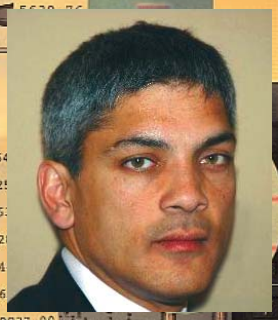
FIX and algorithmic trading



By Roberto Rivero, Director, Intelligent Growth

Chris Sims and Roberto Rivero discuss the impact of FIX on the development of Algorithmic Trading - and vice-versa.

Algorithmic trading was first developed in the US in the mid-1990s as a response to two major changes in the markets. The first was the SEC's "Reg. ATS" in 1996, which created electronic crossing network and fragmented liquidity. The first algorithms were designed to execute orders across a fragmented marketplace.

The second major development in the US was decimalisation which, in addition to reducing spreads (and therefore margins), forced brokers to trade smaller lumps of stock more rapidly and led to a more stealthy approach to trading.

Figures

Estimates of the proportion of volumes that trade algorithmically vary enormously. Generally, estimates from Buy-Side firms are lower than those from Sell-Side firms and those from North America are higher than European numbers.

At TradeTech 2005, in April, buy-side participants estimated that 3-4% of trading was being done algorithmically. On the 27th of May the Financial Times, quoting Goldman Sachs, said the figure was 45%.

Maria Domnick in Advanced Execution Services at CSFB explains that when a buy-side firm provides an estimate, it is likely to be based on their internal experience. A sell-side firm gets a feel for what happens across a group of customers and its own desk. Sometimes algorithms are used at a Sell-Side desk to help execute part of a client's order.

Maria agrees that European figures may be lagging behind the US. But this can be explained by the fact that in Europe the algorithms have had to be developed for over 15 unique markets, using different rules and different currencies. The US market is a united, very liquid, market with a single currency set of rules. That was why the US was developed first and where the use is more mature.

Driver and growth

Undoubtedly, the rapid spread of algorithmic trading is due to the improved performance and increased control for the buy-side trader - at a lower cost. "Algorithms are like word processors for traders; they increase performance and productivity," says Kevin Houstoun, Co-Chairman of the FIX Global Technical Committee.

Maria Domnick believes the spread of such tools is due to increasing sophistication of buy-side desks. "It's one of the range of tools they use to obtain better execution performance at a lower cost".

Despite the high levels of adoption for the technology, suppliers see rapid growth continuing. Any market fragmentation caused by MiFID is likely to spur growth. "Arbitrage is already one of the biggest areas of activity for our clients," says Bertrand Rassat of Flextrade.

"Any slower growth in equities will be more than made up by an accelerating interest in FX and Fixed Income," says Kirsti Suutari, Business Manager for Algorithmic Trading at Reuters. Flextrade's FX service with links to 12-15 trading destinations is already live.

Use of FIX

FIX, of course, has played a huge role in the emergence of algorithmic trading by providing an industry-wide infrastructure that different suppliers can build on.

Most implementations of algorithmic trading are using FIX 4.2 with non-standard use of tags to exchange the additional information required. For as long as FIX has been in use, custom tags have been used by practitioners to extend the protocol for one reason or another.

The current version of FIX, version 4.4, supports algorithmic trading through a combination of 3 strategy related tags: TargetStrategy (tag 847), TargetStrategyParameters (tag 848) and ParticipationRate (tag 849). For most firms, there are a growing number of strategies that need additional parameters. Several firms have come up with a variety of implementations and have been adding custom tags to support their requirements.

The formation of the FIX Working Group on Algorithmic Trading was first discussed in the middle of 2004 at a European FIX governance meeting. The driver was the growing push by brokers to market their algorithmic offerings to the buy-side and the emergence of the multitude of different approaches to passing required data to algorithmic engines.

Whilst the group had 109 registered members only about 5 took the lead. "By necessity, these were mostly the experienced sell-side firms," says Maria Domnick

The working group met for the first time in September 2004, the approach was to obtain copies of interface specifications from as many brokers as possible and to identify the commonalities. This turned out to be more tricky than initially anticipated; it took some time and effort to persuade brokers to share their interface specifications.

The internal working of the brokers' algorithmic engines are obviously sensitive proprietary information so it took time to persuade individuals that the definition of the additional tags required in a new order message to communicate to the algorithmic engines was not sensitive information.

