Price Transparency in the U.S. Corporate Bond Markets

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In recent years, the Securities and Exchange Commission (SEC) has pushed for, and achieved, greater price transparency in the U.S. corporate bond markets. Price transparency refers to the clarity or visibility to market participants of price information, such as a security's current bid or ask (offer) price—known as pre-trade transparency—or its most recent trading price—known as post-trade transparency.

INTRODUCTION OF TRACE

In response to the SEC's prodding, the National Association of Securities Dealers (NASD), now known as the Financial Industry Regulatory Authority (FINRA), developed a mandatory electronic reporting system for trades in corporate bonds, called Trade Reporting and Compliance Engine (TRACE), which was adopted by corporate bond market participants and phased in beginning July 2002.[1] Currently, specified details of trades in virtually all U.S. investment-grade and high-yield corporate bonds must be reported to TRACE within 15 minutes of their actual occurrence. These trade details are then disseminated to market participants via the FINRA website or via subscription from third-party vendors.

The SEC's motivation for promoting increased transparency is laudable in principle, namely to increase confidence in financial markets and institutions by ensuring that bond prices are fair and efficient for all market participants. Price transparency is meant to help prevent unscrupulous bond dealers from charging mark-ups that might otherwise be excessive. Former SEC Chairman Arthur Levitt, who has been credited as the driving force behind TRACE (e.g., Vames [2003]), likened the opaque pre-TRACE corporate bond market to an "oriental bazaar.... Our intent was to make the market fairer. The result was that it was also less expensive" (Pittman and Salas [2006]).

In theory, the effect of increased transparency on trading in a given market is ambiguous. On the one hand, increased transparency may enhance liquidity by increasing the number of market participants (Pagano and Röell [1996]), an opinion echoed in Arthur Levitt's testimony before the U.S. Congress [1999] when he stated that

> [b]ecause transparency increases the fairness and efficiency of markets and fosters investor confidence in those markets, it has the added benefit of encouraging greater participation by investors. This participation means more trading, more market liquidity, and perhaps even new business for bond dealers.

On the other hand, market liquidity—as measured by the inverse of the width of the

bid–ask spread—may decrease with an increase in transparency in a market. Dealers who provide liquidity, by committing trading capital while functioning as intermediaries between investment firms, may want to increase the width of their bid–ask spreads in order to protect their trading positions if details of their trades are broadcast to the market in near-real time (Bloomfield and O'Hara [1999, 2000], Goldstein and Kavajecz [2000], and Flood et al. [2002]).[2]

Now that TRACE has been in operation for several years, three academic studies have recently investigated its empirical impact on trading costs in the corporate bond markets. All three studies found that the adoption of TRACE has led to a reduction in trading costs for market participants. The authors of all three studies concluded that increased market transparency due to SEC-mandated reporting requirements and dissemination of trade details via TRACE has therefore been beneficial for investors.

I will argue instead that the increase in post-trade transparency in the U.S. corporate bond markets has, on balance, probably not benefited investors. First, I will discuss the findings of the three studies, pointing out two shortcomings in their methodologies; in essence, the studies confuse dealer mark-ups with commissions, and they ignore far more relevant trading costs, in particular opportunity costs. Along the way, I will argue that liquidity in corporate bond trading is better thought of as the size of the bid and ask, rather than as the width, or spread, between them, and that TRACE has probably impaired corporate bond liquidity thus defined.

TRACE IMPACT STUDIES

Bessembinder, Maxwell, and Venkataraman [2006] compared corporate bond trades by insurance companies during the six months prior to the introduction of TRACE (January 2002 through June 2002) and six months afterward (July 2002 through December 2002). Details of trades during the pre-TRACE period were made available to the authors by the National Association of Insurance Commissioners (NAIC). Following the introduction of TRACE, insurance companies executed approximately 12% of all dollar trading volume in U.S. corporate bonds. The authors found an average drop of 5–8 basis points (bps) in the cost of bond trading as reported on TRACE, or 40%–60% of the pre-TRACE cost of trading. In addition, they found a 3.5 bp reduction in the trading cost of bonds that were not reported on TRACE, which constitutes 20% of their pre-TRACE trading costs. Extrapolating these cost savings to all corporate bond market participants, the authors estimate "annual trading cost reductions of about $1 billion for the full corporate bond market" (p. 283).

