)	754,974,633	12.6	5.75	521,278	2,995,931
2007	134,688,381	0.8	670,665,569	17.1	4.98	536,607	2,671,974
2006	133,605,267	0.9	572,645,790	10.4	4.29	532,292	2,281,457

Source - http://www.federalreserve.gov/paymentsystems/fedfunds_ann.htm

Changing Payments Landscape

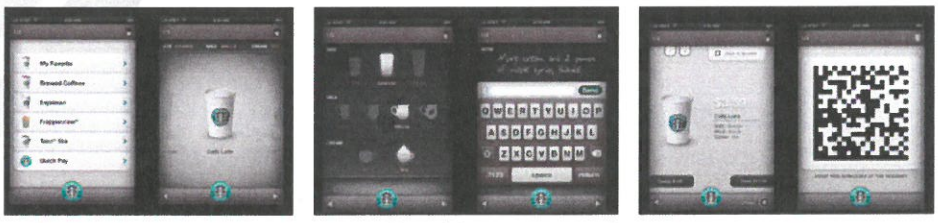




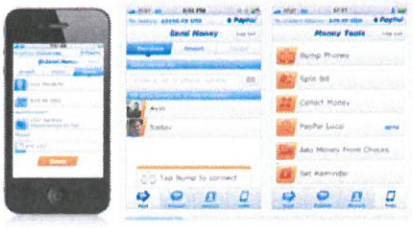
Mobile Technology

...so why not?

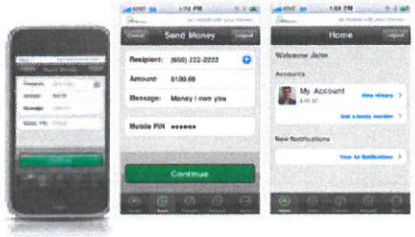
Mobile Payment Apps



Starbuck's 2D Barcode



PayPal Bump

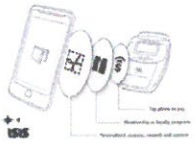


Obopay

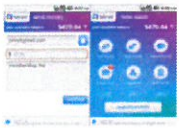
Mobile Wallets

- Pay With Square
  - Square

- Google Wallet
  - Google, MasterCard, Verifone, Sprint



- ISIS
  - AT&T, T-Mobile, Verizon, Barclaycard, Discover, Amex, MasterCard, and Visa



- Serve
  - American Express

- Merchant Customer Exchange
  - Wal-Mart, Target, Best Buy, Hy-Vee, etc.

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U.S. Payments System

A Faster Payments Assessment

End-to-End Strategic Focus

Safety and Security

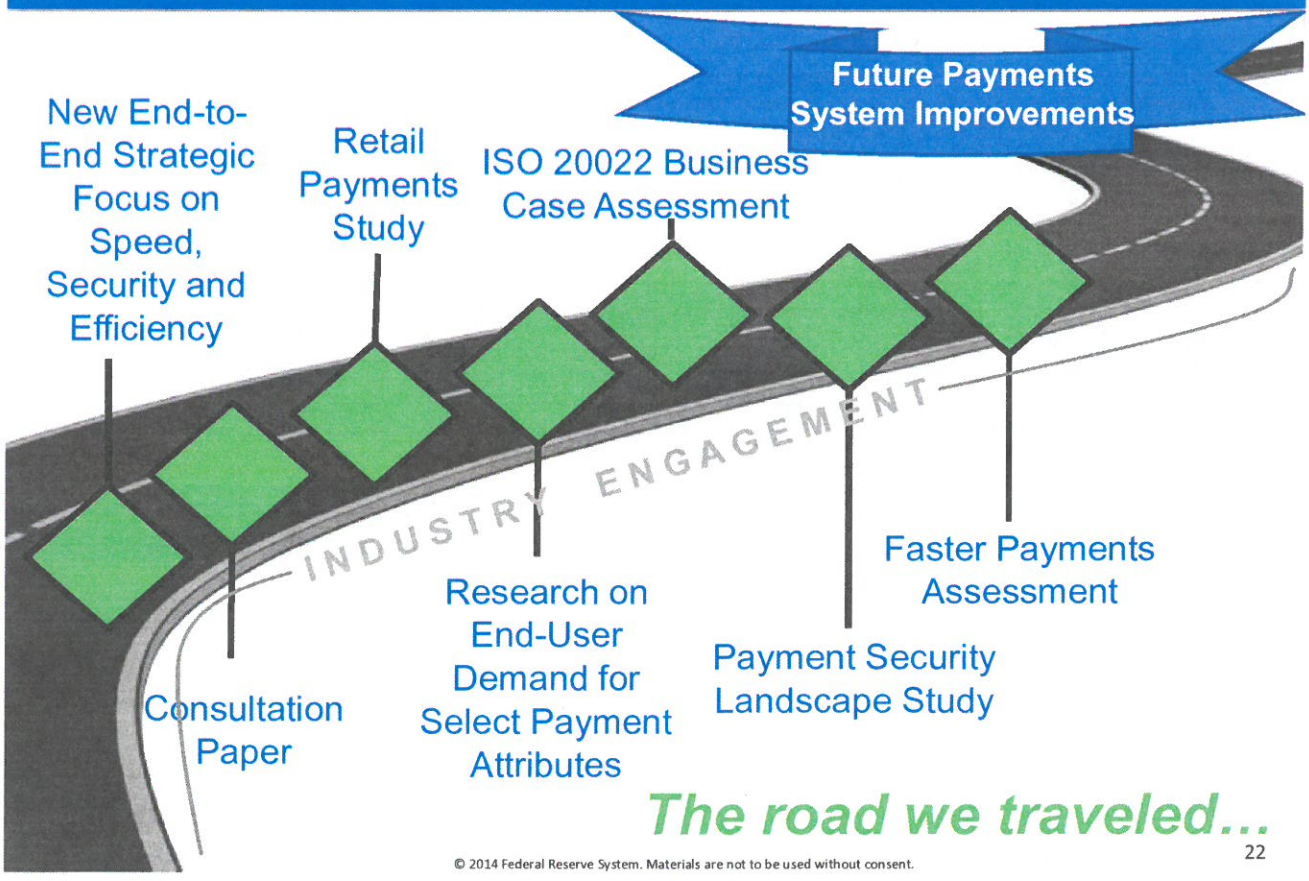
- Maintain and enhance FRB network security
- Enhance understanding of end-to-end security
- Collaborate and promote industry best practices

