The liquidity of capital markets under new banking regulations

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Stanford University

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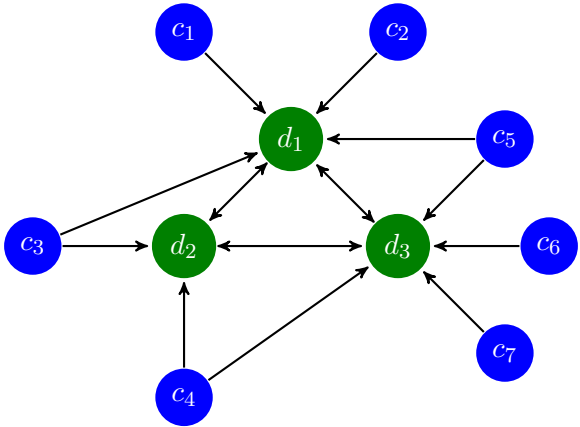
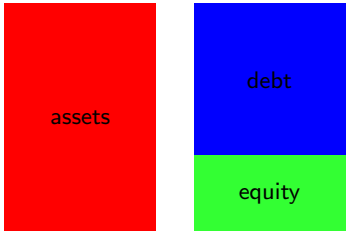
A bank-intermediated bilateral OTC market



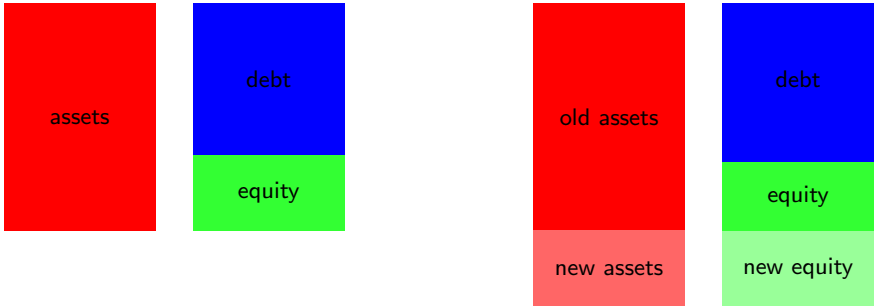
Regulatory Implications for Capital Market Efficiency

1. More financial stability from higher bank capitalization and BRRD.
2. The leverage-ratio rule distorts market making away from safe assets.
3. Debt funding costs for banks are heightened by BRRD, increasing balance sheet costs.
4. The local monopoly power of banks is mildly reduced by MiFID.

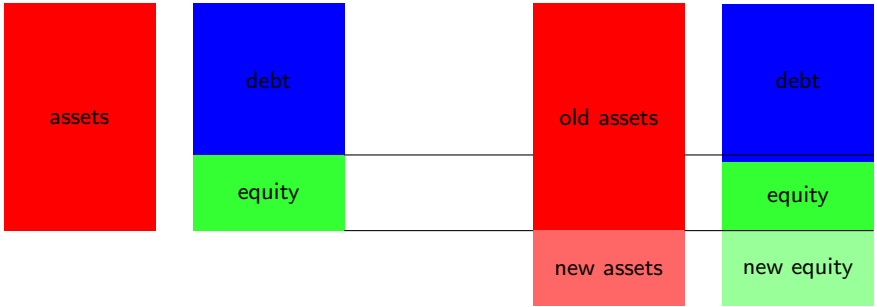
Dealer balance sheet



More equity to fund more assets

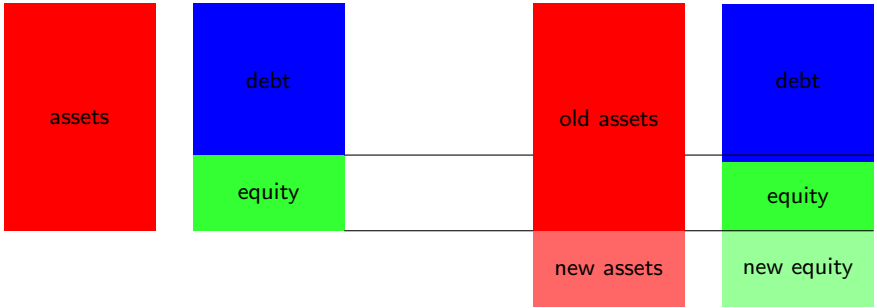


Legacy shareholders have subsidized creditors



Higher capitalization implies a value transfer from legacy shareholders to creditors.

