14. TRADING OBJECTIVES, COSTS AND STRATEGIES

14.1 Overview

Planning and evaluating trades

Objective: what are we trying to accomplish?

> ex: "Buy 1,000 shares of INTL by today's close."

Strategies: what are the possible ways of meeting this objective?

> ex: Immediate market buy order
>
> (But there might be many other ways of accomplishing the goal.)

Costs: What measure (metric) do we use for evaluating strategies?

Viewed prospectively (looking ahead), costs are random (uncertain). There will be a risk-return trade-off.

Importance

While all investors are (or should be) concerned with trading costs, this material is most important for fund managers acting on behalf of someone else.

> Mutual fund managers are responsible to the shareholders of the fund. (Investment Company Act of 1940)
>
> Pension fund administrators are responsible to the pension beneficiaries (current and future retirees). (General agency law, specific Department of Labor regulations.)

When these agents make trading decisions, the costs come out of the shareholders'/beneficiaries' pockets.

In the US, fund managers are generally viewed as being required to monitor trading costs.

Bundling and "soft dollars"

Sometimes trading services are bundled with other services (especially research). Normally:

Trading costs are borne by the fund beneficiaries (an offset to the fund's gross return).

Research costs are borne by the fund managers. The stated "management fee" is supposed to cover research.

When a service (like research) is bundled with commissions, it shifts expenses from the fund manager to the fund beneficiaries (in a very non-transparent fashion).

"Soft dollar" conventions establish an accounting and tracking scheme for all of this.

> Example:
>
> Broker *B* tells client *C*: "For every commission dollar you pay to us (in cash), we'll credit you with one soft dollar."
>
> Broker *B* tells independent research firm *R*: "We'll let our clients buy your services with soft dollars. When client *C* pays you with soft dollars, we'll give you cash in exchange for them."

Bundling and soft dollars have always been controversial because of the potential for cost-shifting.

As a legal defense, managers assert that these arrangements do not result in higher trading costs. They must have analyses numbers to back this claim.

14.2 The implementation shortfall framework (Perold)

Suppose that we observe a portfolio's returns over time.

Can we decompose this "investment gains/losses" and "trading gains/losses"?

In practice, portfolio and trading decisions are linked.

Your return on an investment is determined by the purchase price and resale price *net of all commissions and irrespective of where the*

prices lie relative to then-prevalent "market prices".

Trading objectives are often fuzzy. The trader needs to know how badly the portfolio manager needs the trade done (the cost of non-execution).

In the implementation shortfall approach, we assume a *separation* between investment and trading decisions.

"Long term" investment strategies are made by "portfolio managers". They make clear decisions about what to buy, sell and hold.

These decisions are implemented by a trading desk.

We compare the performance of an actual portfolio (gain, loss or return) to the performance of a hypothetical paper portfolio in which all trades are made at notional ("benchmark") prices. The cost is the difference.

E.g., If the return on the paper portfolio is 10% and the return on the actual portfolio is 9%, the implementation shortfall is 1%.

Interpretation: If we had a perfect trading desk, our trades could be executed at the notional prices. Any divergence must be attributed to trading (implementation) costs.

The framework tells us about costs at the portfolio level, but not about the costs of individual trades.

Often, though, the framework leads to an obvious cost measurement.

The bid-ask midpoint

A common benchmark price for trades is the midpoint of the bid and ask quotes prevailing at the time the decision was made to invest.

bid-ask midpoint = "BAM"

Other candidate benchmarks

- BAM subsequent to the trade
- average price for the day
- previous day's closing price

Calculation of the implementation shortfall

I buy 100 shares of ABC. When I decide to buy the shares, the market is 50 bid, 51 offered. I actually buy at 51.20, paying a $29 commission.

Cash outflow = 5,120 + 29 = 5,149

When I make the decision to sell, the market is 54 bid, 54.50 offered. I actually sell at 54, paying a $29 commission.

Cash inflow = 5,400 – 29 = 5,371

My net cash flow is 5,371 – 5,149 = 222. (A return of 4.31%)

In my paper portfolio, I buy and sell at the midpoint of the bid and ask quotes at the time I decide to trade.

