

Securities Trading: Principles and Protocols

Chapter 6 Dealers

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Topics

- ❑ A dealer is an intermediary who makes a market (posts a bid and offer), accommodates customers' buying and selling needs, but has no inclination to hold a long term position.
- ❑ Roles
 - Dealers as supplemental to a limit order market.
 - Designated market makers
 - Dealer markets

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How do dealers differ from brokers?

- ❑ A broker usually represents a customer order, acting as *agent* on behalf of the customer.
 - “Buy 2,000 XYZ limit \$50.”
- ❑ A broker acting as agent would send this order to some market (like the NYSE or NASDAQ) where it would be handled in accordance with the market’s rules and procedures.
- ❑ Alternative, the broker (or someone in the broker’s firm) might sell to the customer directly if:
 - The order is not marketable (can’t be executed immediately) but the broker is willing to meet the customer’s terms.
 - ❑ The NBO is \$50.10, but the broker will sell to the customer at \$50.
 - The order is marketable, but the broker is offering better terms.
 - ❑ The NBO is \$50.00, but the broker will sell to the customer at \$49.98.

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The broker/dealer conflict

- ❑ In both of these examples, the broker’s willingness to trade works to the customer’s advantage.
 - But often there is a conflict of interest.
- ❑ A broker working as an *agent* wants to execute the customer’s order at the best price (the lowest price, for a buy order).
- ❑ A broker taking the other side of a customer’s trade is acting as a *dealer (trading as a principal)*.
 - A dealer wants to execute the customer’s order on unfavorable terms (selling to the customer at the highest price, for a buy order).

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“Buy 2,000 XYZ limit 50”: One of the gray areas

- ❑ Suppose that the NBO is 50.00 (at NASDAQ), but the dealer has excess XYZ (for whatever reason).
- ❑ The dealer sells to the customer at 50.00
 - “If I’d sent the order to NASDAQ, the customer would have received 50.00, so I’m simply giving the customer the market price.”
- ❑ But: if the order had been sent to NASDAQ, it *might* have executed against a hidden order at a better price.
- ❑ And: the seller on NASDAQ took a chance by visibly displaying her offer in the hope of attracting an buyer.
 - She’s been deprived of an execution.
 - The next time she wants to sell, will she display an aggressive offer?

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- ❑ The broker/dealer conflict can be managed (but not eliminated) by
 - Reputation (dealers who give their customers poor deals won’t survive).
 - Firm and industry standards of conduct (with varying degrees of legal force)
 - Laws, rules and regulations

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Example

- ❑ The Chicago Mercantile Exchange (CME, “Merc”) is a futures market that still partially functions as a floor market.
 - Members buy and sell face-to-face.
- ❑ Sometimes a member is representing a customer order; sometimes a member is trading on their own account.
 - Doing both at the same time is called dual trading.
- ❑ Dual trading within the same day is generally prohibited (CME Rule 552) for high-volume contracts, but is permitted for low-volume contracts.

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The role of dealers in augmenting the limit order book: Two BATS books from Wed, Jan 15 2014, about 3pm

Book Viewer BZX BYX

BATS BAC

Market Quality Statistics

BANK OF AMERICA CORPORATION COM

Orders Accepted: 625,378 Total Volume: 34,480,757

TOP OF BOOK		LAST 10 TRADES		
SHARES	PRICE	TIME	PRICE	SHARES
30,004	17.2300	14:59:01	17.1850	100
34,504	17.2200	14:59:01	17.1800	800
34,606	17.2100	14:59:01	17.1800	800
41,208	17.2000	14:59:01	17.1800	100
42,403	17.1900	14:59:01	17.1800	100
59,050	17.1800	14:59:01	17.1800	200
42,705	17.1700	14:59:01	17.1800	500
32,004	17.1600	14:59:01	17.1800	100
30,904	17.1500	14:59:01	17.1800	100
26,304	17.1400	14:59:01	17.1800	500

