



## **Frontiers in Best Execution : Perspectives for Investment Managers**

The gremlins of portfolio implementation shortfalls have always haunted the halls of investment management. As part of their on-going efforts to limit these shortfalls, money managers have utilized best execution services to minimize the costs, and better manage the factors that diminish the performance of their portfolios.

In this Nov 2005 paper, Chito Jovellanos (President & CEO, *forward look, inc.*) provides an overview of the genesis and current state of best execution services; offers a brief overview of current providers; and highlights the key considerations for investment management operations.

### **The Implementation Shortfall (IS)**

A portfolio starts out as an idea on paper - essentially a target basket of financial assets with some expected return over a given period. Trading enables the implementation of that investment idea, and the 'implementation shortfall' arises when the actual return fails to meet the initial expectation (ie, the manager is unable to fully exploit their stock selection insights). Andre Perold is credited with first articulating the underlying concepts in his 1988 paper that gave birth to the concepts that drive transaction cost analysis (TCA) today.

Wagner and Banks (1992) reported that managers experience implementation shortfalls in the range of 1-8%. Moreover, making up that shortfall through asset reallocation or style shifts significantly increases both the risk profile and the inefficiencies in the operation of the portfolio. The more urgent the motivation for the trade (eg, an IPO), the more costs edge up towards the high-end of the spectrum. Notably, even a pure 'planned' activity like a transition incurs significant costs as a percentage of assets. Recent reports (ca. 2002) by the WM Company and Mercer (the actuarial consultant) suggest that the average cost of a transition is over 2.0 per cent of the portfolio, and can be as high as 2.7 per cent.

### **Components of IS**

In its simplest form, IS is the sum of execution cost and opportunity cost (note : you might see IS referred to as 'arrival shortfall' in the more recent literature from best execution providers).

*Execution cost* is a measure of explicit costs, eg commissions and taxes. It also incorporates price impact (ie, the price adjustment necessary to create enough liquidity to accommodate the trade, and other concurrent trades in the market --- price impact equals the cost of seeking and purchasing liquidity).



*Opportunity cost*, on the other hand, reflects the cost of failing to find the liquidity to complete the trade - usually within a particular time frame (eg, from the time of submission of the order to the trade desk until cancellation, or three days after the last completed tranche in the order). Opportunity cost embodies the theoretical gains the manager could not capture (ie, from the buys and sells that were *not* executed)

Price impact and opportunity cost now predominate. Commission costs have historically been declining – from a ‘nickel a share’ in the late eighties to about 2 cents a share today (note: this is the estimated payment by Fidelity Management and Research to Lehman Brothers per Chris Meyer’s (Morgan Stanley) recent research note). The price pressure on brokers plus the changing payment landscape for bundled research and soft-dollars explains why commissions are becoming an increasingly smaller component of IS.

### **The Bedrock of Best Execution : Transaction Cost Analysis (TCA)**

The importance of TCA (beyond simply knowing where the costs that depress returns are) is that TCA inputs are fundamental to the selection of optimal trading styles for specific components of a portfolio over a particular trading window.

TCA strongly influences the trading style adopted, ie manual (for large or complicated orders) vs program trades (typically for basket orders) vs algorithmic trading (to-date predominantly for large single instrument acquisitions). TCA also affects the selection of external vs internal liquidity pools (eg, public markets vs internal crosses) when fulfilling the order.

The effectiveness of an execution strategy is premised on an ‘objective’ that guides trading activity, eg speed vs patience; small tranches vs large blocks; concessions to the market to obtain the security; spreads paid to a market maker and so on. The equilibrium of a trading approach constantly shifts in order to get as much of the trade completed before the value of the investment insight is reflected in the evolving price of the stock.

Tracking the volume weighted average price (VWAP) is the most widely agreed-upon metric for best execution because of its ease of measurement and its more forgiving quality (ie, from a broker’s perspective, it can be more readily attained since the target price shifts with market activity and the trader (and the trading algorithm) can track their orders more conveniently to the VWAP shifts). As a result, some plan sponsors dislike VWAP since they feel the broker can ‘game’ the system. Others accept it as the most practical mirror reflecting the reality of various trading moments.

Other metrics exist, such as TWAP (time weighted average price), percentage of volume, and arrival price. But these metric are less appealing than VWAP because of the somewhat naïve assumptions underlying these participation metrics, or their difficulty in measurement.



Given algorithmic trading's current mindshare in terms of topical news, it's worth noting that average performance differences across providers for small orders are few, but gaps grow as order size grows towards approximately 10% of average daily volume. Beyond this level, the superiority of manually worked orders becomes significant (Domowitz and Yagerman, 2005).

### **Survey : TCA Providers**

Historically, TCA was the providence of specialist firms such as Abel Noser, Elkins McSherry (now State St) and the Plexus Group (recently acquired from JP Morgan Chase by ITG). The Quantitative Services Group and GSCS Information Services are more recent entrants into the TCA domain.