I buy 100 shares at 50.50 and sell at 54.25 = 375 (a 7.43% return)

The implementation shortfall is 375 – 222 = 153 (ignoring interest on the cost)

Alternatively, the implementation shortfall is 7.43% – 4.31% = 3.12%

Explicit and implicit trading costs

Explicit cost: commission (net of any rebates of goods or services, “soft dollars”)

Implicit cost: the cost of interacting with the market.

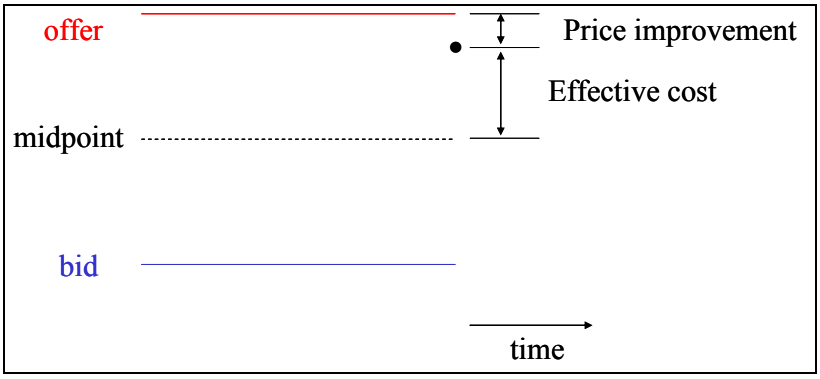
The initial purchase was made $0.70/sh above the BAM, so the implicit cost = $70

The final sale was made $0.25/sh below the BAM, so the implicit cost = $25

The implicit cost computed with respect to the BAM is sometimes called the *effective cost*.

The effective cost is a useful measure for market orders.

The effective cost for a buy order …



Effective spread = 2 x effective cost

For the initial purchase, the effective spread = 2 x $0.70 = $1.40 / share.

Intuition

The quoted (posted) spread is 51 – 50 = 1.

If a buyer pays $0.70 above the BAM and sells $0.70 below the BAM, they are effectively facing a spread of $1.40.

14.3 The effective spread and rule 11ac1-5

SEC rules 11ac1-5 and 11ac1-6 comprise the "Disclosure of order execution and routing practices" rule (effective January 30, 2001)

11ac1-5 requires market centers to compute effective spreads for covered orders and report them electronically (broken down by size of trade, etc.)

11ac1-6 requires brokers to disclose relationships that involve receiving money in exchange for sending customer orders to a particular destination.

Terms in rule 11ac1-5

Market center: a venue for executing trades

- OTC market maker [e.g., Goldman Sachs making a market in MSFT]
- national securities exchange [e.g. NYSE]
- national securities association [Nasdaq]
- etc.

Covered orders

Market orders

Marketable limit orders

Definition of effective spread (rule 11ac1-5)

The term average effective spread shall mean the share-weighted average of effective spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the *consolidated best bid and offer at the time of order receipt* and, for sell orders, as double the amount of difference between the midpoint of the consolidated best bid and offer at the time of order receipt and the execution price.

A typical Nasdaq report (SuperMontage, MSFT, orders of 100-499 shares):

SEC Rule 11Ac1-5: Disclosure of Order Execution Information
Market Center: NASDAQ
Issue: MSFT - Microsoft Corporation - Common Stock
Report Type: Comprehensive - February 2004
Execution System: SuperMontage
Order Size: 100-499 Shares

Order Type	Number of Orders	Number of Shares	Canceled Shares	MC Exec. Shares	Other MC Exec. Shares	0-9 Seconds	10-29 Seconds	30-59 Seconds	60-299 Seconds	5-30 Minutes
Market orders	764	87,049		87,049		87,049				
Marketable limit orders	61,633	12,383,698	5,114,444	7,269,254		7,017,307	157,725	52,548	39,624	2,050
Inside-theQuote limit orders	58	12,301	7,925	4,376		4,376				
At-the-Quote limit orders	236,998	54,728,369	51,919,314	2,809,055		1,493,807	642,063	302,672	320,483	43,875
Near-the-Quote limit orders	199,736	47,603,573	45,823,579	1,779,994		336,823	367,634	234,001	544,494	206,887

Order Type	Avg. Realized Spread	Avg. Effective Spread	Price Improved Exec. Shares	Avg. Price Improvement Amount	Price Improved Avg. Exec. Time	At Quote Exec. Shares	At Quote Avg. Exec. Time	Outside of Quote Exec. Shares	Avg. Outside of Quote Amount	Outside of Quote Avg. Exec. Time
Market orders	$0.0188	$0.0094				80,709	0	6,340	$0.0100	0.1
Marketable limit orders	$0.0060	$0.0036	11,644	$0.0110	0.1	7,038,137	1.7	219,473	$0.0103	0.1
Inside-theQuote limit orders	$0.0543									
At-the-Quote limit orders	-$0.0002									
Near-the-Quote limit orders	-$0.0073									

The statistics do not reflect all trading in MSFT.