ASKS ↑ ↓ BIDS

Last updated 14:59:08

Book Viewer BZX BYX

BATS PRK

Market Quality Statistics

PARK NATL CORP COM

Orders Accepted: 5,093 Total Volume: 424

TOP OF BOOK		LAST 10 TRADES		
SHARES	PRICE	TIME	PRICE	SHARES
100	84.92	13:34:20	81.64	100
100	83.25	10:31:33	81.62	6
100	82.60	10:31:33	81.75	7
100	82.00	10:18:14	81.94	100
100	81.69	10:10:05	81.94	100
100	80.95	10:02:28	81.72	11
100	80.94	09:40:49	81.46	100
100	80.80			
100	79.79			
100	77.82			

ASKS ↑ ↓ BIDS

Last updated 14:48:37

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Designated Market Makers

- ❑ The BAC book is liquid; the PRK book is not.
- ❑ An exchange wants to attract orders and trading volume.
 - If the limit order book is thin/empty, customers will go elsewhere.
- ❑ The exchange may engage/encourage a dealer to provide continuous liquidity (posting bids and asks if there are no customers)

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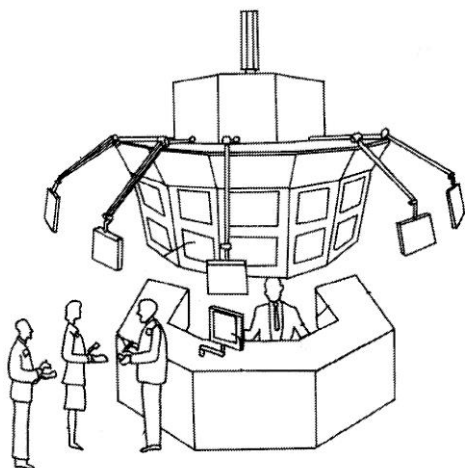
The NYSE specialist

- ❑ The specialist was (prior to 2005) an NYSE member who stood at the center of trading.
 - The legend: In 1875 NYSE member James Boyd broke his leg and set himself up in one place, specializing in the trading of a few stocks.
 - Until modern times
- ❑ Over time a well-defined set of rules and procedures evolved to govern specialist trading.
 - These rules are often referenced today as a touchstone for regulation.

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The NYSE specialist in action



- ❑ NYSE trading occurred at a post.
- ❑ The specialist stood outside of the U-shaped desk. (His clerk was on the insider.)
- ❑ The parties to trading were the specialist and one or more members ("the crowd").
- ❑ Orders were delivered electronically, but execution was under the control of the specialist.
- ❑ The specialist's overarching responsibility was "maintaining a fair and orderly market."

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The specialist's affirmative obligations

- ❑ He must always post a bid and ask (at a narrow spread).
- ❑ He must provide price continuity (avoiding large price jumps)
 - A sequence of trades: $50, 50\frac{1}{8}, 50\frac{1}{4}, \dots 50\frac{7}{8}, 51$ is okay.
 - A sequence $50, 51$ is not okay.
 - If there was good news, the specialist would have to bridge transition, usually by making small sales on his own account.
 - If there was bad news, ..., small purchases.

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The specialist's negative prohibitions

- ❑ Public priority.
 - If the specialist is bidding 50, and a customer puts in a limit order to buy at 50, the customer's bid has priority over the specialist's.
 - The specialist is the agent for the limit order book, and an agent shouldn't trade ahead of the person he's representing.
- ❑ Can't trade in a "destabilizing" fashion.
 - In practice, can't hit a customer bid or lift a customer offer.
 - This might move the market: the specialist was supposed to be a neutral intermediary.

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The specialist's rights

- ❑ Only the specialist knew the contents of the limit order book.
 - He was prohibited from showing it to other members.
- ❑ He had an effective right of first refusal.
 - Suppose the market is 200 shares offered at \$50 (from a customer), and a market buy order for 100 shares arrives.
 - ❑ The specialist can't sell 100 shares at 50. (This would violate public priority.)
 - ❑ The specialist *can* sell 100 shares at $49\frac{7}{8}$. He might do this if incoming order were small.
 - ❑ If the incoming order were "buy 10,000 shares", he might step back and let the order walk through the (customer) limit orders.
- ❑ These advantages enabled most specialists to reap sizeable trading profits.