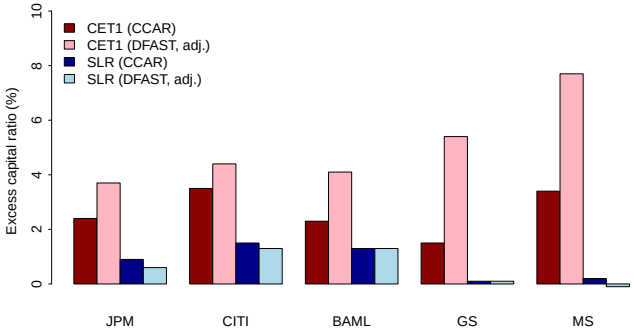
Debt overhang



For shareholders to break even, the new assets must be purchased at a profit that exceeds the value transfer to creditors. (Myers, 1977)

SLR is more binding than risk-based capital ratios

Results of the Fed's 2017 stress tests for the largest US dealer banks



CCAR: stressed CET1 after assumed payouts, less 4.5%; stressed SLR less 3.0%.

DFAST, adjusted: stressed CET1 (no payouts) less (4.5% + G-SIB surcharge); stressed SLR less the G-SIB minimum of 5%.

European Banks Delever as Reporting Days Approach

Daily collateral outstanding in the tri-party repo market and the Federal Reserve's overnight reverse repo (ON RRP) facility

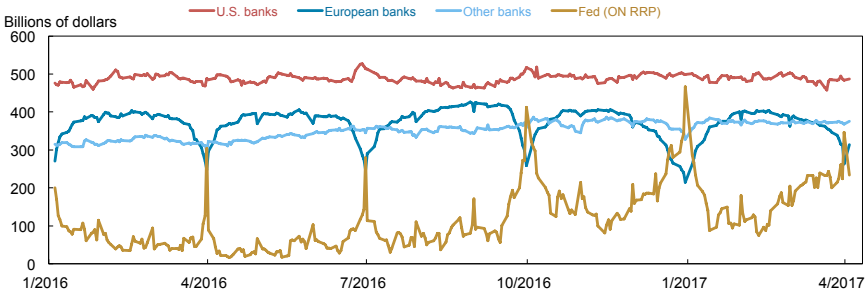
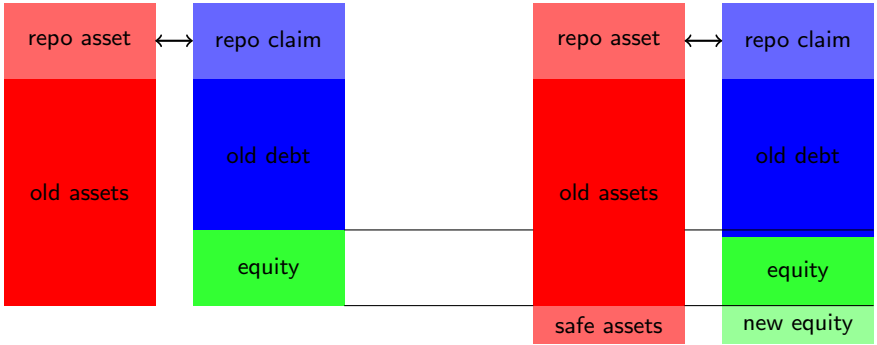


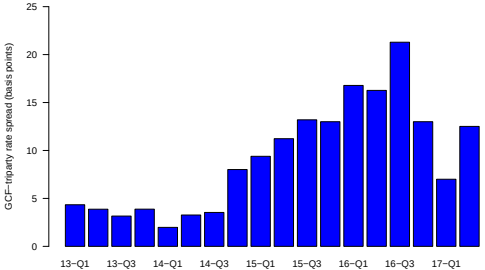
Figure Source: Egelhov, Martin, Zinsmeister, Federal Reserve Bank of New York, August, 2017.

Notes: Banks headquartered in the euro area and Switzerland report leverage ratios as a snapshot of their value on the last day of each quarter, while their U.S. counterparts report quarterly averages. Totals only include trades backed by Fedwire-eligible securities–that is, U.S. Treasury and agency securities.

