Internet Appendix for "Click or Call? Auction versus Search in the Over-the-Counter Market"

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This document provides supplementary materials for the above paper. Section I calculates average transaction costs using a simple methodology. Supplementing Table I in the main text, Section II provides additional descriptive statistics for where trading occurs based on trade size. Section III provides an analysis of the determinants of electronic auctions' duration.

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I. Electronic and Voice Trades by Trade Size and Buy/Sell

The simplest approach to calculate transaction costs is to compare buy and sell prices of the same bond around the same time to create an imputed spread. As the TRACE data identify whether a transaction is buyer- or seller-initiated, imputed spreads are straightforward to compute. Hong and Warga (2000) follow this approach to estimate what Harris and Piwowar (2006) refer to as a benchmark methodology by subtracting the average price for all sell transactions from the average buy price for each bond each day when there is both a buy and a sell (see also Feldhütter (2012)).

Figure IA.I displays trading costs in basis points measured using the difference between average prices for all buy and sells for each bond for bond days when there is both a buy and a sell. We divide the difference between buy and sell prices by two to measure the one-way transaction cost. This cost is broken out for electronic and voice for each trade-size category in Table IA.I. Costs are first measured for all bond-days with a buy and a sell for each trade size. An initial attempt to control for cross-sectional differences in the types of bonds that trade electronically shown in Table I is to calculate costs only for bonds traded both electronically and by voice. To control for time-series differences in market conditions, Figure IA.1 also calculates costs only on bond-days with both electronic and voice buys and sells in each trade size.

A steep decline in trading costs with trade size and substantial cost differences between electronic and voice are immediately evident. For the broadest cost measure, odd-lot electronic trades average 11 basis points while for voice trades the cost is substantially higher at 41 basis points. The costs for voice trades fall to 12 and 8 basis points in the round and maximum trade size categories, respectively. Electronic costs fall with trade size as well, albeit more slowly. These costs are similar in magnitude to previous estimates of corporate bond transaction costs. While electronic costs are lower than voice, Table I shows that the characteristics of bonds traded via electronic and voice differ, with bonds likely to be more liquid (e.g., bonds with larger issue sizes) trading more electronically. Electronic costs calculated only for bonds traded via both electronic and voice are quite similar to using all bonds because the bonds traded electronically are also traded by voice. Voice costs generally fall when limiting the bonds, but the declines are modest and the costs remain higher than electronic.

Limiting the analysis to only bonds traded both electronically and by voice controls for cross-sectional differences in bond characteristics. However, it is still possible that bonds are more likely to trade electronically on days when liquidity in those bonds is higher; that is, when there is less uncertainty about the issuer. Figure IA.1 attempts to control for this by only examining days when costs for a

bond can be calculated for both electronic and voice. The costs and cost differences are not greatly affected by further narrowing the sample, but the number of observations falls substantially, especially in the larger trade sizes. A natural approach to incorporate bond characteristics and market conditions is a multivariate regression framework that controls for potential selection biases in the trading mechanism choice. We follow this approach in the main paper.

II. Electronic and Voice Trades by Trade Size and Trade Direction

Table IA.I examines the characteristics of electronic and voice trades in terms of trade size and whether the customer is buying or selling. We distinguish between investment-grade and high-yield bonds because the trading convention for investment-grade corporate bonds is in terms of the yield spread over a benchmark Treasury of similar duration, whereas negotiations in high-yield bonds occur in dollar prices. This difference in pricing convention means that dealers' bids in high-yield bonds are exposed to broad interest rate risk between the time of placement and execution, so that auction time is more critical.

The majority of voice trades are micro lots defined as below $100,000 in value, 79.0% and 72.8% for investment-grade and high-yield bonds, respectively. Size differences are already apparent in Table II between the electronic auction mechanism and the OTC voice market. There is a much higher concentration of odd-lot ($100,000 to $1 million) trades in the electronic auction mechanism and fewer large transactions. Overall, for investment-grade bonds the share of the electronic auction market in overall bond trading is 7% in micro ($1 to $100K), 33% in odd-lot ($100K to $1M), 24% in round-lot ($1M to $5M), and 4% in maximum reported size ($5M+) trades. Electronic trading is much less prevalent in high-yield bonds with only about 2% of trades overall. As with investment-grade bonds, the smallest trades are most likely to be done by voice. Clientele effects might also be a consideration. Although most large investors use both electronic and voice, smaller retail-oriented traders may lack access to the auction platform, resulting in a smaller electronic market share in micro-sized trades. This could also explain why the average trade size is larger for electronic auctions in odd-lot trades. Lower electronic market share in the largest trades likely arises from differences in the trading mechanisms.

