OUTLINE

▪ FinTech and Decentralization

▪ Lessons from Peer-to-Peer and FinTech Lending

▪ The Promise and Challenges of Blockchain and DeFi

▪ Conclusion
FINTECH AND DECENTRALIZATION
Technology and Finance

- Technology has always influenced the way the financial industry operates.

Sources: Arner, Barberis, and Buckley (forthcoming); Quinn and Roberds (2008); World Economic Forum (2015).
What is so special about the recent FinTech revolution?

Two Observations:

- The pace at which new technologies are tested and introduced into finance is faster than ever before.
- Much of the change is happening from outside the financial industry, as young start-up firms and big established technology firms are attempting to disrupt the incumbents.
A GLIMPSE INTO ACADEMIC RESEARCH

- A FinTech initiative launched in 2016 at the Review of Financial Studies solicited research proposals on the emerging field of FinTech
  - A first-of-its-kind initiative, both in topic and editorial process
    - Academic research on the topic was very scarce
    - Asking scholars to propose future research
- A crowdsourcing view on what FinTech is about
- Special issue “To FinTech and Beyond” published in 2019
WHAT IS FINTECH? A WORD CLOUD FROM RESEARCH PROPOSALS

Source: Goldstein, Jiang, and Karolyi (2019)
WHAT IS FINTECH? TOPICS OF RESEARCH PROPOSALS

Source: Goldstein, Jiang, and Karolyi (2019)
AN EMERGING UNIFYING THEME: DECENTRALIZATION

- Decentralization is a key premise.
- Traditional finance features central players, such as financial intermediaries and governments who facilitate transactions and recordkeeping.
- Decentralization aims to give rise to a process that will not rely on these big players.
- Motivation for decentralization was strengthened in the aftermath of the global financial crisis and the distrust in central players that followed it.
- Decentralization can be enabled by technology.
THE PROMISE OF DECENTRALIZATION

- Decentralized process alleviates the systemic risk from the failure of a central player
  - For example, a central counterparty (CCP) or a central computer system

- Decentralized process eliminates market power and rent extraction by large intermediaries
  - Key concern in finance due to the excessive power of large intermediaries

- Decentralized process may enable more efficient trading of a large variety of assets
  - Many assets are traded inefficiently with large frictions in traditional financial systems, e.g., corporate bonds
  - With new technologies, trading of non-traditional assets can be more easily enabled, e.g., artwork
LESSONS FROM PEER-TO-PEER AND FINTECH LENDING
LESSONS FROM PEER-TO-PEER LENDING

- Peer-to-peer lending was based on a powerful idea:
  - Instead of relying on banks as intermediaries, form an online market where lenders directly match with borrowers
  - Eliminate rents of big intermediaries and give better deals to the ultimate lenders and borrowers
  - Dominant US players: LendingClub and Prosper

- Ultimately, this model did not live up to the expectations:
  - Big intermediaries took over and now retail investors do not participate
  - The evolution of peer-to-peer lending demonstrates the challenges with decentralization
LIMITED SCOPE OF DECENTRALIZATION: THE CASE OF PEER-TO-PEER LENDING

- Why did large investors end up dominating marketplace lending platforms and reversing the peer-to-peer lending model?
  - Financial intermediation holds key advantages that brought intermediaries to prominence to begin with
    - Informational advantage and screening capacity
    - Ability of monitoring borrowers
    - Liquidity transformation and risk sharing
  - These traditional forces are still relevant today, putting retail investors at disadvantage

- Despite the fall of peer-to-peer lending, FinTech lending has been rising in other forms, not as decentralized
SNAPSHOT OF FINTECH LENDING IN US