> If Goldman acts as a dealer, taking the other side of a customer order, and reporting the trade, this would normally be reported in Goldman's 11ac1-5 statistics (on Goldman's web site, not Nasdaq's

Things to note:

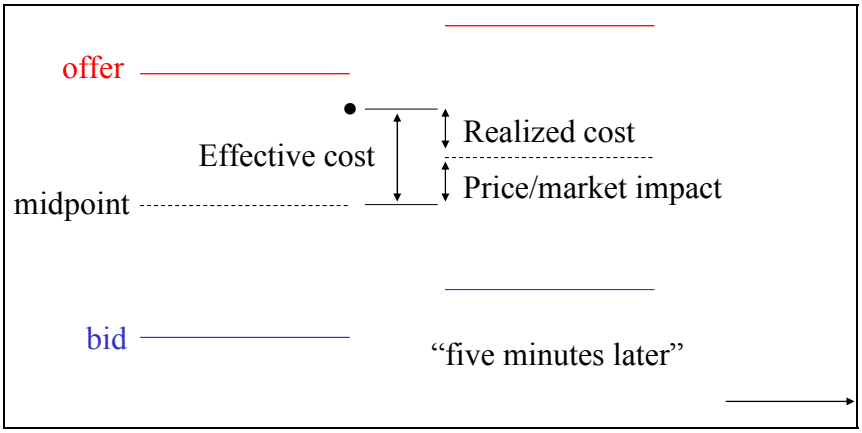
- Most "market" orders are really marketable limit orders (i.e., they are priced)
- The average effective spread for these orders is 0.36 *cents*.
- There are an enormous number of limit orders priced inside, at or near the quote. Most of these are canceled.

14.4 Realized cost and realized spread

For executed trades, the realized cost is the transaction price relative to the BAM at some time subsequent to the trade.

This impounds price movements after the trade (including the price impact due to the information in the trade).

Analysis of a buy order



An interpretation of the realized cost

This cost can be interpreted as the profit realized by the other (contra) side of the trade, assuming the contra side could lay off the position at the new BAM.

Example:

The dealer sells to the customer at 100.09.

Five minutes later, the market is bid 100.02, 100.12 offered (BAM = (100.02+100.12)/2 = 100.07.)

The realized cost is 0.02

This would be the dealer's profit if he could reverse the trade (purchase the stock) at the subsequent BAM.

The realized spread (Rule 11ac1-5 definition)

> The term average realized spread shall mean the share-weighted average of realized spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the consolidated best bid and offer five minutes after the time of order execution and, for sell orders, as double the amount of difference between the midpoint of the consolidated best bid and offer five minutes after the time of order execution and the execution price; provided, however, that the midpoint of the final consolidated best bid and offer disseminated for regular trading hours shall be used to calculate a realized spread if it is disseminated less than five minutes after the time of order execution.

MSFT SuperMontage statistics (revisited)

realized spread = effective spread – price impact

Since price impact is normally positive, we expect

realized spread < effective spread

MSFT:

rlzd sp (0.0060) > eff sp (0.0036)

This is puzzling. (Statistical sampling error?)

A less-frequently traded stock (PIXR):

You can modify your report by changing any of the criteria below, or to request a new report click here.

