

# Controlling Institutional Trading Costs

*We have met the enemy, and it is us.*

Robert A. Schwartz and Benn Steil

**T**rading costs are the bane of institutions. Despite tireless efforts to reduce them, institutions face inefficient market structures manned by inefficient intermediaries that conspire to keep costs high.

This is the story line one would infer from the academic literature on institutional trading costs, which assumes that profit-maximizing fund managers seek to minimize trading costs. Yet a closer look at institutional trading practices suggests that fund managers are hardly passive victims of sell-side structures and practices. If the buy-side's goal were truly to minimize trading costs, it would appear to be its own worst enemy.

We shed light on sources of systematic buy-side trading underperformance attributable to buy-side trading practices. Our analysis is based in part on findings we have obtained through a survey of chief investment officers (CIOs) and head equity traders at 72 major asset management firms in North America, Europe, and Australia. These firms report assets under management of \$2.066 trillion in 1998, equivalent to about 15% of world mutual and pension funds and 10% of total institutional assets at that time.<sup>1</sup>

The heart of the underperformance problem is the outsourcing of research, computer systems, and other support services to the sell-side, with client assets used as payment. A fund management firm that provides such services internally, or that makes explicit payments to third parties for them, must bear the cost from its own capital and charge a management fee that makes the cost explicit

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to investors. Consequently, a fund has an incentive to outsource services in a manner that keeps the cost unobservable to investors. This is accomplished through the trading process. Institutions can legally fund the most basic aspects of their operations out of client assets by paying higher trading commissions, and receiving non-trade-related services from the intermediary as a form of “rebate.”

This opaque system necessarily involves broker-dealers in trading, not because they provide trading services that are desired in their own right, but because they are part of a system of invisibly transferring operating costs from the fund manager to the fundholder. We use the term *commission bundling* to reflect the packaging of trade execution with research and other non-execution services.

Obscuring the source of a fund’s research through commission bundling is costly. The explicit cost gap between traditional institutional brokerage and non-intermediated electronic trading is growing rapidly, and keeping intermediaries in the trading process unnecessarily generates higher market impact costs associated with greater demand for immediacy.

Our survey results clearly suggest that the traditional explanation for immediacy demand—the opportunity cost of failing to trade ahead of an anticipated market move—is overstated. We conclude that the buy-side’s demand for immediacy is in appreciable part endogenous to an intermediated environment that is characterized by front-running.

The damage to fund performance attributable to commission bundling is exceptionally difficult for fundholders to detect, and empirically it is well documented that poorly performing funds do not suffer significant divestment.<sup>2</sup> Given the lack of a systematic positive correlation between past performance and current returns, investors are simply unable to discipline commission bundling through performance monitoring. Investors must naturally focus on ex ante information such as investment strategy and costs. Fund managers therefore have a clear incentive to hide costs in returns rather than reveal them in expenses.

Quantitative trading performance benchmarks are now widely used in the industry. We provide evidence on *VWAP trading*, the use of a stock’s daily volume-weighted average price as a benchmark, and argue that this increasingly common practice leads to trading inefficiencies and to an understatement of trading costs. Using a benchmark that fails to detect the higher implicit trading costs that derive from commission bundling serves to perpetuate the practice.

## INSTITUTIONAL COMMISSIONS

Institutional commission rates have been curiously stagnant in recent years. U.S. weighted-average agency commission rates fell only 10% from 1994 to 1998, from 6.1 cents per share to 5.5 cents per share,<sup>3</sup> despite a four-fold rise in trading volumes over the period.<sup>4</sup> This compares with non-intermediated electronic trading commissions of 0.25 cents to 2 cents per share currently prevailing in the U.S. market.

Yet there has been no mass institutional migration to electronic platforms; institutional ECN executions actually declined from 24% of Nasdaq volume in 1996 to 15% in 1998,<sup>5</sup> even as *total* ECN executions rose to 30% of Nasdaq volume.

