Faster Payments: Complexities and Challenges

MTRA 2017
“This isn’t about illegal payments. This is about control over transactional culture and knowledge, because he who controls them, controls the world.”

—Charlie Shrem, live at the Texas Bitcoin Conference (via Skype from house arrest at Mom & Dad’s), March 5, 2014
Efforts to Implement Faster Payments

- **The Regulator:** Federal Reserve Board Faster Payments Task Force (Faster Payments Effectiveness Criteria)

- **The Industry:** NACHA (Same Day ACH Rule); Clearing House (Real Time Payments Initiative); non-bank offerings (Dwolla, MasterCard Send, etc.)

- **The Outsider:** Blockchain (Bitcoin, Ripple)
The Outsider -- Blockchain

- Bitcoin started it all
- Mysterious creator, Satoshi Nakamoto
- White paper published 2008; first software uploaded January 2009
- Open source, democratized system
- Set of software protocols that creates TWO things: (1) a cryptocurrency, and (2) a network
- Foundation of the system is a distributed ledger technology (DLT) called the BLOCKCHAIN
Anatomy of a Bitcoin Transfer

Alice wants to send 1BTC to Bob

Bob sends his Bitcoin wallet address (public key) to Alice

Alice creates a transaction message with Bob’s public key & the amount

Alice signs the transaction with her private key, and announces her public key for signature verification

Transaction is broadcast to Bitcoin network for all to see.

The transaction is verified by the Bitcoin network.
Anatomy of a Bitcoin (DLT) Transfer

- Trusted intermediary (e.g. bank) replaced by distributed consensus network.
- Alice-Bob transaction bundled with other concurrent transactions into a “transaction block” and all miners begin hashing process called “Proof of Work.”
- Miners are competing to complete the cryptographic hash function.
- Transaction block includes a “coinbase” transaction that pays out new bitcoins to the winning miner.
DLT to the Mainstream

- July 2016: Canadian bank used Ripple network to send $1,000 to German bank in 8 seconds.
- April 2017: BBVA used Ripple DLT to send 50 transfers from Spain to Mexico in “mere seconds.”
  - ... at a cost 81% less than the correspondent bank network
- Several explorations of hybrid DLT / ACH Same-Day tech
Downsides to Bitcoin Transfers

- Systemically irreversible – like cash: you have to force the other person to give it back.
- Bitcoin is pseudonymous – normal legal remedies difficult to pursue.
- No integrated fraud or theft protections – even personal property laws are unclear here.
DLT Downsides

- Participation (the fax machine problem)
- Can eliminate competitive advantages
- Operational vulnerabilities
- Can a distributed ledger handle the scale of the U.S. economy?
Some General Principles for Faster Intermediated Payments

- Intermediated payments have two parts: messaging and settlement.
- Real-time messaging is easy.
- Settlement can either occur coincident with messaging or at a later time.
- To get faster: speed the settlement process or fake it.
  - Speeding it puts more risk on sender; faking it puts more risk on the FI.
- Real-time settlement essentially means irrevocable transactions.
  - Absent a fundamental breakthrough, risks generally can’t be destroyed, only converted.
Faster Payments in Other Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Account Posting</th>
<th>Settlement Speed</th>
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<tbody>
<tr>
<td>Brazil</td>
<td>&lt; 1 minute</td>
<td>Continuous net settlement (every 5 min.)</td>
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<tr>
<td>Japan</td>
<td>Real-time</td>
<td>End of day</td>
</tr>
<tr>
<td>South Korea</td>
<td>Real-time</td>
<td>Next day (11:30AM)</td>
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<tr>
<td>United Kingdom</td>
<td>≤ 2 hours</td>
<td>Deferred, 3X daily</td>
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**Further reading:**
Faster Payments in Other Countries

- Deliberate choice to not build immediate settlement engine
- Deferred / delayed settlement allows more risk mitigation
- Many countries have implemented transaction caps, aggregate dollar thresholds, or prefunding measures to mitigate risks.
General Risks and Challenges Associated With Faster Payments

- Real-time or near-real-time settlement strongly implies 24/7 operation

- Strategy to handle down-time
  - Redundant systems

- Faster payment system could facilitate faster bank run

- Difficult to assess whether customers want/need 24/7 payments
  - Bank of Japan survey: 10%-20% of customers demand 24/7

- Altering user behaviors
  - Can create overdraft / liquidity problems
U.S. Regulatory Stew
## Payments Regulation

<table>
<thead>
<tr>
<th>Payments regulation</th>
<th>Banks</th>
<th>Non-Banks</th>
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<tbody>
<tr>
<td>Safety &amp; soundness</td>
<td>Federal Reserve</td>
<td>States—Money Transmission</td>
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<td></td>
<td>OCC</td>
<td>Feds—Bank Service Company Act</td>
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<td>FDIC</td>
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<td>State banking departments</td>
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<td>Anti-money laundering</td>
<td>FinCEN</td>
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<td></td>
<td>OFAC</td>
<td>OFAC States</td>
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<tr>
<td>Consumer protection &amp; privacy</td>
<td>CFPB</td>
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<td>FTC</td>
<td>FTC States</td>
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Range of Compliance Responsibilities

- Varies with role
  - E.g. payment processors may or may not be subject to state MTL; banks are not
- Data protection and privacy
- Disclosures (e.g. Reg E, Reg Z)
- Reporting
- Anti-Money Laundering (AML) / OFAC
- Licensing
- Unclaimed property law (e.g. for e-wallet programs)
Bank Secrecy Act

Major provisions include:

- **Reporting requirements (CTRs and SARs)**
  - CTRs probably unaffected by faster payments (cash only)
  - Automated suspicious activity monitoring may need to be updated

- **Record keeping**
  - Integration with DLT

- **AML program**

- **Know Your Customer (KYC)**
Know Your Customer

- KYC has three parts: Customer Information Program (CIP); Customer Due Diligence (CDD); Enhanced Due Diligence (EDD)
- CDD program helps identify customer’s expected transactions
- Should improve KYC procedures to mitigate risks of faster payments
- Better understanding behaviors can mitigate fraud
Money Transmission Laws

- Near-instant payments may force states to define terms we take for granted: e.g. receipt, outstanding
- May affect permissible investments
- New regulations to address payor risk increase
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