

# BigTechs, Credit, and Digital Money

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# Introduction

- **FinTech promises** to overcome
  - assessment of creditworthiness: information
  - contract enforcement: digital ledger that automatically settles loans

... but many practical challenges (side trades “off-ledger”, identity verification, ...)
- **2 Institutional Responses**
  1. **Private BigTech platform**
    - Gathers and processes new data on users
    - Enforcement through closed payment system (depends on scale)
    - ... but rent extraction  $\Rightarrow$  encourage platform competition
  2. **Public Option of programmable ledger** (Payment platform, CBDC, ...)
    - Can be a cash substitute or a universal ledger
    - ... but tradeoffs between privacy, contract enforcement, anti-fraud rules

# Payments & Credit Trilemma

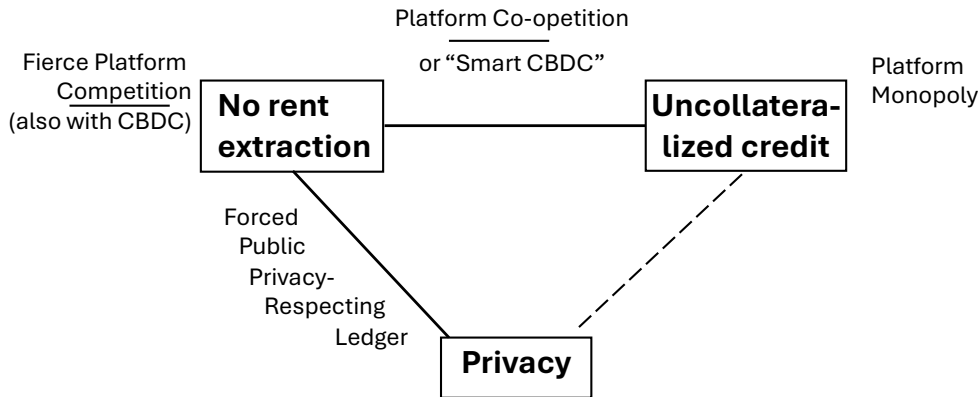


Figure 1: Policy Trilemma

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Framework

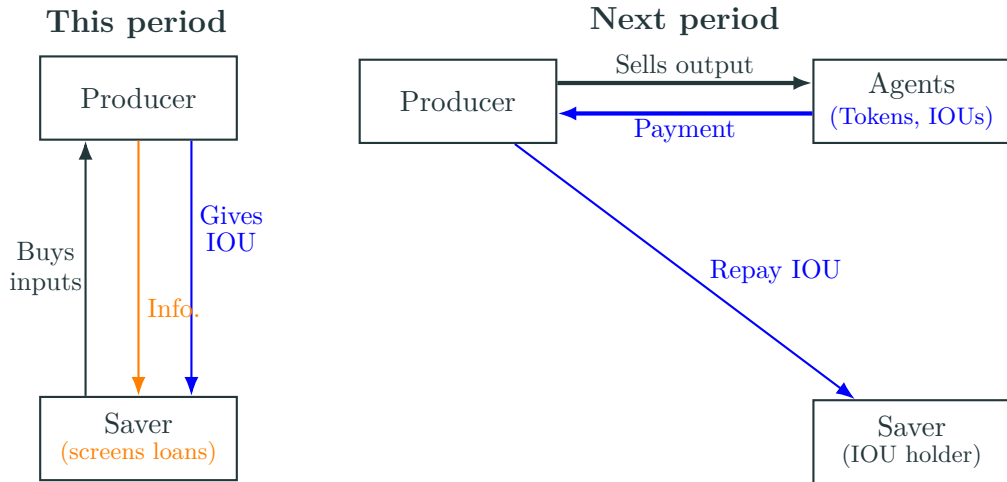
BigTech Platform (Response I)

Public Option (Response II)