## COMMISSION BUNDLING

What accounts for the persistence of both traditional institutional trade intermediation and commission rates in the face of proliferating low-cost electronic competition? There are two interrelated answers to this question. The first is that those in the best position to place orders in the market on the basis of cost performance—the traders—are frequently passive participants in the trading process. More than half of U.S. institutional commission payments are not actually controlled by those doing the trading, but rather by a combination of the institution’s portfolio managers (40%), analysts (12%), and clients (10%).<sup>6</sup> Trader control increases from 40% to 48% for large institutions that pay over \$20 million in commissions annually. We found that 14% of portfolio managers actually specify the broker to be used on the majority of their orders submitted to the trading desk,<sup>7</sup> and 64% indicate that the trading desk’s choice of broker should reward good research on most transactions.<sup>8</sup>

This leads to the second more fundamental explanation: Institutions are paying for services wholly unrelated to trade execution, such as company and macroeconomic research, via trade execution commissions. Institutional trading desks engaging in such commission bundling—buying non-trade-related services from broker-dealers with trading commissions—cannot be pursuing trading cost minimization as an overriding objective.

Exhibit 1 illustrates the factors driving choice of broker. We asked institutional head equity traders how frequently their choice of broker is driven by the factors indicated, and CIOs how frequently the trader’s broker choice *should* be driven by these factors. As is apparent

**EXHIBIT 1**  
**FACTORS DETERMINING HOW INSTITUTIONS CHOOSE BROKERS**

	All Traders	U.S. Traders	Larger Fund Traders	Smaller Fund Traders	All CIOs	U.S. CIOs
Lowest possible execution costs	3.53	3.76	3.70	3.18	3.39	3.61
Fastest possible execution	3.37	3.42	3.67	3.00	3.24	3.22
Rewarding good research	3.39	3.24	3.20	3.61	3.42	3.11
Soft commission obligations	2.45	2.87	2.59	2.21	2.44	2.44
Portfolio manager direction	2.39	2.24	2.37	2.41	N/A	N/A

Scale: 1 (“never”) to 5 (“very frequently,” or 75%-100% of the time).

from the responses, factors other than minimizing execution cost are indeed significant. “Rewarding good research,” which is wholly unrelated to seeking best execution, features prominently. “Soft-commission obligations,” which represent a binding prior commitment to pay for research-related services through trading commissions, are not dominant but nonetheless conspicuous.

Traders from large institutions (over median sample asset size of \$6.2 billion) put considerably more emphasis on both execution cost and speed than traders from smaller institutions, who direct their commissions largely to pay for research services they could not provide in-house. Traders in general also put slightly more emphasis on the trade-related factors of cost and speed than CIOs.

The study finds further that, on average, traders direct 26% of their order flow to specific broker-dealers as a means of payment for “research, trading or information systems or third-party services.” U.S. traders direct a considerably greater portion of their orders for such purposes (32%) than traders in other major markets (e.g., Europe, 18%).

**SOFT COMMISSIONS**

Over half of all U.S. institutional commissions are actually targeted in advance, as an annual minimum commitment, to specific brokers to pay for a combination of:

- Research services from that broker (32% of total commissions).<sup>9</sup>

- Third-party research acquired by the broker, and other “soft” services such as trading and analytic technology (12%).<sup>10</sup>
- Commitment to providing capital to facilitate trades (16%).<sup>10</sup>

Over 70% of U.S. institutions engage in such soft-commission business, guaranteeing broker-dealers minimum annual commission payments for these services and others, such as IPO access (see Conrad, Johnson, and Wahal [2000]).

The degree to which an institution provides research services internally or subcontracts them from broker-dealers should clearly be a matter of business judgment. A problem of fiduciary accountability arises, however, when the cost of acquiring research services is embedded in the cost of individual trade transactions. A fund manager’s portfolio management services are contracted by fundholders—either individual investors or other institutions, such as pension funds. An explicit management fee schedule is associated with such services. Yet if the fund manager is dependent on brokers for research and other services necessary to manage client funds, and if the fees for such services are embedded in trading commissions, it is impossible for clients to observe the expenditure and to evaluate the efficiency with which their assets are being managed.

Among fund managers, views on soft commissions are quite diverse, but generally positive. We find that 67% of head institutional traders believe it “appropriate for a fund management firm to pay ‘soft commissions’ on

trades as compensation for broker research.” Similarly, 61% believe that such payments are also appropriate “as compensation for third-party services, such as computer information or trading systems.”