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The decline of the specialist system

- ❑ In 1997 the tick size went from 1/8 to 1/16, and then in 2001 to \$0.01.
 - The bid-ask spreads narrowed, and trading revenue declined.
- ❑ Around 2005, the NYSE became an automated market.
 - The specialist lost the right of first refusal.
- ❑ In April, 2005, seven specialist firms were the target of a U.S. civil action.
 - Criminal charges followed against individuals, but most of these were dropped.
- ❑ The NYSE still has “specialists” but they are now called *designated market makers*.

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NASDAQ Market Makers

- ❑ To trade on NASDAQ (use NASDAQ markets and systems), you (or your firm) must become a NASDAQ *member*.
- ❑ To act as a broker (agent) for customer orders, you must also become an *order entry firm*.
- ❑ To trade against your customers (take the other side of their trades) you must also become a market maker.

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- ❑ You register to be a market-maker in a specific security.
 - You can register in many securities.
- ❑ Market makers must post a bid and offer (“two-sided quotes”) that are no more than the designated percentage from the best bid and offer (or last sale price). [Rule 4612]
- ❑ The designated percentage for most stocks is 8%.
- ❑ Sources
 - www.nasdaqtrader.com → U.S. Market → Membership;
 - www.nasdaqtrader.com → Regulation → Rule manuals

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NASDAQ order handling

- ❑ Prior to the 1990’s NASDAQ market makers were the only traders who could post bid and offer quotes.
- ❑ Each market maker had his/her own limit order book. Customer limit orders went into this book.
- ❑ They weren’t displayed or allowed to interact with other orders.

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What was possible in 1990? An example

- ❑ NASDAQ dealers are bidding $20 \frac{1}{4}$ and offering $20 \frac{1}{2}$ for MSFT.
- ❑ Beth submits a limit order to Broker Z, “Buy 100 sh MSFT limit $20 \frac{3}{8}$ ”
 - Z is not required to display the order.
- ❑ Sam submits to Z: “Sell 100 sh MSFT limit $20 \frac{1}{4}$.”
 - Z can buy from Sam at $20 \frac{1}{4}$, *trading through Beth’s order*.
- ❑ Z only owes Beth an execution when the NBO drops to Beth’s limit price.

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The reforms

- ❑ 1995 (“Manning Rule”) Market makers restricted from trading through (and ahead of) their customer limit orders.
- ❑ 1996 (“Order Display Rule”) Market makers must display their customer limit orders.

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NASDAQ market makers and the collusion charges

- ❑ In the 1990's, the price increment for US stocks was $\frac{1}{8}$ of a dollar (\$0.125).
- ❑ All stock prices exhibit clustering.
 - A “whole number” price like 52 is more common than a fractional price like $52\frac{1}{2}$
 - $52\frac{1}{2}$ is more common than $52\frac{1}{4}$ or $52\frac{3}{4}$.
 - $52\frac{1}{4}$ or $52\frac{3}{4}$ are more common a price on one of the “odd eighths”, like $52\frac{1}{8}$, $\frac{3}{8}$, $\frac{5}{8}$
- ❑ Bids and offer quotes on the NYSE exhibited mild clustering.
- ❑ NASDAQ quotes were extremely clustered (next slide).

