FINTECH, DECENTRALIZATION, AND UTILITY TOKENS

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OUTLINE

▪ Decentralization and Its Challenges
  ▪ Key theme of FinTech
  ▪ But there are strong forces against it

▪ Utility Tokens
  ▪ Technology and market power
  ▪ The role of utility tokens in promoting decentralization

▪ Concluding Remarks
DECENTRALIZATION AND ITS CHALLENGES
WHAT IS SPECIAL ABOUT FINTECH?

- Since 2016, when we launched the FinTech initiative at the *Review of Financial Studies*, one constant pushback has been on the basic definition
  - What is new about FinTech?
  - After all, technology has always influenced the way the financial industry operates

- We pointed to two particular features:
  - 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 KEY THEME: DECENTRALIZATION

- An important theme about FinTech, related to the features above, but with increasing momentum is: **Decentralization**
  - Consider the emergence of DeFi

- Traditional finance features central players, such as financial intermediaries and governments, who facilitate transactions and recordkeeping

- Many financial technologies and their applications are motivated by the attempt to break this dependence

- Much of this motivation is based on **distrust** in central players that gained momentum in the aftermath of the global financial crisis
  - Decentralization alleviates the **systemic risk** from the failure of a central player
  - Decentralization eliminates **market power** and rent extraction by large intermediaries
SOME CHALLENGES WITH DECENTRALIZATION

- Experience with financial technologies suggests that financial intermediaries cannot be easily displaced
  - Experience with **peer-to-peer lending** shows that financial intermediaries can end up dominating new technologies
  - Various forces in **blockchain economics** push back to concentration
    - Mining pools
    - Large investment in equipment
    - Interactions with blockchain governance
SOME CHALLENGES WITH DECENTRALIZATION

- Traditional **benefits of intermediation** are still present
  - Monitoring
  - Liquidity transformation

- Blockchain **impossibility triangle**
  - The idea is that blockchain can achieve only two out of the three objectives:
    - Consensus
    - Decentralization
    - Scalability
**TECHNOLOGY AND MARKET POWER**

- Despite the connection between technology and decentralization in finance, we see a growing link in the opposite direction in the broader economy.

- **Platform companies**, such as Facebook and Amazon, benefit from **excessive market power**
  - They are subject to congressional focus on how best to regulate them.
  - Some policy proposals recommend breaking them up.
  - But, breaking up large platforms can reduce benefit from network.

- Can FinTech help restore efficiency in such networks?
  - Reduce market power of platform owner.
  - While still maintaining benefits from having many on the platform.
In a paper with Deeksha Gupta and Ruslan Sverchkov, “Utility Tokens as a Commitment to Competition,” we show that:

- Utility tokens (crypto tokens used as currency on a specific platform) can reduce rents and improve efficiency in two-sided online marketplaces.
- If platform tends to go to monopoly pricing, tokens serve as a commitment device for platform to maintain competitive pricing.
- Applications include platforms such as:
  - Filecoin (simple homogenous services),
  - Uber (more complex heterogenous services),
  - or even Facebook (different business model based on ads).
IMPORTANT FEATURES OF UTILITY TOKENS

- Tokens are the **sole currency** on the platform with a fixed **token to service price**
- Tokens must be allowed to be traded in **resale market** with floating price relative to another currency (such as USD)
- Tokens essentially transfer the service into a **durable good** from the point of view of the platform owner
- **Smart contracts** are essential for achieving commitment to token rules
EXAMPLE: MONOPOLISTIC CASE

- Consider two periods
- Platform matches providers and consumers
- Competitive providers produce service at cost $c$
- Heterogeneous consumers value one unit of service every period
  - Fraction $\alpha_H$ value at $V_H$ and fraction $\alpha_L$ value at $V_L$
  - $V_H > V_L > c$
- Platform owner acts as a monopoly every period
  - Pays providers $c$ per unit of service
  - Charges $V_H$ and serves only $\alpha_H$ consumers
  - Inefficient outcome
EXAMPLE: MONOPOLISTIC CASE

\[
p_m = v_H
\]

\[
v_L
\]

\[
c
\]

\[
\alpha_H
\]

\[
\alpha_L
\]

\[
t = 1
\]

\[
t = 2
\]
EXAMPLE: INTRODUCING TOKENS

$t = 1$

Token market: entrepreneur sells $q_1$ tokens, consumers buy for price $p_1$

Platform market: consumers get service, providers receive tokens

Consumers consume

$t = 2$

Token market: entrepreneur sells $q_2$ tokens, providers sell $q_1$, consumers buy for price $p_2$

Platform market: consumers get service, providers receive tokens

Consumers consume, providers redeem tokens for $c$
EXAMPLE: INTRODUCING TOKENS

\[ p_e = v_H \]  
\[ v_L \]  
\[ c \]  
\[ \alpha_H \]  
\[ \alpha_L \]  

\[ t = 1 \]  

\[ v_H \]  
\[ p_e = v_L \]  
\[ c \]  
\[ \alpha_H \]  
\[ \alpha_L \]  

\[ t = 2 \]
Example: Introducing Tokens

- The platform will optimally choose to sell $\alpha_H$ tokens in the first period and $\alpha_L$ in the second period.
- Token prices will thus be $V_H$ in the first period and $V_L$ in the second period.
- After putting $\alpha_H$ tokens into circulation, the platform loses the ability to make profit over them, and so the only way to continue to make a profit is to put additional $\alpha_L$ tokens into circulation, and push down the price accordingly.
- Mechanism is based on **limited stock of market power**
  - Each time platform wants to monetize, it increases competition in later periods.
  - Similar to the limits of monopolies in a model of durable goods.
  - Eventually, surplus is maximized as under competitive solution.
EXTENSIONS AND IMPLICATIONS

- Will platforms choose to issue tokens on their own?
  - YES, if they are financed by future users who internalize their effect on platform viability
  - YES, if they face a threat from competitors
  - BUT, not always, and so regulation may be needed to require tokens

- Is a large platform with tokens better than two smaller ones who compete with each other?
  - YES, tokens enable achieving the network benefits while maintaining the surplus from competition
  - No need to break up platforms

- Can the mechanism work in more complicated settings?
  - YES, it can accommodate heterogeneous services
  - YES, it can accommodate demand uncertainty
The market for ICOs has been facing fluctuations since its inception.

- Rapid growth between 2016-2018
- In 2019, ICO activity slowed to a crawl
- ICOs have been labeled as scams and 2017-2018 described as a bubble
- Now there is large regulatory uncertainty going forward

We show that they can play an important role.

- Important to guide regulation as to when they are useful and what features of them are important.
CONCLUDING
REMARKS
CONCLUSION

- The idea of **decentralized finance**, key to FinTech development, has a lot of positive aspects.

- FinTech can also help in decentralizing other technology-driven platforms.

- Strong challenges remain:
  - **Counter forces** for centralization are strong.
  - Developments in FinTech exhibit a lot of **noise and illicit behavior**, hurting the public trust.
  - **Regulation** is needed to separate the good from the bad and achieve the long-term benefits.