

Paired Bond Trades

Eric Zitzewitz
Dartmouth College

Q Group
April 5, 2011

Things we know about bond trading

- Essentially all bond trading is in dealer markets, despite existence of exchanges (e.g. NYSE Bonds)
- Bonds do not trade frequently
- Trading costs are high, especially for small trades
- Many investors are locked into using a single dealer as a counterparty
- Recent regulation has sought to reduce trading costs (post-trade price disclosure, excess markup cases), with some success

Open questions

- Do trading costs reflect rents?
- Is price regulation (ex post enforcement actions when markups are deemed “excessive”) optimal?
- Should exchange-based trading be mandated?

This paper

- Documents a new fact: 37 percent of dealer-client corporate bond trades are paired with a dealer-dealer trade
 - Usually for same exact quantity and executed at same exact second
 - Implied pairing dealer profit is essentially never negative (0.4 percent of pairs)
- Pairing rates
 - Much higher for <\$100k trades (46 percent) than \geq \$500k trades (4.5 percent)
 - Lower for institutional (NAIC-matched) trades of a given size
 - Higher for client buys
- Trading costs are higher for paired trades of given size
 - Spread is split roughly 50-50 between pairing dealer (PD) and ultimate dealer (UD)

Two other results

- Pairing rate *is lower* for round-price trades
 - If round pricing is used to soften competition, suggests there is less need for paired trades
- Interdealer spread is higher for small trades, low credit quality
 - But pairing dealer spread U-shaped in trade size and credit quality
 - Pairing rates also u-shaped

Implications

- Pairing suggests many investors do not search over entire market
 - Dealers with preferred access to orders (due to contracts or relationships) earn substantial and nearly risk-free trading profits
- By Wall Street standards, pairing dealer profits are tiny:
 - 45 percent of profit on paired trades, but
 - of \$3.8B/yr in aggregate corp bond dealer profits, only \$360M is pairing dealer profits
- Some evidence that excessive markup regulation has an impact
- Understanding pairing is important to other empirical bond asset pricing work:
 - E.g., unpaired interdealer trade prices are much less negatively autocorrelated

Data

- TRACE
 - Trade by trade data, reported ex post
 - “Reporting party side” variable added to public version in November 2008
 - No dealer identifier
 - Quantities truncated at \$5M (\$1M for high yield)
 - FINRA sanctions for misreporting
- NAIC
 - Trade by trade data for insurance company trades
 - Dealers identified, no quantity truncation
 - Trades date but not time stamped
- MSRB (coming soon)

Last Updated: 12/9/2010

Bond Trade Activity Search Results

Glossary

Issue: **JPM.UD** Description: **JPMORGAN CHASE & CO** Coupon Rate: **5.150** Maturity Date: **12/15/2015**

<< First < Prev Next > Last >>

Execution											
Date	Time	Status	Quantity	Price	Yield	Commission	Modifier	2nd Modifier	Special	As Of	Reporting Party Side
11/30/2010	08:38:49	T	10000	100.000	5.138	N	C				B
11/19/2010	12:00:00	T	36000	100.000	5.143	N	@				D
09/21/2010	10:21:57	T	17000	99.954	5.160	N	@				D
09/21/2010	10:21:56	T	17000	100.054	4.765	N	@				S
09/21/2010	10:15:48	T	8000	99.954	5.160	N	@				D
09/21/2010	10:15:47	T	8000	100.079	4.588	N	@				S
09/21/2010	10:07:17	T	25000	100.054	4.765	N	@				S
09/21/2010	10:07:17	T	25000	99.954	5.160	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				S
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/19/2010	11:09:35	T	1000	94.500	6.373	Y	@				B
08/19/2010	11:09:35	T	1000	97.000	5.808	N	@				D
05/25/2010	12:15:00	T	50000	98.300	5.506	N	@				B
04/06/2010	10:05:02	T	5000	100.300	2.143	N	@				S
03/23/2010	15:58:53	T	5000	100.300	2.937	N	@				S
03/23/2010	15:58:00	T	5000	100.300	2.937	N	@		R		S
03/23/2010	15:55:35	T	9000	99.850	5.180	N	@				S
03/23/2010	15:49:28	T	14000	99.300	5.292	N	@				B
10/27/2009	11:06:55	T	5000	99.750	5.197	N	@				S
10/27/2009	10:54:54	T	5000	98.750	5.390	N	@				B
09/30/2009	10:46:47	T	6000	100.000	5.148	N	@				S
09/30/2009	09:42:38	T	6000	99.000	5.339	N	@				B

Last Updated: 12/9/2010

Bond Trade Activity Search Results

Glossary

Issue: **JPM.UD** Description: **JPMORGAN CHASE & CO** Coupon Rate: **5.150** Maturity Date: **12/15/2015**

<< First < Prev Next > Last >>

Execution											
Date	Time	Status	Quantity	Price	Yield	Commission	Modifier	2nd Modifier	Special	As Of	Reporting Party Side
11/30/2010	08:38:49	T	10000	100.000	5.138	N	C				B
11/19/2010	12:00:00	T	36000	100.000	5.143	N	@				D
09/21/2010	10:21:57	T	17000	99.954	5.160	N	@				D
09/21/2010	10:21:56	T	17000	100.054	4.765	N	@				S
09/21/2010	10:15:48	T	8000	99.954	5.160	N	@				D
09/21/2010	10:15:47	T	8000	100.079	4.588	N	@				S
09/21/2010	10:07:17	T	25000	100.054	4.765	N	@				S
09/21/2010	10:07:17	T	25000	99.954	5.160	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				S
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/19/2010	11:09:35	T	1000	94.500	6.373	Y	@				B
08/19/2010	11:09:35	T	1000	97.000	5.808	N	@				D
05/25/2010	12:15:00	T	50000	98.300	5.506	N	@				B
04/06/2010	10:05:02	T	5000	100.300	2.143	N	@				S
03/23/2010	15:58:53	T	5000	100.300	2.937	N	@				S
03/23/2010	15:58:00	T	5000	100.300	2.937	N	@		R		S
03/23/2010	15:55:35	T	9000	99.850	5.180	N	@				S
03/23/2010	15:49:28	T	14000	99.300	5.292	N	@				B
10/27/2009	11:06:55	T	5000	99.750	5.197	N	@				S
10/27/2009	10:54:54	T	5000	98.750	5.390	N	@				B
09/30/2009	10:46:47	T	6000	100.000	5.148	N	@				S
09/30/2009	09:42:38	T	6000	99.000	5.339	N	@				B