Edwards, Harris, and Piwowar [2007] examined all trades reported to TRACE between January 2003 and January 2005. They, too, found that "transparent bonds have lower transaction costs than nontransparent bonds, and that transaction costs decrease when bonds become price transparent" (p. 1425). They estimated that "transparency decreases customer transaction costs by roughly five basis points" (p. 1423). In 2003, total trading volume of publicly registered corporate bonds was approximately $2 trillion; the authors thus attributed a total cost savings to TRACE of $1 billion, which is a result similar to that found by Bessembinder, Maxwell, and Venkataraman [2006]. Edwards, Harris, and Piwowar argued that these cost savings are likely to increase over time as the awareness of the availability of trade details on TRACE spreads through the corporate bond markets.

Goldstein, Hotchkiss, and Sirri [2007] analyzed all trades in 4,888 corporate bond issues from July 2002 through February 2004, focusing on trade data for a group of 120 corporate bond issues (90 actively traded and 30 relatively inactive traded) before and after their trade data was disseminated on TRACE as of April 2003. The authors compared these data to trade data of a control group that had no change in the dissemination of its trade data as of April 2003. As in the other two studies, Goldstein, Hotchkiss, and Sirri found that "spreads decrease for bonds whose prices become transparent" (p. 235). They attribute this result to "investors being able to negotiate better terms of trade with dealers once the investors have access to broader bond pricing data" (p. 235). The magnitude of the reduction in spreads ranges from 0 to 67 bps, and is dependent on trade size and the amount of trading activity in a bond before its trading details were reported on TRACE.

ASSESSMENT OF TRACE IMPACT STUDIES

All three studies share a focus on bid–ask spreads as representing the cost of trading. For example, Bessembinder and Maxwell [2008] claimed that "[i]nvestors have benefited from the increased transparency through substantial reductions in the bid–ask spreads that they pay to

bond dealers to complete trades" (p. 232), and Goldstein, Hotchkiss, and Sirri [2007] argued that

> [t]hough transaction costs can have multiple components, perhaps the most important for our purposes is the effective spread of the bond. This is the difference between what a customer pays when they buy a bond and what they receive if they sell the bond.

But there are two major problems with using the bid–ask spread as a proxy for trading cost.

The first problem with using the bid–ask spread as a proxy for trading cost is that it blurs a distinction that is probably familiar to most professional traders and many readers of this journal. The bid–ask spread is a combination of prices at which a dealer is willing to buy and sell a specified amount of securities. It is a pre-trade, posted spread, not a realized profit margin on a trade. A *dealer mark-up* is the profit a dealer makes on a bond he or she buys from one counterparty and sells to another, assuming the two sides of the trade can be linked. A *commission* is a predetermined, disclosed amount that a buyer or seller of bonds pays to a broker for executing an order. Madhavan, Treynor, and Wagner [2007, p. 654] labeled a commission a "direct" or "explicit" cost, because a trader could be given a receipt for them (other examples of explicit costs are fees paid to exchanges, taxes, or stamp duties). A dealer mark-up, however, is an indirect or implicit cost, for which no receipt can be given. In all three studies, the authors attempted to investigate dealer mark-ups (an implicit cost), but treated them as if they were commissions (an explicit cost), and referred to them as bid–ask spreads.

This is not just a matter of semantics. The distinction between dealer mark-ups and commissions is due to a distinction in the capacities in which a sellside firm can act when executing a trade, namely as principal or as agent. When a sellside trader acts as principal, he or she puts trading capital at risk. The intent behind quoting both a bid and an ask price prior to knowing whether the customer wants to buy or sell is to keep the dealer "honest"; that is, to prevent the dealer from shaving down his bid if he knows the customer wants to sell bonds, or from marking up his ask price if he knows the customer wants to buy. In contrast, when a sellside trader acts as agent, he or she does not put any capital at risk. The commission in this case serves solely to compensate the dealer for the search cost of identifying one or more counterparties to the trade and for the ability to persuade those counterparties to participate in the trade.