Exec. System:	Month:	Issue Symbol:	Report Type:		
NASDAQ-Listed	February 2004	PIXR	Comprehensive	◉ Order Size ○ Order Type: 100-499 Shares	View

SEC Rule 11Ac1-5: Disclosure of Order Execution Information
Market Center: NASDAQ
Issue: PIXR - Pixar - Common Stock
Report Type: Comprehensive - February 2004
Execution System: NASDAQ Market Center NASDAQ-Listed Trading
Order Size: 100-499 Shares

Order Type	Number of Orders	Number of Shares	Canceled Shares	MC Exec. Shares	Other MC Exec. Shares	0-9 Seconds	10-29 Seconds	30-59 Seconds	60-299 Seconds	5-30 Minutes
Market orders	142	21,375		21,375		21,375				
Marketable limit orders	5,891	912,810	211,954	700,856		699,792	236	142	486	200
Inside-theQuote limit orders	6,689	1,097,475	785,158	312,317		307,389	1,825	1,696	1,207	200
At-the-Quote limit orders	5,228	670,003	478,711	191,292		126,808	25,025	16,056	19,385	3,618
Near-the-Quote limit orders	36,036	5,919,030	5,805,979	113,051		59,444	13,251	10,579	19,598	8,970

Order Type	Avg. Realized Spread	Avg. Effective Spread	Price Improved Exec. Shares	Avg. Price Improvement Amount	Price Improved Avg. Exec. Time	At Quote Exec. Shares	At Quote Avg. Exec. Time	Outside of Quote Exec. Shares	Avg. Outside of Quote Amount	Outside of Quote Avg. Exec. Time
Market orders	$0.4529	$0.0778	5,362	$0.0332	0.1	11,122	0.1	4,891	$0.0375	0.1
Marketable limit orders	$0.0110	$0.0449	31,199	$0.0252	0.1	592,837	0.4	76,820	$0.0293	0.2
Inside-theQuote limit orders	-$0.0198									
At-the-Quote limit orders	-$0.0331									
Near-the-Quote limit orders	-$0.0935									

14.5 The effective cost of a sequence of market orders

Often traders break up large orders into smaller ones, and feed them to the market over time.

In a sequence of orders, the cumulative price impact means that later orders will trade at worse prices than early ones.

For a buy sequence, the effective cost is:

volume wtd average purchase price –
BAM prevailing at time of trading decision

Ex: Suppose the BAM is 10.00. We buy 100 shares at 100.10, 500 shares at 100.25 and 400 shares at 100.50.

The vol wtd average purchase price is 100.335/share.

The effective cost is $0.335 per share.

Breaking up orders is typically cheaper

Suppose the BAM = $10.00. We want to buy 1,000 shares.

The effective cost of one 1,000 share order is $0.30/sh

If we split the order into two successive 500 share trades, we pay

500 x ($10.00 + $0.20) +
500 x ($10.00 + $0.05 + $0.20)
= 500 x $10.20 + 500 x ($10.05 + $0.20)
= $5,100 + $5,125 = $10,225

Relative to the initial midpoint, the trading cost is 225 ($0.225/sh)

14.6 Measuring market impact

Statistical tools from time series analysis attempt to correlate orders with subsequent price movements.

General considerations.

- Market impact is not the same for all orders in all markets.
- Large orders have higher impact than smaller orders.
- Orders perceived as originating from "smart" traders will have high impact.
- Orders that execute in markets that cater to retail investors will have low impact.

14.7 Measuring the cost of limit orders

For a single limit orders there are no summary measures comparable to effective and realized spreads.

Market orders always execute. The only issue is price.

Limit orders often don't execute.

How should we account for …

- an order that wasn't filled?
- a delayed execution?

It is possible to measure the effective cost of strategies that use limit orders if the strategy ensures an (eventual) execution.

The first-limit-then-market strategy

Situation: the trader must fill an order by some pre-set time (like the close of trading).

Strategy

> First use limit orders at (or away from the market).
>
> If a limit order doesn't execute within some pre-set time, replace it with a more aggressively priced order.
>
> Repeat.
>
> If no limit orders have been filled by the end of the day, switch to a market order.

Example: It's 10am. I have to buy 100 shares by today's close. The market is 20.50 bid 0.60 offered.

I put in a buy limit order at 20.50.

If the order hasn't executed in 30 minutes, I'll cancel and replace with a buy limit order priced at 20.51, etc.

If no fill by the close, I'll cancel the limit order and submit a market order.

14.8 Cross-market comparisons

11ac1-5: All market centers must report effective and realized costs.

The computations are difficult. Some orders fall in grey areas.

The computations aren't audited.

Each market reports electronically on its own web site.

There is no one place where you can get a consolidated report.

15. CONSOLIDATION AND FRAGMENTATION

There are many places to trade shares of stock. Does this cause any difficulties? Should we force all trading into a single venue?