Nonetheless, a substantial 51% believe that it is, in principle, “desirable” (20%) or “highly desirable” (31%) actually to unbundle payment for external research and brokerage commissions. Only 8% consider this “undesirable” (6.6%) or “highly undesirable” (1.6%).

Views are split, however, on the degree to which it is, as a practical matter, *feasible* to unbundle these services and charge for them separately. Thirty-one percent consider it “feasible” (26%) or “highly feasible” (5%), while an almost identical 29% consider it “infeasible” (21%) or “highly infeasible” (8%).

Whatever their views on the matter, we should emphasize that institutions have no financial incentive to support the unbundling of execution and research payments, since these are made directly out of *client funds*, rather than out of the institution’s own capital. This is the source of an endemic principal-agent problem in the operation of collective investment schemes, which acts to discourage efficient implementation of portfolio decisions taken on behalf of fundholders.

## COMMISSION BUNDLING AND IMPLICIT TRADING COSTS

If paying higher institutional commissions resulted in lower implicit execution costs, there would be less reason to be concerned about the effects of commission bundling on fund performance. But the evidence suggests the contrary. Keim and Madhavan [1997] find a positive correlation coefficient between explicit and implicit costs of 0.14 for sells and 0.07 for buys. The findings of Berkowitz, Logue, and Noser [1988] and Domowitz and Steil [1999] are consistent.

Given the inherent problems of incentive structure and monitoring in soft-dollar and directed brokerage arrangements, it is not surprising that researchers have documented significant losses in trading performance attributable to them specifically. After adjusting for order characteristic and institution-specific differences, and excluding commissions, Conrad, Johnson, and Wahal [2001] calculate that soft-dollar trade executions cost the client an average of 0.29% more than discretionary executions for buy trades, and 0.24% more for sells. They find explicit costs on soft-dollar transactions to be, on average, four times higher than those on non-intermediated elec-

tronic systems (0.278% versus 0.069%), while generating implicit costs three times higher (0.695% versus 0.233%).

Glass and Wagner [1998] report that money managers handling directed trades on behalf of plan sponsors frequently execute them after trades in the same stocks on behalf of other fundholders, and that such “sequencing” practices can result in higher trading costs attributable to delayed execution. They report findings of a Plexus Group study of a large growth fund manager over 1993–1994 that reveals cost savings amounting to 0.03% of principal deriving from lower commissions on directed trades, but trading cost losses of 0.43% deriving from delayed execution of such trades.

## COMMISSION BUNDLING AND THE DEMAND FOR IMMEDIACY

Commission bundling locks intermediaries into the trading process, and the way intermediaries handle orders can have a significant impact on implicit trading costs. We contend that unnecessary trade intermediation also generates higher implicit trading costs by encouraging institutions to demand excessive immediacy in order execution.

Intermediated markets produce an endogenous demand for immediacy that owes to the effect of order revelation on prices. An institution trading in a dealer market, or human-intermediated auction market, must give up its identity and order information when it trades, thereby offering signals to broker-dealers as to its *future* buying or selling intentions. An order to buy, for example, will often indicate more buying to come. When the order is from a large fund, the importance of the signal is correspondingly greater.

Such information leakage naturally induces a tendency to trade quickly, before intermediaries are able to trade ahead of orders or to pass on the information to other clients. Agency brokers will frequently tip off one institutional client about another’s trading interest, hoping to win more commission business as a reward. Knowing how this game is played, clients naturally try to execute their orders before others are offered the opportunity to trade ahead of them.

This effect was particularly salient in London under the SEAQ dealer structure, before the blue chips were moved to the SETS electronic auction platform in 1997. Market participants routinely used the terms “liquidity” and “immediacy” interchangeably in that market, reflecting the critical importance of immediacy in a market

where information leakage was endemic to the market structure.<sup>11</sup>

Institutional awareness of the fact that costs are implicit in human trade intermediation is reflected in the concern that CIOs express that large be orders traded quickly, without revealing information about either their identity or order size (*Exhibit 2*). Awareness of the problem among buy-side traders is reflected in their growing tendency to see broker-dealers as competitors,<sup>12</sup> and their identification of anonymity as a key attraction of non-intermediated electronic trading systems (Economides and Schwartz [1995]; Schwartz and Steil [1996]).