Last Updated: 12/9/2010

Bond Trade Activity Search Results

Glossary

Issue: **JPM.UD** Description: **JPMORGAN CHASE & CO** Coupon Rate: **5.150** Maturity Date: **12/15/2015**

<< First < Prev Next > Last >>

Execution											
Date	Time	Status	Quantity	Price	Yield	Commission	Modifier	2nd Modifier	Special	As Of	Reporting Party Side
11/30/2010	08:38:49	T	10000	100.000	5.138	N	C				B
11/19/2010	12:00:00	T	36000	100.000	5.143	N	@				D
09/21/2010	10:21:57	T	17000	99.954	5.160	N	@				D
09/21/2010	10:21:56	T	17000	100.054	4.765	N	@				S
09/21/2010	10:15:48	T	8000	99.954	5.160	N	@				D
09/21/2010	10:15:47	T	8000	100.079	4.588	N	@				S
09/21/2010	10:07:17	T	25000	100.054	4.765	N	@				S
09/21/2010	10:07:17	T	25000	99.954	5.160	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				S
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/19/2010	11:09:35	T	1000	94.500	6.373	Y	@				B
08/19/2010	11:09:35	T	1000	97.000	5.808	N	@				D
05/25/2010	12:15:00	T	50000	98.300	5.506	N	@				B
04/06/2010	10:05:02	T	5000	100.300	2.143	N	@				S
03/23/2010	15:58:53	T	5000	100.300	2.937	N	@				S
03/23/2010	15:58:00	T	5000	100.300	2.937	N	@		R		S
03/23/2010	15:55:35	T	9000	99.850	5.180	N	@				S
03/23/2010	15:49:28	T	14000	99.300	5.292	N	@				B
10/27/2009	11:06:55	T	5000	99.750	5.197	N	@				S
10/27/2009	10:54:54	T	5000	98.750	5.390	N	@				B
09/30/2009	10:46:47	T	6000	100.000	5.148	N	@				S
09/30/2009	09:42:38	T	6000	99.000	5.339	N	@				B

Last Updated: 12/9/2010

Bond Trade Activity Search Results[Glossary](#)Issue: **JPM.UD** Description: **JPMORGAN CHASE & CO** Coupon Rate: **5.150** Maturity Date: **12/15/2015**[<< First](#) [< Prev](#) [Next >](#) [Last >>](#)

Execution											
Date	Time	Status	Quantity	Price	Yield	Commission	Modifier	2nd Modifier	Special	As Of	Reporting Party Side
11/30/2010	08:38:49	T	10000	100.000	5.138	N	C				B
11/19/2010	12:00:00	T	36000	100.000	5.143	N	@				D
09/21/2010	10:21:57	T	17000	99.954	5.160	N	@				D
09/21/2010	10:21:56	T	17000	100.054	4.765	N	@				S
09/21/2010	10:15:48	T	8000	99.954	5.160	N	@				D
09/21/2010	10:15:47	T	8000	100.079	4.588	N	@				S
09/21/2010	10:07:17	T	25000	100.054	4.765	N	@				S
09/21/2010	10:07:17	T	25000	99.954	5.160	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				S
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/20/2010	14:59:56	T	1000	100.000	5.148	N	@				D
08/19/2010	11:09:35	T	1000	94.500	6.373	Y	@				B
08/19/2010	11:09:35	T	1000	97.000	5.808	N	@				D
05/25/2010	12:15:00	T	50000	98.300	5.506	N	@				B
04/06/2010	10:05:02	T	5000	100.300	2.143	N	@				S
03/23/2010	15:58:53	T	5000	100.300	2.937	N	@				S
03/23/2010	15:58:00	T	5000	100.300	2.937	N	@		R		S
03/23/2010	15:55:35	T	9000	99.850	5.180	N	@				S
03/23/2010	15:49:28	T	14000	99.300	5.292	N	@				B
10/27/2009	11:06:55	T	5000	99.750	5.197	N	@				S
10/27/2009	10:54:54	T	5000	98.750	5.390	N	@				B
09/30/2009	10:46:47	T	6000	100.000	5.148	N	@				S
09/30/2009	09:42:38	T	6000	99.000	5.339	N	@				B

Table 1. CSQs by number of trades

	# in 000s	%
S	3,916	35%
D	3,460	31%
B	1,866	17%
BD	703	6.3%
DS	702	6.3%
All other 2 trade combos	205	1.8%
DDS	142	1.3%
BDD	83	0.7%
All other 3 trade combos	34	0.3%
4+ trade combos	25	0.2%

CSQ = Cusip, second, quantity combination. Within CSQ, trades sorted by price, then alphabetically. So BD and DS imply non-negative implied pairing-dealer profit.

Table 2B. Which trades are really paired?