Speed

- Develop solutions to enhance payment speed
- Understand market demand for faster payments
- Continue migration of paper to electronic

Efficiency

- Develop solutions to promote efficiency
- Understand needs and barriers
- Promote standards adoption to improve efficiency



The road we traveled...

Desired Outcome

Ubiquitous, Faster Electronic Solution(s)

- A ubiquitous, faster electronic solution(s) will exist for making a broad variety of business and personal payments, and the Federal Reserve will provide a flexible and cost-effective means for private sector arrangements to settle their positions rapidly and with finality.

Faster Payments Assessment Approach

- Identify target use cases for faster payments, leveraging global lessons
- Develop potential design options for improving the speed of the U.S. payment system
- Assess each design option including business and technical requirements, business case and impact on stakeholders
- Provide a potential implementation plan for the path forward

Faster Payments Assessment
Learnings from Around the World


The UK's Faster Payments Service


Australia's New Payments Platform


Canadian Payments Association


Brazil's Transferências Electrônicas Disponíveis


Poland's Express ELIXIR


South Africa's Real Time Clearing


Singapore's G3


The EU's Single Euro Payments Area


Finland's Finvoice


Mexico's Sistema de Pagos Electrónicos Interbancarios

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Faster Payments Assessment

Global Case Studies

- Decision to launch faster payment system has been strategic, not financial
- Initial prioritization of P2P (speed) and B2B (speed, remittance data)
- Real-time settlement not required for real-time availability
- Permitting players to create new services can help facilitate adoption
- Insufficient payment product differentiation and premium pricing likely to impede adoption
- All countries have relied on a combination of incentives
- Stakeholder engagement has been a powerful tool for building industry support

Faster Payments Assessment

End-user needs for each use case were assessed against 11 features and functions

Speed features

Non-speed efficiency and effectiveness features[3]

1. Access to system
2. Credit / Debit
3. Information content (e.g., remittance data)
4. Authentication support
5. End user privacy and security
6. Timing and method of authorization and clearing
7. Availability of funds
8. Timing and method of settlement (interbank)
9. Revocability, returns, denials[2] and exceptions handling
10. Transaction notification / documentation
11. Cross-border interoperability

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Faster Payments Assessment

Five Use Cases Could Benefit…

Use case	Volume / % of total payments	Speed required
B2B[1] ad-hoc low value (e.g., just-in-time supplier payments)	11.1 billion / 5%	▪ Real-time authorization/clearing ▪ Intra-day availability of funds ▪ Intra-day interbank settlement
B2P ad-hoc high value (e.g., insurance claims, legal settlements)	NA	▪ Real-time authorization/clearing ▪ Real-time availability of funds ▪ Late-day interbank settlement
P2P[2] transfers (e.g., rent repayment to roommates)	4.3 billion / 2%	▪ Real-time authorization/clearing ▪ Real-time availability of funds ▪ Late-day interbank settlement
B2P ad-hoc low value (e.g., temporary employee wages)	3.2 billion / 1%	▪ Intra-day authorization/clearing ▪ Intra-day availability of funds ▪ Late-day interbank settlement
P2B ad-hoc, remote (e.g., emergency bill pay)	10.3 billion / 4%[3]	▪ Real-time authorization/clearing ▪ Late-day availability of funds ▪ Late-day interbank settlement

