

# Liquidity, price and timing - engineering more client centric FX algorithms



William Essex

Foreign exchange may be almost as old as commerce itself, dating back to the days when commodities were sold off the backs of camels, but widely accessible FX-dedicated execution algorithms are a surprisingly recent innovation. As William Essex discovers they go back just five years.

In August 2007, Credit Suisse Advanced Execution Services (AES) offered its FX algorithms to external clients. The move was as much a show of prescience as of good timing: the stated intention of the offer was to enable clients more effectively to locate global liquidity; as we all know, Summer 2007 was when global liquidity first went into hiding.

Credit Suisse's first-mover advantage lasted only months, with Goldman Sachs for example announcing its own plans for the FX-algo space before end-2007. Global trade, global finance and indeed global liquidity have continued to develop in interesting ways, and

execution algorithms have now become an established "tool in the toolbox" for FX-market participants. Asif Razaq, global head of FX algo execution at BNP Paribas, observes that: "Over the last couple of years, we have seen an increased level of interest from our clients in using FX algorithms as an alternative to traditional methods of trading. The way I would describe such an algorithm to a client is: think of it as another tool in your toolbox that will achieve efficient execution whilst minimising market impact, providing full transparency and reducing overall transaction costs." BNP Paribas launched its FX algo solution Cortex iX [iX: intelligent eXecution] in June 2012.

## Challenges of FX

But while this sustained and ongoing take-up of algo execution may be largely attributable to recent macro-economic excitements, some of the challenges of FX are intrinsic to the asset class. "Unlike equities and other markets, FX is very fragmented and unstandardised, also resilient because of the lack of transparency," says Robert Weissman, Vice President, Foreign Exchange, FlexTrade, neatly itemising three reasons to believe that the "marriage" of FX and algos will continue to flourish as varying market conditions persist. Even if the good times do return, FX is going to stay fragmented, unstandardized and opaque. In that environment, algos will continue to work in FX because they help normalize trading outcomes over a period of time, while minimizing market impact and improving performance against benchmarks.

One key point here is that despite everything, FX-algo take-up has not been dictated entirely by external factors. Discussing the delivery of algos that enable clients to benchmark and add more precision to their trade-execution process, Ian Green, head of electronic commerce for fixed income, currencies and commodities, Credit Suisse, says: "For clients with a fiduciary responsibility to prove best execution, algorithms, combined with forensic execution reports, can help to establish that each order was worked at a competitive level. Moreover, market impact can be

assessed methodologically to ensure that the algos themselves are having minimal impact on the achieved price."

As this suggests, execution algorithms have a potential role to play at two levels: first, achieving best execution; subsequently, proving best execution. Green adds: "Algos offer the client the flexibility to choose an execution scheme appropriate for the size of the trade, the time of day and the pair." Size is important. Jonathan Wykes, head of eFX sales EMEA, Bank of America Merrill Lynch says: "Clients don't typically use execution algorithms for smaller sized trades; they use them where size is an issue, market impact is very important, maybe liquidity is a bit thin and a trade needs to be executed carefully."

So the application of algorithms to FX can enhance both the management of external factors – so far, we've touched on liquidity and market impact – and internal controls.

This serves to remind us of an important distinction. Crudely, a trading algorithm processes data into a trading signal, while an execution algorithm handles the execution of a trade. Significantly, this mirrors a distinction that can be made in the FX market itself. Gary Stone, Chief Strategy Officer, Bloomberg Tradebook, says: "When I look at the segmentation of the FX marketplace, I see two groups. There are people who trade FX as an asset class, and there are people who trade FX as a by-product of another investment strategy. The former group includes hedge funds, banks, proprietary traders, and the people who trade FX as a by-product include corporates and long-only funds and hedge funds."





Asif Razaq

*“We’re giving clients access to algorithms that are able to adapt their strategy mid-execution in response to the signals they take from the market.”*

### Lost control

Any market historian would agree that the last five years have generated a very large amount of very interesting, potentially tradable data. There has been, and remains, an opportunity here for traders. But there is another history that could be written, and that’s the history of lost control. As that history tells us, lost control is a bigger issue than missed opportunities – which is where the execution algos come in. With hindsight, one viable strategy for the past five years might have been to opt out of as much market participation as possible – and yet, the FX market is also distinctive for the number of its participants who can’t opt out. Gary Stone mentions corporates and long-onlies. For a large corporate in particular, the option of not selling across borders, and by that opt-out not incurring a necessary FX liability, doesn’t exist. Not surprisingly, Stone continues: “Those who trade FX as an ancillary product are looking for ways to hedge risk and algos present a way to do that because they automate trades according to given parameters.”