	Percent of pairs with negative implied profit		
Time difference	Same exact quant	Same range	Different range
Same second	0.11	0.61	0.48
1-5 secs	0.23	4.0	4.6
6-60 secs	0.86	9.2	11.4
1:01-5:00 mins	2.4	12.9	14.4
5:01-15:00 mins	4.9	15.4	16.7
15:00-59:59 mins	9.2	18.7	19.6
Same day, 60 mins+	11.7	21.8	22.8
1-7 days	15.6	24.6	25.0
8+ days	29.2	33.3	35.4
Total	1.8	17.8	19.3

Each dealer-client trade is matched with the temporally closest interdealer trade.

Figure 1. Share of trade pairs with negative implied profit, by time and quantity difference

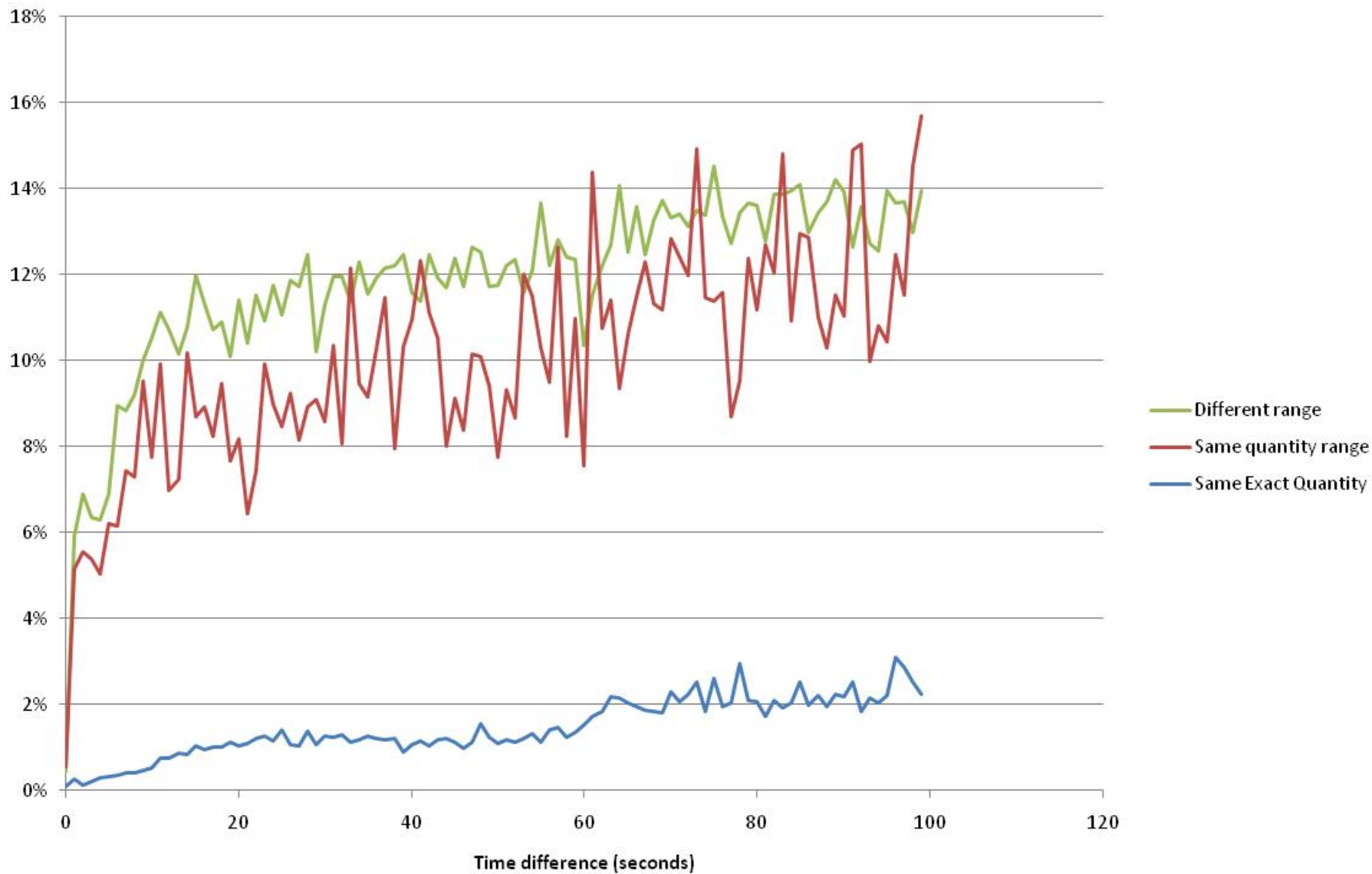


Table 2A. Number of matches

	Number of matches (000s)		
Time difference	Same exact quant	Same range	Different range
Same second	1,001	27	154
1-5 secs	635	10	55
6-60 secs	694	31	171
1:01-5:00 mins	283	55	354
5:01-15:00 mins	131	62	422
15:00-59:59 mins	92	80	580
Same day, 60 mins+	66	69	503
1-7 days	76	97	714
8+ days	10	17	118
Total	2,988	448	3,071

Each dealer-client trade is matched with the temporally closest interdealer trade.

Table 2C. Mean implied profit

Time difference	Mean implied profit (percent)		
	Same exact quant	Same range	Different range
Same second	0.52	0.57	0.59
1-5 secs	0.73	0.77	0.77
6-60 secs	0.58	0.88	0.92
1:01-5:00 mins	0.68	0.94	0.97
5:01-15:00 mins	0.82	0.97	0.97
15:00-59:59 mins	0.97	0.95	0.96
Same day, 60 mins+	1.08	0.99	0.96
1-7 days	1.38	1.06	1.03
8+ days	1.16	0.85	0.76

Each dealer-client trade is matched with the temporally closest interdealer trade.