The key readings here are SEC's Rule 390 Concept Release and the SEC's Reg NMS proposal.

Read only the sections indicated in the syllabus.

Terms

> When trading occurs in many different isolated venues, a market is *fragmented*.
>
> When trading occurs in one venue, a market is *consolidated*.

These are extremes. Most markets are a blend.

Virtual consolidation: Trading occurs in multiple venues, but the venues are linked in a way that unifies (consolidates) the market.

15.1 The Rule 390 Concept Release

Context

Rule 390 was the NYSE's rule that limited members' ability to trade away from the NYSE floor.

It was the last in a series of rules that effectively gave the NYSE exclusive or near-exclusive trading rights in its listed stocks.

It was repealed (under SEC pressure)

In discussing the repeal, the SEC decided to lay out its view of fragmentation and consolidation in the "Rule 390 Concept Release"

This remains one of clearest statements of the issues.

The SEC's general concerns: Price and market center competition

Price competition results many orders competing against each other on the basis of price (*investor order interaction*, in the language of the Reg NMS proposal).

Example: the competition that takes place within an electronic limit order book.

Price competition is good because it enhances economic efficiency (the "right" people trade, as in the batch markets discussed earlier).

When all the orders go to one place, there is a greater likelihood that a buyer and seller will find each other at a mutually agreeable price (the "liquidity externality").

Market center competition occurs when different exchanges/ATS's compete to offer innovative trading services at low prices.

Example: ITG starting POSIT to provide an alternative to NYSE executions.

Consolidation encourages price competition.

Market center competition leads to fragmentation.

How to strike a balance to provide both kinds of competition?

The SEC has taken many steps to encourage market competion, but it is also concerned with price competition.

How can we avoid extremely fragmented markets?

Unifying principles/mechanisms

The Concept Release identifies three unifying forces.

- Price transparency

  Transparency: the extent to which a market's workings are visible away from the market (e.g. "off floor")

- Intermarket linkages

  These allow orders to be easily sent to the market center posting the best price.

- Broker's duty of best execution.

  This principle makes brokers responsible for monitoring market quality on behalf of their customers.

15.2 Price Transparency

What should we force markets to display?

How much should we let them charge for this information?

> As commission and trading revenues are squeezed, exchanges (and all market centers) are becoming more dependent on revenues from information.

Current US thinking and practice on this is summarized in the report of the SEC's Advisory Committee on Market Information ("Seligman Committee")

Also summarized in Reg NMS proposal

For each stock, the most basic data consist of:

- NBBO (National Best Bid and Offer) with prices, sizes, and market center identifications
- a montage of the best bids and offers from each SRO (Self Regulatory Organization) that includes prices, sizes, and market center identifications
- a consolidated set of trade reports in the security.

All markets participate (directly or indirectly) in systems run by an industry consortium (the Consolidated Tape Association)

The Seligman Committee affirmed the value of having this basic information available at low cost.

But:

Market centers are free to distribute additional information (such as orders away from the bid and ask). They are not required to do this.

> This allows the NYSE to charge a premium for OpenBook (the real-time limit order data).
>
> Nasdaq also has various expanded data services.

15.3 Intermarket linkages

Systems that allow different market centers to access (i.e., send orders to) other market centers for execution.

The transparency systems just let us see what's out there. To interact with the market, we need access.

The current key intermarket linkage systems are:

- SuperMontage (for Nasdaq)
- The Intermarket Trading System (ITS, for "listed" stocks)
- Direct linkages among the ECN's

SuperMontage

Within SuperMontage:

- An order-entry firm can send an executable (market or marketable limit) order to a wholesaler.
- An ECN (like Island) can send and receive executable orders.

ITS

An order-routing system between NYSE, Nasdaq and regionals.

In principle, it provides a way for the NYSE specialist to send an order, e.g., to Boston if Boston is quoting a better price.

In 1975, Congress passed an act ("The 1975 Act") that directed the SEC to encourage a "national market system" for stocks. ITS was the NYSE's response.

It has been called "a system designed not to work". There are many complaints about speed.

When Exchange A sends Exchange B an order (a commitment to trade), Exchange B has up to two minutes to respond.

Direct linkages

Since the "390" document, many ECN's have implemented bi-lateral direct links that bypass ITS and SuperMontage. These links are very fast (and believed reliable).