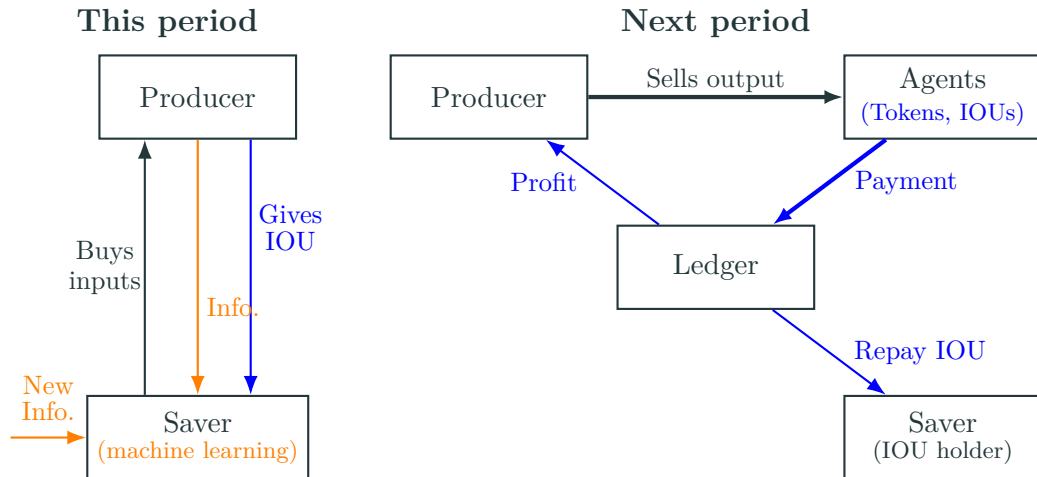
Co-opetition Regulation

Geopolitics

# The Loan Process



# FinTech Vision: More Info & Move Onto a Digital “Ledger”



# FinTech Vision: More Info & Move Onto a Digital “Ledger”

## Idea:

1. More digital **information** collection and better processing.
2. Conduct financial payments through the **ledger**.

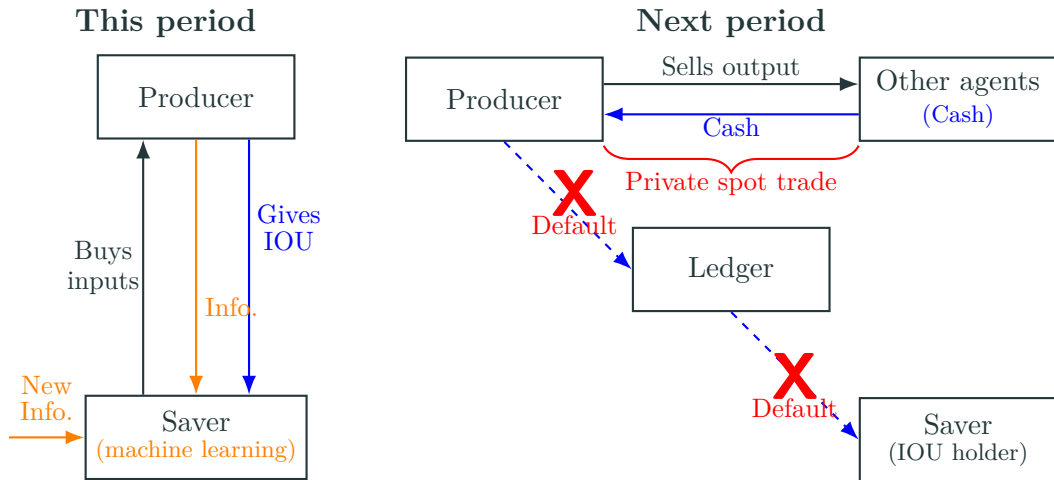
So, the ledger can automatically use sales revenue to settle IOUs.

- A ledger is simply a digital record keeping system with:
  - Token or asset balances: wealth held by different agents using ledger.
  - Contracts: coded instructions for executing transactions conditional on information.
  - Information: that has been provided to the ledger.

What can go wrong with the FinTech vision?



# A FinTech Vision Problem: “Off-ledger” Payments Lead to Default



## Case Study: FinTech in India

- [Rishabh and Schäublin, 2021] studies FinTechs and debt repayment in India.
- Finds that non-performing borrowers:
  - Drop their non-cash sales, right after loan disbursal, by 18%.
  - Divert about 11% of their transactions right after disbursal.
- Argues that: *“By persuading their customers to pay . . . not using the lender’s POS but with alternative means of payments (e.g. cash), a merchant can circumvent the automatic repayment to the payment company.”*

