

Picking up the Pace

The idiosyncrasies of the fixed income market have made it a laggard in the adoption of automated and algorithmic trading, but the soul searching that followed the sub-prime crisis may accelerate uptake, reports Chris Hall.

Until last summer, the fixed income markets were ploughing a lone, if lucrative, furrow. While the equities, foreign exchange and exchange-traded derivatives markets were driving down an increasingly commoditised 'stack'em high, sell'em cheap' route, fixed income brokers were piling on the bells and whistles at the high-margin, luxury end of the financial markets. The more complex the structure, the harder to understand the risk, the more appealing the product.

While other markets employed the latest technology – including automated and algorithmic trading

techniques – in pursuit of greater transparency and trading efficiency (see Figure 1), fixed income largely stood aloof, confident in the allure of its wares to the more sophisticated investor. This splendid isolation ended in July 2007 when confidence in many fixed income investments was dealt a mortal blow by widespread defaults on US sub-prime mortgages, many of which had been repacked for sale to (and by) many of the world's premier financial institutions. Complexity was suddenly a curse. The inability of market participants to agree on a basis for valuation brought the credit derivatives market, previously one of the most dynamic fixed income businesses, to a standstill.

A taste for transparency?

With the US credit crunch having escalated into an ongoing international liquidity crisis across the financial markets, reform of the system that prompted it is only now beginning to take shape. But there is already an understandable appetite for more clarity and less complex products in the fixed income markets. It is likely that this new-found taste for the simpler dishes on the menu will in time