By treating trading costs as commissions, the three studies implicitly assumed that sellside firms in the corporate bond market trade primarily as agents. By convention, however, virtually all trades in the corporate bond markets are executed on a principal rather than agency basis.[3] This means that technically almost all trades are one-sided only. In this respect, what Bessembinder and Maxwell [2008] referred to as a "round-trip" trade (p. 223) or an economic "rent" extracted by dealers (pp. 222 and 226) does not exist. Dealer mark-ups are meant to compensate dealers for the capital risk they assume in their function as an intermediary between investors and for the expense of maintaining a distribution system of trading counterparties that is needed to complete any trade.

That the three studies found dealer mark-ups have decreased following the introduction of TRACE is not unambiguously positive for investors. Instead, the situation could be that a reduction in mark-ups has occurred because fewer trades have been executed on a principal (capital risk) basis and more on an agency (risk-free) basis, or that relatively fewer and smaller trades have been completed following the introduction of TRACE. Such changes would not necessarily be in the interest of investors.

The second major shortcoming of all three studies is their undue focus on dealer mark-ups as representing the cost of executing trades. To be sure, dealer mark-ups can be substantial. If a buyside trader shrinks dealer mark-ups by a quarter of a point in his or her favor, on average, and the annual turnover ratio of the portfolios he or she trades is 1x, the trader adds an incremental 25 bps to the portfolio's annual return. That may not sound like much, but for a relative-performance ranking of closely clustered mutual funds it could mean several notches up or down the ranking.

Many costs, however, are associated with trading corporate bonds. Far more important than dealer mark-up are *price impact* and *opportunity cost*. Price impact is the impact on the price of a bond from the mere act of soliciting or executing a trade in the bond. If an investor wants to sell $10 million of a bond, but manages to sell only $1 million and in the process causes the price to drop by one point, the price impact of the trade is one point on the unexecuted $9 million the investor still owns.

Even more important than price impact is the opportunity cost of unexecuted trades. Wagner and Edwards [1998] defined opportunity cost as "the cost of failing to complete the trade" (p. 325). They noted that opportunity cost is "never seen but possibly the most damaging to performance" and that "the most expensive trade is typically the one that never occurred" (p. 327).[4]

For example, assume that an investor wants to liquidate $10 million of a corporate bond holding in her portfolio and that the pre-TRACE market is 99–100 (i.e., the investor could sell bonds at a price of 99 or buy them at 100). Assume also that one way the investor could liquidate the $10 million in bonds would be to sell $5 million to a dealer at a price of 99 and to give the dealer an order on the remaining $5 million. The dealer would then attempt to sell the full $10 million to other investors. If, during the time it took to complete the order, the price of the bond dropped from 99 to, say, 97, the investor selling the bonds would take a two-point hit, but only on the $5 million she had not sold to the dealer at the time of the initial trade.

Now, assume that with the advent of TRACE the bid–ask spread in our example has decreased to 99.25–99.75. But because trade details are broadcast to anyone with access to the TRACE system, the dealer is now reluctant to use his or her capital to accommodate the selling investor, because investors who would potentially buy the bond now have an informational advantage in that they know the size and price at which the dealer bought the bonds he is now offering for sale. As a result, the dealer may now be willing to buy only, say, $1 to $2 million at 99.25 from the seller and to take an order on the remaining $8 to $9 million. If, during the time it takes to complete the order, the price dropped from 99.25 to 97.25, the selling investor would have benefited from TRACE by a quarter point on $1 to $2 million bonds, but at the expense of two points on $3 to $4 million. This becomes especially costly in the event the price were to drop prior to trade completion by not 2 points but, say, 20 points or more, which is not an unrealistic price drop by any means, for example, in the case of high-yield bonds that begin trading distressed.