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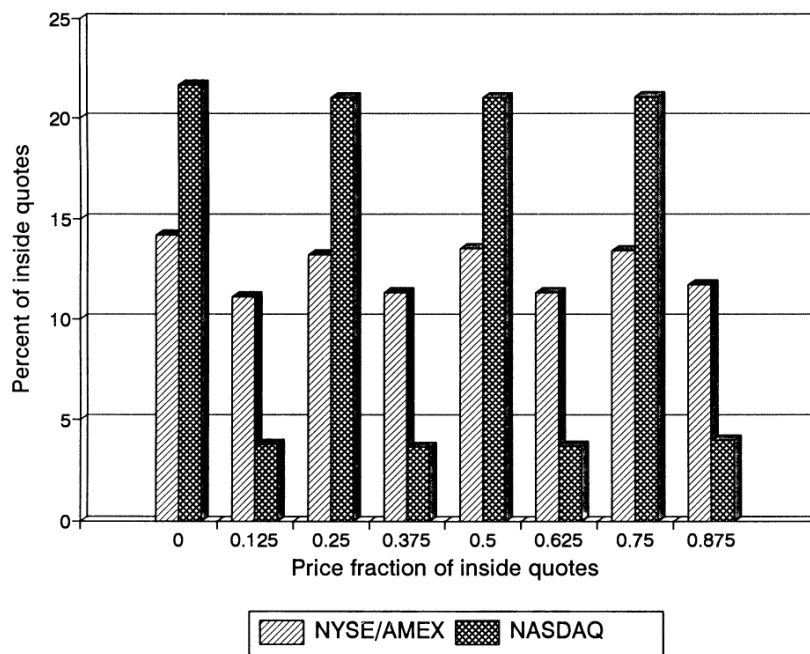


Figure 3. The distribution of price fractions across all inside quotes for 100 NASDAQ and 100 NYSE/AMEX securities of similar price and end-of-year market capitalization. The figure contrasts the percentage of price fractions that fall on each eighth for firms listed on the NYSE/AMEX versus firms listed on NASDAQ. The percentage is an average of the frequencies at the bid and ask, computed using all inside.

Source: Christie, W.G., Schultz, P.H., 1994. Why do NASDAQ market makers avoid odd-eighth quotes? *Journal of Finance* 49, 1813-1840, Record Number: 1820 0022-1082.

Why?

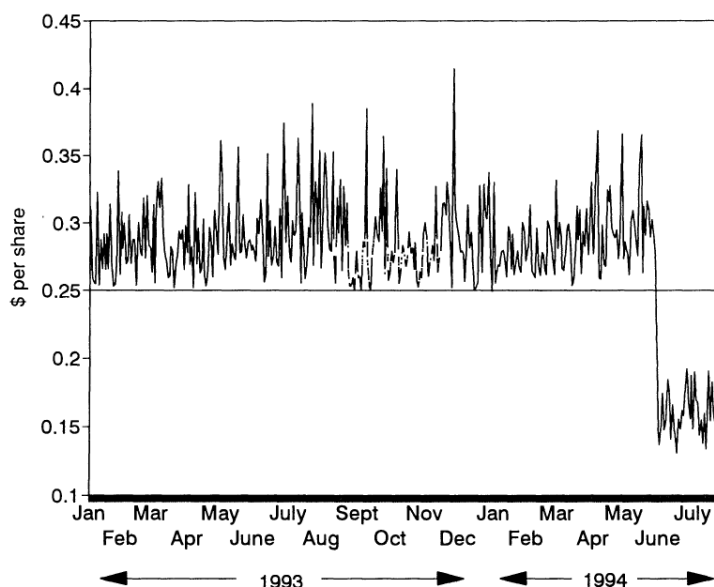
- ❑ Christie & Schulz suggest that the avoidance of odd-eighths prevented the bid-ask spread from dropping below $\frac{1}{4}$.
- ❑ ... and that this was occurring due to collusion by NASDAQ market makers.
- ❑ Findings are released on May 24, and widely reported on May 26, 27 1994.
- ❑ Bid-ask spreads in NASDAQ stocks promptly narrow.

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The bid-ask spread in AAPL.

Source: Christie, W.G., Harris, J.H., Schultz, P.H., 1994. Why did NASDAQ market makers stop avoiding odd-eighth quotes? *Journal of Finance* 49, 1841-60.



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Why the drop? Securities Week reports:

- ❑ Richard Ketchum, NASD CEO, COO and president, along with William Broka, senior vp of trading and market Services, and John Wall, executive vp of marketing and market operations, told a group representing more than 100 major OTC dealers during a meeting at Bear Stearns' headquarters in New York last Tuesday (May 24) to narrow the differences between their bids and offers in order to be competitive with other exchanges and in order to avoid regulation by the NASD and the SEC.