Figure 2A. Distribution of implied dealer profit, paired trades

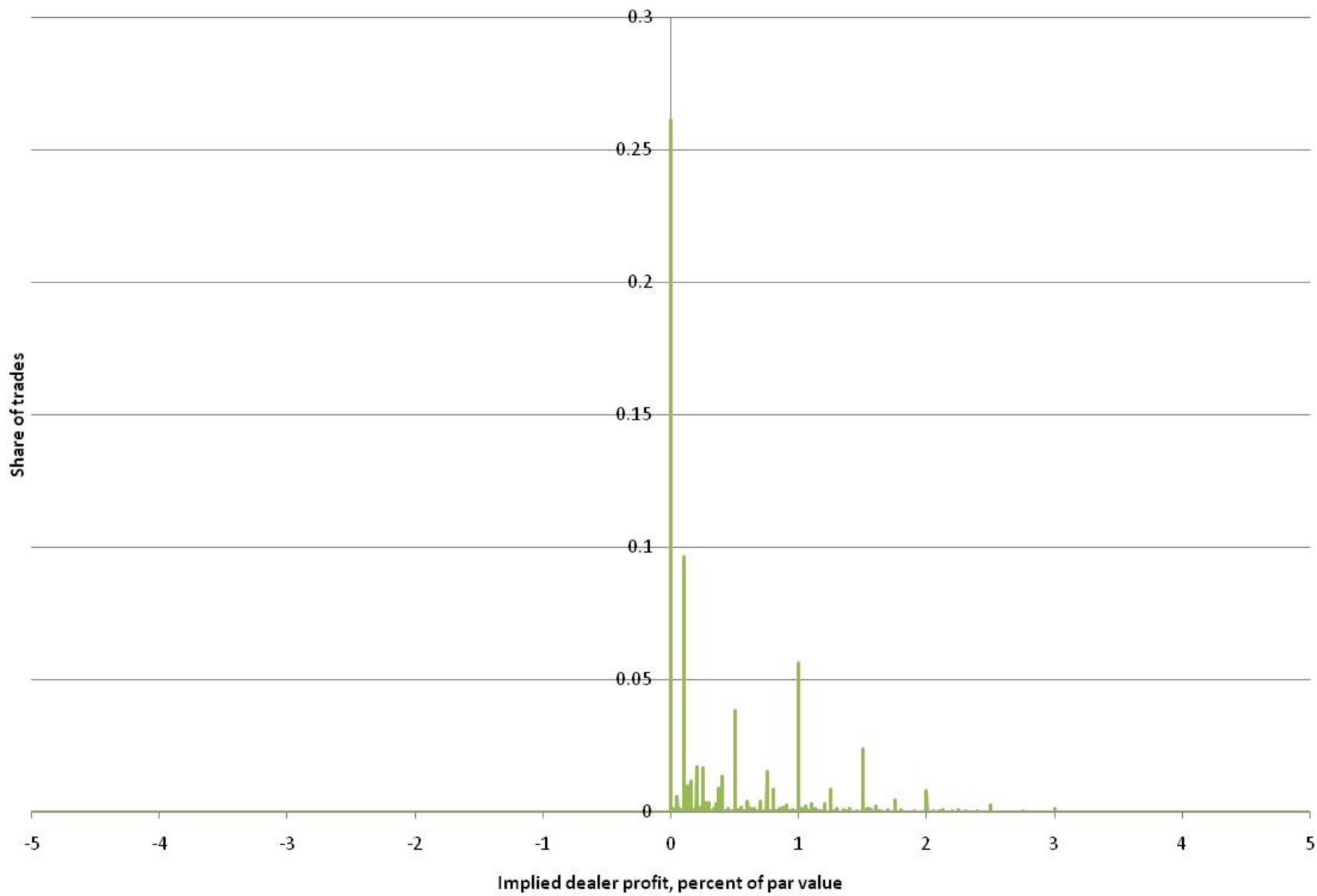


Figure 2B. Distribution of implied dealer profit, other trade matches within 15 minutes