Edwards, Harris, and Piwowar [2007, p. 1450] argued that any impact on market liquidity due to dealers managing their inventory differently as a result of TRACE should not be an issue because 1) debt is less risky than equity and the equity market has plenty of liquidity, and 2) dealers can hedge debt exposure in the equity markets. Although it is accurate to say that debt is less risky than the equity of the same issuer, the statement that debt is less risky than equity in the absolute is not automatically true for the market in its entirety. Many companies have publicly outstanding equity but not debt. Therefore, as a group, companies with debt outstanding may well be riskier than the aggregate of all companies. Furthermore, many companies with debt outstanding have no public equity, in which case it is either not possible or not practical to hedge credit exposure in the equity markets. In addition, hedging in the credit markets would add an extra layer of complexity to managing the credit risk of a trading portfolio, which would likely be reflected in wider bid–ask spreads and larger dealer mark-ups. Finally, hedging a corporate bond's risk in the equity market (assuming a corresponding stock is outstanding) is more difficult in practice than in theory, because "basis risk" is considerably greater when dealing with default risk than when dealing with interest-rate risk.

Bessembinder and Maxwell [2008] found that market participants whom they surveyed "were nearly unanimous in the view that trading is more difficult after the introduction of TRACE" (p. 228). These market participants included "professionals representing small, medium, and large investment management firms, as well as medium and large corporate bond dealers" (p. 219). Indeed, Bessembinder and Maxwell acknowledged that "transacting is no longer as simple as it was pre-TRACE" (p. 229).

Bessembinder and Maxwell countered the comments of market participants by arguing that average daily trading volumes of corporate debt securities, as provided by the Securities Industry and Financial Markets Association (SIFMA), increased rather than decreased from 2002 (when TRACE was introduced) through 2007. Indeed, as can be calculated from the figures in the second column of the exhibit, daily average trading volumes increased by 28.6% over this five-year period. But during the same period, the total amount of corporate debt outstanding increased by as much as 42.1%, as can be calculated from the figures in the first column of the exhibit. Clearly, from 2002 through 2007, trading volumes failed to keep pace with the total amount of corporate debt outstanding by a substantial margin.

Note that the interpretation of the trends in these figures is not straightforward. For example, in recent years, much of credit trading has migrated from corporate bonds to derivative instruments, such as credit default swaps, and

EXHIBIT

Outstanding U.S. Corporate Debt and Average Daily Trading Volumes, 2002–2007 (in billions)

	Outstanding U.S. Corporate Bond Market Debt	Average Daily Trading Volumes in the U.S. Corporate Bond Markets
2002	4,099.5	18.9
2003	4,458.4	20.7
2004	4,785.1	21.2
2005	4,960.0	21.0
2006	5,365.0	24.1
2007	5,825.4	24.3

Source: SIFMA at http://www.sifma.org/research/statistics/statistics.html.

to corporate loans, not all of which are subject to the same reporting requirements as corporate bonds. This credit market migration away from corporate bonds is not only, if at all, due to the advent of TRACE. But neither can it be argued that the increase in bond trading volume in the five years subsequent to TRACE means that TRACE has not impaired liquidity in the corporate bond markets.

MARKET IMPACT OF TRACE

Regulators refer to all three academic studies that I have discussed in this article as evidence that "increased transparency reduces transaction costs and does not negatively impact liquidity" (Nazareth [2006]). These studies, however, have interpreted liquidity as the width of the bid–ask spread. Instead, as I have argued, corporate bond liquidity is better thought of as the size of the bid and the ask, or what is sometimes referred to as the *depth* of the market (e.g., Kyle [1985]), than as the width, or spread, between the bid and ask.

Investors depend on the willingness of bond dealers to make markets in bonds they want to buy or sell. Investors want to be able to execute a trade even if a bond dealer does not have a counterparty simultaneously lined up. A bond dealer may be willing to function as a temporary counterparty to a sale by committing his or her own capital, but the dealer incurs a risk that the price will drop before he finds another investor who is willing to buy the bond that his client sold. The reason the dealer charges a mark-up on the trade is to compensate for this price risk. In the short term, investors benefit from a smaller mark-up. But in the long run, they will incur greater difficulty buying or selling bonds when they want to buy or sell them, which effectively leaves them with the price risk. That price risk, measured in points, is far greater than the reduction in mark-ups, measured in basis points, found by the three academic studies analyzed in this article.

