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& Best Execution Transaction Cost Analysis SPECIAL REPORT

Liquidity Crisis Calls for Solutions

Premium for illiquidity drives up costs where opportunities are concentrated

BY KEVIN M. CALLAHAN

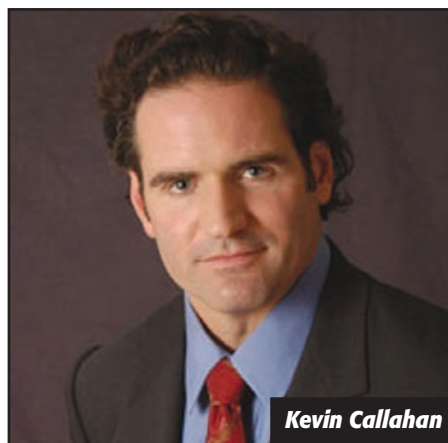
For years, the money management industry was built on the principles of risk and return. Increasingly, however, academics and money managers are recognizing a critical third component to the investment equation: liquidity. While portfolio models have long assumed a “frictionless” world, savvy market participants are recognizing that trading costs can have a substantial impact on investment performance.

Unfortunately for money managers and their investors, liquidity is getting harder, not easier, to find in today’s equity markets. In a recent TowerGroup survey of top buy-side traders, “finding liquidity” was their number-one concern. As leading money managers and hedge funds look to enter and exit bigger positions rapidly, they are running into substantial liquidity challenges.

While it is relatively easy to trade smaller positions in heavily traded issues, trading costs mushroom for larger trades in small-cap, mid-cap and momentum stocks, especially when you consider the total costs of trading to include market impact, delays and missed trades. What’s more frustrating for fund managers is that these tough-to-trade stocks are where

much of the alpha-capture opportunities lie.

Money managers can dramatically reduce liquidity risk, reduce total trading costs and capture substantial alpha through what we at JonesTrading call the



Kevin Callahan

Proactive Liquidity Sourcing Solution (PLSS). A PLSS should be an integral part of every trading desk’s arsenal that also includes exchanges and electronic communications networks (ECNs), algorithms, programs, dark pools and capital. Ever-more-sophisticated pre-trade analysis tools should help portfolio managers and traders determine when it makes sense to “go proactive.”

“Currently, we are entering an era of global markets. In recent years, the pace of change has accelerated,” Robert Schwartz and Reto Francioni, who is now CEO of Deutsche Borse, wrote in “Equity Markets in Action.” “This might leave us all breathless, but is further development still needed? Yes. The major problem is that market structure does not cater adequately to the needs of institutional customers.”

Many of the bedrocks of modern portfolio management theory, such as the capital asset pricing model (CAPM), are based on the assumption that markets have no friction and positions can be easily bought and sold without regard to transaction costs. Such an assumption makes for effective modeling, but it completely breaks down in the real world of buying and selling stocks, where transaction costs can have a substantial, even crippling, effect on investment returns.

The academic community has begun to recognize this reality. As finance professor Michael Pagano said in his “Reflections of a Finance Professor,” “Our students graduate knowing a great deal about a risk-and-return world. There is only one trouble with this: The real world is not two-dimensional.” The third factor: liquidity.

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As the academic community has recognized the importance of liquidity in the overall investment management process, so too have leading-edge portfolio managers and analysts. Trading was once considered an almost clerical function, entailing little more than filling out an order ticket and sending it to the broker designated by the portfolio manager. As the markets have evolved and as the importance of liquidity and trading costs has risen to the surface, the trading function and traders themselves have become much more integral to the investment management process. Indeed, many buy-side traders have on their desks the same technology and tools that their sell-side counterparts have.

Much of this trend of raising the awareness of trading and the profile of traders has been driven by hedge fund managers, many of whom consider themselves traders first and portfolio managers second. In many ways, the investment community can be broadly divided into two camps: those who “get it,” understanding the integral role that trading plays in the investment process; and those who do not.

