ALGORITHMIC TRADING II

- PRECISION
- CONTROL
- EXECUTION

Brian R. Bruce, Editor
The ascendancy of algorithmic trading has also been at least in-part responsible for an important driver for the rapid expansion of the alternative transaction systems (ATSs)—including the so-called Dark Books. Arguably, the use of algorithmic trading is also accelerating the adoption of transaction cost research products such as pre- and post- trade analytics to predict and validate performance of trading—but especially algorithmic trading. That the US Equities trading is undergoing a transformation led by trading algorithms, Dark Books and transaction cost analytics is not surprising; what is surprising is that market participants are responding to the change by combining algorithms, dark liquidity venues and analytics in new ways and investors are benefiting.

**ARE ALGORITHMS COMMODITIZED?**

Niall McIntyre

There is a perception that algorithms are becoming commoditized, which is partially fuelled by the number of brokers offering algorithmic trading. If so many brokers can do it, the argument runs, it cannot be that difficult. Actually, the algorithmic provider market is not commoditized—it is just a little opaque. The quality of algorithms varies dramatically from broker to broker. The way to find the best in class is to talk to your brokers and understand how their algorithms work and the implications of their trading strategies—use this article as a guide.

**ALGORITHM SELECTION: A QUANTITATIVE APPROACH**

Jian Yang and Brett Jiu

The widespread use of algorithmic trading has led to the question of whether the most suitable algorithm is always being used. We propose a practical framework to help traders qualitatively characterize algorithms as well as quantitatively evaluate comparative performance among various algorithms. We demonstrate the applicability of the quantitative model using historical data from orders executed through ITG Algorithms.

**OPTIMAL USE OF ALGORITHMS: AN APPROACH FOR THE BUY SIDE**

Stephen Engdahl and Harish Devarajan

While algorithms are a tool in common use by the buy side, debates are ongoing over the degree to which algorithms are fashion, fad, or enduring fixture. Algorithms can certainly add value to the trading process by automating routine tasks and enabling traders to focus on more difficult trades. But the degree to which algorithms are a fad or fact of life depends upon how much their value can be quantified within the trading process.

The current algorithmic environment lacks appropriate analysis tools to assist the trader in deciding which algorithm, from which provider, to choose in any particular circumstance. Furthermore, there is room for an improved business model to align both buy and sell side interests regarding algorithmic performance.
THE OMS: BECOMING THE DISTRIBUTION PLATFORM FOR THE SELL SIDE 38

JEFF GAVIN

As the popularity of algorithmic trading heats up and as the sell side continues to refine their existing algorithms and add new tools, it is getting harder and harder for traders to distinguish between the growing numbers of algorithms offered by all the different brokers and to determine which broker's algorithm to include in their trading strategy. The OMS vendor's job isn't to tell their clients which broker's algorithm to use or how to use it. Instead, they must provide clients with access to all the execution tools that they need.

TRADE ALGORITHMS 2005: EVALUATING THE RAPID GROWTH OF AUTOMATED ORDER EXECUTION 41

JOHN J. BLANK

This article grew from a formal presentation to the CME management team. The original presentation, and this article, focused on the role trade algorithms played in driving the rapid growth of automated order execution. The article follows along the lines a development economist would take. It starts with demand drivers, moves through the supply chain, and ends with a look forward from the exchange perspective.

