

Underwriting in US Bond Markets - Why the Status Quo Poses Risks to Competition

Paul Vella¹

Introduction

Antitrust scrutiny of large dealer-banks in bond markets has grown in the last five years, with action taken by both regulators and private litigants. For example, between January and February 2016, the U.S. Department of Justice (“DoJ”), the European Commission and the UK Financial Conduct Authority announced cartel and market manipulation investigations into the \$1.5 trillion market for government-sponsored agency bonds.² In June 2018, the Antitrust Division of the DoJ reportedly opened a criminal investigation into manipulation of unsecured bonds issued by Fannie Mae and Freddie Mac.³

The US has some of the largest and most liquid bond markets in the world. From 2018 to 2019, there was a 20% increase in trading volume for US agency debt, according to SIFMA, with a total of USD 1.87 trillion in outstanding bonds. However, the structural weaknesses in bond markets that render them vulnerable to manipulation remain poorly understood. This article outlines how American investors are damaged by collusive bond market manipulation and presents approaches for quantifying damages in such markets. We focus on collusion impacting issuance prices, bid-ask spreads, and auction prices, with a particular focus on information asymmetries, conflicts of interest, and market concentration.

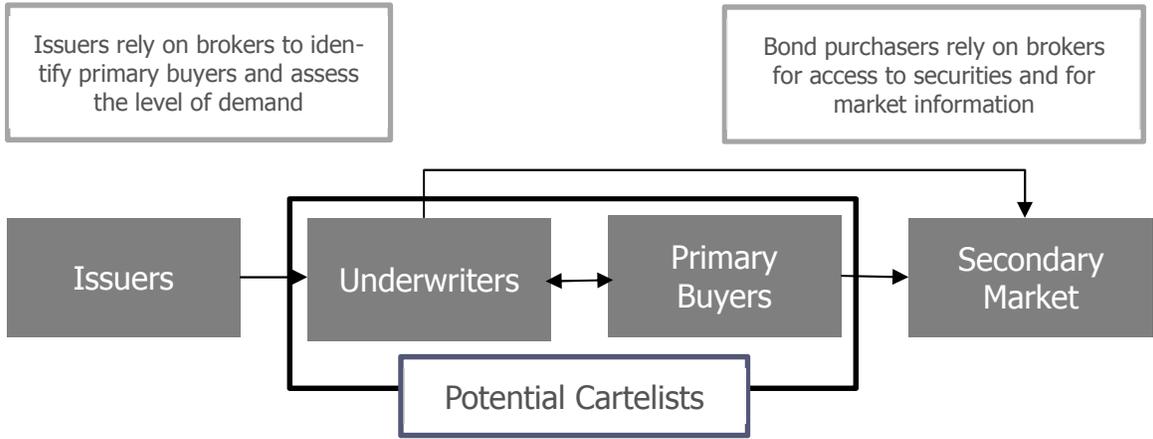
Bond issuances and information asymmetry

When government agencies or corporates issue a bond, they generally engage a large bank to act as a dealer (a.k.a “underwriter”). The bank assesses demand and fills out an order book of initial buyers. Based on its knowledge of the market and its contacts with buyers, the bank recommends a “yield”, or the return to an investor, to attract enough buyers and ensure the bond is fully placed on issuance. The underwriter may even act as a buyer itself in some cases.

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² [EU probes suspected rigging of \\$1.5tn debt market](#), Financial Times, 9 February 2016

³ [U.S. DoJ Opens Criminal Probe in Frannie, Freddie Bonds](#), Bloomberg, 1 June 2018



Both buyers and sellers of bonds rely on underwriters for information about the market, creating an information asymmetry and putting underwriters in a position of power. Underlying this is an innate conflict of interest where dealers both buy bonds and set their price. This results in both opportunity and incentive for manipulation by large market players. In efficient markets, these threats are arbitrated away by dealer competition. However, in concentrated and collusive markets, these issues may instead be compounded and concealed.

Potential forms of manipulation

There are a variety of specific mechanisms by which bond markets might be manipulated by underwriters or dealers, to the detriment of both issuers and investors.