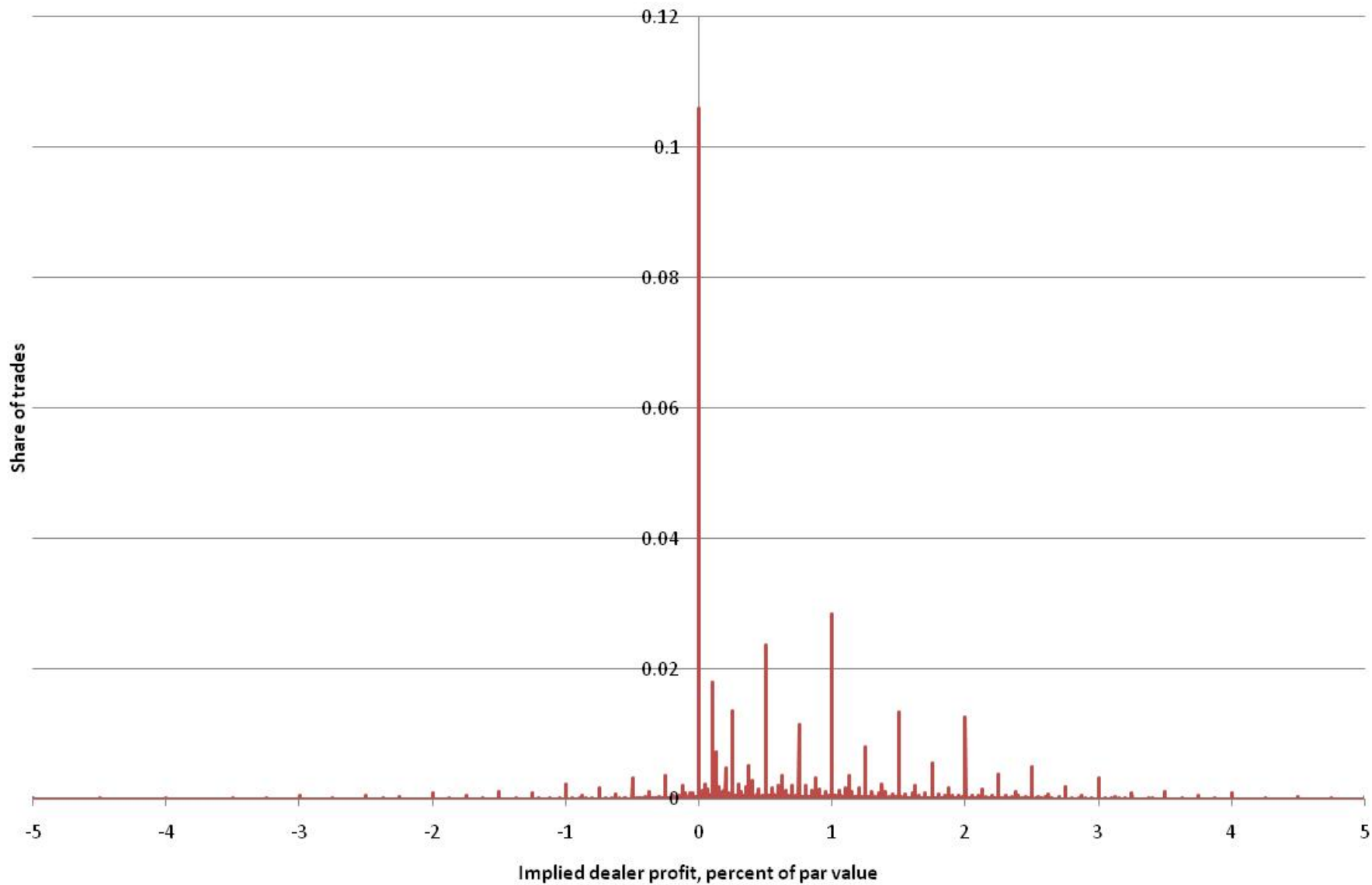


Figure 2C. Distribution of implied dealer profit, all other trade matches

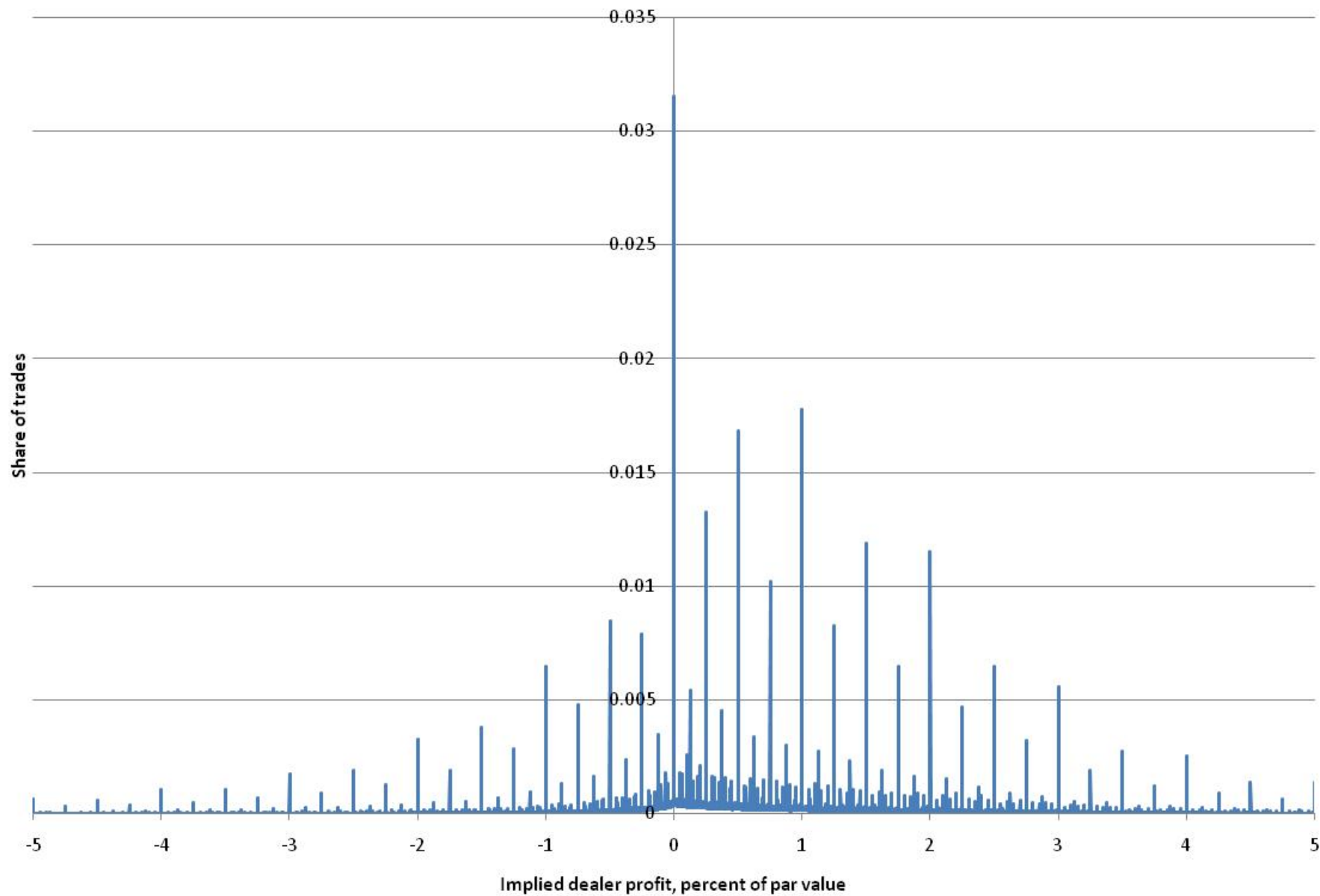


Table 3. Pairing incidence, by direction and size

Size (par value)	Client sells	Client buys	All client	Interdealer
\$1-1.9k	37.2%	44.4%	40.9%	53.0%
\$2-4.9k	36.9	53.6	45.2	55.3
\$5-9.9k	30.8	47.2	41.7	58.5
\$10-19k	30.3	55.1	48.3	62.4
\$20-49k	28.4	55.7	47.8	60.4
\$50-99k	24.3	46.7	39.5	52.4
\$100-199k	18.4	32.9	27.9	39.8
\$200-499k	11.5	18.2	15.6	25.7
\$500-999k	7.4	8.0	7.7	13.5
\$1M-1.9M*	5.1	3.0	4.0	10.1
\$2M-4.9M	5.0	2.9	3.9	7.5
\$5M*	3.4	2.1	2.8	8.4
Small (<\$100k)	30.1	52.7	45.6	59.1
Medium (\$100-499k)	15.2	26.8	22.6	34.1
Large (>=\$500k)	5.2	4.0	4.5	10.4
Total	23.1	43.8	36.7	51.8

Table 4. Pairing incidence, NAIC and other

Size (par value)	NAIC client sells	Other client sells	NAIC client buys	Other client buys
\$1-1.9k	None	37.2%	None	45.3%
\$2-4.9k	0.0	37.1	0.0	53.9
\$5-9.9k	9.5	31.0	4.3	46.8
\$10-19k	11.1	30.3	13.3	54.5
\$20-49k	9.7	28.5	28.1	54.9
\$50-99k	7.8	24.5	33.8	46.1
\$100-199k	6.2	18.8	30.0	32.1