THE PRACTICE OF OPTIMAL EXECUTION 52

MERRELL HORA

Optimal execution is a term that is widely used, and even though the concept is intuitively clear, in practice it is not uniformly achieved. In fact, the gap between this intuition and the perceived reality of algorithm behavior probably accounts for much of the remaining skepticism regarding algorithmic trading. This article examines why the gap exists and how it can be reduced. The typical approach is based upon a formulation that abstracts away from critical elements of the problem facing a trader who is executing in actual markets. It is not surprising that this approach fails to address a number of material risks facing the trader and portfolio manager. One particular risk is known as signaling risk, the risk of conveying information about trading intentions to market participants. It is demonstrated that when signaling risk is ignored, the typical solution is not the strategy that an intelligent, risk-averse rational trader would employ in real-time. By examining how information is utilized by the market, it is possible to derive practical conclusions that can help manage signaling risk from within a trading algorithm. Building on this, it is shown how the execution optimization problem should be revised to provide a better representation of actual trading environments. Solutions to the revised problem correspond to optimal trading strategies that can be employed in practice with greater confidence that signaling risk is being managed.
The US equity market has undergone radical changes in the last 10 years, evolving from a traditional floor-based model dominated by the NYSE and smaller regional exchanges to a highly fractured trading environment supported by voice and electronic exchanges and a host of ECNs and ATSs. The increased use of electronic trading, however, helped expose a number of structural deficiencies in the US markets. Created in the 1970s, the National Market System could not—in a fair and efficient manner—support the kind of trading activities made possible by 30 years of technological innovation. In response, the SEC introduced Regulation NMS (“Reg NMS”), a set of sweeping market reforms intended to modernize US regulatory market structure. Although the immediate impact of Reg NMS has been well documented (see: NYSE/Arca and Nasdaq/Inet), the long-term impact on ECNs as a whole is less clear.

On its face, Reg NMS appears to favor ECNs due to its emphasis on the automation of trading. Thus, we expect ECNs to make continued gains against the specialists. However, the greatest overall impact of Reg NMS will be on the NYSE by forcing it to adopt the electronic model in its recently outlined hybrid structure.

If dealing in size is the problem today, is algorithmic trading the answer? Well, it is one answer, but not necessarily the best. Algorithmic trading by itself is not enough—the reason it has gained rapid acceptance is because it can be adopted by individual firms without coordination or cooperation. Eventually, market participants will come together to rectify the problems with an intelligent market structure.

Recently there has been a surge of acquisitions and investments in ECN/Regional Exchanges. Many are asking why this is happening and whether it will be advantageous for market quality. In this commentary, the discussion centers around two key drivers for this activity. The first is economic opportunity and offensive, the second is safety oriented and defensive.

A crucial ingredient in evaluating execution quality is the choice of benchmark: evaluate execution prices relative to what? In this article, we discuss two popular benchmarks: comparing execution prices to VWAP and comparing execution prices to a pre-trade price. We show that if the executions evaluated affect the market VWAP, then the
VWAP benchmark may lead to sub-optimal decisions. Traders, for example, may adopt a more costly execution strategy. When analyzing execution quality, therefore, the VWAP benchmark lets you down when you need it most: in evaluating difficult orders that may affect market prices. Our recommendation is to consistently use a pre-trade benchmark in evaluating different execution strategies (or traders or venues).

CHOOSING BENCHMARKS VS. CHOOSING STRATEGIES: PART 2—EXECUTION STRATEGIES: VWAP OR SHORTFALL

Dmitry Rakhlin and George Sofianos

In this article, we use execution data from the Goldman Sachs algorithmic trading desk to compare the performance of VWAP and shortfall algorithms. Our analysis shows that the two algorithms work as intended: shortfall performs better than VWAP when short-term (ST) alpha is high, helping traders to reduce alpha loss. The shortfall algorithm also delivers lower execution risk. We also find, however, that the average trader does not optimally allocate orders between the VWAP and shortfall algorithms.

Our findings suggest that providers should better educate users on the relative merits of VWAP and shortfall algorithms and better quantify the trade-offs. If users cannot easily differentiate between high and low ST-alpha orders, a practical alternative is to choose the one algorithm that best fits the overall characteristics of their order flow.

ALGORITHMIC DECISION-MAKING FRAMEWORK

Robert Kissell and Roberto Malamut

The emergence of algorithmic trading as a viable and often preferred execution mechanism has created a need for new suites of trading analytics to assist investors to compare, evaluate, and select appropriate algorithms. Unfortunately, many of the existing algorithms do not provide necessary transparency to make informed trading decisions. In this paper we provide a dynamic algorithmic decision-making framework to assist investors in determining the most appropriate algorithm given overall trading goals and investment objectives. The approach is based on a three step process where investors choose their price benchmark, select trading style (risk aversion), and specify adaptation tactic. The framework makes extensive use of the Almgren & Chriss (1999, 2000) efficient trading frontier.

THOUGHT-LEADING SPONSORS PAGE

TABLE OF VENDORS OFFERING ACCESS TO ALGORITHMIC TRADING BROKERS

GLOSSARY OF ALGORITHMIC TRADING TERMS

2005 ALL-AMERICA EXECUTION & SALES-TRADING RANKINGS