15.4 "Best Execution"

As agents for their customer orders, brokers are governed by legal agency principles and fiduciary obligations.

This principle unifies markets because it requires brokers to "comparison shop" the different market centers to which an order might be sent.

The broker's duty is narrow.

In seeking "best execution" of an order, the broker's obligation is to the particular customer.

No duty is owed "the market at large"

"Best execution" is not formally defined, but generally covers the following aspects of orders.

For a market order

- Price

  The broker must also take into account the opportunity for price improvement.

  Giving the customer the National Best Bid or Offer is not sufficient.

- Speed of execution

For a limit order

- Likelihood of execution
- For institutional investors, size and anonymity are factors.

In order to show due diligence, brokers must monitor the executions their customers receive in various markets.

This is particularly true if the brokers have material relationships with the market centers.

15.5 Specific SEC conerns: preferencing and payment for order flow

On Nasdaq's SuperMontage, a *preferenced order* is one that is sent to a particular market maker.

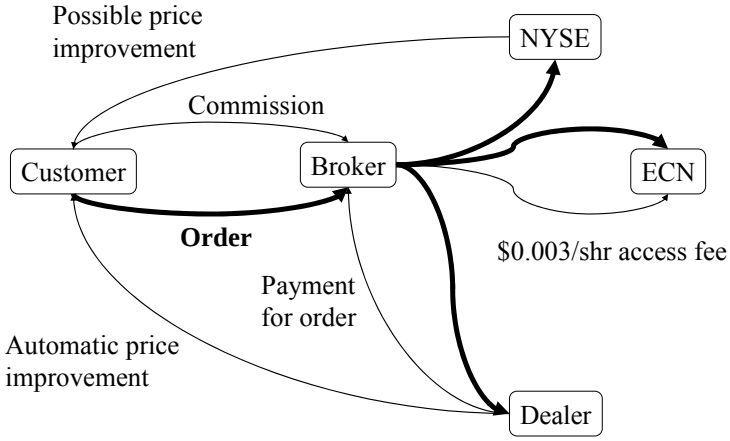
More generally, *preferencing* is the practice whereby the customer's broker favors a particular market center (in a listed or Nasdaq stock).

This is particularly applicable to retail orders.

Preferencing is usually accompanied by a payment or other inducement, a consideration paid by the market-maker or market center in return for the order.

These considerations (explicit or implicit, direct and indirect) are called *payment for order flow*.

Path of a typical retail market order



Forms of payment for order flow

Direct cash payment (usually computed on a per share basis)

Discount or rebate on services supplied by the market-maker or market center to the broker.

Broader material relationships

E.g., brokerage and market-making subsidiaries of the same parent company.

Internalization

Brokers executing trades away from the central market place.

15.6 Remedies

In section IV.C.2 of the concept release, the SEC outlined possible remedies.

Require greater disclosure by market centers and brokers concerning trade executions and order routing.

SEC enacted Execution Quality Disclosure Rules (11Ac1-5 and 11Ac1-6)

Restrict internalization and payment for order flow.

Require exposure of market orders to price competition.

Recall that the NYSE "auctions" incoming market orders to the crowd.

Should we require exposure, or leave it to the customer's option?

Adopt an intermarket prohibition against market makers trading ahead of previously displayed and accessible investor limit orders.

The NYSE specialist can't trade ahead of an NYSE customer limit order (at the same price).

A Nasdaq dealer can't trade ahead of her customer limit orders.

A Nasdaq dealer can trade ahead of an NYSE customer limit order.

The rule that a market maker can't trade ahead of customer orders does not apply across markets.

Provide intermarket time priority for limit orders or quotations that improve the National Best Bid and Offer.

Recall that the NYSE grants time priority to the first member to bid or offer at a price.

Should this be made the rule across markets?

Establish price/time priority for all displayed trading interest. "Virtual CLOB" (Consolidated Limit Order Book)

In the Spring of 2000, there were initiatives from major firms that made this look likely. (U.S. Senate Banking Committee "World Trade Center Hearings")

Many market participants doubted whether a large, high-capacity network to do this would be feasible.

The virtual CLOB is (for the moment) a dead issue.

15.7 The SEC's "dash five" and "dash six" rules

To regulate and alleviate the conflicts of interest that arise from preferencing, internalization and payment for order flow, the SEC implemented two key rules.