(By August 2007, peak days approached 6 billion.) Certainly, declining transaction costs and growing automation have contributed to this impressive growth.

However, this growth is less impressive when you consider asset growth. According to McKinsey & Co.’s annual Global Capital Markets study, the financial assets of the U.S. amounted to just \$12 trillion in 1980. By 2004, these assets had grown to \$136 trillion, divided between equity, private debt, government debt and bank deposits.

Also, the character of investors had shifted substantially over that period from retail to institutional. A study by Paul Gompers and Andrew Melnick showed that large, institutional investors doubled their share of the stock market from 1980 to 1996. With the growth of hedge funds over the last decade and their high turnover, the influence of institutional investors is even greater today.

However, as institutional investors and their need for larger orders has played a much greater role in the markets, the average trade size on both NYSE and Nasdaq has fallen well below 1,000 shares (see graph below).

trading volume, institutional investors often resort to using algorithms to break orders up into multiple execution lots and then time the market for order entry. However, as Schwartz and Francioni point out, “they run the risk of being front-run on the one hand and incurring opportunity costs on the other hand.”

Costs of Liquidity

As finance professor Michael Pagano says, asset prices reflect not only risk, but also an illiquidity premium. How big is this premium?

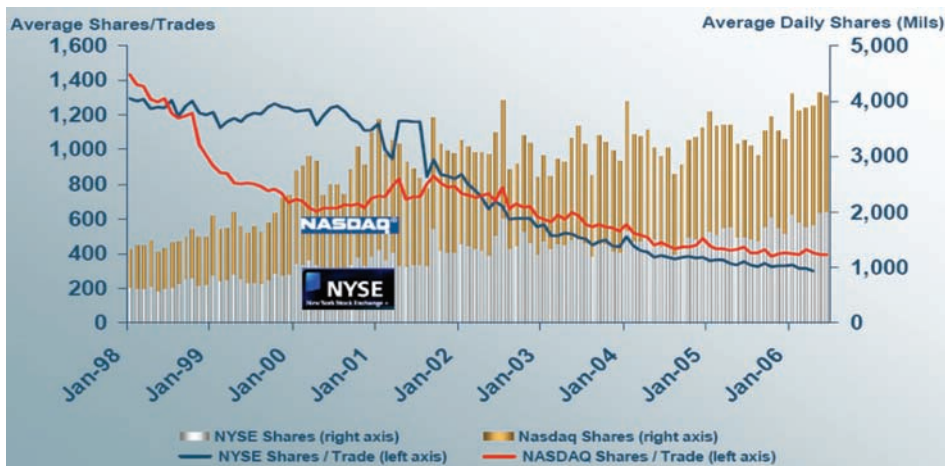
Wagner has analyzed the total costs of trading, taking a sample set of data that represents trading history of funds that represent 25 percent of the world’s trading volume. His analysis shows a cost of approximately 157 basis points (bps) broken down as follows: commissions (17), market impact (34), delay (77), and missed trades, or the opportunity cost (29).

This equates to 47 cents for trading a \$30 stock. Assuming that an institutional investor bought a stock and paid 157 bps on the way in and then sold the stock a year later, paying another 157 bps on the way out, an expected 10 percent return would be knocked down to 6.86 percent. The roughly 30 percent drop is the difference between being a superstar investment manager and an also-ran.

Commissions, which according to Wagner represent 11 percent of the estimated total trading costs, receive by far the most scrutiny. Next in line is market impact, which is also generally visible to astute traders.

Below the “water line” lie the costs of delay and missed trades, both of which can be substantial. Delay means that a portfolio manager or analyst came up with an investment idea, and by the time they could implement it, the price moved away from them. In today’s slice-and-dice trading world, implementing ideas can take hours if not days or even weeks. And the cost of a missed trade is being unable to implement a winning investment thesis.

