Equity Market Structure

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About me

- Finance professor at Georgetown
- I study financial market structure.
- Visited over 70 stock exchanges around the world.
- 12 fintech patents
- Testified 6 times before U.S. Congress
- Served on U.S. Federal Reserve's Faster Payments Task Force
- Work experience:
  - PGandE, BARRA (later part of Morgan Stanley), Nasdaq, Shanghai Stock Exchange
  - Board of Directors: DirectEdge Stock Exchange 2010-2014

- BS Caltech, MBA Harvard Business School, Ph.D. U.C. Berkeley
- At Georgetown +/- since 1991
  - Wharton (2012-2014)

US Equity Market Structure

- Competitive by design
  - 1975 amendments to Securities Exchange Act, Regulation NMS (2005)
- 16 exchanges
- 20+ automated trading systems
- Numerous broker-dealers

- The NETWORK IS THE MARKET
  - Exchanges and ATS are just hubs in the market network.

Markets are linked by market data!

- Securities Information Processors (SIPS) regulated by law
- All market participants (even “dark pools”) must report trades instantly to consolidated tape.
- Exchanges report best bids and offers (“top of book”) that are combined into the “National Best Bid and Offer” NBBO

No one exchange dominates the market

- Big exchange operators (NYSE, Nasdaq, and Cboe operate numerous exchanges.
  - Different pricing models and market models
  - Market segmentation
- 40% off-exchange

Matched Volume	% of Mkt
NYSE (P,N,A,C,M)	19.73%
NYSE (N)	9.55%
NYSE Arca (P)	8.46%
NYSE National (C)	0.98%
NYSE American (A)	0.47%
NYSE Chicago (M)	0.27%
NASDAQ (B,X,Q)	17.89%
NASDAQ (Q)	16.45%
NASDAQ PSX (X)	0.83%
NASDAQ BX (B)	0.61%
Cboe (Z,Y,K,J)	13.74%
EDGX Equities (K)	5.83%
BZX Equities (Z)	5.00%
EDGA Equities (J)	1.57%
BYX Equities (Y)	1.34%
Members Exchange (U)	4.46%
Investors Exchange (V)	2.59%
MIAX Pearl (H)	0.89%
LTSE (L)	0.00%
Exchange Total	59.30%
Off Exchange Total	40.70%
Total	100%

Brokers have a duty of "best execution"

- FINRA Rule 5310
- Simple to monitor as NBBO must be displayed.
  - SEC Rule 603(c)

Retail flow is less “toxic” than institutional flow

- Small retail orders don’t move the market.
  - A dentist’s 100 share order has less information than a 100 share “child” order from an institutions 100,000 share “parent” order.
- Market makers love to buy from retail at the bid and sell at the offer.
  - Happy to share profits with brokers.
  - Payment for order flow (PFOF) for market orders
    - While exchanges generally charge market orders to execute trades.
    - Pay rebates to limit orders that “make” liquidity

PFOF has led to commission-free trading

- Changing business model of brokers
  - Old model: Charge commissions on each trade
  - New model: Act like commercial banks
- Now:
- Commercial banks
  - Customer deposits money, bank lends out
  - Customer gets free bill paying as a perk.
- Brokers
  - Customer deposits cash and securities, broker lends out.
  - Customer gets free trading as a perk

GameStop

- More retail order flow due to pandemic boredom
- Difference of opinion among investors
  - Moribund retail operation about to die in retail apocalypse?
  - Or nascent game streaming powerhouse with big growth opportunities?
- Stock became very volatile.
- NSCC (subsidiary of DTCC) demanded high collateral for trades in process.
  - Even "fully paid" shares
  - SEC Rule 15c3-3 ("Customer protection rule") did not allow customer funds to be used for NSCC margin.
  - Brokers restricted trading to reduce NSCC collateral and communicated poorly.
- Cries for reform. T+1 coming in 2023.