INTEROPERABILITY AND INFRASTRUCTURE INVESTMENT

AFI - Competition Enablers Knowledge Exchange

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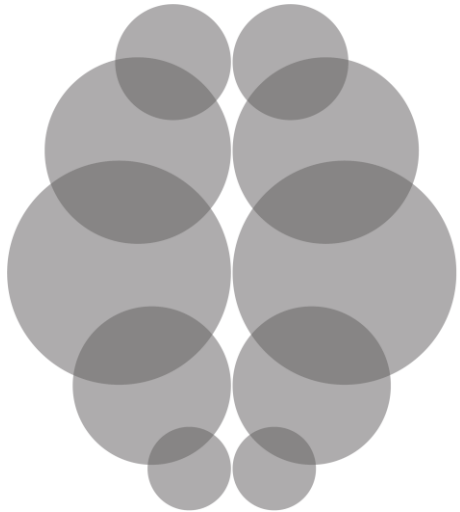
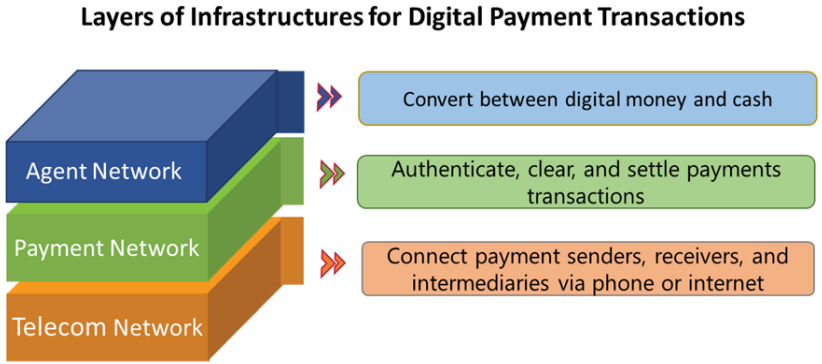


Key Policy Questions

- When to introduce an instant interoperable payment system (IIPS) in LMIC financial markets?
- What is the role of the government and regulation in introducing and sustaining IIPS?
- Should participation in the IIPS be mandatory? For which institutions?
- Should the focus on IIPS be on pricing or quality or both?
- What are potential risks in designing IIPS rules and regulations?
- What types of impacts should we expect from and monitor for IIPS implementations?

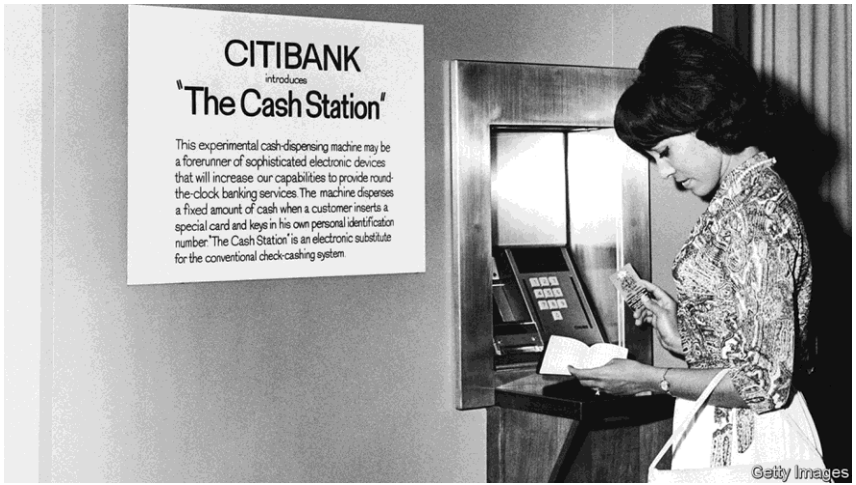
Infrastructure Investment



- Digital Payments require significant investment in infrastructure
- Infrastructure is key for adoption and usage
- Suri and Jack (2016) in Kenya, Aker et al. (2020) in Niger

- Relying on private incentives for investment is unlikely to be efficient
  - Public goods (non-rivalry)
  - Network externalities (network and substitution effects)
  - Dynamics

History: ATMs in NYC



- 1977: 1M to install ATMs in NYC
- Jan 1978: massive blizzard, +20% ATM usage

citibank

"The Citi Never Sleeps."