The biggest cost of illiquidity may be the trades that never took place at all. In other words, what investment ideas are not even being pursued because of a lack of liquidity? For instance, many larger funds shy away from small and mid-cap



Availability and Access

While stock market operators such as NYSE Euronext and Nasdaq point to growing volumes and declining spreads, there is substantial evidence that the search for liquidity (and its associated costs) continues to be a substantial challenge for institutional investors.

In 1980, the average daily trading volume on NYSE was approximately 45 million shares. In 2005, the average amount traded exceeded 1.7 billion shares.

What’s most important in terms of market depth is whether a market has kept up with customers’ appetite for trading. Wayne Wagner of consulting firm Plexus Group estimates that 80 percent of institutional orders exceed half the relevant stock’s average daily trading volume. This means that the threat of market impact is substantial for the vast majority of institutional orders.

With large orders that most often represent a substantial portion of the daily

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companies because of fear of the “roach motel” effect: They may be able to get into the investment but can’t get out.

Obstacles to Alpha

Most frustrating for portfolio managers and traders is that liquidity challenges are often the greatest barrier to capturing true alpha. In other words, above-average investment returns are generally not found among the top stocks that are picked over by every analyst on Wall Street, but among the less popular stocks where truly unique ideas can be discovered. The challenge becomes getting liquidity in those stocks before others seize onto the idea.

There is an almost direct, inverse relationship between company size and total returns to shareholders. In other words, the smaller the company, the bigger the potential return. In fact, the total return of the smallest companies is nearly twice that of the very largest (see graph above).

This phenomenon, the so-called small-company effect, is nothing new. The real question becomes, what accounts for the small-company premium?

Many have posited that smaller companies are simply riskier and therefore command a premium. The source of the risk is said to be the fact that smaller firms are less diversified than larger ones. However, this same argument was used to justify inefficient industrial conglomerates in the 1960s and ’70s. Since then, modern portfolio theory has argued that investors can diversify their own portfolios and therefore do not place a premium on company diversification.

Returning to the point that risk and return are not the only variables in investment management, liquidity must be considered. Smaller companies are simply tougher—and therefore more expensive—to trade. They exact a high illiquidity premium.

Paul Gompers and Andrew Metrick, in their 2001 paper “Institutional Investors and Equity Prices,” found that while small companies earned a significant premium from 1926 to 1979, that began to reverse in the 1980s and ’90s. Small companies actually underperformed larger ones from 1980 to 1996.

They concluded that it was the growing influence of institutions—especially

the very large institutional investor—that accounted for this decline. Institutional investors doubled their share of trading volume from 1980 to 1996 as the largest 100 institutions increased their holdings from 19 percent of assets to 37 percent. Larger investors, the authors concluded, had an appetite for less risky and more liquid stocks.

In summary, smaller, tougher-to-trade companies have potential for alpha capture and above-average returns. Liquidity challenges get in the way of capturing that alpha.

New Middleman Emerges

The stock market was founded by middlemen, mainly brokers. In 1792, when the Buttonwood agreement was signed, investors were separated by space and time and therefore needed a middleman who could complete the transaction. The farmer in Virginia could trade his stock with the merchant in Boston only by using the services of a broker in New York. The stock market was born.

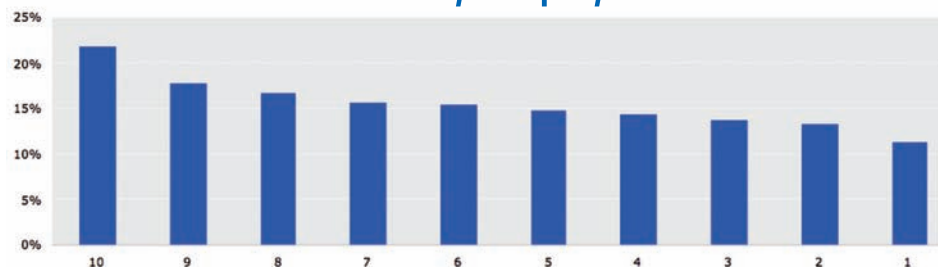
With the power of technology, investors are no longer separated by space or time, but middlemen, whether in real estate or stock markets, are hard to displace. The real question is whether they add value to the customers or manipulate their position to their advantage.