Dealers themselves are extremely concerned about the impact that revelation of their own trades can have on the value of their proprietary positions. A remarkable 41% of North American buy-side traders indicate that their dealers “regularly” or “very frequently” delay publication of risk trades over \$5 million in size, in contravention of publication rules.<sup>13</sup> This highlights the significance of the interrelationship between market structure and trading practices.

### Immediacy and Trading Costs

Trading styles vary widely across institutions, but a significant core of firms consider executing orders quickly once they have passed from the portfolio manager (PM) to the trader to be of great strategic importance. Their choice of broker is frequently driven by a demand for immediacy, with large fund traders generally more trigger-happy than CIOs, and considerably more so than small fund traders (*Exhibit 1*). CIOs consider speed on large orders to be important, although—significantly—they rank it well below market impact (*Exhibit 2*).

Trading quickly may help mitigate the market impact costs of front-running, but still results in high market impact costs. Keim and Madhavan [1997] document far higher trading costs for quick-trading technical investors than for patient-trading value investors, both on the NYSE and Nasdaq.

Analyzing five years of implicit and explicit trading cost data from a large U.S. mutual fund, Domowitz and Steil [1999] find sell trades—for which immediacy was much more frequently demanded than for buys—to be on average 42% more expensive than buys for NYSE stocks and 523% more expensive for Nasdaq stocks. Using call markets (Instinet cross, Posit, and AZX) specifically for sells, which precludes immediacy, yielded considerable savings over continuous trading: 33% for NYSE stocks,

### EXHIBIT 2 FACTORS IMPORTANT TO CIOs IN JUDGING QUALITY OF EXECUTION FOR LARGE ORDERS

1. Little or no market impact	3.95
2. Speed	3.42
3. Not revealing the full size of order to market	3.40
4. Not revealing the identity of company or fund	3.21
5. Within the current market inside spread	3.06
6. Price better than the VWAP	2.93
7. Low or no commission	2.29

Scale: 1 (“not at all important”) to 5 (“very important,” or 75%-100% of the time).

and 49% for Nasdaq stocks. Handa, Schwartz, and Tiwari [2002] find considerable trading cost savings when trades are timed with respect to order balance in the market, rather than reflexively following the passage of orders from the PM to the trading desk.

### Can Opportunity Costs Explain the Demand for Immediacy?

“Opportunity cost” is the loss of investment returns owing to an adverse price move between the time a portfolio decision is made and the time it is implemented. An opportunity cost is incurred when three conditions hold:

- The price of a stock rises (falls) after an investor decides to buy (sell) it, but before he or she is actually able to do so.
- The price change is independent of the investor’s decision.
- The price change is a permanent price innovation.

A price change is a permanent price innovation only if it is caused by the dissemination of information relevant to the valuation of the asset. Other factors may influence the price of an asset, such as temporary liquidity imbalances, but these do not generate opportunity costs.

When opportunity costs are present, fund managers clearly have a strong incentive to trade quickly, before prices can fully adjust to new information. Given that traders are widely observed to trade impatiently, their behavior is routinely ascribed by both economists and consultants to the prevalence of opportunity costs.

The empirical evidence on the significance of opportunity costs is minimal and mixed. Wagner and Edwards [1993] estimate trade delay costs at 0.20% of value for so-called liquidity-neutral markets, or those exhibiting no

**EXHIBIT 3**  
**FREQUENCY WITH WHICH ORDERS ARE**  
**GENERATED AS A RESULT OF PARTICULAR FACTORS**

1. Internally generated company research	4.14
2. Receipt of new company-specific information	3.38
3. Cash inflows or redemptions	3.13
4. Reevaluation of portfolio structure	3.03
5. Externally generated company research	3.03
6. Profit-taking	2.71
7. Receipt of new marketwide economic or political information	2.61
8. Desire to cut losses	2.43
9. Trading activity or order flow in the market (e.g., "merchandise" reported by the trading desk)	2.20
10. Need to track a market index	2.09

Scale: 1 ("never") to 5 ("very frequently," or 75%-100% of the time).

momentum. They also find that 24% of orders go uncompleted, and that the non-execution costs on the unfilled component average 1.8%. As their finding on the proportion of uncompleted orders substantially exceeds the 4%-5% unearthed by Keim and Madhavan [1998] and Perold and Sirri [1993], this may simply be an artifact of their proprietary database.