Issuance Underpricing

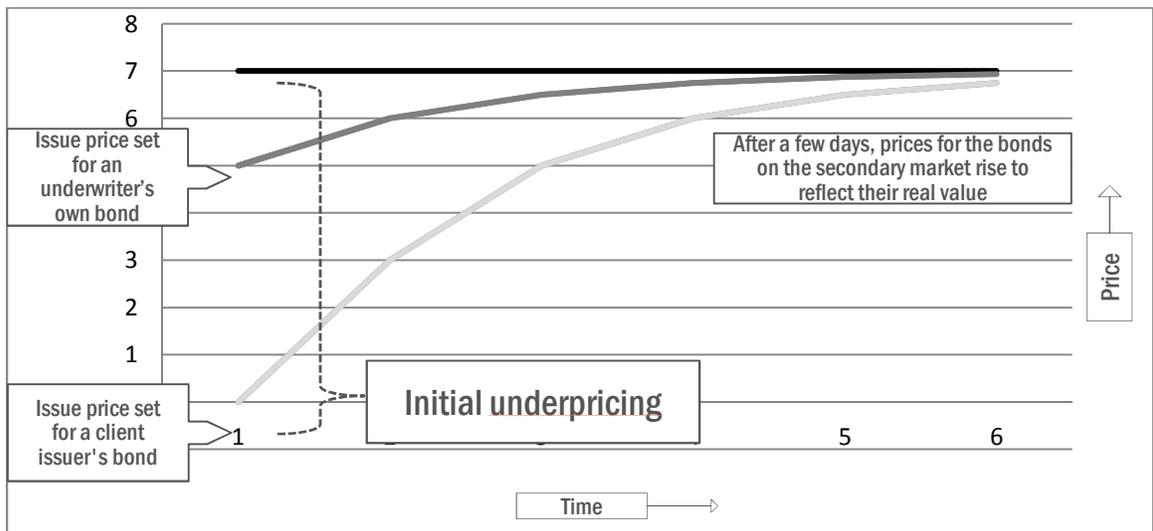
In an issuance, an underwriter determines the yield – the interest the issuer will pay to buyers - and therefore the value of a bond. After placement, on the primary market, bonds can be resold on the secondary market. If the underwriter has properly gauged demand, the secondary resale price of the bonds should, on average, be similar to the initial, i.e. primary, price.

Dealers, however, can use their information advantage to set bond yields excessively high. Primary buyers, either banks themselves or their customers, may thereby purchase bonds at a below-market rate. This practice creates a distinctive pattern in affected markets: a rapid and drastic increase in the price of the bond immediately after issuance.

A low level of underpricing in the primary market is considered normal to compensate for the underwriter’s inventory risk. This is legitimate and explains why even the underwriter’s own bonds may be priced at a slight discount in the primary market. However, comparisons between the discount observed on underwriters’ own bonds,

and those observed on their clients' reveal a striking difference, with the latter being considerably larger.

Excessive underpricing emerges from information asymmetries, conflicting interests, and cartels. Underwriters may issue underpriced bonds to their best clients, shown by SEC investigations into the unfair allocation of bonds during the syndication process. The same favor may be directed to other underwriters as a quid pro quo. Finally, the underwriters themselves may retain a large portion of the issuance, and benefit from the underpricing by reselling the bonds at a higher price on the secondary market.