position contributed to the decline of Nasdaq market makers and NYSE specialists. In a class-action case in 1998, Nasdaq market makers accused of collusion settled with the government for over \$1 billion. In 2004, NYSE specialists were accused of front-running orders and settled with the government for \$240 million, without admitting or denying guilt. These accusations were part of the reason for the elimination of NYSE Rule 390, which disallowed off-exchange principal transactions.

As the influence of the old, designated middlemen declined, a new, perhaps less transparent middleman has emerged. In an agency-based trading environment, any market participant can play the role traditionally played by specialists and market makers: committing capital to facilitate trades.

Certainly, capital commitment plays a role in any efficient stock market. Inevitably, buyers and sellers will not come together at exactly the same time at exactly the same price. A market participant committing capital in the middle can effectively smooth over the temporal imbalances in supply and demand for stock. This role of committing capital traditionally performed by the market maker or specialist has now been assumed, in many cases, by prop desks, quant funds and even day traders.

Total Returns by Company-Size Decile



The stock markets have changed radically over the last ten years, mainly from a more principal-based model to a more agency-based model. The order-handling rules of 1997 and the rollout of decimal pricing in 2000 directly affected Nasdaq market makers, whose role has greatly diminished. With the NYSE Hybrid Market, many expect the role of the specialist to be greatly diminished as well.

Certainly, the abuse of their privileged

The difference is that a market maker or specialist has a designated role and a fiduciary responsibility to ensure orderly markets. No one minds if they make money on their trades—this is compensation for the risk they are assuming—but it should be controlled and monitored. A prop desk or statistical arbitrage hedge fund committing capital on a trade, however, has no such responsibility for fair and orderly markets.

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A look at the equity business of a major investment bank shows how the role of the middleman has changed over the last five years. Between 2002 and 2005 the traditional commissions business declined while the principal business mushroomed (see graph below).

The Institutional Battle

Institutional investors find themselves between a rock and a hard place. They need liquidity on demand, priced fairly, in size, with reasonable execution costs. On the one hand, they have the displayed markets, the exchanges and ECNs, which offer pint-sized liquidity and the risk of leaving “footprints” in the form of multiple, smaller orders executed in those markets. On the other hand, they have the welcoming arms of the investment banks willing to provide capital, but who also maintain growing proprietary trading operations.

allow for anonymous execution, although complaints over gaming and fading have grown as the membership ranks of these networks have swelled.

As successful as crossing networks have been, they suffer from two flaws. The most significant drawback is that they do not work often enough. TowerGroup estimates that only 6 of every 100 trades that go into a crossing network actually get executed. As more and more of these networks emerge and liquidity further fragments, this hit rate could fall lower. In general, institutional investors like to use crossing networks, but they do not work often enough.

Second, crossing networks generally have limited means of price discovery. Many systems are based on simply matching at the midpoint. This means that price discovery occurs at the exchanges, where small retail orders play a more prominent role.

rather than well-informed institutional orders, determining the price? Shouldn't this be the other way around? Also, is it really the retail investor that is placing the 100-share limit order on an exchange that sets the price, or is it a highly sophisticated statistical arbitrage black box? Once sophisticated algorithms understand the link between exchange prices and crossing volume, they may be able to use this information to their advantage.