1 Business includes Government
2 Does not include P2P commerce such as paying babysitter/lawn mowing kid; these transaction are distributed across a number of P2B use cases
SOURCE: McKinsey expert and industry interviews, public consultation responses; McKinsey Payments Map; Consumer Financial Life Survey

Faster Payments Assessment Options Targeted for Full Evaluation

- **Evolve ACH** to provide increased batch clearing windows (considered for comparison purposes, but not one of four options fully evaluated)
- **Evolve ATM/PIN debit infrastructure** to leverage existing real-time functionality
- **Direct clearing** between FIs using common protocols and public IP networks in a distributed architecture
- **Build new infrastructure** to support faster payments; variants include:
  - A. Build new single-item clearing infrastructure that leverages legacy infrastructures (ACH, wire and check systems) for settlement
  - B. Build new clearing and settlement platform for retail payments[1] (excludes systemically important payments)
  - C. Build new clearing and settlement platform for all payments (includes systemically important payments)

1 Retail payments do not include large payments sent on high-value payment systems to settle transactions between financial institutions or other systemically important activity.

Faster Payments Assessment

Perspectives on Options Assessment and Path Forward

- **Evolve ACH** may be quickest to implement with the fewest required changes. However, it only achieves near real-time, not real-time, notification and clearing.
- **Evolve ATM/PIN debit infrastructure** has existing real-time capabilities but presents challenges with aligning networks, integrating corporate cash management systems at FIs, expanding credit capability and changing the economic model.
- **Direct clearing over public IP networks** leverages existing, low-cost communications networks used by millions worldwide, but assuring stakeholders of the safety of the system will be challenging even if required security exists.
- **Build new clearing-only infrastructure (legacy settlement infrastructure)** may be able to meet the needs for real-time in the target use cases in a reasonable timeframe, but integration with legacy settlement constrains the flexibility of the design.
- **Build completely new infrastructure** offers the most flexibility to meet future needs, but cost and time to implement may make this challenging to pursue.

To meet the needs of targeted use cases, the options assessment suggests that building new infrastructure is the optimal solution.

Faster Payments Assessment

Overview of Business Case Findings

- The business case through 2025 for implementing a faster payments solution for the primary use cases is profit contribution net neutral to negative
- Payments would migrate from paper (cash – ~1%, check – 27%) and electronic (ACH – 11%, Wire – 7%), although migration may differ by design option
- If the faster payments solution includes improved information capabilities (e.g., e-invoicing) that enable more efficient AR/AP systems, $10B to $40B in business back office efficiencies can be captured annually, making the business case positive
- Developed using analytics on secondary research, interviews with industry practitioners/experts, international case studies and consultant proprietary knowledge and experts
- Does not include estimates of profit contributions from latent demand, new use cases and other sources of value; which if included, would further improve the business case

Additional Desired Outcomes

Enhanced Payments Safety and Security

- U.S. payment system security is very strong, public confidence in it is high, and protections and incident response have kept pace with the rapidly evolving and expanding threat environment.

Improvements in Cross-Border Payments

- Consumers and businesses have better choices in making convenient, cost-effective and timely cross-border payments from and to the U.S.

Improved Efficiency

- Greater electronification of payments originated and received has reduced the average end-to-end (societal) costs of payment transactions and resulted in innovative payment services that deliver improved value to consumers, businesses and governments.

Strategic Industry Engagement

- Key improvements for the future state of the payment system have been collectively identified and embraced by a broad array of payment participants, and material progress has been made in implementing them.

Available Research and Event Summaries on FedPaymentsImprovement.org

Research

- Faster Payments Assessment Summary (August 2014)
- ISO 20022 Business Case Assessment Summary (August 2014)
- Payment Security Landscape Study Summary (August 2014)
- Consultation Paper Response Summary (March 2014)
- End-User Payment Research Summary (March 2014)

Event Summaries

- Payment System Improvement Town Hall Summary (June 2014)
- Faster Payments Roundtable Summary (June 2014)
- Payment Security Roundtable Summary (June 2014)

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Next Steps

Prepare and Share a Roadmap
Using industry input and research insight, prepare and share a roadmap for payment system improvement initiatives that advance the speed, efficiency and security of payments

Collaborate to Achieve Desired Outcomes
Engage industry stakeholders in advisory roles and working groups to design and implement roadmap initiatives

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