It is not surprising that a portfolio manager would be worried about missing a price move. We find that CIOs, on average, indicate that the receipt of new company-specific information is a fairly frequent source of order generation (*Exhibit 3*). Such information ranks well below internally generated research, however, and not far above other factors such as cash flows, external research, and portfolio structure reevaluation—factors that should impose no need for immediacy.

Further probing suggests that portfolio managers rarely wish to trade because they have company-relevant information to which the market would quickly react. In particular:

- When asked to indicate, in deciding whether to buy a stock, the weight they generally give to their estimate of a company's share price a day hence, 65% of CIOs say they give it "no weight" at all, and none give it "very great weight." In contrast, 70% say they give "great" or "very great weight" to their share price estimates *two years* hence (*Exhibit 4*).
- Similarly, only 9% of respondents say that their buy orders are "regularly" or "very frequently" generated from a decision process lasting under one hour, which must be the case for information-driven trades, while 77% report that this is "never" or "infrequently" the case. In contrast, 48% say that the decision process is "regularly" or "very frequently" between a week and a month in duration, and 38% report it "regularly" or "very frequently" takes over a month (*Exhibit 5*).
- When trading because they believe a stock is mispriced, only 5% say they "regularly" or "very frequently" expect the price correction to take place within an hour, and 8% within an hour and a day. In contrast, 86% say that they "never" or "infrequently" expect the correction within an hour, and 84% say the same for corrections within an hour and a day. 51% "regularly" or "frequently" expect the correction to take over *one year* (*Exhibit 6*).

Furthermore, CIOs do not seem to believe that liquidity itself is a product of differential information. They believe that trading is far more likely to be driven by *different interpretations* of identical information, different portfolio objectives, and different cash flows (*Exhibit 7*). Opportunity costs are much less relevant when trading is driven by such factors.

To the extent that the institutional demand for

**EXHIBIT 4**  
**IN STOCK PURCHASE DECISIONS, WEIGHT CIOs GIVE TO ESTIMATE**  
**OF SHARE PRICE AT DIFFERENT TIMES IN THE FUTURE**

	Response Percentages					Mean
	5	4	3	2	1	
1. One day	0.0%	3.1%	12.1%	19.7%	65.1%	1.53
2. One week	0.0%	3.1%	20.0%	23.0%	53.8%	1.72
3. One month	0.0%	10.7%	32.3%	23.0%	33.9%	2.20
4. One quarter	6.2%	27.7%	29.2%	13.8%	23.0%	2.80
5. One year	34.3%	28.4%	20.8%	4.5%	11.9%	3.69
6. Two years or more	53.7%	16.4%	11.9%	6.0%	11.9%	3.94

Scale: 1 ("none") to 5 ("very great").

**EXHIBIT 5**  
**TIME TYPICALLY TAKEN TO MAKE A BUY DECISION**

	Response Percentages					Mean
	5	4	3	2	1	
1. Less than one hour	3.1%	6.2%	13.8%	46.1%	30.8%	2.05
2. One hour to one day	7.7%	9.2%	41.6%	24.6%	17.0%	2.66
3. Over one day to one week	10.7%	32.3%	27.7%	20.0%	9.2%	3.15
4. Over one week to one month	7.5%	40.9%	21.2%	18.2%	12.1%	3.14
5. Over one month	15.2%	22.7%	19.7%	24.2%	18.2%	2.92

Scale: 1 ("never") to 5 ("very frequently," or 75%-100% of the time).