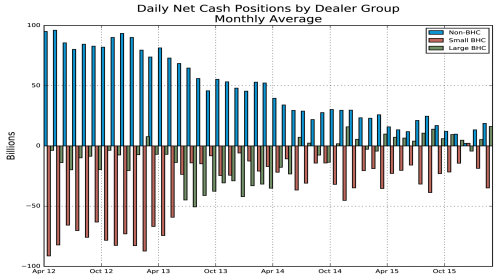
Impact of the leverage-ratio regulation on repo intermediation costs to legacy shareholders



Impact of SLR on UST repo market efficiency



(a) bid-ask spreads up

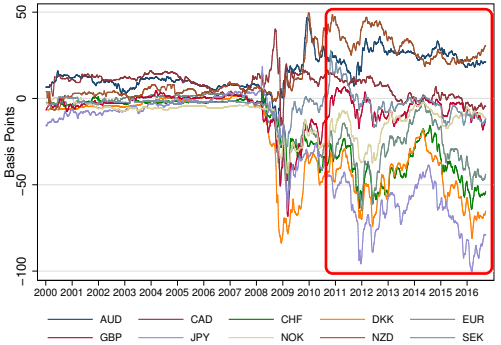


(b) inter-dealer positions down

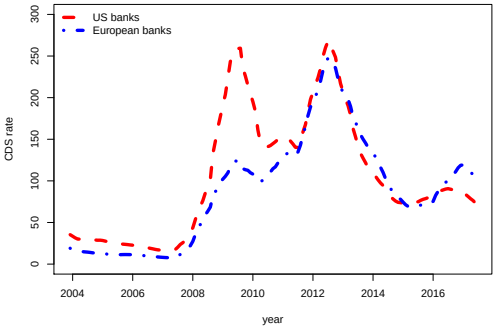
Figure: (a) Average within-quarter difference between overnight GCF and Tri-party repo rates. Data sources: Bloomberg and BNY-Mellon. (b) Figure source: Antoine Martin, FRBNY (2016).

Cross-currency basis and bank funding costs

Funding value adjustments now leave wider arbitrage bounds on the basis

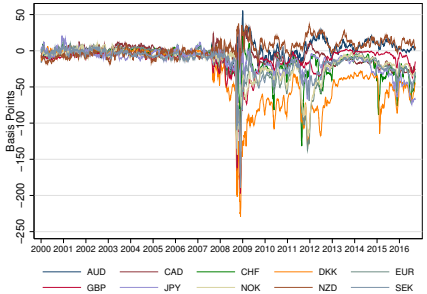


(a) 5-year USD cross-currency basis. Source: Du, Tepper, and Verdelhan (2017).

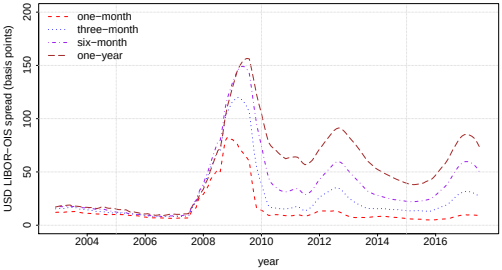


(b) 5-year dealer credit spreads

Cross-currency basis



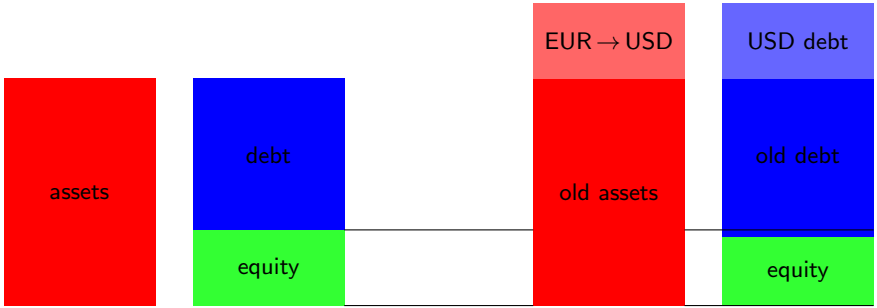
(c) 3-month USD cross-currency basis. Source: Du, Tepper, and Verdelhan (2017)



(d) LIBOR-OIS spreads. Data source: Bloomberg.