\$200-499k	4.9	11.7	21.6	17.7
\$500-999k	5.1	7.7	7.6	7.9
\$1M-1.9M*	4.6	5.2	4.2	3.1
\$2M-4.9M	2.2	5.0	2.7	3.0
\$5M*	1.7	3.5	1.4	2.2
Small (<\$100k)	8.4	30.2	28.1	52.2
Medium (\$100-499k)	5.4	15.6	25.1	26.1
Large (>=\$500k)	3.5	5.3	3.4	4.0

NAIC client trades are trades reported in TRACE with a matching trade in NAIC data (same CUSIP, exact quantity, day, direction and price (within 1 cent). Sample period is 11/08-12/99.

Table 5. Pairing rate by dealer, NAIC client trades

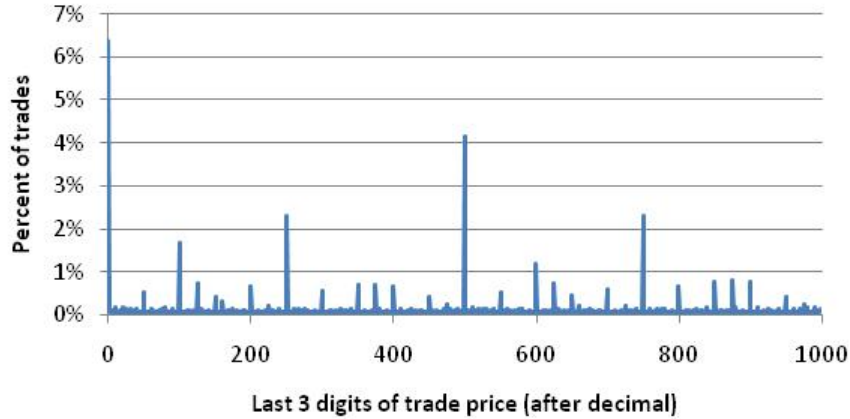
Dealer	Trades	Pairing rate (%)
1. Bank of America	2,153	0.9
2. Morgan Stanley	1,941	8.7
3. Citi	1,919	9.8
4. J.P. Morgan	1,650	2.4
5. Jeffries	1,568	1.8
10. UBS	876	52.2
16. Merrill Lynch	580	50.5
All others	21,601	4.7

Table 6. Determinants of pairing

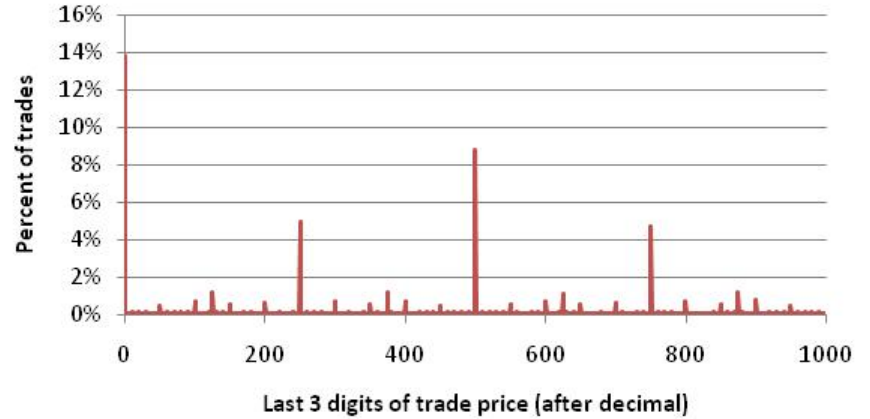
- Controlling for trade size, pairing of clients is more common for:
 - Client buys
 - Non-NAIC clients
 - “Vanilla” bonds (Investment grade, Senior, No credit enhancements, Callable/Convertible)
 - Non-round-number-priced client trades
 - Later in a bond’s life (but not right before maturity)