**EXHIBIT 6**  
**IN BUYING OR SELLING A STOCK BELIEVED MISPRICED, TIME EXPECTED FOR PRICE CORRECTION TO OCCUR**

	Response Percentages					Mean
	5	4	3	2	1	
1. Less than one hour	1.6%	3.2%	9.5%	25.4%	60.3%	1.60
2. One hour to one day	3.2%	4.8%	7.9%	31.8%	52.3%	1.75
3. One day to one week	4.8%	11.1%	17.5%	41.3%	25.4%	2.29
4. One week to one month	1.6%	29.0%	32.3%	22.5%	14.5%	2.81
5. One month to one year	15.9%	36.5%	36.5%	4.8%	6.4%	3.51
6. Over one year	19.7%	31.2%	16.4%	22.9%	9.8%	3.28

Scale: 1 ("never") to 5 ("very frequently," or 75%-100% of the time).

**EXHIBIT 7**  
**WHY CIOs BELIEVE MARKETS ARE LIQUID**

Because buyers and sellers:

1. Receive similar information but disagree in their interpretations	3.97
2. Have different portfolio objectives	3.65
3. Have different cash flows at a given time	3.31
4. Receive different information about stocks	2.79

Scale: 1 ("never") to 5 ("very frequently," or 75%-100% of the time).

immediacy is rational, then, opportunity costs would appear to be a relatively insignificant source of the demand. As we argued earlier, it is primarily information on their *identity* and *order size* captured by intermediaries that triggers adverse price movements for institutions. Institutions are attempting to mitigate these effects by transacting quickly, while the most effective way to eliminate the market impact costs of information leakage is to transact *directly* and *anonymously*.

**IMPACT OF SOFT COMMISSIONS ON U.S. MARKET STRUCTURE**

Domowitz and Steil [2002] find comparable trading cost savings for ECN trading of listed stocks (28% vis-à-vis the NYSE) and for Nasdaq stocks (33% vis-à-vis

broker-dealers). Nevertheless, the usage of ECNs is low for NYSE-listed stocks (about 7%) in comparison with Nasdaq issues (about 40%). What accounts for this?

Soft commissions are likely to be a major explanatory factor. Soft commission obligations are fulfilled overwhelmingly on NYSE share trading, as Nasdaq broker-dealer trades have traditionally been priced net of commissions. This produces a perverse effect, whereby institutions frequently pay brokers for research on Nasdaq issues via executions in NYSE issues. This makes institutional trading of NYSE issues abnormally price-insensitive; institutions willingly pay 5.5 cents a share to a member firm rather than 1.5 cents to an ECN because they are actually buying items such as research and IPO access, rather than execution.

The pervasiveness of soft commissions clearly makes

the introduction of new alternative trading systems more difficult. Call auction systems, in particular, have struggled (AZX) or failed (OptiMark). The ECNs that have prospered in recent years owe their existence largely to SEC regulation—specifically, the 1997 order-handling rules, which allow brokers registered as ECNs to collect commissions on both sides of a Nasdaq transaction.

## PERFORMANCE BENCHMARKS

We do not argue that institutions do not care about transaction costs. Rather, they face a constrained optimization problem. Roughly, they attempt to minimize trading costs subject to the binding constraint that they must pay brokers sufficient commissions, from client funds, to acquire research and other desired services. This constraint still leaves considerable scope for active trading cost management. Our international survey finds that 27% of the institutions responding use outside consultants for this purpose. But more often, less sophisticated internal monitoring methods are used.

As institutions have grown, the division of labor between the stock selection and trading function has become greater. Portfolio managers generally have little direct knowledge of the trading process, which makes it difficult for them to evaluate how well their trading desks are handling their orders. This leads to a second significant principal-agent problem in the operation of collective investment schemes: the use of inefficient benchmarks by PMs and CIOs to evaluate trading desk performance.

VWAP, the volume-weighted average price for a security over a trading day, has in recent years taken on an enormous significance as a benchmark for evaluating trading performance. We find that CIOs rank VWAP performance well above other criteria for evaluating how well their traders handle their orders (*Exhibit 8*).

The underlying logic is that VWAP provides an objective measure of the entire market's contribution to determining the price of a stock, and should therefore also be an objective criterion against which to measure an individual trader's performance. A trader who buys stock below (above) VWAP has "outperformed" ("underperformed") the market.