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And the aftermath ...

- ❑ The SEC subpoenaed the audio recordings of phone conversations.
 - Whenever a dealer narrowed his bid-ask spread, other dealers would call him to humiliate, intimidate or threaten.
- ❑ Large fines and civil settlements for the NASDAQ firms.
- ❑ Misbehavior at NASDAQ (and the NYSE) gave SEC leverage in reforming markets.

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Market makers: the European approach

- ❑ The Euronext markets (Amsterdam, Paris, Brussels, etc.)
- ❑ A listed company may believe that continuous availability of trading may enhance its reputation.
 - It may contract with one or more traders (members) of an exchange to provide liquidity.
 - The listing firm can pay the market maker, but can't share in the trading profits.
- ❑ Rationale: the costs of market making are shifted to those who benefit (the shareholders of the listed firm)

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The US view

- ❑ US securities regulators have traditionally distrusted contract market makers.
 - Could a corporation discreetly pay the market maker to support or run up the price of the stock?
- ❑ As of August, 2013, under an NYSE pilot program, ETF issuers can pay trading firms to serve as lead market makers for the ETFs.
 - The cost is \$10K-\$40K per year.

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De facto market makers

- ❑ Traders who use size or technology to achieve a central market position, but aren't regulated like "traditional" market makers.
- ❑ High-frequency traders (HFTs)
- ❑ Like traditional MMs, they usually post aggressive bids and offers.
- ❑ But:
 - They can (and do) withdraw from the market completely if they feel that conditions are unsettled.
 - They can (and do) hit others' bids and lift others' offers.

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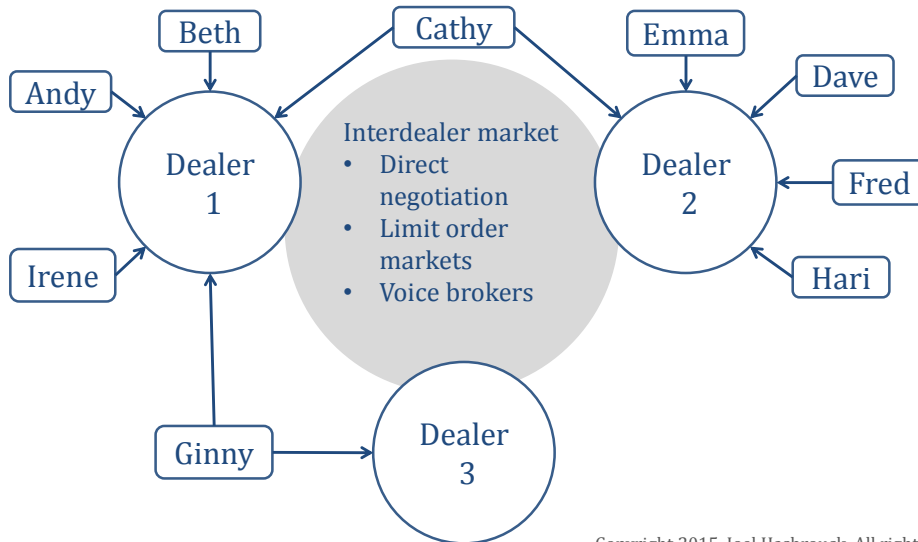
Dealer markets

- ❑ A dealer market is one in which dealers dominate trading.
 - Currency (FX); bonds (corporate and sovereign); swaps and other over-the-counter derivatives.
- ❑ Typically
 - The market has multiple dealers
 - There are no public limit order books or auctions where customers can trade directly.
 - All customer trades have a dealer on the other side.
 - Dealers trade with each other in an interdealer market (which is not usually visible to customers).

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Topology of a dealer market



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The dealer-customer interaction

- ❑ Some dealers quote only in response to customer inquiries.
 - They needn't give the same quote to all customers.
 - The best quotes aren't visible.
- ❑ Trades aren't publicly reported.
- ❑ Some dealers provide electronic customer interfaces.