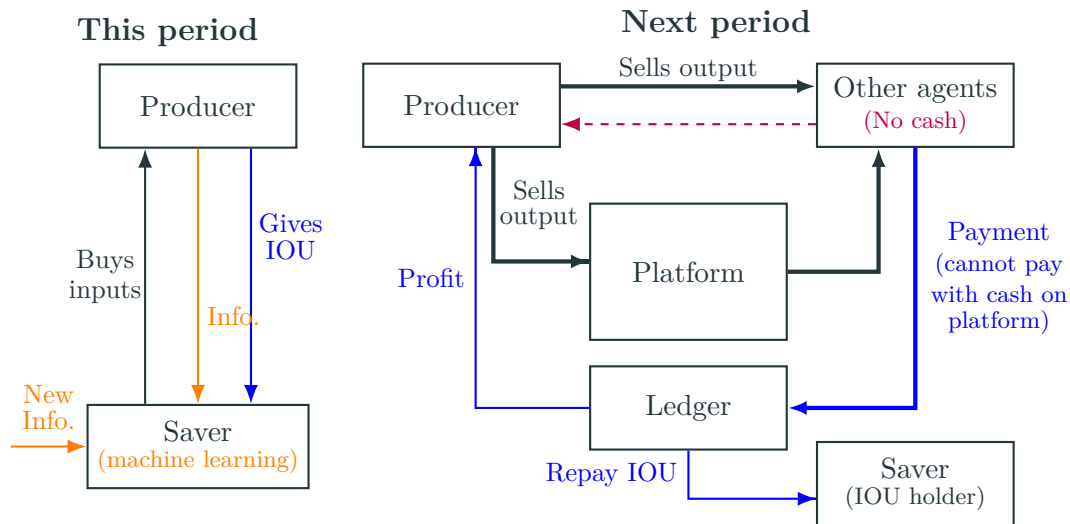
## Response (I): BigTech Platform

# Platform-Ledger Economy: Platform Controlling Trading & Ledger

- There are now two **trading technologies** for connecting goods traders:
  - **Private platform (p)** that is controlled by profit maximizing operator.
  - **Off the platform (o)** - open public marketplace.
- Platform facilitates and observes trades *as well as* provides the settlement ledger:
  - Prevents agents from making payments using cash.  
⇒ **stored cash is not “universally liquid” anymore**
  - Charges markup (or offers subsidy) when agents trade on the platform.

**Outcome:** If sufficiently many traders use the private platform and the markup is sufficiently low, then agents stop holding cash.

# Platform Breaks Liquidity of Cash and Forces Trade Through Platform



## Intuition: Platform Ledger Crowds Out Cash Trades

- Imagine you are producer looking to sell your goods privately for “cash” and default.
- You can only do this if there is a counterparty who has stored a “suitcase of cash”.
- I.e., your ability to default depends on *other agents*’ choice of payment technology.
- Even though the platform only controls *some* trades,
  - ...it can disincentive *all* agents from holding “cash” by blocking its use on platform,
  - ...which effectively shuts down the possibility of default side trades,
  - ...so the only option in all trades is to use the monitored ledger system.

## Takeaways about Digital Platform Ledger

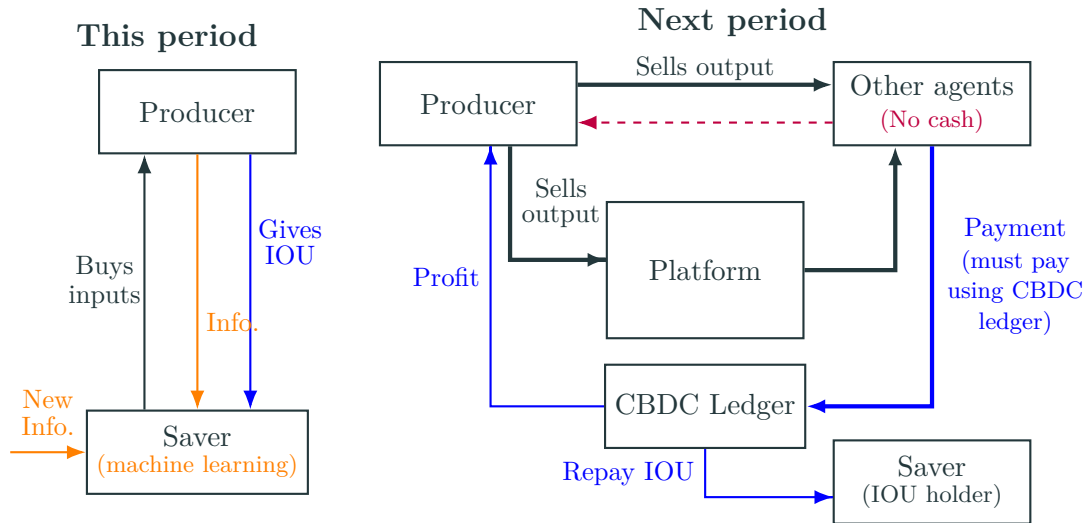
1. BigTech platform can “back” ledger use.
2. Payment technology can collateralize sales revenue (“digital collateral”).
3. ...but the platform can extract high rents!