That is to say, where FX is the necessary – indeed, the compulsory – by-product. For such market participants, whether or not they’re corporates, the

priority has to be finding liquidity and then achieving effective execution with minimal market impact. Not executing is not an option; executing clumsily is hazardous. This is convenient for our purposes, not least because effective execution is also a bedrock priority for even the most data-obsessive FX-market participant, but it is also useful in a more significant respect. As we’ve said, FX is ancient, idiosyncratic, and particularly against a background of ongoing globalisation, unavoidable. It doesn’t matter who you are. Because you can’t avoid FX, you’ve got to get FX right. If you can’t get FX right, you can’t assume that any other outcome will be optimal.

From which it’s tempting to draw the conclusion that if algorithmic execution can make it in FX, as it were, it can make it anywhere. But let’s be realistic: there are wider implications to be drawn from the “FX algo story” than can be obtained from treating the asset class as if it were a final “live test” for algos in general. Much of the past five years’ evolution in the FX-algo space has been towards achieving (regaining?) control, specifically of execution. FX is famously the asset class that can’t be controlled: the FX market has fought governments and won; macro hedge funds have died trying to win at FX.



Robert Weissman

*“Each individual firm defines their own ideas and parameters of best execution. There is no one-size-fits-all answer to that one.”*



The development of algos for FX is an ongoing process, and as we look to the future, the fascination is twofold: will algorithms prove to be an enduringly effective tool for achieving control over FX and FX execution; more broadly, how will this asset class – FX – impact on the wider development of this newly imported (but established elsewhere) means of execution? Algos may address issues faced in the FX market, but FX also poses some interesting questions for algo developers.

### Best execution

One such question is almost a riddle. To focus on execution is, self-evidently, to prioritise best execution. But how do you define “best”? Robert Weissman says: “The question is, how each individual firm determines what best execution is, because there’s no right or wrong on what it is.” If there’s no right or wrong, how do you do your TCA? Gary Stone says: “The challenge with TCA in the FX world is that we don’t have a consolidated tape or volume information. The best we have is a stream of bids and offers. So what we can do is look at the highs and lows and look at where you were executed in a certain period of time versus that high and low, or a simple average of what that rate was.”

For there to be best execution, there has to be a standard for what we might as well call “good-enough execution” (and indeed worst execution). And yet the FX market doesn’t provide one – but there has to be one. Not surprisingly, the need for best execution, and with it the need to be able to conduct meaningful TCA, are helping to shape the current development

of FX algorithms. Rob Maher, Global Head of Fixed Income Electronic Sales at Credit Suisse, says: “We’ve invested significantly over the years to be able to provide a full-service suite of TCA products including pre-trade along with real-time and historic post-



Ian Green

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trade analysis tools. TCA is a key part of the overall algorithmic trading offering; we use it extensively with our clients to help shape future strategy selection along with customisation work.”

There’s a further dimension to this, and it amounts to a drive towards best practice, as well as best execution. Discussing his company’s provision of execution-quality analytics, Jim Kwiatkowski, Global Head of Sales, FXall, says: “Our customers were accustomed to seeing that kind of reporting in the equity markets, but not for FX. They were asking us to help them better understand how to use the various tools that FXall provides. Do they approach a single bank or multiple banks; do they use RFQ, or FXall’s ECN? Is this order best executed in a large size with one counterparty, or in smaller pieces to get the best fill? What time of day is most efficient for certain order sizes and certain currencies?”

### Size matters

Best execution and the TCA to prove it may be priorities, but they’re not the only ones. Developing his point quoted earlier about size, Jonathan Wykes says: “In my experience, corporates typically use algos for event-driven FX flow and where they are looking



Jonathan Wykes

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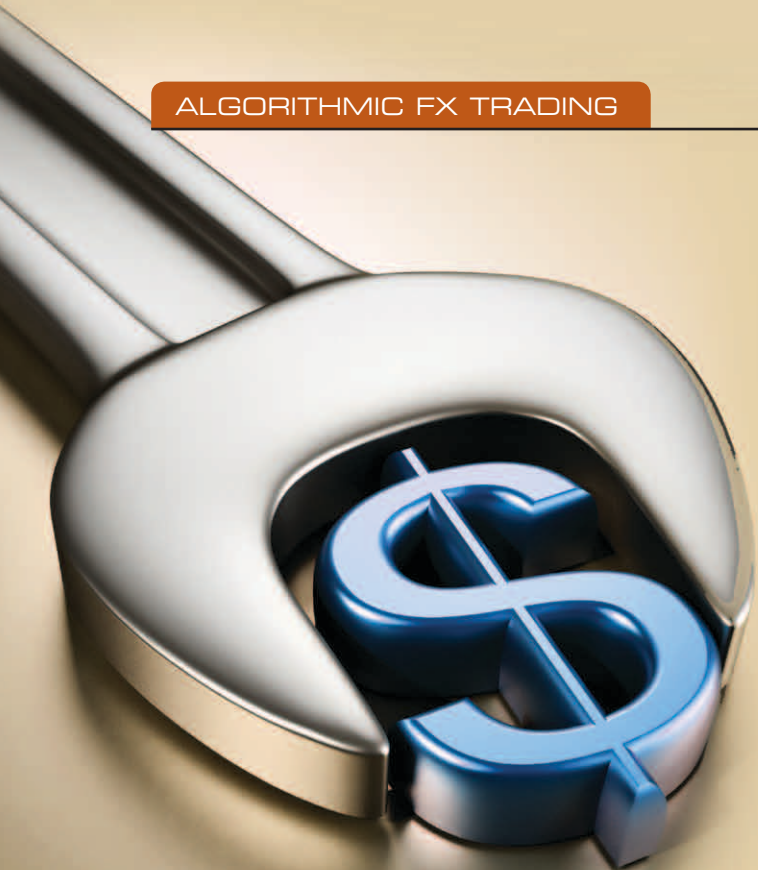