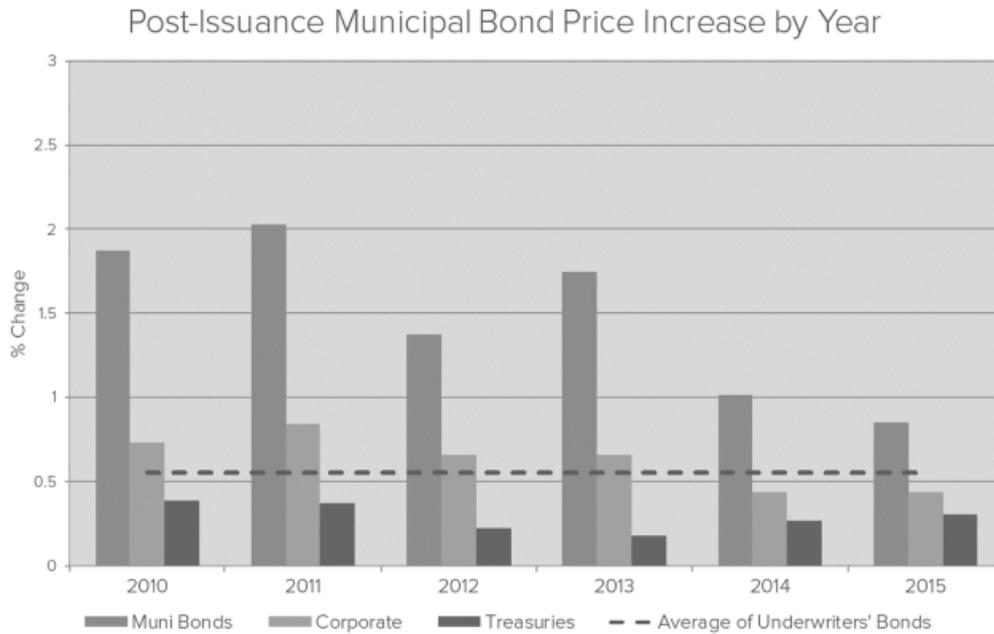


These market flaws are compounded by cartels. Abusive mispricing is unlikely to solely arise from market failure as competitive forces should compel dealers to set a fair price. Cartels help create the conflict of interest that turns information asymmetries into market abuse. Colluding dealers may sell underpriced bonds to each other, profiting from sales in the secondary market, even when an individual dealer retains none of the bonds. Moreover, if dealers collude to misprice issuances, detecting this anticompetitive behavior becomes challenging for other market participants. In this way, cartels transform market deficiencies into market abuse.

Example - Issuance underpricing in US municipal bonds

We analyzed annual aggregated data on bond issuances provided by Bloomberg and a granular sample of municipal bond issuances and trades between 2006 and 2015. We find that underwriters systematically underprice municipal bonds. The post-issuance price increase is abnormally high compared to similar securities, consistent with our predictions.

Between 2006 and 2015, municipal bond prices increased an average of 163 basis points after issuance, compared to an average increase of 33 basis points for Treasury bonds, 55 basis points for underwriters' own bonds and 64 basis points for corporate bonds over the same period. These differences expose the level of mispricing in the municipal bond market.



Source: Bloomberg, Fideres's calculations

We estimate damages to municipal bond issuers as the excess interest payments owed over the life of the bond. We analyze a sample of the largest US issuances and extrapolate our findings to municipal bonds issued between 2006 and 2015.

Using this method, we estimate municipal bond issuers will wind up paying approximately \$25 billion more in interest over the life of these bonds than they would have if underwriters priced their clients' bonds as accurately as they priced their own.

Inflated Transaction Costs

A cartel can also harm the bond market through inflating bid-ask spreads. This means exaggerating the cost of dealing services in order to extract more from both buyers and sellers.

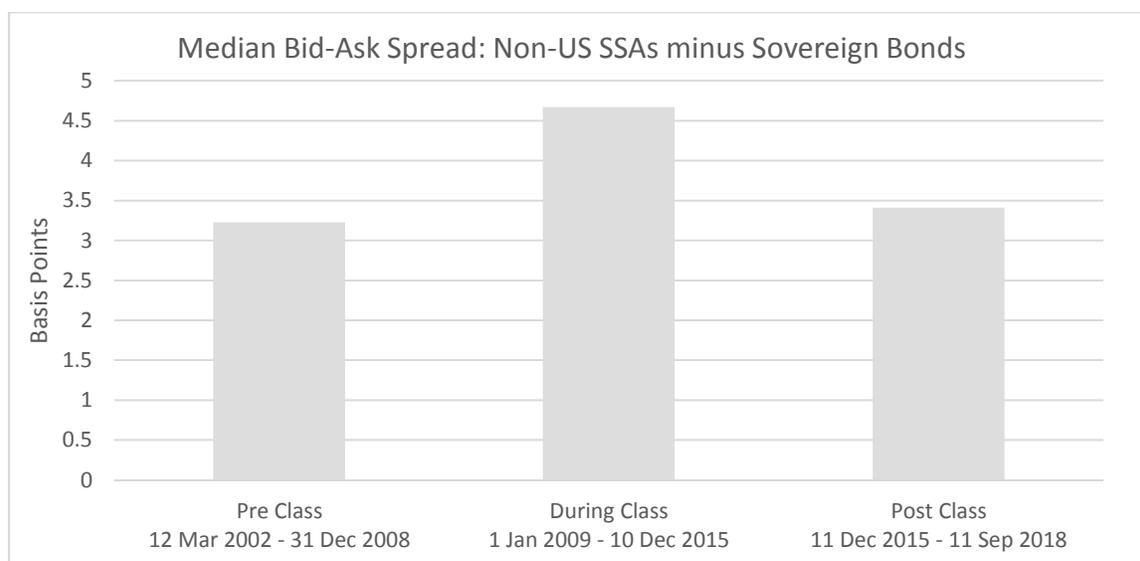
In principle, other dealers win business away from a spread-exaggerating competitor by charging a fair rate. In the presence of a dealer cartel, however, players can explicitly or tacitly agree to widen spreads.