Rule 11Ac1-5 ("dash five")

> Requires market centers to report execution costs.
>
> This, in principle, allows customers to judge the quality of the executions that a market center on average provides.
>
> Limitation: not all market centers accept all orders from all customers at all times.
>
> Analogy: Does the hospital with the worst mortality statistics have the least competent doctors, or does it accept the sickest patients?

Rule 11Ac1-6 (excerpt)

Every broker or dealer shall make publicly available for each calendar quarter a report on its routing of non-directed orders in covered securities during that quarter. [The] report shall include the following information:

> The percentage of … customer orders … that were market orders, limit orders, and other orders;
>
> The identity of the ten venues to which the largest number of total non-directed orders for the section were routed for execution …; and
>
> A discussion of the material aspects of the broker's or dealer's relationship with each venue …, including a description of any arrangement for payment for order flow and any profit-sharing relationship.

[End of excerpt]

In substance dash-six requires brokers to report what they do with their customer orders and what payments or other considerations they receive.

Example: ETrade

(source: ETrade website)

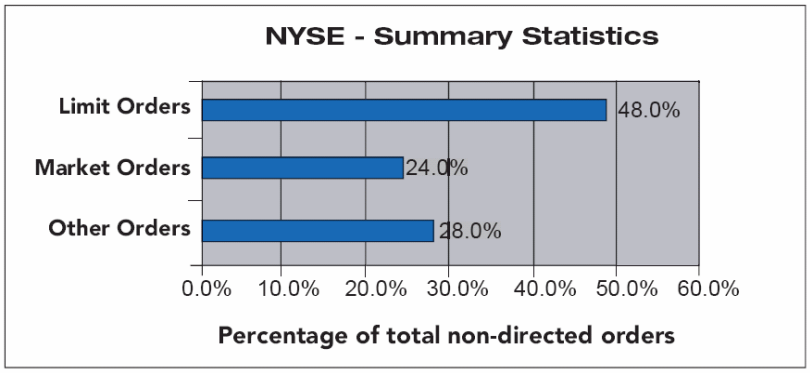
SEC-Required Report on Routing of Customer Orders

For Quarter Ending March 31, 2004

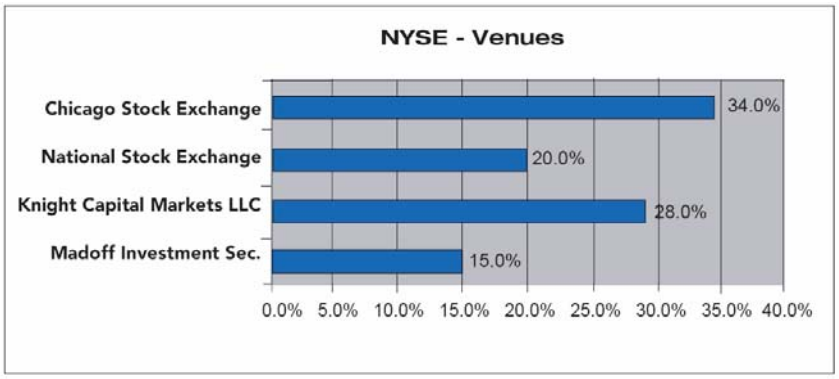
I. Securities Listed on the New York Stock Exchange

(a) Summary Statistics

Non-directed orders as percentage of total customer orders 99%



(b) Venues Receiving Significant Percentage of Total Non-Directed Orders:



(c) Information Concerning Significant Venues:

Chicago Stock Exchange

Market orders	Limit Orders	Other Orders
33%	34%	37%

E*TRADE (a Chicago Stock Exchange (CHX) member) receives payment from specialist firms for directing listed equity order flow to the CHX. Payment varies based upon a number of factors including but not limited to: The NBBO spread in the security at the time of order execution, time of order placement, whether an order is marketable at the time of order entry, whether or not an order is price improved, and the underlying price of the security. Payments received from CHX specialists averaged less than $.0005 per share for the period of Q104. Among the CHX specialists receiving E*TRADE order flow is Dempsey & Co., a wholly owned subsidiary of E*TRADE Financial Corp. (the parent company of E*TRADE). Dempsey & Co. executes on a principal basis, orders routed to it by E*TRADE, and may have profited or lost in connection with such transactions.

Etc.