<table>
<thead>
<tr>
<th>Segment</th>
<th>Source(s)</th>
<th>Q4/2020 (USD billion)</th>
<th>Growth per annum 2016–2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortgage loans</td>
<td>Fed. Reserve (2022b)</td>
<td>16,781</td>
<td>4.0%</td>
</tr>
<tr>
<td>Consumer credit</td>
<td>Board Gov. Fed. Reserve Syst. (2022)</td>
<td>4,186</td>
<td>3.6%</td>
</tr>
<tr>
<td>Commercial and industrial loans</td>
<td>Fed. Reserve (2022a)</td>
<td>2,600</td>
<td>5.7%</td>
</tr>
<tr>
<td><strong>B: Estimates of FinTech lending (new lending)</strong></td>
<td></td>
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<tr>
<td>FinTech mortgage lending</td>
<td>Jagtiani, Lambie-Hanson &amp; Lambie-Hanson (2021); authors’ calculations based on Home Mortgage Disclosure Act (HMDA) filings</td>
<td>565</td>
<td>32.5%&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>FinTech consumer lending</td>
<td>Ziegler et al. (2021)</td>
<td>38</td>
<td>11.9%</td>
</tr>
<tr>
<td>FinTech business lending</td>
<td>Ziegler et al. (2021)</td>
<td>31</td>
<td>43.1%</td>
</tr>
<tr>
<td><strong>C: FinTech lending for subsegments and major players (new lending)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocket Mortgage (formerly Quicken Loans)</td>
<td>Rocket Co. (2020)</td>
<td>320</td>
<td>35%</td>
</tr>
<tr>
<td>Secured non-real estate commercial and industrial loans by FinTech lenders</td>
<td>Gopal &amp; Schnabl (2021); authors’ calculations based on Uniform Commercial Code filings</td>
<td>11</td>
<td>11%</td>
</tr>
<tr>
<td>LendingClub</td>
<td>LendingClub (2017); US Sec. Exch. Comm. (2020a)</td>
<td>4</td>
<td>−16%</td>
</tr>
<tr>
<td>Buy-now-pay-later: Afterpay, Klarna, and Affirm combined</td>
<td>Afterpay (2021); Klarna (2021); US Sec. Exch. Comm. (2020b)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>25</td>
<td>&gt;100%</td>
</tr>
</tbody>
</table>

Source: Berg, Fuster, and Puri (2022)
FACTORS BEHIND SUCCESS OF FINTECH LENDING

- Technology enables convenience
  - Faster processing times and improved user experience

- Lenders are subject to less regulation
  - FinTech lenders are non-banks and thus are not subject to many of the constraints that banks face

- Innovation brings new products
  - For example, Buy-Now-Pay-Later

- Reliance on Big Data
  - New types of data and higher capacity for data processing enable more lending

- Is FinTech Lending beneficial overall?
  - Evidence is mixed
    - On the one hand, we see more elastic credit supply
    - On the other hand, some evidence of overborrowing by naïve consumers
    - In any case, this is not a decentralization revolution
THE PROMISE AND CHALLENGES OF BLOCKCHAIN AND DEFI
NEW FRONTIER OF DECENTRALIZATION: BLOCKCHAIN

- Blockchain is a Distributed Ledger Technology
  - Transactions happen in a decentralized way
  - Consensus evolves without any centralized recordkeeping
  - Information is shared by all
  - Bitcoin was the first, and is still the most famous, application

- The viability of the blockchain depends on the protocols for validation of transactions
  - Proof of Work (PoW)
    - Validators (miners) compete by solving a complex computational problem for the right to validate
    - This involves major costs of energy
  - Proof of Stake (PoS)
    - Validators need to stake coins in order to validate
    - The main advantage is avoiding the energy costs
NEW FRONTIER OF DECENTRALIZATION: SMART CONTRACTS AND DEFI

- Smart contracts are applications built on top of a blockchain
  - They extend the use of the technology beyond simple transfers
  - These are promises that are executed automatically based on the original design

- Decentralized Finance (DeFi) is a collection of smart contracts on a blockchain
  - It is meant to create a new financial architecture that will replace the traditional financial system (TradFi)
  - The key difference between DeFi and TradFi is that the former avoids the reliance on intermediaries, which is so central in the latter
  - Ethereum is the best-known example of a DeFi blockchain
USES: CRYPTOCURRENCIES AND TOKENS