Example - Supra-National Agency Bonds

Bonds issued by supra-national agencies and non-US Agencies are referred to as SSA Bonds. SSA bonds and their respective sovereign bonds largely share the same risk and liquidity factors. As a result, the difference in bid-ask spread between the two is generally expected to remain constant over time.

However, a US class action complaint (*In Re: SSA Bonds Antitrust Litigation*) alleges bid-ask spreads for SSA Bonds were on average 4.6 basis points higher than Sovereign Bonds during the class period, while outside that period, spreads were only 3.2 to 3.4 basis points higher.

This variation in spread differentials is consistent with the existence of an SSA bond trading cartel, an allegation which is currently being investigated by the European Commission.⁴



Source: Bloomberg, Fideres's calculations

Auction Bid Rigging

Most sovereign bonds are issued via auction rather than direct placement described above. However, even when bond issuances are matched with buyers through this ostensibly competitive mechanism, the process can still be manipulated by cartels.

⁴ [Brussels accuses four banks in bond trading cartel probe](#), Financial Times, 20 December 2018

The premise of an auction is that a correct market price is found through competition between bidders. By collaborating on their bids, cartels are allocated bonds at a below-market price.

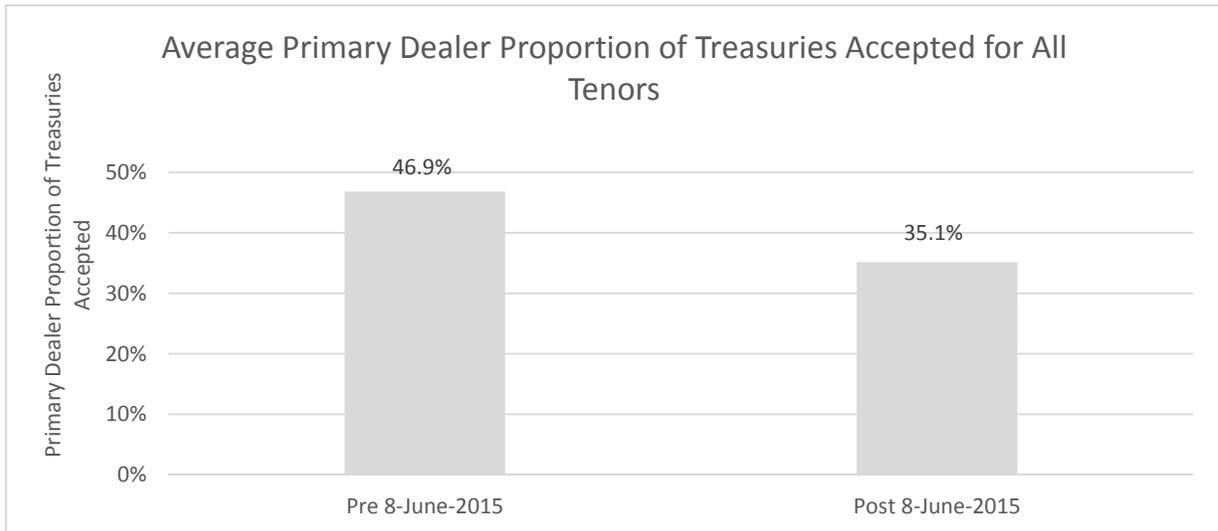
In a competitive auction process, the discrepancy between the winning bids and the appropriate price (i.e., the price that would be obtained in the secondary market) is arbitrated away. Indeed, cartelists who submit non-winning bids forgo the profit from winning the auction reselling on the secondary market. The behavior is only self-interested in the context of ongoing collusion across many bond auctions, in which cartelists take turns “winning”.

Example – US Treasury Auctions

In a 2017 US complaint (*In Re: Treasuries Securities Auction Antitrust Litigation*) plaintiffs alleged that, between 2009 and 2015, cartelist bidders consistently manipulated auctions of US Treasuries by leveraging their informational advantages and market power. The alleged manipulation took one of two forms, depending on the level of demand. In low-demand auctions, the cartelists’ colluded to place similarly low-priced bids, in order to obtain the security at a discount. In high-demand auctions, the cartelists outbid the other participants, in order to secure a given Treasury using illegally obtained information about other dealers’ bids.