## Response (II) Public Option



- **Many designs:** (FedNow, Pix, Wholesale CBDC, Retail CBDC, “Smart” CBDC)
- Fallback in emergencies in case of cyber attacks, financial crises, ...
- Provides an outside option to compete with private ledgers
- **Design choices** lead to different roles:
  1. Superior **alternative to physical cash** ... but facilitates side trades & default
  2. **Exclusive infrastructure** for payment & contracting w/ universal enforcement ...but innovation might suffer

# CBDC Leger (with Platform Competition)



Privacy

# Privacy: Government Objective and CBDC Design Choices

- **Government Objectives:**
  1. **AML:** Anti-Money Laundering
  2. **CFT:** Countering the Financial Terrorism
  3. **KYC:** Know Your Customer
  4. **AE:** Anti-Evasion
- **Design Choice for CBDC:** private vs. non-private digital token
  - **No Privacy:** “Reserves for all” with SSN
  - **Privacy:** CBDC in the form of a USD eToken using zero-knowledge proof doesn't satisfy AML, CFT, KYC, or AE requirements  
universally liquid payment system → side trades & default

# Privacy: Options For a Hybrid System

- **Regulating the Interaction with Financial System**
  - CBDC eToken with zero-knowledge proof
  - However, ML, CFT, KYC, AE apply when CBDC move to broader financial system
- **Anonymity Vouchers** (ECB 2019)
  - provide identity to CBDC (or FI) & receive pseudonymous identity
  - “anonymity vouchers” allow private transfers within time frame
- **Third-Party Authentication**
  - obtain wallet address after KYC assessment by approved third-party authenticator
  - if AML process triggers flag, homomorphic encryption is lifted
- **Asymmetric Privacy** [Tinn, 2024]
  - consumer (sender of money) enjoys maximal privacy
  - merchants (receiver of money) is less protected

# Co-opetition Regulation across Multiple BigTech Platforms

# Co-opetition Regulation

- Encourage entry of  $\geq 2$  platforms (instead of w/ public option)
- **Dimensions of Co-opetition:**
  1. **Across-platform trading** → foster fierce **competition** to lower mark-up
    - interoperability to eliminate lock-ins, switching costs, walled gardens
  2. **Across-ledger (token) payments** → foster **competition** reduce transaction fees
    - exchange rate fee regulation
  3. **Credit extensions** → **coordination** & information sharing
    - competition: offer agents the option to default on loans registered on a competing ledger
    - coordination: not allow agents who defaulted to store their wealth on ledger
- **Ledgers in a 2 Platforms Competition:** [Brunnermeier and Payne, 2025]
  - Matching technologies of both platforms are similar  $\Rightarrow$  2 ledgers are viable
  - Matching technology of one superior:  $\Rightarrow$  1 monopole ledger & charges fee from other

Overall: **Integrated Regulation** btw (i) platform trading & (ii) payments

# Geopolitical Considerations



# Geopolitical Considerations

- **Additional Tradeoff:**

- Cross-border credit extension is further limited  
since foreign collateral is difficult to seize
- Response: **Multinational BigTech platforms**  
... but loss of country's sovereignty

- **Sovereignty**

1. Loss of **payment system**  
Foreign BigTech is like a Trojan horse
2. Loss of **unit of account** (“Dollarization”)  
Foreign BigTech simplifies switch

- **Stablecoins**

- **FinTech vision** of uncollateralised lending via centralized ledger suffers from side-trades
- **Response I: BigTech:** platform rent extraction vs. credit extension
- **Response II: Public Option:** universal enforcement vs. privacy protection
- **BigTech Regulation:** Integrated approach
- **Geopolitics:** Multinational BigTech-National Sovereignty Tradeoff

## Conclusion: Payments & Credit Trilemma

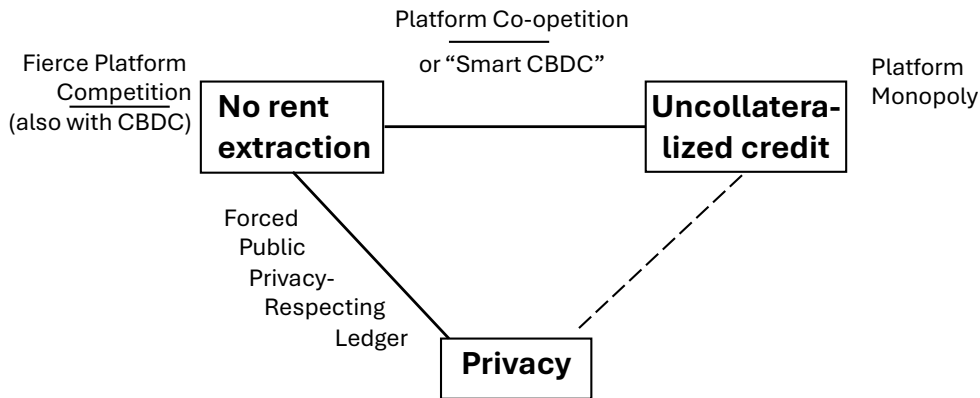





Figure 2: Policy Trilemma

-  Brunnermeier, M. and Payne, J. (2025).  
**Strategic money and credit ledgers.**  
*Princeton Working Paper.*
-  Rishabh, K. and Schäublin, J. (2021).  
**Payment fintechs and debt enforcement.**
-  Tinn, K. (2024).  
**A theory model of digital currency with asymmetric privacy.**  
*Available at SSRN 4891933.*