- 1981: +100% market share for deposit

Network and Substitution Effects

- Citibank privately invested in ATMs, lack of interoperability provided a comparative advantage
  - In 1985, six competing banks(1) formed the New York Cash Exchange (NYCE): within-scheme interoperability, with interchange fees, of 800 ATMs (vs. 500 of Citibank)
  - In 1994, Citibank joined NYCE
- Network effect: consumers value banks with larger ATM networks, banks can offer lower deposit rates
- Substitution effect: if ATMs are interoperable, consumers can search for higher deposit rates
- Similar effects occur for payment infrastructure:
  - Sarkisyany (2024): PIX increase deposit market competition by reducing the payment convenience gap between small and large banks: small banks can increase their deposit
  - Estimated welfare gain of the average Brazilian is $380 per quarter
- Matutes and Padilla (1994): absent regulation, interoperability can be sustained only
  - As an anti-competitive device to deter entry of new banks, or
  - With large switching costs, or
  - With appropriate interchange and withdrawal fees

(1) National Westminster Bank USA, Chase Manhattan, Manufacturers Hanover, Chemical Bank, Barclays Bank, Marine Midland Bank and the Bank of New York

Regulation: Early and Late

- Regulation is often needed, but
  - What are its main functions?
  - How do they evolve as the market develops?
- Bianchi and Yamashita (FIT IN wp 2024): “mechanism design” perspective
  - Small-scale own payment infrastructure vs. large scale interoperable infrastructure
  - Investing in a common infrastructure has a positive externality on current and future competitors
- Unregulated markets are inefficient: too low investment (hold-up) and too low usage conditional on investment (rent extraction)
  - Even if budget constrained, a regulator can help by deciding who should pay and who should participate
- Nascent markets (one monopolist and potential entrant): pricing
  - Regulator sets prices (access fees) balancing the monopolist’s incentive to invest and the entrant’s incentive to join
- Mature markets (several firms operating): coordination
  - Regulator elicits information and coordinate on the investment and usage of the infrastructure
- Regulation can be more effective in mature markets (more information on firms and consumers)
  - But further need to coordinate (e.g. PIX): absent coordination power, it may be better to act early!

Interoperability can reduce investment

- Interoperability affects fees but also the incentives to install/maintain mobile towers, especially in more remote areas
- Brunnermeier et al. (2024):
  - Panel of MM fees of 120 operators across 40 African countries over 2010-2020 via web scraping and "wayback machine" (average fee: 4%, up to 30% for small payments)
  - GSMA data on mobile coverage and operators' financials
  - Staggered introduction of interoperability
- Interoperability reduces fees
  - 3.5% decline for on-net fees, especially so for small transactions
- Interoperability reduces coverage
  - Key observation: mobile infrastructure can have important variable costs
  - Dominant players (>30% market share) cut coverage by 5%, non-dominant increase it by 9%
  - Stronger effects on poorer/rural districts, ex-ante more expensive operators, younger operators

  → Interoperability can reduce financial inclusion (extensive margin)
- Policy: interoperability as patent expiration
  - Introduce it in mature markets, offer a grace period to the monopolist
  - Ethiopia: in 2021, state-owned Ethio telecom launched its mobile money service with a 1-year grace period as monopolist

Interoperability vs. Competition

- Interoperability is often seen as a pro-competitive tool
  - Typical case: monopolist and large barriers to entry
- In more competitive markets, interoperability may weaken competition
- Bianchi, Martimort, Straub (FIT IN wp 2024)
  - Lowering fees to attract consumers has a business stealing and a network effect
  - Perfect interoperability minimizes network effects
  - Firms are induced to compete less aggressively
- Interoperability may increase the incentives to invest in network quality (vertical differentiation)

Key Takeaways

1. As with other public goods, unregulated markets are unlikely to deliver socially optimal levels of investment in digital payment infrastructure.

2. Regulators should play different roles depending on the stage of development of the market for digital payments.

   At an early stage, regulators should focus on *pricing*. At later stages, regulators should focus on *coordinating* investment and usage.

3. Interoperability may be more beneficial in more mature markets where it is often important to *mandate* that all firms operate on the common IIPS.

   But regulators should have sufficient regulatory capacity and authority to implement such a mandate.

4. If interoperability decreases fees, it can reduce investments in infrastructure with detrimental effects on financial inclusion, allowing incumbents a grace period before mandating interoperability may offer a solution.

5. The most important consumer benefits of interoperability may accrue through improved investments in financial service quality, not just through improved pricing.

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