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Managing the dealer's conflict of interest

- ❑ A bank's dealer operations (the FX/bond/swaps desks) generally have two sorts of traders.
- ❑ *Position traders* make the markets, but don't have direct contact with the customers.
 - Think of them as proprietary traders.
- ❑ *Sales traders* have direct contact with customers, and act as go-betweens (between the customers and the position traders).
 - In principle, they represent the customers' interests.
- ❑ This separation of roles avoids putting the conflict of interest on one person.

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Dealer's quoting strategies (setting the bid and ask)

- ❑ A dealer always posts a bid and ask.
 - This presence is the basis for their reputation.
- ❑ The customer calls: "What's your bid and offer?"
 - The dealer never calls the customer to solicit a bid or offer.
- ❑ The dealer is fundamentally passive, a price "maker", not a taker.
- ❑ We'll consider one dealer who doesn't face competition in the short-run.
 - She has a set of customers that can't quickly set up accounts with other dealers.
 - She has market power.

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The dealer's basic trade-off

- The dealer makes money on the *turn* (buying at their bid and selling at their higher ask)
 - A wide bid-ask spread → fewer customers, but each customer generates more revenue.
 - A narrow spread → more customers, but less revenue on each.
- How to maximize the revenues?

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Maximizing revenue with two possible spreads

Spread	Arrival rate of buyers (per hour, also the arrival rate of sellers)	Hourly revenue
\$0.50	2	\$1.00
\$0.10	20	\$2.00

- If two buyers and two sellers arrive each hour, we make \$0.50 on each pair, for an hourly revenue of \$1.00.
- Assume that each buyer or seller trades one unit (share or contract)

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Position management: the problem

- ❑ Buyers and sellers don't arrive in matched pairs.
 - Their arrivals are random.
- ❑ Even if the average arrival rates are equal, we might on any given day get a long string of buyers or sellers.
- ❑ If this happens, the dealer will have a large long or short position.
 - This is costly to finance.
 - The large position creates risk.

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The solution

- ❑ The dealer can't get out of the position using market orders.
 - There are no bids or offers from the customers.
- ❑ The dealer must trade passively, setting the bid and ask asymmetrically to elicit an incoming order imbalance.

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Asymmetric quoting

Bid	Arrival rate of sellers
\$9.75	2
\$9.95	20

Offer	Arrival rate of buyers
\$10.25	2
\$10.05	20

- Assume that the fundamental value of the security is \$10, and the bid and offer are set relative to this value.
- Sellers care only about the dealer's bid; buyers care only about the dealer's offer.
- Symmetric quoting: if the dealer bids \$9.75 and offers at \$10.25, the spread is \$0.50 and the average arrival rate of sellers = buyers = 2 per hour.
- Asymmetric quoting: if the dealer bids \$9.75 and offers at \$10.05, there will be a net arrival of $20 - 2 = 18$ buyers per hour.
- This imbalance can be used to work off a long position.

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The dealer's two strategies

- Starting "flat" (with a position of zero), the dealer will set the quotes to maximize expected trading revenue.
- As the position wanders away from zero (or, worse, draws near the dealers position limits) the dealer will switch over to position management.
 - Setting the quote asymmetrically to elicit an imbalance in the desired direction.

Market segments: The US corporate bond market

- ❑ A dealer market with trade reporting.
- ❑ All executions are reported to FINRA's TRACE (Trade Reporting And Compliance Engine) system.
 - There is an unusual level of detail on the participants and direction of the trade.
 - Individuals can access the data in real time off of FINRA's website.

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finra-markets.morningstar.com/BondCenter, Nov. 6, 2013

Most Active Investment Grade Bonds

Issuer Name	Symbol	Coupon	Maturity	Moody's/S&P/Fitch	High	Low	Last	Change	Yield%
AT&T INC	T4013485	4.300%	12/15/2042	A3/A-/A	85.24000	82.53700	85.24000	2.351000	5.300333
MORGAN STANLEY	MS3997659	2.125%	04/25/2018	Baa1/A-/A	100.49900	98.22000	99.12300	-0.293000	2.332918
EXPRESS SCRIPTS HOLDING CO	ESRX3954243	2.650%	02/15/2017	Baa3/BBB+/BBB	103.68000	103.55700	103.66400	-0.087000	1.497095
WELLS FARGO & COMPANY NEW MEDIUM TERM SR	WFC4039294	4.125%	08/15/2023	A3/A/A+	102.00000	98.73600	102.00000	2.029200	3.876510
INTERNATIONAL BUSINESS MACHINES CORP	IBM.AB	0.875%	10/31/2014	Aa3/AA-/A+	100.59670	100.25000	100.59670	0.003700	0.263538