To substantiate these claims, the complaint reports that, on average during the class period, the yield spread implied by auction prices and secondary markets prices was approximately 0.7 basis points on high-demand auctions and 1.6bps on low-demand auctions. This difference fully disappeared outside of the class period, with both yield spreads hovering around 1.4 basis points. These patterns, which allegedly affected 75% of the auctions in the class period, are indicative of a poor auction result, and potential bid-rigging between the largest primary purchasers of treasuries.

The complaint also found that during the class period, 46.9% of newly issued treasuries were allocated to dealers, against only 35.1% after it.



The decline in relative allocation to dealers may have been a result of cartelist's reduced interest in Treasuries, which no longer yielded cartel profits, or losing the information advantage that allowed dealers to out-bid the market.

Quantifying Damages

Issuance Underpricing

At its most basic level, damages arise from excess interest that issuers must pay on their debt. In practice, identifying the exact extent to which bonds are mispriced is less straightforward.

We calculate a 'but-for' interest rate, or the rate that would have prevailed without any manipulation. This rate is applied to the size and maturity length of the debt to calculate the total but-for cost of issuing a bond.

$$Cost_{but-for} = D \left(1 + \frac{i_{but-for}}{n} \right)^{nt}$$

Where D is the amount of debt issued, $i_{but-for}$ is the interest rate without manipulation, n is the number of payments per period, and t is the maturity length of the bond. The difference between the but-for and the actual cost of a bond is the damage owed to issuers.

$$Damages = Cost_{actual} - Cost_{but-for}$$

In this model, the key variable we need to determine is $i_{but-for}$ or the sans-manipulation interest rate. We propose benchmarking issuances against similar bonds to

estimate this. If manipulation is widespread, this method may understate damages. A potential solution is therefore to use the dealers' own bonds as a benchmark rate, as they have no incentive to inflate their own debt obligations.

Bid-Ask Spreads

The fundamental methodology for calculating damages is essentially the same for bid-ask spreads. For purchasers, damages are the difference between the actual bid price and the counterfactual bid price, whereas for sellers, damages arise from the ask price. Therefore:

$$\text{Damages} = \text{Quantity}(\text{Bid}/\text{Ask}_{\text{actual}} - \text{Bid}/\text{Ask}_{\text{but-for}})$$

To model bid-ask damages, we have to estimate both the actual and the but-for bid-ask price. Directly measuring actual spreads is not possible without reliable data from dealers. However, a large market microstructure literature, that has so far focused largely on equity markets, can be adapted to model bid-ask spreads in bond markets. Fideres has employed a range of these methods, the applicability of which depends on data granularity and availability.

For example, Corwin and Schultz (2012) employ a "high/low" method for estimating bid-ask spreads, which relies on the insight that daily high prices are generally buy orders and daily lows are generally sell orders.⁵ If intraday trading data is available, "trade indicator models" can offer a more robust estimate of bid-ask spread, and decompose the spread into distinct components (such as moral hazard and adverse selection)⁶. Notably, this method can also be used to reverse engineer but-for spreads in an efficient market, or identify potentially similar unmanipulated markets to use as a benchmarked but-for bid-ask spread.

Why do Distortions in Bond Markets Persist?

Given the pervasiveness of manipulation in bond placements and trading, we have identified several stylized features of these markets that render them vulnerable to collusive conduct. These are:

Information Asymmetries – Dealers hold exclusive knowledge of supply and demand

Conflicts of Interest – They also hold conflicting interests in their fiduciary responsibility to clients and their own financial incentives as bond holders

⁵ Corwin and Schultz (2012), "A Simple Way to Estimate Bid- Ask Spreads from Daily High and Low Prices"

⁶ Huang and Stoll (1997), "The Components of the Bid-Ask Spread: A General Approach"

Comparability – Bond prices are set relative to other bonds, therefore pervasive manipulation creates a vicious cycle

Market Dominance – Six banks alone underwrite 80% of issued bonds

The harm done by these arrangements should be of particular concern to regulators because much of it falls on the public purse. Bonds are the primary means by which national and state governments raise short term capital to cover their commitments, and corporate bonds provide a crucial source of financing to American businesses. Consequently, an inexpensive and well-functioning bond market is crucial to their operation.

Conclusion

The opaque nature of these markets necessitates greater oversight. Moreover, it is unclear why the primary market for many of these bonds is defined by murky issuances that put dealers in a unique position of power. This issue continues in the secondary market where bonds are traded over-the-counter rather than on-exchange. If issuers are paying greater yields to access the same amount of credit, future tax-payers must foot the bill for higher interest payments and ever compounding debt. Given the apparent scale of the problem it is surprising that bond issuers have not taken action to ensure more competitive pricing of their own securities.