- Cryptocurrencies:
  - Coins that are meant to serve as money and replace government-sponsored money
  - Most notably, Bitcoin, but many others as well
  - Major challenges in making them suitable as a medium for payment

- Tokens:
  - Coins issued for use on a platform to purchase services on the platform
  - For example, Ether used on the general Ethereum platform, or Filecoin used on specific platform to rent unused hard drive space
  - Initial Coin Offering (ICO) boom came to a halt due to large volume of fraudulent activity
USES: LEADING DEFI APPLICATIONS

- The system enables various financial activities mimicking the traditional financial system
- At this point, this is mostly in the proof-of-concept stage and still highly self-referential
- Current key applications:
  - Trading:
    - Decentralized Exchanges (DEX) using automated market makers (AMM) protocols to exchange different coins
  - Lending and Borrowing:
    - Lending protocols designed to borrow one coin, using another coin as collateral; these loans are typically over-collateralized
  - Yield Farming:
    - Smart contracts that aim to maximize returns on coins by allocating them across different applications
DEFI APPLICATIONS: VALUE INVOLVED

Source: Makarov and Schoar (2022)
USES: STABLECOINS

- Stablecoins are digital currencies designed to maintain a peg to fiat-currencies
  - Because of the volatility of cryptocurrencies, there is demand for a stable currency in the digital world

- Two types of stablecoins:
  - Stablecoins backed by traditional liquid and safe assets – Tether and USD Coin
  - Algorithmic stablecoins backed by other cryptocurrencies – Terra and Dai

- Stablecoins’ value proposition comes from their stability but there are concerns about runs, which are well known from the traditional financial system
  - Terra’s recent collapse was a clear illustration of that
  - Concerns arise also with stablecoins backed by traditional assets, as there is ambiguity about the value and stability of these assets
THE LANDSCAPE OF TOKENS

Source: Makarov and Schoar (2022)
LIMITS OF DECENTRALIZATION

- Experience with peer-to-peer lending shows that financial intermediaries can end up dominating the new technologies
  - Building on traditional advantages of intermediation

- Various forces in blockchain economics also push back to concentration
  - Experience with PoW protocol clearly showed that there are returns to scale, leading to:
    - Mining pools
    - Large investment in equipment
    - Interactions with blockchain governance
  - In theory, PoS might be prone to such issues:
    - The right to validate a transaction is tied to the stake a validator holds in the coin
As protocols for validation are practiced and tested, problems arise in consensus generation and operability
- PoW is still most widely used
  - Energy costs make this protocol unviable
  - Strategies of validators can lead to adverse outcomes, such as coordination problems and forks
- PoS is only now becoming more prominent, and challenges might arise

Blockchain impossibility triangle
- A well-known theory suggests that blockchain can achieve only two out of the three objectives:
  - Consensus
  - Decentralization
  - Scalability
BLOCKCHAIN TRUST AND LEGAL CHALLENGES

- The experience with blockchain applications thus far has led many to believe that they are non-credible and that they are tied to illicit activities
  - Volatility of Bitcoin and other cryptocurrencies prices
  - Large volume of fraudulent ICOs
  - Hard-to-justify prices for Non-Fungible Tokens (NFTs)
  - Collapse of Terra stablecoin
  - Highly visible failure of FTX

- Legal and regulatory framework continues to be in flux
  - Rules to address suspicious financial transactions clash with blockchain anonymity and decentralization
  - Uncertainty about legal status of coins and whether they should be treated as securities
  - Different countries are adopting different solutions amplifying the uncertainty and confusion
CONCLUSION

- There is a big push to create a new financial system based on decentralization
- The idea of decentralized finance has a lot of positive aspects, but the forces for centralization and intermediation are strong
- A realistic middle ground is one where intermediaries continue to play a role, but some of the benefits of the technologies are still achieved: Partial decentralization
- There are still many other obstacles on the way to this equilibrium