Sellside traders opposed the introduction of TRACE (and, earlier, of FIPS), because they realized it would reduce their profitability. The dealer mark-up on "flow" trading, or trades in large, well-known, frequently traded issues, was never that large to begin with, as multiple dealers trafficked in such bonds, and it was relatively easy for buyside traders to "check around" for the best price to execute. Instead, sellside desks' profitability depended on occasionally clearing a large mark-up on a relatively obscure bond. Both the buyer and seller thought they were receiving a reasonable execution, because there were no recent transactions in the bond or transactions in closely comparable issues to indicate otherwise.

These trades may have been booked as risk transactions, so no commission had to be charged or disclosed, but in reality the buyer and seller were lined up in advance and the bonds were crossed with virtually no capital risk to the sellside intermediary. To some extent this reflects so-called search costs, or the costs a dealer incurs for lining up a counterparty to a trade, which is more difficult to do in the case of a relatively obscure bond than in the case of a large, liquid, easily tradable bond. But it may also reflect that bonds, especially high-yield corporate bonds, are sometimes traded only by the lead member of the original underwriting syndicate, which effectively constitutes a monopoly "rent."[5]

When this sort of riskless profit opportunity disappeared as a result of increased price transparency, dealers quite rationally reduced their capital commitment to ordinary market making and concentrated instead on proprietary trading, in which buyside firms became more like competitors than clients.

Hooper and Schwartz [2008] recently pointed out that trading is a coordination process that brings together a diverse group of buyers and sellers, and that "illiquidity is in large part attributable to coordination difficulties involved in turning the orders of different agents into trades and transaction prices" (p. 1). Within this context, the marketplace facilitates not only price discovery, but also quantity discovery. According to Hooper and Schwartz, "[q]uantity discovery involves buyers and sellers finding each other and trading when, because of the size of their orders, they are at the same time seeking to hide their presence in the marketplace" (p. 2).

I have argued in this article that excessive price transparency impedes quantity discovery, which impedes the coordination process of trading, and in turn impedes the efficient allocation of capital in the marketplace. Not just investors stand to lose. All else remaining equal, as investors seek compensation for lower liquidity, they require higher interest rates on the bonds they buy (Amihud and Mendelson [1991]; Chen, Lesmond, and Wei [2007]), making it more expensive for U.S. corporate debt issuers to finance their businesses.

CONCLUSION

It would appear that the increase in SEC-mandated reporting requirements has become a case of interference with free markets that, although perhaps well intentioned, has had unintended consequences, which on balance may do more harm than good to investors meant to benefit from them. Markets tend to function best when regulators tinker least with the price mechanism. The most effective way to prevent dealer mark-ups from becoming excessive is by encouraging competition among bond dealers (Galai and Copeland [1983] and Bloomfield and O'Hara [2000]), not by making it less attractive for them to operate.

ENDNOTES

[1]Prior to the introduction of TRACE, the high-yield corporate bond market used the Fixed Income Pricing System (FIPS) to report trades in the most liquid high-yield corporate bonds. FIPS was instituted in the early 1990s following an SEC investigation of alleged trading in high-yield bonds based on insider information about pending mergers and acquisitions.

[2]For an overview of the arguments on both sides of this debate, see Biais, Glosten, and Spatt [2005].

[3]According to the NASD-sponsored *Report of the Corporate Debt Market Panel* ([2004], p. 5), in 92% of all TRACE-reported trades, the reporting bond dealer acted in a principal capacity (dealer) rather than as agent (broker).

[4]Madhavan, Treynor, and Wagner [2007] referred to this as *delay cost*, which is due to "the inability to complete the desired trade immediately due to its size and the liquidity of markets.... One reason delay can be costly is that while a trade is being stretched out over time, information is leaking into the market."

[5]In July 2004, the NASD fined four securities dealers $5 million each for charging mark-ups as high as 32.2% on 18 trades in high-yield corporate bonds executed between 2000 and 2002, and for related offenses (see http://www.finra.org/PressRoom/NewsReleases/2004NewsReleases/P010892).

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