There are two fundamental problems inherent in VWAP trading. First, VWAP, as an intraday benchmark, is generally not appropriate for evaluating the trading of large orders. If trading of such orders is spread out over many days, the market impact of such trading will be spread out as well. The second is that large-scale VWAP

trading across the industry will affect the determination of VWAP itself.

Monetary economist Charles Goodhart famously notes that "any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes" [1984, p. 96]. Goodhart's law applied to trading suggests that when enough traders become VWAP traders, the VWAP statistic itself becomes distorted to the point where VWAP trading loses its rationale. Let us expand on these points.

Wagner and Edwards [1993] estimate that about 40% of U.S. institutional orders exceed the relevant stock's average daily trading volume. If traders fill orders of this size within a single day, their trading performance is likely to appear poor against a VWAP benchmark. Chan and Lakonishok [1995] find that only about 20% of the value of institutional buy orders is completed within a day, and less than half within four days.

Roughly speaking, traders cannot hope to account for more than about a fifth of a day's market volume and not fall awry of VWAP. VWAP traders therefore hold back huge portions of their orders, filling them over several days, and often a week or more, as a means of staying within or near the VWAP benchmark; each day they stop buying (selling) when their trade prices move above (below) VWAP. When a large number of institutional traders in the market behave like this, share prices naturally fail to reflect true levels of demand, thus eliminating the relevance of VWAP as an indicator of such demand.

VWAP merely reflects those small portions of each order that are actually brought to the market each day, in the expectation that they are too small to affect the market price significantly. Prices will eventually come to reflect the latent demand in actual orders, but with a time lag.

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### EXHIBIT 8 CRITERIA CIOs USE TO DETERMINE QUALITY OF TRADES

1. Execution price of order relative to VWAP	3.06
2. Speed of execution	2.76
3. Execution price of each trade relative to contemporaneous market price	2.69
4. Average daily execution price relative to the day's closing price	2.53
5. Commission cost	2.10
6. No evaluation made	1.88

Scale: 1 ("never") to 5 ("very frequently," or 75%-100% of the time).

A VWAP trader can therefore chase a stock several percent up or down over many days, appearing skillful against VWAP while often damaging the fund's performance. Chan and Lakonishok [1995] find that market impact costs are significantly higher when measured for trade *packages* rather than individual trades, underscoring the flaws inherent in VWAP as a trading performance benchmark. American Century Mutual Funds reports finding that its broker who ranked best under a VWAP methodology ranked *worst* under a methodology that accounts for share price movements the day after trades.

As brokers themselves are clearly aware of the degree to which VWAP can be gamed, it is not surprising that many actually offer guaranteed VWAP prices (plus commissions) on institutional orders. For the buy-side trader client, such services are valuable immunization against critical scrutiny from the PMs or CIO.

## LOOKING FORWARD

Will commission bundling persist? There are strong forces at work to perpetuate it. The empirical evidence suggests that investors tend to reward very high performance with greater cash inflows, but fail symmetrically to punish lower performance through divestment. The net effect is to encourage funds to take greater investment risks as a way to increase the likelihood of exceptional returns, while offering little incentive for ending commission bundling. Furthermore, many institutions simply do not measure trading costs, or they use flawed benchmarks such as VWAP. A VWAP shop will fail to measure implicit costs accurately, and therefore fail to detect the performance damage that commission bundling brings.

If market forces could, on their own, bring about the unbundling of payments for trade execution and non-execution services, we suspect that the mechanism would operate as follows. First, while trading costs can only be estimated and never measured precisely, institutions will certainly have to find more accurate ways to estimate these costs. Fortunately, these are widely available, and knowledge of the techniques and service providers in the industry is growing. Larger funds are more likely than smaller funds to find external cost measurement services cost-effective.

Second, the cost gap between bundled commission trades and non-bundled trades is likely to continue to grow. If typical (bundled) U.S. institutional commissions remain stuck at 5.5 cents per share, while execution-only electronic trading commissions continue to decline from the current average of about 1.75 cents per share to the level

of the cheapest providers, about 0.25 cents per share, this will result in a further increase in the imputed cost of "research" of about 1.5 cents per share—a 40% increase from its current level of about 3.75 cents.