Balancing Liquidity, Regulation

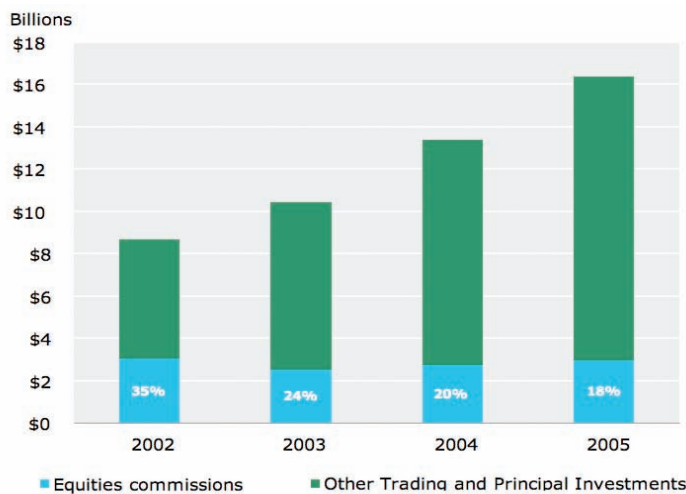
Just when the institutional investors are retreating to dark pools for safety, they find that their interests can still be compromised.

In 2004, three of the five commissioners of the Securities and Exchange Commission approved the sweeping regulatory reform of U.S. equities markets called Regulation NMS. Its most controversial aspect was the trade-through rule, which effectively takes the old NYSE trade-through rule and applies it across all markets and all market participants. If you are a broker-dealer or exchange and a customer gives you an order to execute, you must satisfy the best bid or offer that is available on a fast market. You cannot “trade through” a better bid or offer to execute the order.

Institutional investors have not paid much attention to Reg NMS; the trade-through rule largely applies to intermediaries, broker-dealers and exchanges. However, the rule will have a profound impact on the markets and investors' desperate search for liquidity. The unfortunate news is that, despite its best intentions, Reg NMS is likely to make things harder, not easier, for institutional traders.

Oddly enough, Reg NMS was designed, in part, to address many of the liquidity issues we have discussed in this paper, mainly the lack of displayed liquidity in the markets. The solution, according to regulators, was to encourage the display of limit orders. Limit orders are the lifeblood of a market because they set the price that market orders are executed against. Limit orders supply liquidity to a market, while market orders demand or take liquidity from a market. More limit orders are good for liquidity.

Equity Business of an Investment Bank



Faced with these unappealing choices, many institutional investors have turned to crossing networks in search of anonymous, low-cost execution. TowerGroup estimates that crossing networks account for 12 percent of order flow from buy-side desks and are growing rapidly. Nearly every major broker and every national and regional exchange has announced plans for a crossing network.

On the upside, crossing networks offer institutional-size execution; most average 50,000 shares per trade. Also, to varying degrees of success, crossing networks

Essentially, then, price discovery occurs in the exchanges and size discovery, where available, happens in the crossing networks. This is less than ideal for several reasons. First, price and size discovery should go hand in hand, as they do in almost all other markets. If you are buying a shipload of bananas, then you might expect to pay a different price than if you are buying a bunch at the grocery store. Institutional investors should be able to play off both size and price when negotiating their trades.

Why are retail orders on an exchange,

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However, the problem emerged when regulators began to look at the root causes of a lack of limit orders. In their view, investors did not post displayed limit orders for fear of being traded through. Why post liquidity if someone else can execute ahead of me?

Is it really the fear of being traded through that prevents displayed limit orders or the fear of being taken advantage of? Certainly, in the case of institutional investors, the lack of displayed liquidity is a direct result of the fact that their displayed intentions will move the market.

Spotlight on the Price

Institutional investors have turned to crossing networks and agency brokers to avoid the prying eyes of prop traders and other market participants and deal directly with other institutional investors on an agency basis. Reg NMS, however, could have an unintended consequence on the market and on institutional investors in particular. This is because the trade-through rule has the potential of pushing price as the most important determinant of best execution.