16. THE FUTURE: "REG NMS"

On Feb. 26, 2004, the SEC proposed "Regulation NMS"

The Commission is holding public hearings and seeking comment letters (up to May 24).

The Reg NMS proposal is in the lineage of the Rule 390 Concept Release – a regulatory perspective on how to strike a balance between market center competition and price competition (investor order interaction)

NMS stands for National Market System.

In the 1975 Securities Act, Congress mandated:

> The Commission is directed, therefore, having due regard for the public interest, the protection of investors, and the maintenance of fair and orderly markets, to use its authority under this title to facilitate the establishment of a national market system for securities.

The precise definition of what an NMS is has proved elusive.

> But everyone agrees that the term has connotations of a securities market that is in some sense linked and unified.

16.1 Key provisions of Reg NMS

All of the provisions have qualifications and exceptions, but the essential features are as follows.

Intermarket trade-through protection

> A bid or offer that is posted in one market center cannot be traded through by any other market.

Access

> A market center can't discriminate against orders routed to it by other market centers in favor of orders entered by its own customers.

Sub-penny pricing forbidden

> You can't bid or offer in a price increment finer than $0.01

Allocation of market data revenues

Currently exchanges share in the revenues from the trade and quote “tape”. The shares are determined primarily by *number of trades*.

The proposed allocation is based on a (complicated) mix of trade and quote statistics.

Rule renumbering

“The Commission proposes to simplify the structure of the rules adopted under Section 11A of the Exchange Act (“NMS rules”) by designating them as proposed Regulation NMS and renumbering them.”

16.2 Trade-through proposal

Pros and cons

All floor markets and ECNs prohibit trade-throughs within the market. Doesn’t this mean that it’s a good thing?

When we look a broader markets, trade-through protection is rare.

> A Nasdaq broker can execute a trade that trades through a SuperMontage bid or offer.
>
> If I buy a Toyota at Acme Motors, Beta Dealership can’t “break the trade” by claiming that they would have offered me a better price.

Can we rely on the broker’s duty of best execution to protect a posted limit price?

Why would a broker acting on my behalf buy at a price of 20 when someone in some other market is offering at 19.90?

- It’s very difficult to monitor brokers.
- The customer who caused the trade-through might not have cared about price as much as he/she wanted immediate and certain execution.

  In fact, the proposal allows customers in this situation to “opt out” of trade-through prohibitions.

If the customer can decide whether he/she wants the protection, why is there a problem?

> There is still an injured party: the person who posted the limit order that was traded through gets discouraged and won’t bid or offer as aggressively in the future.
>
> This means that market spreads may widen; bids and offers may become more volatile.
>
> These are the same bids and offers that derivative markets (such as crossing networks) are using as reference prices.

Exceptions

The proposal allows two exceptions in which trade-throughs are allowed.

- A customer can actively opt out (noted above).
- To merit protection, the bid or offer must be visible in an automated market center, i.e., must be available for immediate automatic execution.

In addition, the executing market does not have to consider bids and offers that appeared within the same second as the execution. For example:

At 10:00:00 the NBBO is 60.01 to 60.03.

At 10:00:00.1 a dealer receives an order to buy.

At 10:00:00.3 the NBBO becomes 60.01 to 60.02.

At 10:00:00.5 the dealer sells to the buyer at 60.03.

The dealer can say "I didn't know about the better price."

Difficulty of protesting a trade-through

Within a market (like the Merc), protests of trade-throughs are disputes between members who have some interest in reputation and an ongoing relationship.

This is not true between markets.

A made-up story

The NBBO for a listed stock is 60.01 to 60.03.

I post a limit order to sell at 60.02. This gets displayed as the NYSE offer.

Suppose there's a trade at 60.03. I complain to my broker.

Broker: "Hey, I did what I was supposed to do. I sent your order to New York and they showed it. You should complain to Boston (or Philadelphia or Nasdaq or Inet, whoever caused the trade-through)"

Boston Stock Exchange: "We didn't do the trade. It was just reported to us by an executing broker. We can't tell you who by, but, uh, we'll look into it."

If the query ever does reach the market center that caused the trade-through, the response will be:

“The trade was reported a little late. It actually occurred before your offer was shown. Sorry.”

or

“The customer opted out of the trade-through protection. Sorry.”

16.3 Access

Market centers

