The Optimal Design of Payment Systems: Regulation and Policy

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Usual Fed disclaimer applies
Two extreme environments with no need for a payment system

– Most primitive exchange is barter
  • Bilateral
  • No means of payment
  • Requires a double-coincidence of wants
  • Series of static trades

– Most advanced exchange is Arrow-Debreu
  • Multilateral
  • No means of payment
  • Requires complete information and full commitment of agents
  • Static or dynamic (although no incentive problems)
What role does a payment system play in an economy?

• Facilitates the exchange of goods and services
• Something in between barter and Arrow-Debreu
  – Both bilateral and multilateral (network)
  – Instrument(s) serve as means of payment
  – Requires only single-coincidence of wants
  – Typically requires some combination of information and commitment
    • Importance of trust
  – Dynamic (incentives matter)
Moving from a more primitive to a more advanced payment system requires coordination

• What instrument(s) serve as means of payment?
  – Money
  – Access to asset accounts
  – Access to credit

• What are the rules of exchange?
  – How does settlement take place?
  – Is there a credit component?
  – What are the roles of intermediaries?

• How will promises be enforced?
  – Participation constraints
  – Incentive compatibility
    • Assigning liability for when things go wrong
Private sector can often facilitate this coordination

• Instruments
  – Role of intermediaries
    • Private money arises based on credible reputations not to overissue
    • Banks find ways to provide access to funds in asset accounts
      – Checks, debit cards, electronic funds transfers
    • Credit instruments take advantage of reputations of an intermediary and borrower
    • Future profit stream may serve as a discipline over short-run opportunities
      – Collateral can also play a role
Private sector can often facilitate this coordination

• Rules of exchange
  – Clearinghouses and networks emerge to improve efficient settlement
    • Establish rules for membership
    • Establish method for settlement (gross versus net)
    • Establish rules for default and assign liability
    • Provide credit to facilitate settlement
    • Provide emergency liquidity to facilitate settlement
    • Establish prices for services
  – Oftentimes clearinghouses and networks emerge “locally”
    • Leverage credible reputation among participants
What role does government have in the payments system?

• In general, promote the safety and efficiency of payment systems
• Motivated by potential market failures
  – Network externalities and coordination problems
  – Negative externalities that cause systemic risk
    • Importance of resiliency
  – Market concentration and noncontestable monopolies
• Other motivations
  – Consumer protection
  – Role of the payment system in conducting monetary policy
Types of government involvement in the payment system

- Provision of instruments
- Operations of systems
- Oversight of systems and instruments
- Catalyst for change
- Regulations
Government provision of a payment instrument

• Most governments provide money
  – Currency and reserve balances at central bank
  – Motivated by assumption that government can best provide safe asset for settlement and for monetary policy reasons
    • Not always best assumption, particularly in developing countries

• Often private sector provides other instruments that are fundamentally related to the public money
Government operation of a payment system

• Many central banks operate a large value payment system
  – Motivations
    • Negative externalities that cause systemic risk
      – Critical system for smooth function of financial system
      – Ability to provide emergency liquidity
    • Relationship with monetary policy
    • Efficiency in providing routine liquidity for settlement purposes
      – Tied to fact that many payment service providers have accounts with central bank and central bank can create money by increasing reserve account balances
    • Also overcomes coordination problems
      – E.g., Fed established national US check clearing system over coordination problems across regions
Government oversight in a payment system

• Many central banks and other regulators oversee critical private financial market infrastructures
  – Large value payment systems, securities and foreign exchange settlement systems, central counterparties for financial instruments
  – Motivations
    • Negative externalities that cause systemic risk
  – Actions
    • Standards that define settlement rules
    • Standards for risk management
    • Procedures for the provision of emergency liquidity
Government oversight of payment instruments

- A few governments set standards for the design and use of payment instruments
  - Motivations
    - Consumer protection
      - Fraud prevention
      - Assignment of liability
    - Improvement in trust and reliability (perceived lack of discipline of reputational incentives)
Government as a catalyst for change

• Government authorities may help push a payment system from an inferior steady state to a superior one
  – Motivation
    • Overcome coordination problems among various stakeholders
  – Actions
    • Neutral arbitrator
    • Lobbying of legislature
Government regulations

• Many of the same motivations
• May formalize or standardize processes and rules, assign liability, etc.
Some final thoughts for discussion

• Modeling an economic rationale for a payment system
  – A roadmap in models of money with micro foundations

• Modeling an economic rationale for a role for government in payment system a bit harder
  – Can model frictions that motivate the role for an institution that overcomes those frictions
  – But why must that institution be the government?