The more closely best execution is associated with only price, it gets further away from the needs of institutional investors, who use a variety of factors when deciding where and how to trade. Obviously, price is one key variable. But so is the size of the order, as is speed and, most importantly, the total cost of execution. A multitude of small orders that are executed within the bid-ask spread could be very costly to institutional investors if their orders are in fact moving the market. And yet, under a narrow view of best execution, the broker handling the trade would have done just fine.

Also, regarding the issue of price discovery, institutional investors may be even less prone to set prices in the market. This bifurcated market, where price is set in the displayed markets and quantity is discovered (to a limited extent) in the non-displayed markets, will be more or less set in stone. In the end, it will not be the widow in Iowa who is setting the price with a limit order; it will be one of the market intermediaries. Reg NMS may strengthen rather than reduce the role of certain middlemen in the

market, to the potential disadvantage to institutional investors.

Ultimately, buy-side traders will adapt to a post-NMS, post-Hybrid trading environment and they will use a variety of tools and techniques to achieve the investment objectives of their funds. JonesTrading's Proactive Liquidity Sourcing Solution (PLSS), for one, helps traders find and release pent-up liquidity that is not available in the markets, displayed or non-displayed. That is because the liquidity may reside even in stock holdings themselves and may become available only when a performance or trading opportunity arises.

Optimizing the Factors

By liquidity, we mean that a trader can satisfy every single trading criterion: the price of the security, size of the order, speed of execution and total cost of execution. All of these criteria must be balanced. Perhaps you could get an order completed rapidly, but at a massive cost of market impact. Or you can get the price you want, but not the quantity. Any time the markets cannot deliver all these elements in an optimal fashion, it is time to turn to a PLSS.

This is not a passive technology model that allows orders to sit, awaiting a counter-side while simultaneously releasing trading information and signaling intention. Rather, PLSS is comprised of three elements: a trader, a network and technology. Only in the combination of all three are institutional trading needs fully addressed and met.

The PLSS starts and ends with an execution trader that the buy-side trader can trust implicitly and completely. The trader must be highly skilled, essentially a liquidity sourcing expert, someone who knows what moves markets and how to source and draw liquidity to create size without revealing customers intentions.

The network component consists of leading money managers, mutual funds and hedge funds. The network should include customers that want to buy and sell stock, not those who want to gather information to use to their advantage and another investor's detriment. And it should be diverse, including investment managers with a wide array of investment strategies. You need diversity to create

trades, to create liquidity. Many crossing networks have suffered a low hit rate partly because their communities are relatively homogenous.

Most importantly, the network must be completely secure, built on a long track record of trusted relationships. Customers' investment and trading objectives must be understood intimately and should be used when trying to bring together parties with compatible interests. The network should be actively policed and monitored and prudently culled of anyone trying to take advantage of the system.

The technology that is the third component of a PLSS must arm the trader with advanced technology that gives them access to all markets, visible and invisible, and advanced tools for sourcing liquidity internally.

The real magic is not the components themselves, but how they are used in combination to meet the liquidity needs of customers. We can call this search, show and source.

"Search" means that the trader has the ability to instantly search all available pools of liquidity—national exchanges, ECNs, regional exchanges, dark pools, etc.—and can rapidly get a picture of the available liquidity options in the market. Every buy-side desk has access to the same venues, but the astute execution trader uses search capabilities as one means of an integrated strategy to source liquidity.

"Show" means that the execution trader can execute a trade in order to attract liquidity that is not currently in the marketplace. "Source" means that the execution trader taps his or her network to find potential buyers or sellers. Sourcing may not be the right approach for some highly sensitive trades, but it can be a highly effective tool when implemented properly.

For institutional investors, the search for performance is neither simple nor sure. Buy-side trading professionals, the skills and expertise they bring to the investment equation, and the choices they make in execution can mean the difference between marginal or significant increases in alpha. Quickly sourcing cost-effective and fairly priced liquidity in desired size is not only one of their greatest challenges, but if achieved consistently can be one of their greatest accomplishments. ■



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