Such a substantial further rise would make it cost-effective for more large fund managers to provide research services internally and to hire the traders necessary to take fullest advantage of proliferating non-intermediated electronic trading systems. Given the growing complaints from institutions over the lack of objectivity in sell-side research, owing to conflicts of interest stemming from investment banking activity, we suspect that large funds will, in fact, move to bring more research in-house.

Large funds that can measure costs more accurately and conduct their own research and trading activity would logically lead the drive for unbundling. Interestingly, the economics of unbundling would also appear to favor funds operated by the sell-side. Large investment banks, which already have significant in-house research capability and the most advanced trading desks, should be in the best position to exploit the growing cost benefits of disintermediation. Yet while banks have, in fact, been making massive investments in building or buying asset management arms in recent years, so-called Chinese walls between the asset management and brokerage divisions may severely limit the ability of banks to exploit growing economies of scope.

We suggest that the investor protection rationale for maintaining Chinese walls that limit market intelligence or direct trading system access on the asset management side needs to be revisited in an era when the traditional division of labor between buy-side and sell-side, and investor and intermediary generally, has been rendered obsolete by advances in trading technology.

Regulatory pressure on commission bundling will continue to grow. The SEC's approach, based on obliging disclosure to fundholders, however, is unlikely to be effective, as nearly two-thirds of soft dollar arrangements between brokers and fund managers are entirely undocumented.<sup>14</sup>

The far more radical approach recommended in the U.K. Myners Report [2001], which would oblige fund managers to absorb all commission costs themselves, clearly addresses the principal-agent problem more directly.<sup>15</sup> If this approach were implemented and enforced, trading costs would be transferred from client returns to client fees, thereby encouraging fund managers to behave more like the profit-maximizing and cost-minimizing agents the trading cost literature has long held them to be.

## ENDNOTES

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<sup>1</sup>850 questionnaires were sent out, with a response rate of 8.5%. Fifty-four percent of recipients were based in the U.S., 19% in Canada, 11% in Australia, 8% in the U.K., and 7% in continental Europe.

<sup>2</sup>See Fant and O'Neal [2000], Sirri and Tufano [1998], and Goetzmann and Peles [1997].

<sup>3</sup>"Advances and Anomalies" [1999].

<sup>4</sup>The value of shares traded in the U.S. rose from \$3.56 trillion in 1994 to \$13.15 trillion in 1998, according to the Securities Industry Association.

<sup>5</sup>"Advances and Anomalies" [1999].

<sup>6</sup>These figures were remarkably stable over the period 1996–1998.

<sup>7</sup>This is consistent with our finding that 16% of traders report that their choice of broker is determined by the portfolio managers on more than half their orders.

<sup>8</sup>Slightly fewer traders, 55%, indicate that choice of broker should be driven by research more than half the time.

<sup>9</sup>"Advances and Anomalies" [1999] cites an almost identical figure of 30%.

<sup>10</sup>"Advances and Anomalies" [1999].

<sup>11</sup>See, in particular, the testimony of London Stock Exchange Chief Executive Gavin Casey before the U.K. Treasury Committee on March 17, 1997 ("The Prospects for the London Stock Exchange").

<sup>12</sup>Forty three percent considered broker-dealers to be acting more as "competitors" than "agents" compared with five years prior to the survey. Twenty-four percent considered them to be acting more as "agents."

<sup>13</sup>In Europe, where many major national markets have explicit rules to accommodate delayed publication of block trades, the figure is only 8%.

Our exact question was: "When you trade a large block of shares (over \$5 million) directly with a dealer, how often does the dealer 'stop' ('work' or 'protect') the order—that is, guarantee a price that he or she will try to improve on, but not print the trade until natural counterparties are found—or otherwise deliberately delay publishing the trade to the market?" The response "regularly" is defined as 50%–74% of the time, while the response "very frequently" is defined as 75%–100% of the time.

<sup>14</sup>See the SEC's web site: <http://www.sec.gov/news/studies/softdldr.htm>.

<sup>15</sup>Concerns expressed by the U.K. National Association of Pension Funds that this might merely encourage broker-dealers to widen spreads actually serve to highlight the benefits of

disintermediating the trading process, so that spreads are determined by the direct interaction of investor buy and sell orders.

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