Today, many brokers and their (algorithmic) trading strategies typically incorporate their own TCA services. By way of examples :

- GSAT (Goldman Sachs Algorithmic Trading) offers VWAP, Percentage of Volume, Piccolo and 4Cast (the latter takes in real-time market data to forecast the impact of a trade) services. A GS feature called 'Navigator' assists its clients in identifying which of the four algorithms would be the most appropriate given the client's strategy. These are accessible via REDIPlus, their electronic trading platform (that was obtained as part of their Spear, Leads & Kellogg acquisition). GSAT is also developing a capability that enables clients to switch algorithms mid-stream (ie, after parts of the order have been executed), based on shifts in market condition.
- JPMorgan recently introduced its Trading Algorithmic Optimizer (TAO), which determines and executes the most appropriate algorithms for trading a portfolio of stocks. The bank says TAO offers anonymous trading while providing visibility and control at both the portfolio and individual ticker level.

### **What TCA Should Convey to Investment Managers**

At a minimum, any TCA analysis should explicitly communicate :

- Your overall trading cost by market (commission, fees + market impact) in bp's
- The cash equivalent of one bp of your transaction cost
- Your commission cost in bp's and cash
- Your market impact cost in bp's and cash
- Your fee cost in bp's and cash
- Your opportunity cost (based on pre-trade analytics; this is the hardest metric for an Investment Manager to validate)
- Profiles of your high cost trades
- Profiles of your low cost trades



For your international portfolio, TCA analysis should also offer

- Your overall trading cost in bp's and its ranking relative to your universe
- Your local brokers trading costs and their relative rankings

To view some sample TCA reports, see the GSCS site (<http://www.gscs.info/im-reports.asp>). The content and presentation are typical of most TCA providers.

### **Buy Side Systems for Best Execution**

Order management systems with access to TCA (more so than just market gateways) are increasingly important in enabling best execution. For example, MacGregor's XIP7 provides connectivity to Elkins McSherry, ITG TCA™, Quantitative Services Group, and GSCS.

In the best of all worlds, buy-side systems should *maintain their own TCA component*, since the unique assumptions and rules underlying their particular business need to be incorporated, and more importantly, the proprietary insights retained within the firm.

Many broker-dealers offer TCA as an integral component of their execution services for investment managers. However, many institutions are not comfortable with fully disclosing their proprietary strategies to brokers that act in both an agency and principal capacity. The concern rests with obtaining proprietary knowledge and the resulting behaviors that engender a conflict of interest - more through unintended consequence rather than actual intent.

A recent example stems from Lehman's SEC settlement regarding the firm's failure to supervise a trading strategy pegged to the closing price of Quest Diagnostics stock in 2002 that gave Lehman a profit while potentially harming its customers. As reported in the Wall Street Journal, Lehman's agreed to buy 2.05 million shares of Quest Diagnostics Inc. from 13 customers on the afternoon of Dec. 11, 2002. Customers expected the stock to rise because Quest was moving into the Standard & Poor's 500-stock index from the S&P 400 index on that day, and Lehman guaranteed to buy shares at a price of 0.33 cent to two cents over the closing price. But to hedge its guarantee, Lehman also sold more than two million Quest Diagnostics shares --- with 78% flooding the market in the trailing minutes of trading and Quest shares sliding to \$59 from \$59.61. Because Lehman had sold part of its position earlier at higher prices, it realized a profit while its customers, whose trades were tied to the closing price, may have been detrimentally affected.

## **What Plan Sponsors Want To Know from Investment Managers**

Investment Managers should be able to address these basic questions from Plan Sponsors regarding best execution :

- ❑ What is your total implementation cost and what does it buy the plan?
- ❑ What do you consider reasonable costs?
- ❑ How do you synergize trading style with investment style?
- ❑ How do you communicate with execution brokers and how does it alter their service?
- ❑ How do you manage costs for research vs execution?
- ❑ How do you validate your own trader's skills relative to implementation of investment ideas?

## **Emerging Considerations for Best Execution**

*Asset Classes* : Though the history of TCA is rooted in the analysis of the equity markets, there is a growing body of high-frequency trading data that should be applied to best execution strategies for other instruments such as FX, futures and options.

*Regions & Markets* : Nascent regulatory regimes, particularly in the European Union, need to be addressed by best execution. For example, the Markets in Financial Instruments Directive (MiFID) poses an issue for many firms operating in the region. How should they define a best execution framework that can effectively serve all markets in the EU satisfactorily? The response will be a complicated one since firms need to unbundle all the pricing and cost components across markets, and then flow these through their order management and execution systems.

## **Additional Information Resources**

For more detailed treatments of best execution and algorithmic trading, see :

- ❑ Algorithmic Trading: Precision, Control, Execution. ed. Brian R. Bruce, PanAgora Asset Management. 2004
- ❑ Madhavan A. 2005. The Trading Revolution : navigating the brave new world of algorithmic execution. Barclays Global Investors *Investment Insights*. July 2005. 19 p

The papers on best execution and algorithmic trading cited in this article are :

- ❑ Domowitz I and Yagerman H. 2005. The Cost of Algorithmic Trading : A First Look at Comparative Performance. ITG White Paper. March 2005. 22 p
- ❑ Perold A. 1988. The Implementation Shortfall: Paper versus Reality. *Journal of Portfolio Management*, April 1988. p 4-9
- ❑ Wagner WH and Banks M. 1992. Increasing Portfolio Effectiveness Via Transaction Cost Management. *Journal of Portfolio Management*, Fall 1992. p 6-11