AT&T INC

+ ADD TO WATCHLIST

Coupon Rate
4.300%

Maturity Date
12/15/2042

Symbol T4013485 CUSIP 00206RBH4 Next Call Date 06/15/2042 Callable Yes

Last Trade Price \$85.07 Last Trade Yield 5.314% Last Trade Date 11/06/2013 US Treasury Yield —

[Trade History](#)

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Issue: **T4013485** Description: rity Date: **12/15/2042**

Execution							Reporting Party Side
Date ▼	Time	Settlement	Status	Quantity	Price	Yield	
11/6/2013	12:54:11	11/12/2013	T	25000	85.067	5.314	S
11/6/2013	10:57:23	11/12/2013	T	5000	85.064	5.314	S
11/6/2013	09:4	11/12/2013	T	550000	82.578	5.508	B
11/6/2013	09:0	11/12/2013	T	000000	82.508	5.514	D
11/6/2013	08:59:00	11/12/2013	T	2000000	82.560	5.509	D
11/5/2013	15:51:46	11/8/2013	T	25000	85.240	5.3	S
11/5/2013	15:51:45	11/8/2013	T	115000	85.110	5.31	S
11/5/2013	15:49:55	11/8/2013	T	150000	83.040	5.471	D
11/5/2013	15:01:26	11/8/2013	T	1000000	82.763	5.493	S
11/5/2013	14:44:24	11/8/2013	T	2033000	82.537	5.511	B
11/5/2013	11:51:00	11/8/2013	T	1000000	82.645	5.502	D
11/5/2013	11:50:48	11/8/2013	T	1000000	82.581	5.508	D
11/5/2013	11:35:36	11/8/2013	T	10000	84.966	5.321	S
11/5/2013	11:20:43	11/8/2013	T	90000	82.814	5.489	S
11/5/2013	10:52:08	11/8/2013	T	5000000	83.600	5.427	B

Par value of trade

S: dealer sold to a customer
B: dealer bought from a customer
D: dealer-to-dealer trade

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Issue: **T4013485** Description: rity Date: **12/15/2042**

Execution							Reporting Party Side
Date ▼	Time	Settlement	Status	Quantity	Price	Yield	
11/6/2013	12:54:11	11/12/2013	T	25000	85.067	5.314	S
11/6/2013	10:57:23	11/12/2013	T	5000	85.064	5.314	S
11/6/2013	09:49:01	11/12/2013	T	550000	82.578	5.508	B
11/6/2013	09:05:18	11/12/2013	T	2000000	82.508	5.514	D
11/6/2013	08:59:00	11/12/2013	T	2000000	82.560	5.509	D
11/5/2013	15:51:46	11/8/2013	T	25000	85.240	5.3	S
11/5/2013	15:51:45	11/8/2013	T	115000	85.110	5.31	S
11/5/2013	15:49:55	11/8/2013	T	150000	83.040	5.471	D
11/5/2013	15:01:26	11/8/2013	T	1000000	82.763	5.493	S
11/5/2013	14:44:24	11/8/2013	T	2033000	82.537	5.511	B
11/5/2013	11:51:00	11/8/2013	T	1000000	82.645	5.502	D
11/5/2013	11:50:48	11/8/2013	T	1000000	82.581	5.508	D
11/5/2013	11:35:36	11/8/2013	T	10000	84.966	5.321	S
11/5/2013	11:20:43	11/8/2013	T	90000	82.814	5.489	S
11/5/2013	10:52:08	11/8/2013	T	5000000	83.600	5.427	B

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