Jim Kwiatkowski

*“An interesting question many FX market buy-side participants evaluate is: what challenges can FX algos solve?”*

for a solution that would allow them to get into the market without the associated impact of giving a sizeable trade to a particular desk.” This is also a control issue, but at its core is the risk associated with coming too noticeably into the market. Corporates aren’t just stuck with having to trade; they’re stuck with having to trade big.

No doubt we’re all watching the corporates. And no doubt best execution is as much a function of a successfully concealed intention, as it is of a set of analytical tools. Jim Kwiatkowski says: “An interesting question many FX market buy-side participants evaluate is: what challenges can FX algos solve? Algorithms are particularly effective at automating repeatable or low-value transactions, for example breaking up a large order for a liquid currency into smaller pieces to be executed in the market over a defined period of time. The algorithm can increase efficiency, saving time and minimizing impact cost, while at the same time freeing up the trader to focus on high-value trades where they can add significant insight by managing the execution directly. There is also demand for algos with the ability to aggregate



multiple liquidity sources to get the best price available in the market.”

Cheap is good, of course, but what about smart? Discussing the launch of Cortex iX, Asif Razaq says, “We’re giving clients access to algorithms that are able to adapt their strategy mid-execution in response to the signals they take from the market. What we’re looking to do with these adaptive capabilities is have the algorithm mould into current market conditions and use the appropriate set of execution rules to work the order into the market.” There is an AI element to this, Razaq explains: the objective is to develop flexible algorithms that have the ability to learn. Razaq says: “From a client perspective, all they have to do is specify what they want to achieve. They set the boundaries and retain full control of the execution.” The degree of flexibility extends to, for example, being able to suspend an order mid-execution, or change the parameters of the order (boundaries) mid-execution.

With the assumption of control, of course, comes the assumption of risk. In a similar discussion of the role of adaptive algorithms in meeting clients’ specific requirements, Ian Green says: “It’s important to remember that when choosing an execution algorithm, rather than taking a price from a dealer, the client is assuming the risk of the price moving against him or her as an order is worked. Adaptive features within the algorithm itself give the kind of intelligence that a human dealer would have, to change the execution scheme dynamically if and as markets change in

direction. These characteristics are an essential and established part of the algo toolkit.” Maybe there will come a point in this evolution at which that very smart and well-compensated human trader will do the simple trades while the even smarter algorithm does more useful work. Maybe.

But if, despite all the flexibility, AI, adaptive capability, the big question is still all about slicing up big orders into little orders and thereby avoiding a noisy impact on the market, there’s a further issue to address. Are we likely to see a growing demand for explicitly “stealth” algos that minimise noise and avoid leaving digital patterns in the market? Ian Green says: “In Equities markets a decade or more ago the rise of Direct Market Access (DMA) trading immediately preceded the massive growth in algo trading. It transpired that DMA trading ‘required’ algos to consolidate liquidity across fragmented sources and to bring the kind of intelligent trading capabilities to DMA orders that human traders previously provided. Today’s FX markets differ from the Equity markets of that time in that clients also have 24x6 access to fully electronic dealer risk prices for a comprehensive range



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of products, in good size and on tight, consistent spreads.”

### Conclusion

Concluding with a look to the future, Ian Green says: “However, for clients who are happy to take on execution risk in order to try to improve on spread capture or, perhaps more commonly, to be able to evidence best execution, there is plenty of growth in algorithms, which we expect to continue apace.” On the same question about stealth, Asif Razaq says: “Many clients are concerned about leaving digital patterns in the market. Certainly with very large orders, this is a key concern and for this reason we have embedded intelligent logic to ensure iX strategies are undetectable.” Razaq also makes the point that demand for stealth can be correlated with the sophistication of the client base – and predicts that both will increase.

Final word to Stephen Garland, chief strategist at Kx Systems, who draws an encouraging conclusion from the evolution of FX algos to date. Citing initiatives to enhance information flow to clients and facilitate TCA – while perhaps also thinking of the past few years’ global turbulence, Garland says simply: “Algorithms enable a culture of knowing what’s going on.”