Figure 3. Pairing and round pricing

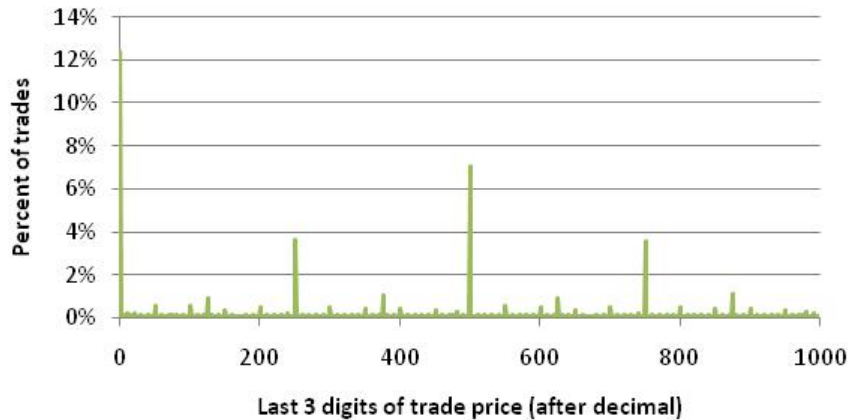
Paired dealer-client



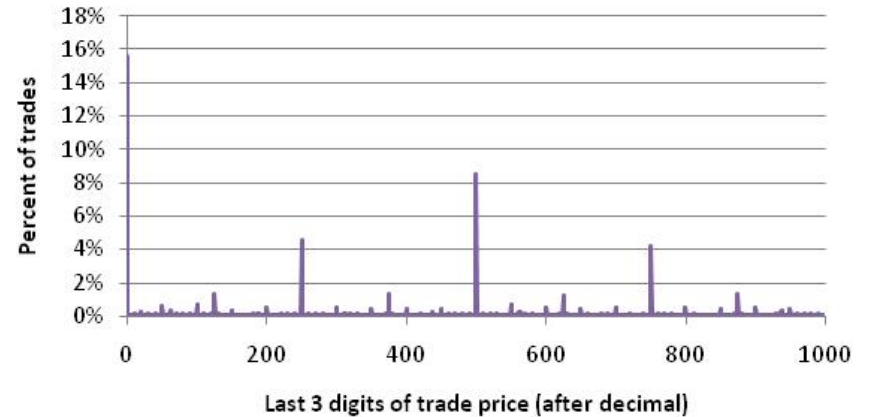
Unpaired dealer-client



Paired interdealer



Unpaired interdealer



Trade size, trading costs, and pairing dealer profits

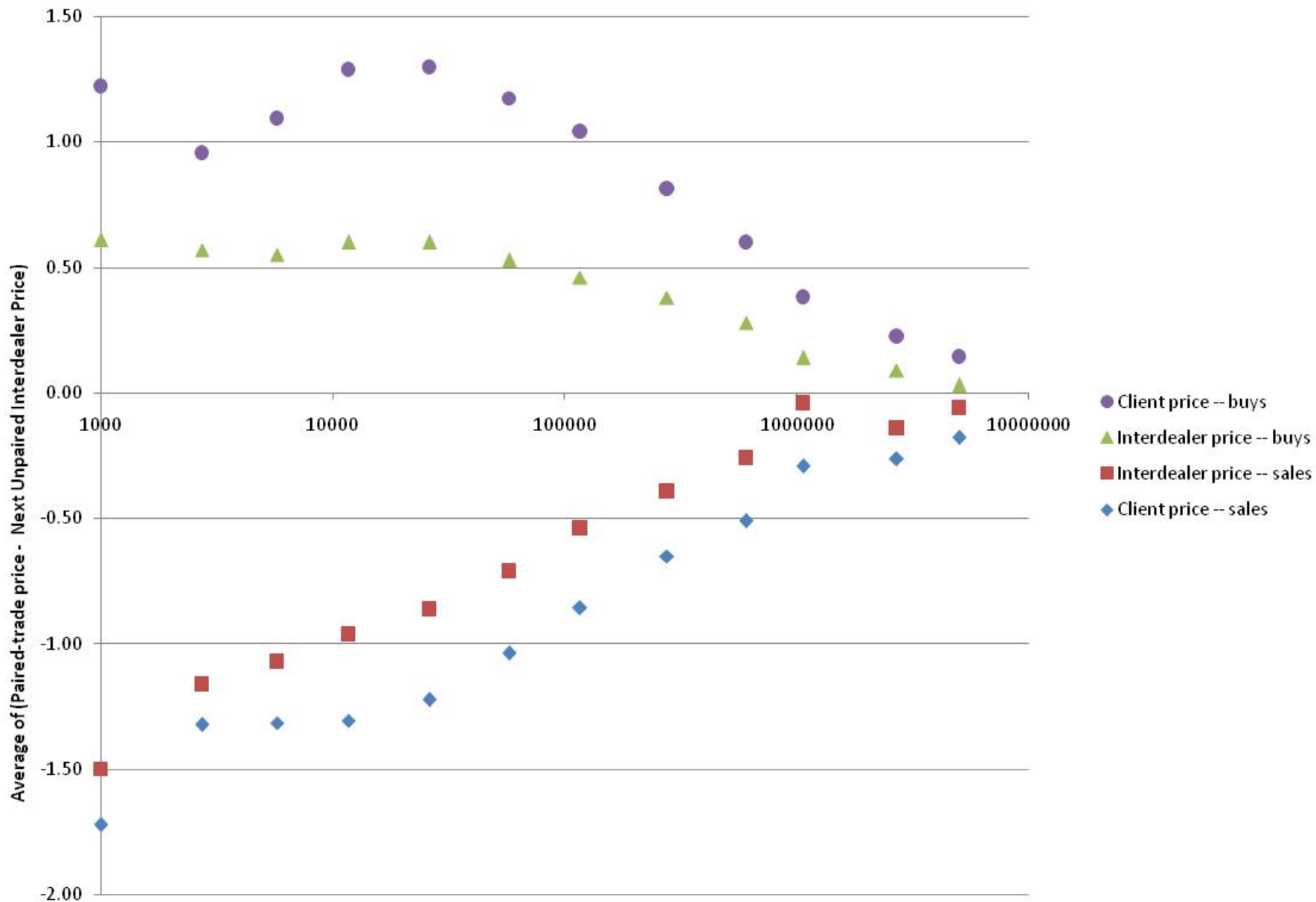


Figure 4. Trade size and trading costs

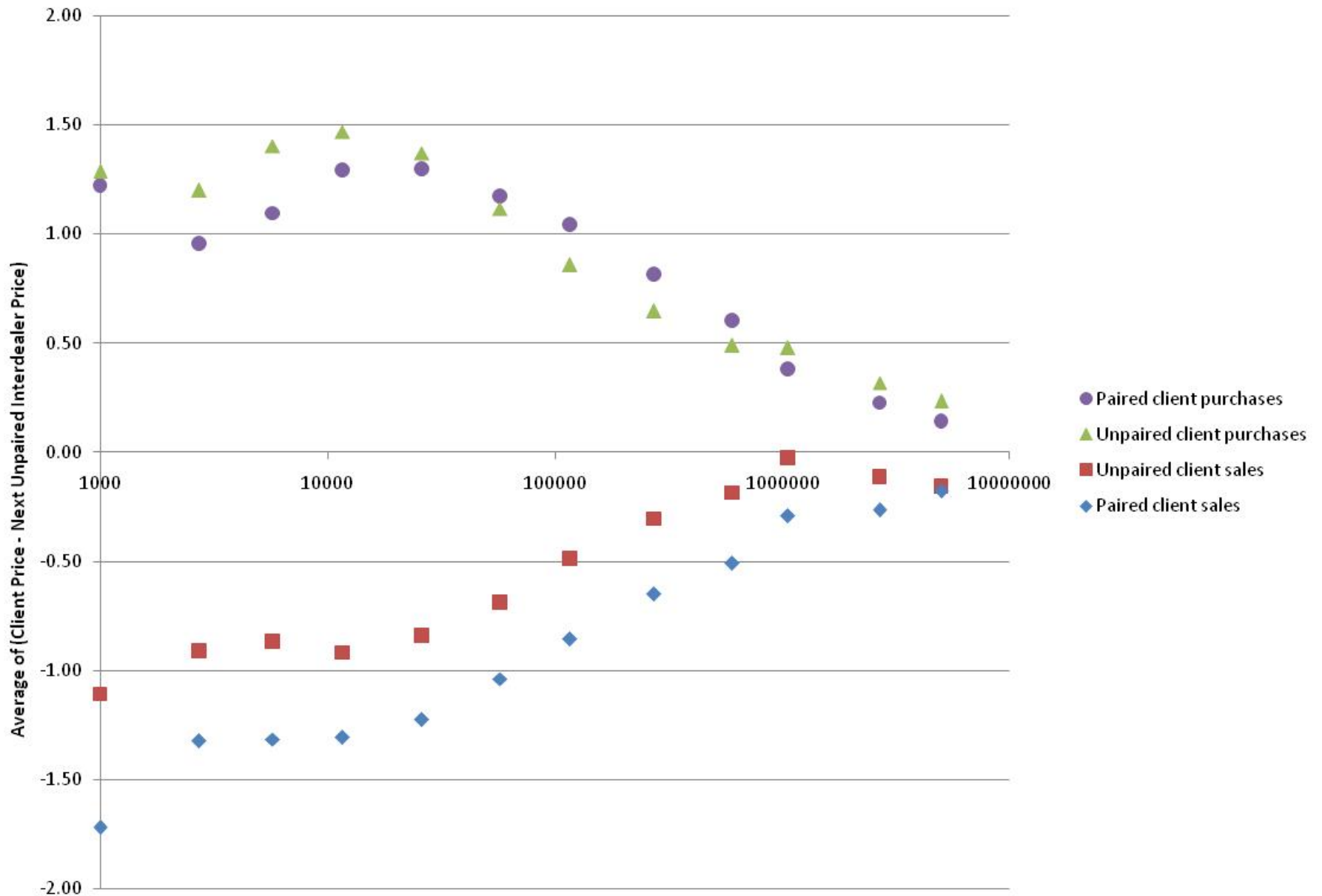


Table 7. Trading costs by size and pairing

Trade type	Small (<\$100k)	Medium (\$100-499k)	Large (>\$500k)
Paired client sells	-1.41	-0.81	-0.35
Unpaired client sells	-0.97	-0.42	-0.11
Interdealer paired with sell	-1.09	-0.52	-0.13
Interdealer paired with buy	0.67	0.45	0.19
Unpaired client buy	1.34	0.77	0.44
Paired client buy	1.32	0.98	0.44
Two-way paired client	2.73	1.79	0.79
Two-way unpaired client	2.31	1.19	0.55
Two-way paired interdealer	1.76	0.97	0.32

Tables 8-9. Determinants of trading costs

- Interdealer trading costs
 - Lower for larger trades
 - Higher for longer maturity
 - Lower for “vanilla” bonds (investment grade, non-convert/callable, senior, no credit enhancements)
- Pairing dealer implied profit
 - **Peaks** at trade size of ~ \$50k
 - Higher for longer maturity
 - **Higher** for “vanilla” bonds

Final thoughts

- Pairing is a source of nearly risk-free profits for dealers
 - Pairing dealer spread is about half of trading costs faced by small bond investors
- Institutional investors appear more able to avoid pairing
- Excessive markup regulation appears to constraint costs on some trades
 - But does it cause some dealers to refuse trades at any price?