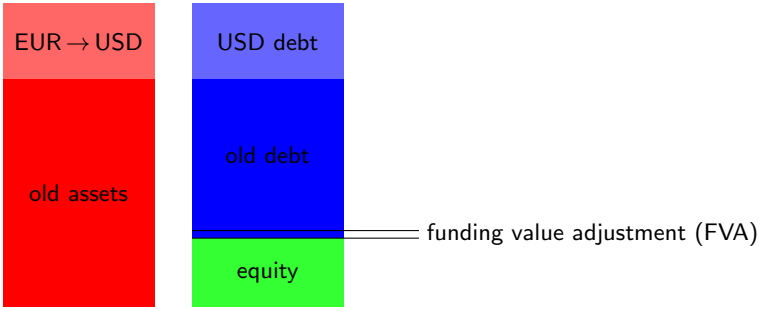
CIP arbitrage can be costly to dealer shareholders

Debt overhang cost for funding synthetic dollar deposits



To benefit shareholders, the trade profit must exceed the funding value adjustment (FVA), a debt-overhang cost.

Funding cost to shareholders



Example: CIP arbitrage can be bad for shareholders

- Suppose the one-year USD risk-free rate is zero.
- Our bank has a one-year credit spread of 35 basis points.
- We borrow \$100 with one-year USD commercial paper, promising \$100.35.
- We invest \$100 in one-year EUR CP, swapped to USD, with the same all-in credit quality as that of our bank's CP, and uncorrelated.
- Suppose the EUR CP, swapped to dollars, promises \$100.60, for a basis of -25bps.
- We have a new liability worth \$100 and a new asset worth $\$100.65/1.0035 \simeq \$100.25$, for a trade profit of approximately \$0.25.
- However, the marginal value of the trade to our shareholders is negative, because, *conditional on dealer survival,* the expected incremental payoff to equity is $\$100.25 - \$100.35 = -\$0.10$. Conditional on default, equity gets nothing.

Funding Costs to Dealer Shareholders

From work with Andersen and Song: The marginal increase in the value of the dealer's equity per dollar of a debt-funded asset purchase is

$$p^*\pi - \delta\,\mathrm{COV}^* - \mathrm{FVA},$$

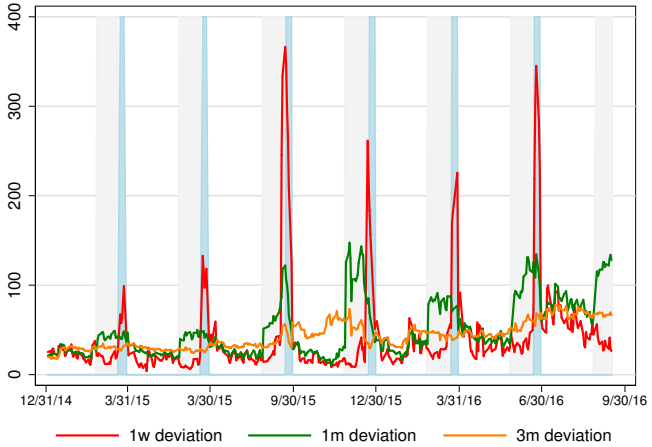
where

- p^* is the dealer's risk-neutral probability of survival to term.
- π is the trade profit (P&L).
- δ is the risk-free discount.
- COV^* is the risk-neutral covariance of the asset payoff and dealer default event.
- FVA is the funding value adjustment $p^*\delta ST$, where S is the dealer's credit spread and T is the term.

The extra marginal cost to dealer shareholders when a fraction α of the funding must be equity is $\alpha(1 - p^* - \mathrm{FVA})$, which annualizes to roughly αS (assuming a loss given default of 0.5).

For safe assets, the shareholder breakeven "arbitrage" yield is thus the total annualized funding cost to shareholders of roughly $(1 + \alpha)S$.

When should a dealer arbitrage the USD-JPY CIP basis?



Source: Du, Tepper, and Verdelhan (2016).