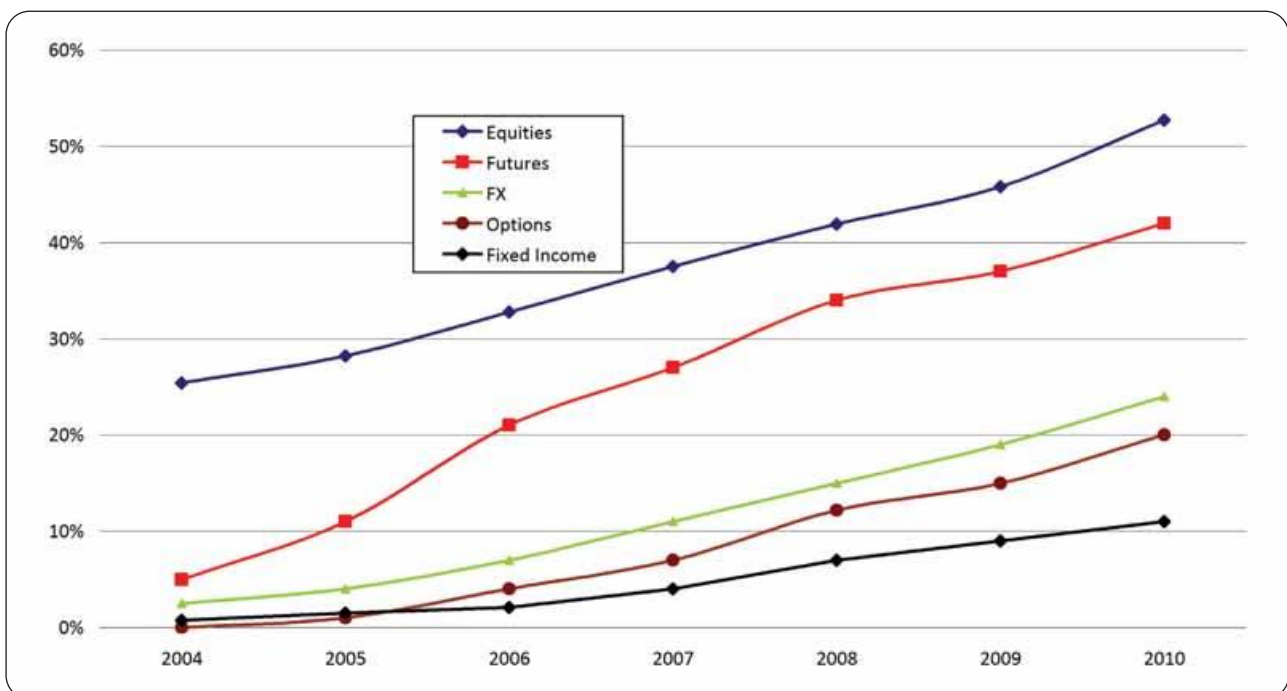


Figure 1: Algorithmic trading – adoption by asset class

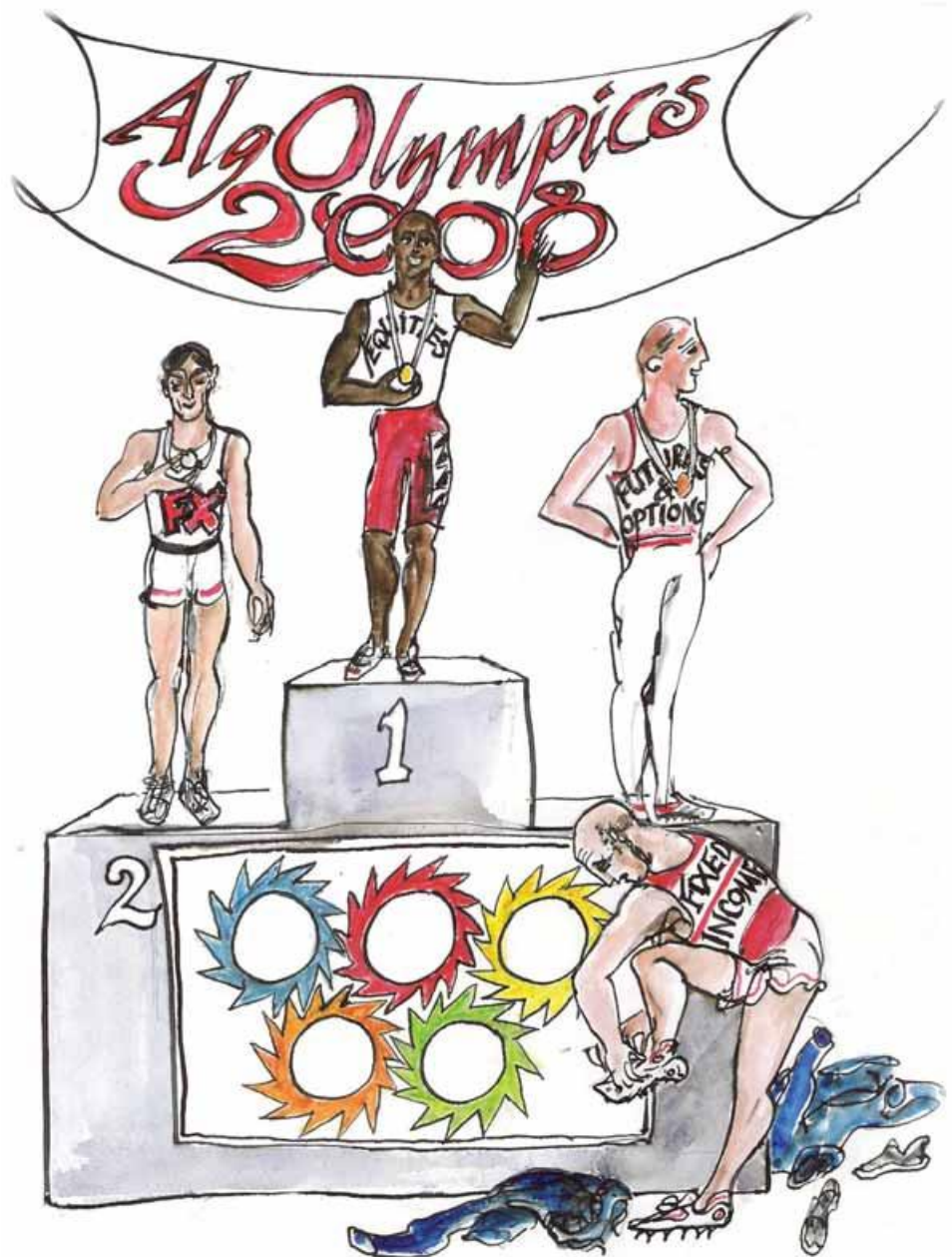
Source: Aite Group

increase the levels of automated and algorithmic trading in the fixed income markets.

“The industry is looking closer at the advantages of an equities-style model and accepts that some kind of pooled liquidity could be advantageous in the longer term,” says Henrik Raber, Co-head of Flow Credit Sales and Trading, Europe, UBS. “New approaches will take time to evolve, but these last six months have raised questions over whether process and liquidity efficiencies can be achieved by doing things differently. The answer is, almost certainly, ‘yes’.” Higher volumes are also forcing the issue, according to Raber. “With the credit default swap market growing by 37 per cent in the second half of last year, according to ISDA (International Swaps and Derivatives Association), the whole market is looking for ways to improve trading efficiency,” he says.