III. Determinants of Auction Length

Table IA.II examines the length of time investors choose to run auctions. Clustering is immediately evident; almost all auctions are five, 10, 15, or 20 minutes with the approximate percentages being 20, 50, 10, and 20, respectively. Table IA.II regresses the auction length on the set of bond, market, and trade variables. Larger trades run for shorter periods, consistent with greater information leakage concerns. This is also consistent with a higher response rate from dealers for larger orders. Auctions are longer for older and longer maturity bonds, likely due to their lower liquidity. Less information leakage in larger issues and lower issuer stock price volatility is likely responsible for the longer auctions under these conditions.

REFERENCES

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Table IA.I
Trading Value and Trade Size Distribution

The table presents descriptive statistics based on a sample of all U.S. investment-grade and high-yield corporate bond trades in the Financial Industry Regulatory Authority's (FINRA) Trade Reporting and Compliance Engine (TRACE) from January 2010 through April 2011, excluding all interdealer trades. Electronic refers to MarketAxess trades; Voice trades are all TRACE reported trades excluding electronic auction trades. High yield is below BBB rated. Foreign issue bonds are excluded.

	Investment Grade		High Yield	
Feature	**Electronic**	**Voice**	**Electronic**	**Voice**
Number of Trades	445,416	3,229,956	22,198	923,655
Value Traded ($ Billions)				
Micro (1-100K)	5.8	51.8	0.3	13.5
Odd (100K-1M)	63.5	102.8	3.0	34.7
Round (1M-5M)	91.6	332.0	3.4	146.9
$5M and above	20.8	539.2		
Trade Size ($ 000)				
Micro (1-100K)	30	20	29	20
Odd (100K-1M)	320	253	315	273
Round (1M-5M)	1,774	2,037		
Distribution of Trades (%)				
Micro (1-100K)	42.9	79.0	47.4	72.8
Odd (100K-1M)	44.6	12.6	43.5	13.8
Round (1M-5M)	11.6	5.0	9.0	13.4
$5M and above	0.9	3.3		
Buys (%)				
Micro (1-100K)	33.0	59.2	26.4	67.0
Odd (100K-1M)	51.9	60.3	39.8	58.6
Round (1M-5M)	49.2	56.3	42.7	51.6
$5M and above	41.4	50.9		

Table IA.II
Time Length of Auctions

The table presents regression results for the length of time in minutes auctions are run for a sample of electronic auctions from January 2010 to April 2011. Independent variables include dummy variables for the investor buying from a dealer, *buy*, trade size, *odd*-lot ($100K to $1M), *round*-lot ($1M to $5M), and *max* ($5M+), calendar time, *Monday*, *Friday*, and *end-of-month*, and *A-BBB rating*. The absolute value of the return on the issuer's stock the day of the trade is |*ret*|. Bond characteristics include the logarithm of the bond's time to *maturity*, time since issuance, *age*, *issue size*, and issuer's *other issue size*. All continuous independent variables are demeaned. The logarithm of the number of *dealers* sent a request for a quote in the auction is included. Standard errors clustered on day and bond issue are in parentheses; ** and * denote statistical significance at the 0.01 and 0.05 level.

	Investment Grade	**High Yield**
Buy	-0.30**	-0.41*
	(0.06)	(0.19)
Odd	-1.19**	-0.90**
	(0.08)	(0.25)
Round	-1.80**	-1.94**
	(0.10)	(0.27)
Max	-2.51**	
	(0.15)	
A-BBB Rating	0.55**	
	(0.12)	
|Ret|	-4.88**	-6.95**
	(1.59)	(2.32)
Maturity	0.04**	0.09**
	(0.00)	(0.01)
Age	0.05**	0.04
	(0.01)	(0.03)
Issue Size	0.55**	0.21
	(0.06)	(0.16)
Other Issue Size	-0.21**	-0.00
	(0.04)	(0.08)
Constant	11.90**	11.21**
	(0.13)	(0.22)
Observations	606,325	47,148
R^2	0.03	0.02

Figure IA.1. Trading costs in basis points by size and mechanism.
The figure displays one-way trading costs in basis points measured using the difference between the average prices for all buy and sells, divided by two, for each bond for three samples: bond days when there is both a buy and a sell; bonds with buys and sells in both mechanisms; and bond days with buys and sells in both mechanisms. This cost is broken out for electronic and voice by trade size category. Data are from January 2010 through April 2011, excluding all interdealer trades. Electronic refers to MarketAxess trades; Voice to OTC trades.