Credit spreads: funding-cost wedge and arbitrage bounds

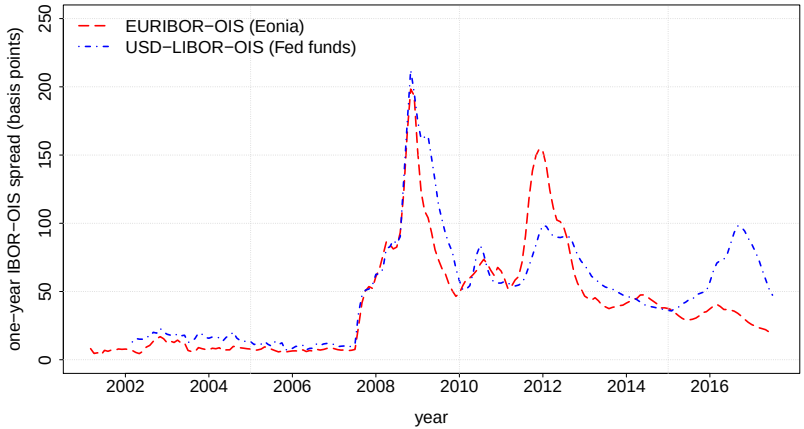


Figure: One-year spreads between interbank offered rates and overnight index swap rates. Data source: Bloomberg.

5-year CDS rates of major European banks

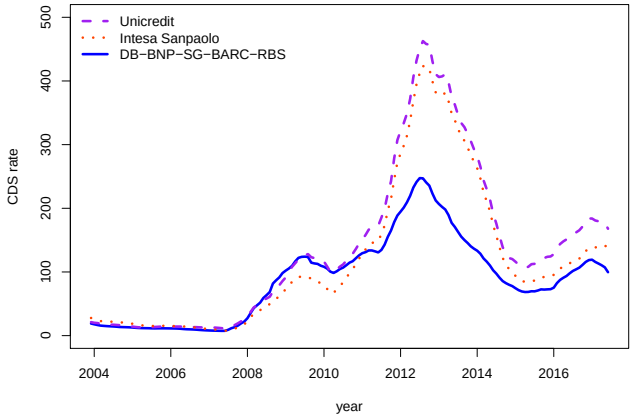
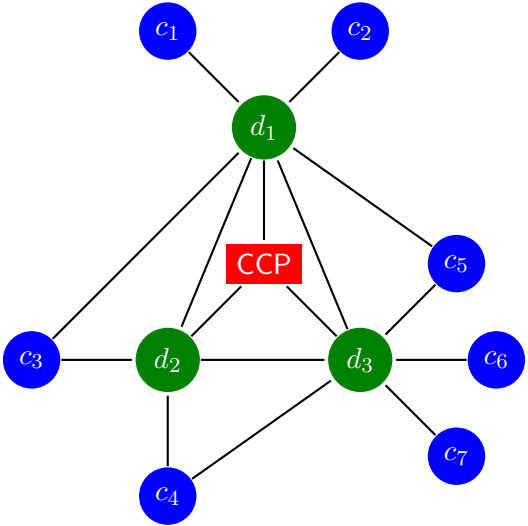


Figure: CDS rates for large European banks average (DB-BNP-SG-BARC-RBS), Unicredit and

CCPs require dealers to post collateral



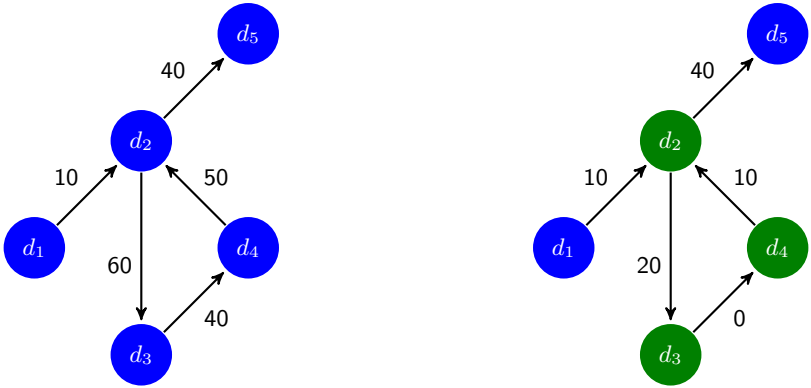


Figure: A compression trade that eliminates a redundant circle of positions of size 40 (counterclockwise, involving dealers 2, 3, and 4) with a circle of clockwise trades of size 40. Counterparty exposures and initial margin are reduced without changing market exposures. Example service providers: TriOptima (over $1 quadrillion notional eliminated, largely interest-rate swaps).