David Rutter, Deputy CEO, ICAP Electronic Broking, which owns the BrokerTec bond trading platform, says the opacity that has characterised areas of the fixed income markets is reducing at a slower rate than some participants had expected. But he agrees that recent turmoil may add further impetus to change in the medium term. “In the short-term, there’s less transparency because fewer dealers are willing to make markets in esoteric instruments. But there will be a concentration around more standard instruments available in the fixed income markets,” says Rutter. “Some of the liquidity issues we’re facing in today’s market will lead to more sustainable solutions and algorithmic trading will play a part in that.”

Increased use of electronic and automated trading techniques will make it easier for participants to establish fair value, according to Luke Flemmer, Co-founder and Managing Director, Lab49, a financial



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technology consultancy. “The recent trouble in the credit markets stem largely from firms carrying instruments on their balance sheets or in special purpose vehicles that they couldn’t mark to market. Electronification can only improve the ability of participants to agree on the value of assets. The development of more complex collateralised debt obligations was an almost willful drive toward obscurity,” says Flemmer. “Following the bailout of the financial industry by central banks, you’d expect enthusiasm for complex products to be replaced by a focus on more commoditised and more liquid instruments.”

Special pleading

Despite expectations of a gradual shift toward greater simplicity and transparency, the reasons cited for the fixed income markets' overall reluctance to adopt automated and algorithmic trading are manifold. The majority of fixed income instruments are too complex, too illiquid, too voice-brokered, too over-the-counter, traded in too large an order size to be traded either using automated quantitative models or execution algorithms, so the arguments go. Though not without merit, similar objections have been made to support manual trading methods in other asset classes, only for the will, and the technology, to find a way over time. While few doubt that a renewed emphasis on execution efficiency will drive electronically-traded volumes in the fixed income markets – thus spurring greater use of automated and algorithmic trading – the current reality is of an overwhelmingly voice-brokered market. “The electronic market has expanded a lot, but the tickets are majority retail; the bulk of volume from hedge funds and asset managers remains voice executed,”



David Rutter, ICAP

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says UBS’s Raber. “However, there is an overall drift toward electronic execution and we expect the future to be a lot more electronic, driven by the demand for greater speed and ease, but lower cost, of execution.”

Only in the government bond market have the pre-conditions for automated and algorithmic trading been fully met, according to Raber. “There’s very little algorithmic trading activity in the fixed income market at present except in the execution of government bond trades, where there’s also ‘electronic’ arbitrage between the futures and cash markets,” he says. “Away from government bonds, the liquidity hasn’t really existed in the cash markets to enable algorithmic trading to take place, nor have there been any exchanges or venues that have traded instruments in sufficient volume to exploit algorithmic trading.”

ICAP’s Rutter is even more specific, insisting that it’s really only the US treasuries market that has witnessed significant development in the use of algorithmic trading. “US treasuries has a concentrated number of price points (i.e. the two-, five-, ten-, and 30-year issues) with very deep, liquid and transparent markets. And for algorithmic trading to work well, you need to be able to establish high beta correlations to other marketplaces for hedging purposes,” says Rutter. “Such correlations exist in spades in the equities markets, and in fixed income you can trade on an automated basis against bond futures and Eurodollar futures as well as trading the curve.” Although banks in the European government bond market are increasingly offering streaming prices, Rutter asserts that automated trading will not take off until a wider range of participants can access the market. “European government bonds have a very liquid futures market, so over time Europe should see more automated trading as traders extract the cash equivalent prices with reference to the futures market. But access is limited to particular participants and liquidity is currently concentrated on the MTS platform, although this is beginning to change. In equities or FX, you can trade against prices quoted on different venues, but that’s not easily done in the European government bond market,” he says.

Although European government bond trading is dominated by banks accredited to deal on EuroMTS, an inter-dealer government bond platform, new entrants and new trading practices are expected to reduce margins and increase trading efficiencies. Following a period of sustained industry pressure, MTS accepted wider participation in September 2007 when it announced plans to permit access to non-banking entities with broker-dealer status.



Henrik Raber, UBS

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In Q1 2008, both the Dutch and Belgian government debt agencies announced they were enabling primary dealers to fulfill their secondary bond market quoting obligations via ICAP’s BrokerTec platform. In contrast with the US, the sheer number of issuers of government bonds in Europe is a barrier to liquidity concentration around specific price points. “There are scores of different bonds in Europe issued in relatively small size by the various governments,” says Rutter. “Discussions around euro-zone bond issuance, as opposed to by individual governments, could see a concentration in liquidity that would propel algorithmic trading forward.”

