Asset Pricing and Re-sale in Networks

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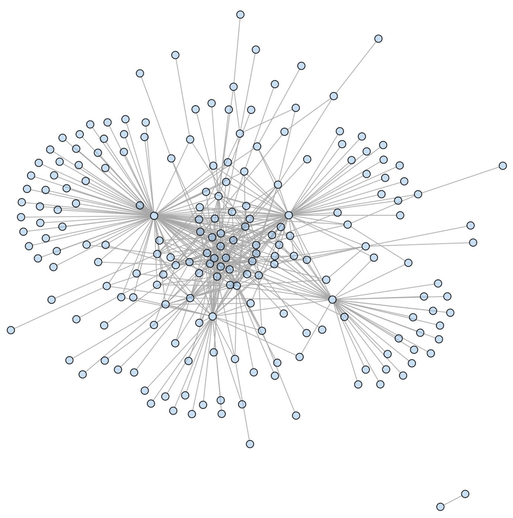
Motivation

1. **Many financial securities, such as bonds, are issued and re-traded in different market structures**
   - Primary Market (PM): single price
     - "Centralized": Uniform price auction
   - Secondary Markets (SM): different prices
     - "Decentralized" exchanges among traders

$$\text{PM} \rightarrow \text{Dealers} \rightarrow \text{SMs}: \begin{cases} \text{Over-the-counter markets} \\ \text{Interdealer market} \end{cases}$$

2. **Dealers form a core-periphery trading network**
   - Trading is *not random* → trading relationships



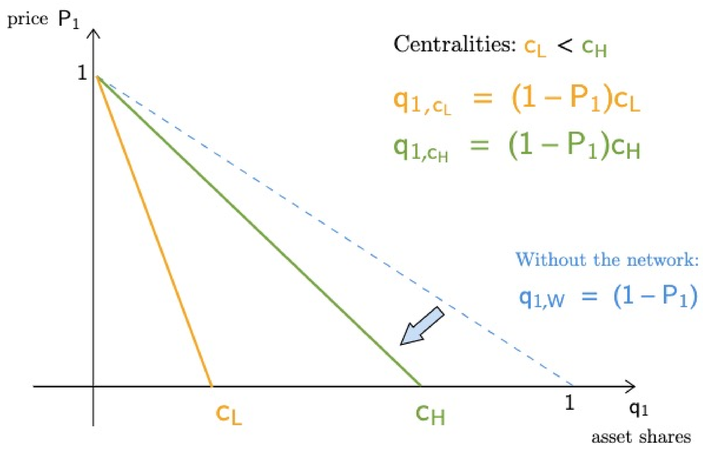
Dealers' trading network for US Corporate bonds: each node is a dealer, and two dealers are connected if they trade at least once.
Inferred by the Author.

Does dealers' trading network matter to the Primary Market?

YES!

Dealers' trading network structure determines PM outcomes

Why? The network changes the buying incentives for the asset!

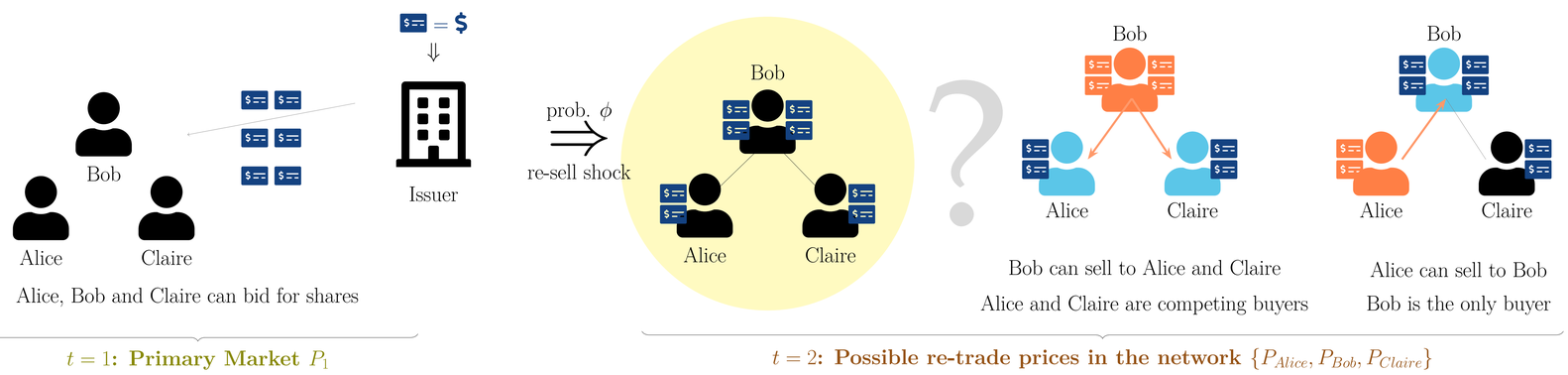


Bidding behavior: dealers' demand schedule at issuance

The Model

Dealers have quasilinear quadratic utility over asset shares (nummeraire = "cash"). They acquire shares in the PM in anticipation of possibly being able to re-trade shares later with their network connections.

⇒ **What is the price of the asset that can be re-traded in a trading network ?**
(PM: issuance price) **(SM: interdealer market)**



How PM and re-trade demands interact?

Key mechanism: A dealer wants to buy less when others buy more in the PM, to enjoy lower re-trade prices in the network as there will be

1. more being sold by her friends

2. less being demanded by her friends' friends - her competing buyers

Dealers' **PM demand reacts negatively to the PM demand of their friends and friends' friends**

↪ *One-shot, simultaneous-move network game of strategic substitutes played in the PM*

Trading Centrality, a sufficient statistic for equilibrium

TC is a unique measure defining all market outcomes: prices, demands, welfare!

What sets Trading Centrality apart?

A recursive network metric that produces a "score" for each dealer.

- **"I am more central the less central my friends are"**: A dealer invests in the opposite way as others
- **"I am more central thus I demand more in the PM"**: It gives dealers' marginal utility for the asset in the PM

Why is it useful?

- Arbitrary network + extensions
- Comparison across network structures
- Readily applied to data

Network → Trading Centrality
↓
PM price ← Dealers' behavior

Much more than connectivity alone

Why we observe so often core-periphery trading networks in financial markets?

It is the trading network that delivers the **lowest cost of trading and highest welfare** for **dealers**!

Important! Not "so good" for the Issuer: highest cost of debt
↪ fine balance between Issuer and dealers' objectives

Contrast: symmetric networks (all dealers are the same) exhibit the opposite.

Empirical Application

Interdealer trades of US Corporate bonds (Academic TRACE Data): 5 bonds and 2 months

→ **How TC relates to the observed prices and quantities?**

→ Hypothesis:

1. Central dealers sell more and buy less
2. Central dealers sell at higher prices and buy at lower prices less

↪ Qualitative support; not quantitative results

Next - Full empirical validation:
Interdealer + PM information (Mergent/FISD)