Reducing swap exposures, especially from compression trading

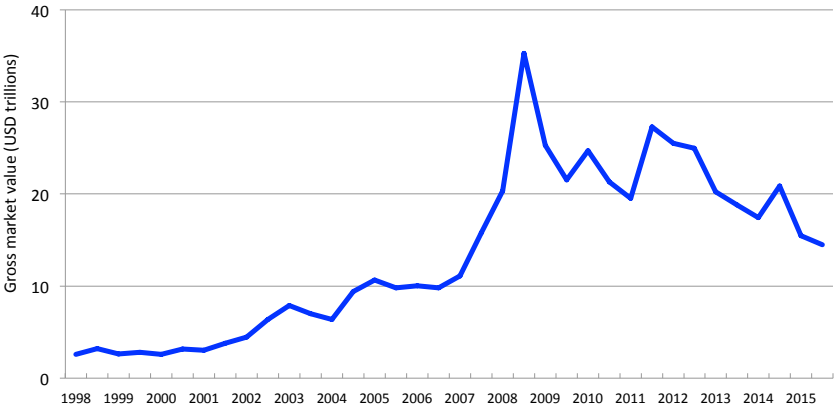
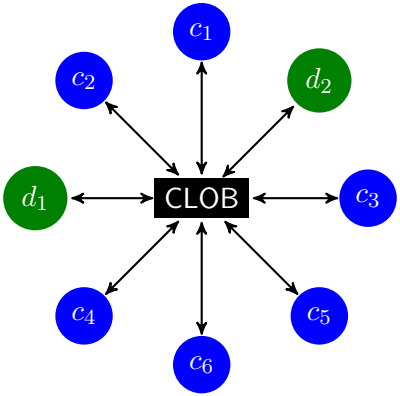


Figure: Data source: Bank for International Settlements

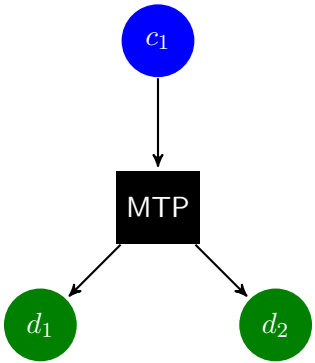
Improving trade competition

Example objective: Migration of active products to all-to-all trade platforms

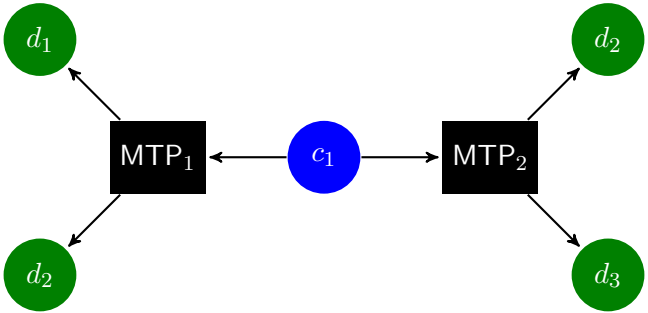


OTC competition after Dodd-Frank and MiFID

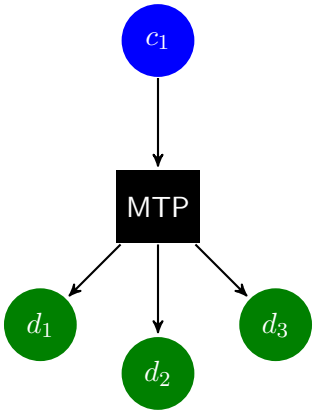
Buy-side firms request quotes at multilateral trading platforms



But with excessive fragmentation across platforms



Reducing fragmentation improves competition



At corporate bond platforms
Dealer competition lowers buy-side trade costs

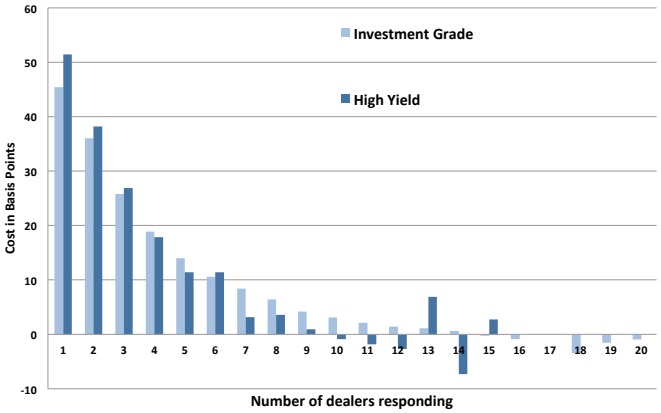


Figure: Source: Hendershott and Madhavan (2016)

Now typical fragmented two-tiered OTC markets