Information shortfall

But getting more liquidity into particular price points is only a starting point, according to Raber of UBS. “At present, the question facing the fixed income market is how best to implement algorithms in the trading function when you still don’t have a fully electronic market. It’s great to have trading models that can identify price differences, but if you can’t execute on that automatically, you’ve only got part of the picture. When the market is largely over the counter, sourcing liquidity is best achieved over

the phone rather than by computer programmes,” he says. “However, the CDS market could be an area in which more complex algorithmic trading will take off, i.e. using algorithms to search out which dealers have the best prices and where to execute.”

Along with a lack of liquidity in large parts of the fixed income markets, the lack of executable prices and the sheer range of instruments and pricing methods are the most commonly cited barriers to algorithmic trading. As in all financial markets, pricing information has been at a premium in the fixed income market historically. And the stronger links between banks’ bond underwriting and trading business, compared to equities issuance and dealing, remains a key reason for the lack of price transparency in the fixed income markets, says John Jay, Senior Analyst, Aite Group. “Execution algorithms almost by definition imply that information is shared with everybody, but these guys make their spread by not telling anybody anything. If a dealer is sitting on a heap of inventory he might sell at a point less than he otherwise would, but you’re only going to find out by ringing around, that information’s not going to be available on a price stream,” he says.

But developments in price discovery are beginning to pave the way for use of execution algorithms. Over the last 18 months, Richard Gissing, founder and CTO of Gissing Software, has noted an upsurge in interest from both buy- and sell-side participants in the deployment of automated and quant-based trading techniques in the fixed income markets. “Sell-side firms already had automated pricing engines for fixed income instruments, but they were pretty basic, i.e. either taking a spread on a curve from a future or a benchmark. Now, they are getting more sophisticated and using quant-based techniques, but it’s still early days,” says Gissing, who says the range on instruments in the fixed income markets has until now been a barrier to automated and algorithmic trading. “One challenge is the sheer number of fixed income instruments and the speed at which new ones are created. With only a couple of different share classes in the equities market, there isn’t the same complexity or diversity in the structure of the instruments,” he says.

Malbec Partners, a US-based alternative asset management firm, recently deployed a market data solution devised by Gissing as they shifted from

discretionary trading in the fixed income and other markets to a quant-based approach to investment. The firm has implemented Gissing technology to continuously publish and distribute internal pricing and real-time market data to spreadsheets used by quant traders to develop trading models, which are then converted into Java applications. The firm also uses a Gissing solution to feed real-time positions data from Bloomberg to the traders' spreadsheets to support accurate, independent position keeping. "Because the position data is fed back to the trading models, the solution ensures the traders' models are not all taking up similar positions in the market, which is important from a risk management perspective," says Gissing.

Streaming ahead

Greg Bufton, Director, Co-Head of Quantitative Desk, Rates Trading Group, Mitsubishi UFJ Securities International, which uses Gissing to publish 'house' prices on a range of instruments in real time to traders and sales teams in London and Tokyo (as well as external data vendors), says the fixed income markets are not an ideal environment for algorithmic trading. "One of the main difficulties is that the life cycle of a fixed income instrument is often quite restricted compared to an equity, resulting in a very limited trading window," says Bufton. "Some issues can be bought fairly easily for six months, then held for six months, and before you know it the liquidity's all but disappeared. If you look at the US treasuries market, a once-proud benchmark can soon become a specialist issue." With such a limited trading window, it is vitally important to have as much information as possible, Bufton asserts. "To start trading an issue after three months, you need a lot more than 60 closing prices; you need enough tick data to identify correlations with other issues," he says. "In equities, this data is more readily available and can go back many years. In fixed income, you can't use the same trades as in the last bull market, for example, because the bond may not have existed. Moreover the shape of the yield curve would have been totally different."

Bufton says that one of the key advantages of Mitsubishi UFJ Securities' real-time price distribution mechanism is that the price discovery process also helps identify appropriate hedges. "Because we're able to track not only how a specific instrument traded historically and its closing prices,

but also how it trades intraday, we can identify liquid instruments against which it has strong correlations and therefore make the right hedging decision," says Bufton. "This means we have real-time hedging as well as real-time pricing."