Over a number of working group meetings and separate conversations with brokers, a technical proposal was gradually formulated. This was finalized in June and recently approved by the Global Technical Committee and will released as an extension pack to FIX 4.4.

This next set of changes is designed to standardize the use of FIX in algorithmic trading and to support its rapid adoption. **FIX**

Chris Sims is Chair of FPL's Algorithmic Trading Working Group and Head of Development at Gartmore Investment Management.

Roberto Rivero is a member of the FIX Education & Marketing Committee, EMEA and a Director of Intelligent Growth, a consulting company advising firms in the Financial IT industry. www.intelligent-growth.com

Any thoughts on this or other articles?
Please send any comments, refering to this article as Vol 1 Issue 7 EUR1, direct to Edward at edward@fixglobal.com

Proposed Algorithmic Trading Extensions - June 15, 2005

Recommendations:

In order to standardize the passing of additional parameters for strategies and create a more flexible implementation to support algorithmic trading, we propose the following:

1. Add a repeating group (shown below) to capture the parameters of a strategy. This repeating group will be added to all messages that currently have the TargetStrategy tag (tag 847). This includes message types D, E, G, 8, AB, AC, s and t.

Tag	Field		Type	Description
957	NoStrategyParameters		NumIn Group	Indicates number of strategy parameters
í	958	StrategyParameterName	String	Name of parameter
í	959	StrategyParameterType	Int	Datatype of the parameter. Refer to Appendix-A for a list of valid values.
í	960	StrategyParameterValue	String	Value of the parameter

2. Deprecate tags TargetStrategyParameters (848) and ParticipationRate (849) (introduced in FIX 4.4).

3. In this approach, a 'VWAP' strategy with specified start time and end time and two additional parameters, participation rate (40%) and aggressiveness (Y) can be represented as follows:

   847 (TargetStrategy) = 1 (VWAP)
   168 (EffectiveTime) = 20050606-14:00:00
   126 (ExpireTime) = 20050606-20:00:00
   957 (NoStrategyParameters) = 2
   958 (StrategyParameterName) = ParticipationRate
   959 (StrategyParameterType) = 11 (Percentage)
   960 (StrategyParameterValue) = 0.4
   958 (StrategyParameterName) = Aggressiveness
   959 (StrategyParameterType) = 13 (Boolean)
   960 (StrategyParameterValue) = Y

4. For firms / vendors that cannot support custom repeating groups in earlier versions of FIX, the strategy tags can be passed in tag 847 & 848 as follows:

   - Tag 847 will contain the strategy identifier
   - Tag 848 will contain a series of semi-colon delimited Tag:Value pairs
   - In the above example, tag 847 & 848 will be populated as follows:
     847=1
     848=957:2; 958:ParticipationRate; 959:11; 960:0.4; 958:Aggressiveness; 959:13; 960:Y

5. For firms / vendors that cannot implement tag 847, 848, 957-960 in earlier versions of FIX, they can use the corresponding user defined tags in the 5000 series - 5847, 5848, 5957-5960.

6. In summary, the table overleaf shows the recommended tags and alternatives:

Recommended Approach for all FIX versions		Alternate approach #1 for firms / vendors who cannot support custom repeating groups	Alternate approach #2 for firms / vendors who can support custom repeating groups but cannot support tag 847, 957-960	Alternate approach #3 for firms / vendors who cannot support custom repeating groups and cannot support tags 847 and 848
847	TargetStrategy	847	5847	5847
848	TargetStrategy Parameters - Deprecated	Tag 848 containing semi-colon delimited Tag:Value pairs	Deprecated	Tag 5848 containing semi-colon delimited Tag:Value pairs
849	ParticipationRate - Deprecated		Deprecated	
957	NoStrategyParameters		5957	
958	StrategyParameterName		5958	
959	StrategyParameterType		5959	
960	StrategyParameterValue		5960	

Appendix-A: Valid values for StrategyParameterType (tag 959)

Tag	Field	Type	Description
959	StrategyParameterType	Int	Datatype of the parameter. Valid values: 1 = Int 2 = Length 3 = NumInGroup 4 = SeqNum 5 = TagNum 6 = Float 7 = Qty 8 = Price 9 = PriceOffset 10 = Amt 11 = Percentage 12 = Char 13 = Boolean 14 = String 15 = MultipleValueString 16 = Currency 17 = Exchange 18 = Month-Year 19 = UTCTimeStamp 20 = UTCTimeOnly 21 = LocalMktTime 22 = UTCDate 23 = Data