Greater automation of market-making processes, such as use of request for stream (RFS), pricing is increasingly common, says Lab49's Flemmer. Responding to a request for quote (RFQ) has typically been a fairly manual process, i.e. an individual trader responds to a ticket received via the TradeWeb platform for example, or an auto-quoting engine automatically applies the appropriate customer spread, provided the incoming RFQ is within certain parameters. "In addition, some execution venues are moving toward an RFS approach, whereby the client requests a price feed on a particular instrument that will be updated over time. This represents a shift toward a much more dynamic type of market, at least among the more liquid instruments such as US treasuries, and will drive further automation of banks' market-making processes," says Flemmer.

Although the rate at which fixed income price streams are updated is variable, and certainly lags those available in the equities and foreign exchange markets, their existence does offer scope for automated, rather than voice-brokered, price discovery and liquidity sourcing. Such price streams may not be executable at present, but history suggests this is just a matter of time. And as competing automated price streams develop in the fixed income market, firms are likely to be able to execute orders with multiple counterparties using similar execution algorithms and routing techniques to those already deployed in other markets today. But why wait, asks Ary Khatchikian, President and Chief Technology Officer, Portware, a multi-asset execution management system. "Just because you have RFQs in the fixed income market, rather than executable quotes, that's no reason why you can't VWAP an order. It might have to wait around a little longer than in the equity market to receive a price, but the general mechanism a VWAP algorithm would use in the fixed income market is basically the same," he says.

Going native

However, Khatchikian asserts that algorithmic trading will inevitably assume characteristics unique to the fixed income markets. "To execute effectively,

an algorithm needs to include parameters that account for all the factors that can affect the price of the instrument, such as interest, maturity, rating etc. – as well as the actual bond price itself,” says Khatchikian. “Much more information is required compared with the algorithms operating in the equities market, where fewer parameters are required.” Khatchikian also suggests that algorithms might be used more frequently to execute more complex cross-asset strategies. “The ability to build and use automated cross-asset strategies is likely to prove more valuable to most asset managers in the fixed income market than deploying an algorithm that can slice and dice a US Treasury order all day to save a few nickels and dimes. What you might see increasingly is the kind of auto-hedging already commonly executed across the equities and foreign exchange markets, so perhaps a firm might use an execution algorithm to perform a T-Bill to cover the carry costs of an FX transaction,” he says.

UBS’s Raber agrees that the equity markets should not be seen as a blueprint for fixed income. “In the equity markets, execution algorithms are used to achieve the most efficient execution strategies, but in the fixed income market it is far more common for automated trading models to exploit relative values between instruments, i.e. where one moves too far away from the standard deviation,” he says. “However, firms are using execution algorithms to execute large fixed income orders in a single clip.”

On the sell side, Lab49’s Flemmer notes a growing use of execution algorithms by brokers to execute hedges that might otherwise take up several hours of a trader’s time. “Putting on a large curve trade can be very cumbersome, particularly due to the legging risk that can arise when switching out of one instrument into another. But by setting an algorithm to perform the switch under specific price-differential parameters the improvement in execution efficiency can make a direct P&L contribution,” he says. “You see more of this on the sell side because – as market-makers – they’re sitting on much larger flows than the buy side and need to actively manage positions to remain risk-neutral.”

In addition, both buy- and sell-side institutions are deploying automated trading models to support both arbitrage and relative value strategies on fixed income trading venues. “Where there are fungible instruments on different platforms, traders are setting programmes



Luke Flemmer, Lab49

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to buy treasuries on eSpeed, for example, and sell them on BrokerTec for a few pennies more, thus helping to improve market efficiency,” says Flemmer. “But there are also relative value plays, based on statistical analysis of where fair value should be and automated models that identify and take advantage when particular instruments fall out of line.”

ICAP’s Rutter argues that the growing maturity of the market is leading to greater emphasis on relative value strategies. “The simple latency arbitrage algorithms have been played out and we’re seeing more sophisticated models emerge that look at book shape, basis trades, etc.,” he says. Regardless of strategy, however, both established bond funds and hedge funds “are increasingly looking to improve execution performance in the fixed income markets” by deploying strategies that have succeeded in other markets, says Rutter. UBS’s Raber says the increased focus on execution costs stretches across buy- and sell-side firms. “Both fund managers and dealers view execution desks as costs and recognise that electronic execution can lower these costs, particularly if you consider all the processes required from the front to the back office. As volumes continue to increase, the need to address costs becomes more urgent,” he says.